Data Management





Signal Cables

Page 23





Digimatic Interface Page 25



Tolerancing, Timing, Display Units and Data Logger Page 29

12



Digimatic Mini Processor Page 18

Wireless Data Transmission





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.

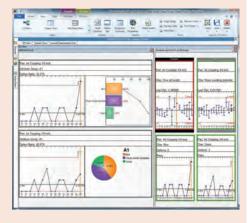
As a client/server application, MeasurLink gives you the performance you need through distributed processing. Combined with a multi-user relational database, MeasurLink delivers a safe and organized data warehousing system making quality data available for viewing and analysis by any member of the production, engineering and managerrial 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 buttom 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

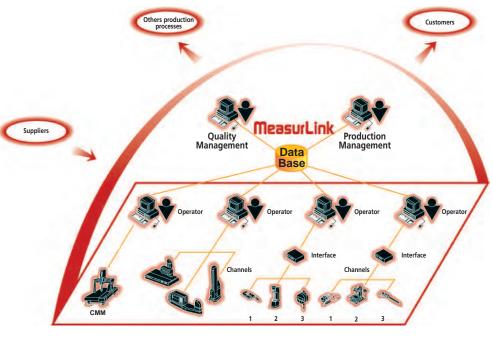
MeasurLink is available in several modules offering you a wide range of solutions, from data acquisition to manager views and gage management. Details about all modules can be found on the next pages. However, you can create your own package and combine modules by choosing one of the following license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







MeasurLink brochure available on request



No.	Description	Price [€]
64AAB184R	MeasurLink 7 State License - 30 Pack	19995,00
64AAB185R	MeasurLink 7 Workgroup License - 15 Pack	10995,00
64AAB263R	MeasurLink 7 Workgroup License - 10 Pack	7995,00
64AAB264R	MeasurLink 7 Workgroup License - 5 Pack	4995,00
64AAB265R	MeasurLink 7 Academic License - 20 Pack	3995,00

MeasurLink Real-Time Standard Edition

Designed for customers who want to aquire 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	Price [€]
64AAB177R	MeasurLink 7 Real-Time Standard Edition	1195,00

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

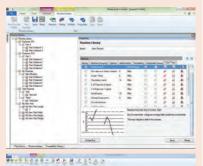
Supported data sources: keyboard, RS232, USB devices, Mitutoyo DDE, ASCII, QMD.

No.	Description	Price [€]
64AAB178R	MeasurLink 7 Real-Time Professional Edition	1795,00



ANT AREADIATE PREME







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	Price [€]
64AAB179R	MeasurLink 7 Real-Time Professional 3D Edition	1995.00

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 datbases
- Tree control navigation
- Reporting

No.	Description	Price [€]	
64AAB180R	MeasurLink 7 Process Analyzer Lite Edition	995,00	





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 datbases
- Tree control navigation
- Reporting
- Group, search and sort data
- Merge data
- Scatter plots
- Electronic signatures

No.	Description	Price [€]
64AAB181R	MeasurLink 7 Process Analyzer Professional Edition	1795,00

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!

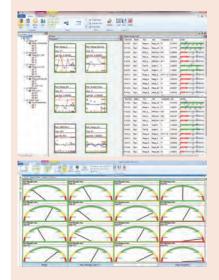
- Organize and maintain a shop-wide quality program at a glance.
- Audit the entire shop floor inspection activity from a single PC
- Get process information without leaving the office
- View current production across all machines
- Show clients your quality operation for the entire facility
- Establish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

Drill down for details on certain

- tracebility
- assignable cause
- failed tests
- serial numbers

No.	Description	Price [€]
64AAB182R	MeasurLink 7 Process Manager Standard Edition	1795,00

191	
and the second s	mert a fallachte an
Panel -	And the the she
	death her
	APPHAN AND AND A



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 analisys
- Short method for attributive gages
- Bias study
- Linearity study
- Stability study

Features :

Graphical analysis tools :

- Xbar R chart
- Part by appraiser plot

No.	Description	Price [€]
64AAB183R	MeasurLink Gage R&R 6	995,00

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	Price [€]
64AAS007DR	MeasurLink Gage Management 6	543,00

Digimatic Printer/Statisitic 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.

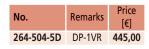
The DP-1VR offers the following benefits:

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





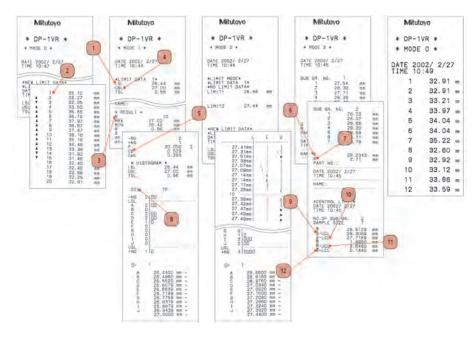
Example application



Footswitch - 937179T



Dimensions in mm



Specifications

specifications	
Printer type	Thermal line printer
Print speed	6,5 mm/s (using AC adapter)
Printing paper	48 m per roll
Capacity	ca. 6500 lines for large characters, 12000 lines for normal characters
Processing capacity	Mode 1/2/3: 9999 data subgroups; Mode 0: 100000 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	42,00
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	90,00
00EAA084 and 065	516 can not be used simultaneously	

09EAA084 and 965516 can not be used simultaneously.

Consumable spares

No.	Description	Price €
011037	4 batteries LR6 (AA)	10,00
011348	Ni-MH Batteries (rechargeable)	
09EAA082-5	Printer paper (5 rolls)	26,00
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 capabilty 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)

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

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)

Digimatic Data Cables

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. / I	Price €			
1 m	2 m	For use with	Measuri	ing instrument plugs
05CZA624 71,00 €	05CZA625 80,00 €	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 €	ABSOLUTE DIGIMATIC Caliper (Series 500, 551, 573) DIGIMATIC Height Gauge (Series 192, 570) ABSOLUTE DIGIMATIC Depth Gauge (Series 547) Portable Hardness Tester (Series 811)	Right	
905693 30,00 €	905694 36,00 €	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 44,00 €	ABSOLUTE DIGIMATIC Micrometer Head (Series 164)	With data key	
05CZA662 74,00 €	05CZA663 83,00 €	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 58,00€	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 44,00 €	965014 58,00 €	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	
52,00 €	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		1

Digimatic Extension Cables

Series 011

 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.

Optional accessories

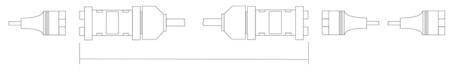
•		
No.	Description	Price €
936937	Digimatic cable (1 m)	44,00
965014	Digimatic cable (2 m)	58,00



011393

DIGIMATIC measurement devices with data output

DIGIMATIC transmitters or Digimatic Miniprocessor



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

No.	Length	Price
NO.	[m]	[€]
011391	5	125,00
011392	8	141,00

011393 10 157,00

Nr. 011391 5 m Nr. 011392 8 m Nr. 011393 10 m DIGIMATIC Signal cable Nr. 936937 1 m Nr. 965014 2 m

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), Windows® 8
Max connectable devices	Windows® XP/2000: 108 devices (18 hubs with 7 ports and 1 software Dongle) Windows Vista®/7: 20 devices, Windows® 8: 20 devices

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00
06ADV384	USB cable for connecting of a footswitch (Footswitch connection only with USB-IT PAK), cable length: 160 mm	100,00
06AEN846	USB-ITPAK	220,00



Typical USB cable



Footswitch connection for USB



Typical commercially available USB Hub











06ADV380B

06ADV380D



USB Input Tool Direct (Digimatic-USB cable)

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	А	IP USB Input Tool Direct Cable Straight With Data Switch (2m) e.g. for IP67 Caliper	115,00
06ADV380B	В	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 Indidator	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 Specifiaction (e.g. 01A+138,626) with fixed COM assignment as channel identifiction	
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)	

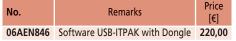


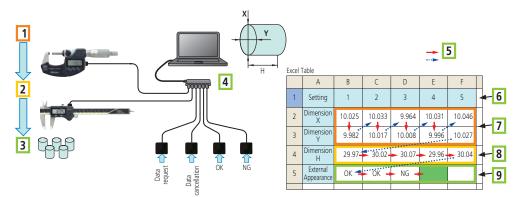
USB ITPAK

Series 06AEN

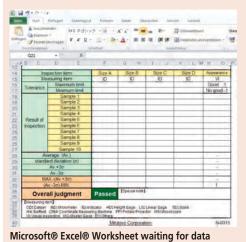
- USB-ITPAK is a setting and data collection software for collection data from measuring instruments with Digimatic output for entry to Microsoft® Excel®.
- USB Input Tool Direct cable, U-WAVE Wireless communication system and USB Footswitch adapter can be used to send the data to a Microsoft® Excel® worksheet.





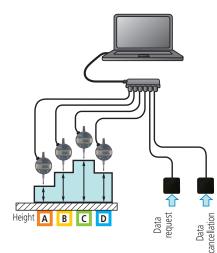


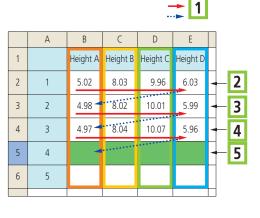
OS compatibility	Windows® 2000 Professional (≥SP4), Windows® XP Professional (≥SP2), Windows® XP Home Edition (≥SP2), Windows Vista®/7 (32bit,64bit), Windows® 8
Applicable MS Excel Version	Microsoft® Excel® 2000/2002/2003/2007/2010
Functions	 setting of Microsoft® Excel® input (workbook, worksheet, cell range a.s.o.) data collection: USB Input Tool Direct cable wireless communication system U- WAVE selection of measuring input (sequential, simultaneous, individual) control of data imput (mouse, foot switch, kexboard) character string input by foot switch timer function measurement time input
Language for display	English, German, French, Italian, Spanish, Turkish, Czech, Polish, Hungarian, Swedish, Russian, Japanese, Korean, Simplified Chinese, Traditional Chinese
Delivered	with USB dongle



Sequential Measurement

1: Micrometer for diameters X and Y; 2: Caliper for height measurement H; 3: Inspection by attributes OK/NG with foot switch e.g. scratches in the surface; 4: standard USB-Hub; 5 Measurement direction; 6: Workpiece No. 7: Measuring result X/Y; 8: Measuring result H; 9: OK/NG judgement (e.g. scratches)





Simultaneous Measurement

1: Measurement direction; 2: First measurement: press foot switch once = 4 complete data batches;

3: second measurement: press foot switch once = 4 complete data batches; 4: third measurement: press foot switch once = 4 complete data batches; 5: is waiting for the next batch measurement

Mitutoyo

22

Specifications

Specifications	
Wireless communication protocol	IEEE 802,15
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), Windows® 8

Standard accessories

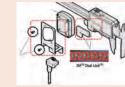
No.	Description
02AZD770	Clip for Cable fixing
05CZA619	Screw driver
05SAA217D	Lithium battery CR-2032

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00
02AZE200	Holder for U-WAVE T. Contents: support plate, fixing pads, screws	20,00
02NDB003	U-Wave Pak Event Drive*	53,00

Consumable spares

No.	Description	Price €
05SAA217D	Lithium battery CR-2032	6,00



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



U-Wave-R



*The Event Drive Moole will reduce the battery life

Wireless Communication System: U-WAVE

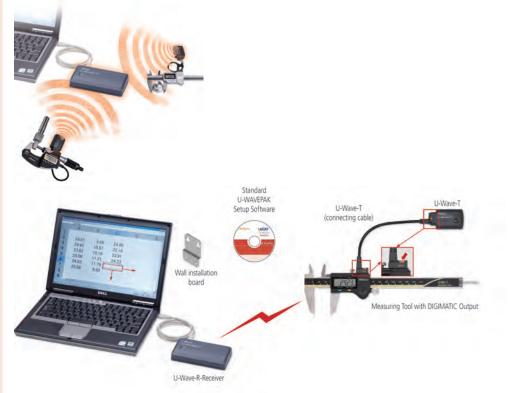
Series 02AZD

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 400000 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.



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]	Dimensions (WxDxH) [mm]	Mass [g]	Price [€]
02AZD810D	U-WAVE PAK	U-WAVE R + Software	Up to 16	Up to 100	1	140 x 80 x 31,6	130	318,00

Transmitter U-WAVE T

No.	Data reception indication	Remarks	Battery life	Dimensions (WxDxH) [mm]	Mass [g]	Price [€]
02AZD730D	LED	IP67 model	400 transmissions	44 x 29,6 x 18,5	23	160,00
02AZD880D	LED and buzzer	Standard model	400 transmissions	44 x 29,6 x 18,5	23	160,00

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



Wireless Communication System: U-WAVE

Series 02AZD / 02AZE

• This connecting cable 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.





Cable without footswitch connection

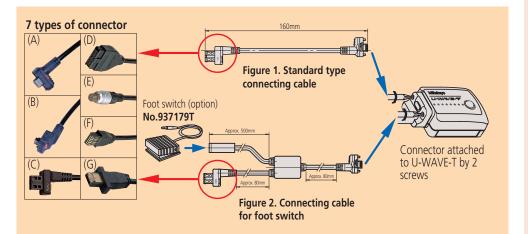
1 Cable without footswitch connection

Cable with 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	В	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 Indidator	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	А	IP U-WAVE Data Cable Straight With Data Switch/FootSwitch Connector e.g. for IP67 Cali- per	129,00
02AZE140B	В	IP U-WAVE Data Cable Back Side With Data Switch/FootSwitch Connector e.g. for IP65 Micrometer	129,00
02AZE140C	С	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







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

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, Vista®, 7, 8, Pocket PC 2002

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00

	A	В	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		
0	2.701	4.940	13.432		
11	2.357	4.940	12.129		

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 con- nector	Mass [g]	Price [€]
264-012-10	1 x Digimatic	USB keyboard signal (HID)	point	Yes	61	205,00
264-014-10	1 x Digimatic	USB keyboard signal (HID)	Emulates the local setting	Yes	61	205,00

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.

		DMX3T/FS-USB ON/OFF ON/OFF 3	USB	Menü FT FT		
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	464,00

Specifications

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

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00
011538	Interface Link cable (300 mm)	41,00

	A	В	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-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	81,00

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.





011506

rear panel

No.	Data input	Data output	Interface ca- ble connec- tion	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	108,00

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.



011466

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	351,00

Specifications

•	
Dimensions (WxDxH)	58 x 62 x 18 mm

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00
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	42,00

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	42,00
011119	Signal cable RS-232C D-SUB 25 to D-SUB 9 (2m)	85,00



Sample application with footswitch (optional accessory)

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	42,00

DMX-2 USB

Series 011

Connecting 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 con- nection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011443	2 x Digi- matic	USB virtual COM-Port (VCP) USB keyboard signal (HID) (switchable on the box)	USB	Yes	9600	8	1	none	351,00

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

Foot-Data in-Interface cable Data Stop Price Data output Baud rate No. switch Parity connection bits bits [€] put connector USB virtual For serial cable: 1200/9600 3 x Digi-COM-Port 011505 D-SUB 9 for USB: 8 none 433,00 Yes (adjustable 1 (VCP), matic cable type B with jumper) RS-232C

27

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	42,00
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.





No.	Data input	Data out- put	Interface ca- ble connec- tion	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
264-002D	4 x Digimat- ic	RS-232C	D-SUB 9	Yes	300, 600, 1200, 2400, 9600, 19200	8	1	none	1150,00

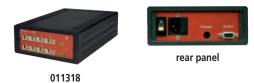
DMX-8/2

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.



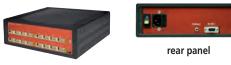
No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
011318	8 x Digimatic	RS-232C	D-SUB 9	Yes	9600	8	1	none	1030,00

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



No.	Туре	Data input	Data out- put	Interface ca- ble connec- tion	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	1606,00
011255	DMX-16C	16 x Digi- matic	RS-232C	D-SUB 9	Yes	9600	8	1	none	2307,00

Specifications

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

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00
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	42,00
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	42,00
011196	Signal cable RS-232C DSub9- DSub9 (2 m)	15,00

Dimensions (WxDxH)	170 x 128 x 55 mm
Timer function	interval 0-99s or 0-99 min
Mitutoyo measuring instruments with RS232C ouput	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 cascadable interface	3 via optional link cable
Delivered	USB cable (1,8 mm) Driver Software

Optional accessories

No.	Description	Price €
937179T	Footswitch	42,00
011538	Interface Link cable (300 mm)	41,00

Specifications	
Dimensions (WxDxH)	55 x 58 x 31 mm
Power supply	AC-Adapator 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

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

N	No.	Data input	Data output	Interface ca- ble connec- tion	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Price [€]
0	011552	3 x Digimatic 2 x RS232C	USB virtual COM- Port (VCP) USB key- board signal (HID)	USB	Yes	9600	8	1	none	886,00

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.



Price

[€]



Sample application with USB Input Tool Direct

011540 319,00

No.



Digimatic Display Unit

Series 542

- For devices equipped with SPC Digimatic output:
- Micrometer
- Indicator
- Caliper
- etc...





542-016

542-093-2

542-072D

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.	Туре	Mass [g]	Price [€]
011264	DL-1000	130	606,00
011264M	DL-1000 M	130	687,00



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

Specifications

Specifications	
Memory	DL-1000/1000 M: Up to 999 measurement values can be stored by these data loggers. DL-1000 M: Sample or feature-related operation is possible. 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. Based on the number of features, the DL-1000 M will automatically calculate how many samples are available. For example, 10 measured features means that a maximum of 99 samples can be stored.
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)	44,00
965014	Digimatic cable (2 m)	58,00
06ADV380D	USB Input Tool Direct cable (2 m)	100,00

Mitutoyo

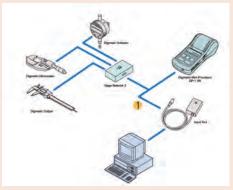
The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Delivered

Optional accessories

No. Description		Price €	
936937	Digimatic cable (1 m)	44,00	
965014	Digimatic cable (2 m)	58,00	
937179T	Footswitch	42,00	
937179T only for 011235			

AC-Adapter (011235 only)



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

Specifications

Dimensions (WxDxH)	117 x 73 x 24 mm
Delivered	With AC adapter

Optional accessories

No.	Description	Price €
011037	4 batteries LR6 (AA)	10,00

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.



No.	Data output	Data input	Footswitch connector	Price [€]
011235	1 x Digimatic (1 channel)	5 x Digimatic	Yes	384,00
939039	1 x Digimatic (1 channel)	3 x Digimatic	No	263,00

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







Quick Guide to Precision Measuring Instruments



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

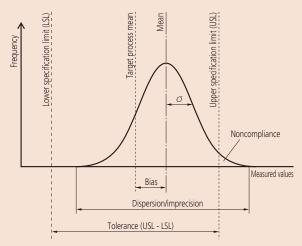
Number of product items in the sample.

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 mean $\pm 3 \sigma$ 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 (\overline{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

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

USL: Upper specification limit LSL: Lower specification limit

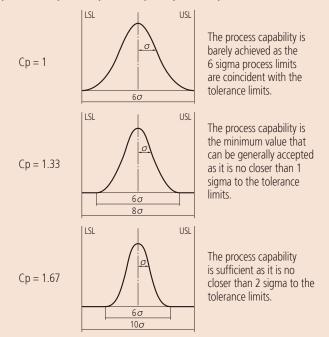
Unilateral tolerance ... If only the upper limit is stipulated

$$Cp = \frac{USL-\overline{X}}{3\sigma}$$

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

$$Cp = \frac{\overline{X}-LSL}{3\sigma}$$

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

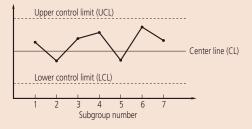


Note that Cp only represents the relationship between the tolerance limits and the process dispersion and does not consider the position of the process mean.

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

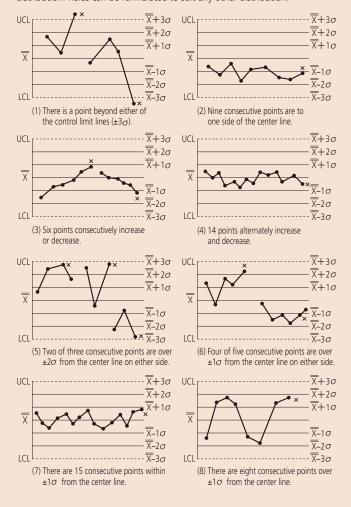
These causes of variation are of relatively low importance. Chance causes are technologically or economically impossible to eliminate even if they can be identified.

X-R control chart

A control chart used for process control that provides the most information on the process. The \overline{X} -R control chart consists of the \overline{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 \overline{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.



The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



Micrometers





Digimatic Micrometers and Mechanical Micrometers Page 35

> Micrometers Accessories Page 94

> > Micrometer Heads Page 110



Micrometer Head Accessories Page 134





Functions	Series 293
ON/OFF	0
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	0
Function lock	0
HOLD	0
Data output	9
PRESET	0
Resolution switching	a

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
Power supply	Lithium battery (CR2032) x 1
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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 €
05SAA217D	Lithium battery CR-2032	6,00





0,1µm digital step

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 handheld tool (such as Gauge R & R analysis).

The Absolute High-Accuracy Micrometer offers the following benefits:

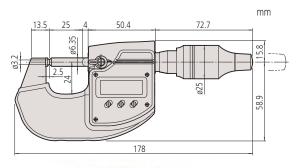
- It delivers higher accuracy without sacrificing operability, by using Mitutoyo's innovative 0,1 µm resolution ABS (absolute) rotary sensor and high accuracy screw machining technology which reduces instrumental error to just 0,5 µm.
- Its highly rigid frame and high-performance constant-force mechanism (7-9N) enable more stable measurement.



High Accuracy Micrometer with heat insulating cover (standard accessory)

Metric					
No.	Range [mm]	Digital step	Instrumental error	Mass [g]	Price [€]
293-100	0-25	0,0001 mm/ 0,0005 mm (switchable)	±0,5 μm	400	1400,00







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



Digimatic Micrometer QuantuMike IP65

Series 293

This is a micrometer with a 2mm spindle pitch, offering movement four times as fast as a 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 $\pm 1\mu m$ 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.

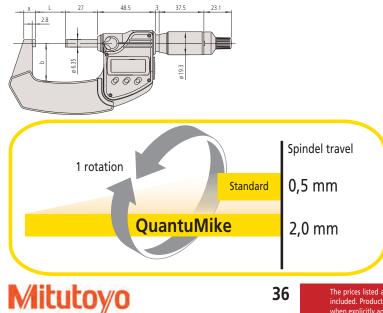
QuantuMike[®]



Coloured ratchet caps

Metric								
No.	Range [mm]	Accuracy [µm]	Data output	L [mm]	a [mm]	b [mm]	Mass [g]	Price [€]
293-140	0-25	±1	0	0	9	25	265	290,00
293-145	0-25	±1		0	9	25	265	205,00
293-141	25-50	±1	0	25	9,8	32	325	358,00
293-146	25-50	±1		25	9,8	32	325	282,00
293-142	50-75	±1	0	50	12,6	47	465	433,00
293-147	50-75	±1		50	12,6	47	465	338,00
293-143	75-100	±2	0	75	14	60	620	493,00
293-148	75-100	±2		75	14	60	620	383,00





36



ORIGIN (until 100 mm)	
ZERO/ABS	0
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	0
Function lock	0
HOLD	0

Series 293

Functions

• • • • • • • • • • • • •

Only for 0-25, 25-50 mm

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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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

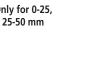
Consumable spares

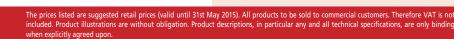
No.	Description	Price €
938882	Battery SR44	6,00
04GAA899	Black ratchet cap	4,00





1: Ratchet on thimble 2 : Ratchet on speeder





Functions	Series 293
ORIGIN (until 100 mm)	0
ZERO/ABS	<i>i</i>
2 x PRESET (over 100 mm)	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
Low voltage alarm	0
Function lock	<i>i</i>
HOLD	

•	
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	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	carbide-tipped, micro-lap finish
surfaces	
Measuring	With spindle lock, ø 6,35 mm, spindle
spindle	pitch 0,5 mm
Measuring	5-10 N
force	
Battery life	approx. 2,4 years for models up to
	100 mm
	1,2 years for >100mm
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00





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 ±1µm instrumental error (75mm or less measuring range models).





293-234-30 with ratched thimble



293-252-10

Metric	With ratchet stop								
No.	Range [mm]	Accuracy [µm]	Data output	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
293-230-30	0-25	±1	0					270	258,00
293-240-30	0-25	±1						270	188,00
293-231-30	25-50	±1	0					330	319,00
293-241-30	25-50	±1						330	262,00
293-232-30	50-75	±1	0					470	
293-242-30	50-75	±1						470	317,00
293-233-30	75-100	±2	0					625	449,00
293-243-30	75-100	±2						625	360,00
293-250-10	100-125	±2	0	132,8	5,3	16,7	76,5	600	551,00
293-251-10	125-150	±2	0	158,2	5,7	18,8	91	740	567,00
293-252-10	150-175	±3	0	183,6	6,1	19,1	102	800	582,00
293-253-10	175-200	±3	0	208,8	6,3	18,2	115	970	592,00
293-254-10	200-225	±3	0	234,2	6,7	16,8	127	1100	603,00
293-255-10	225-250	±4	0	258	5,5	18	139	1270	613,00
293-256-10	250-275	±4	0	284	6,5	18	152	1340	623,00
293-257-10	275-300	±4	0	309	6,5	18	166	1540	639,00

Metric With ratchet thimble					
No.	Range [mm]	Accuracy [µm]	Data output	Mass [g]	Price [€]
293-234-30	0-25	±1	0	270	288,00
293-244-30	0-25	±1		270	199,00
293-235-30	25-50	±1	0	330	355,00
293-245-30	25-50	±1		330	272,00
293-236-30	50-75	±1	0	470	433,00
293-246-30	50-75	±1		470	360,00
293-237-30	75-100	±2	0	625	489,00
293-247-30	75-100	±2		625	411,00

Improved Battery Life (approx. 8700 hrs)



Digimatic Micrometer IP65 Metric

Series 293 - Micrometers in set

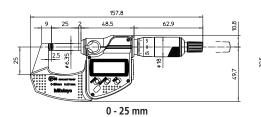
This metric micrometer offers outstanding accuracy, with and without data input, and is highly robust.

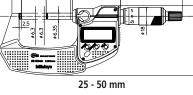
The Digimatic Micrometer IP65 Metric offers the following benefits:

• With data output.



Metric Set/With ratchet stop Range Price No. Data output Set combination [€] [mm] 293-230-30 / 293-231-30 + setting standard 25 mm made of 293-966-30 0-50 572,00 ceramics 293-230-30 / 293-231-30 / 293-232-30 + setting standard 25 mm and 50 mm 979,00 293-962-30 0-75 293-230-30 / 293-231-30 / 293-232-30 / 293-233-30 + setting standard 25 293-963-30 0-100 1390,00 mm, 50 mm and 75 mm





245.5

6.35

75 - 100 mm

6.3

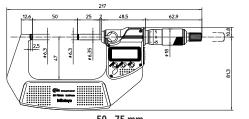
185.8

48.5

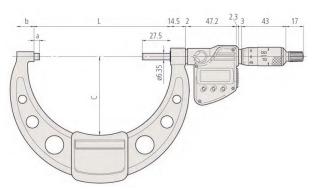
62.9

60.1

02.3



50 - 75 mm



Ratchet stop type over 100 mm







Dust- and Waterproof IP65

only for 0-25mm, 25-50mm

Functions	Series 293 - Micrometers in set
ORIGIN (until 100 mm)	
ZERO/ABS	e
Auto Power OFF	
after 20 min. non use	
Low voltage alarm	e
Function lock	
HOLD	۲

Specifications

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. 2,4 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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00

38

Functions	Series 293
ZERO/ABS	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
Low voltage alarm	0
HOLD	<i>i</i>
Data output	0

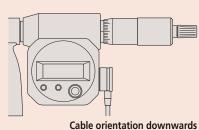
specifications	
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish
Flatness	0,6 μm
Parallelism	5 μm for models up to 375 mm 6 μm for models up to 475 mm 7 μm for models up to 500 mm
Measuring surfaces	Carbide tipped, micro lap finish
Measuring spindle	with spindle lock, ø 8 mm, sindle pitch 0,5 mm
Measuring force	10-14 N
Battery life	approx. 1,8 years
Delivered	Including box, setting standard, key, 2 batteries

Optional accessories

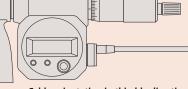
No.	Description	Price €
04AZB512	Digimatic cable with data switch (1 m)	75,00
04AZB513	Digimatic cable with data switch (2 m)	85,00
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
02AZD790C	U-WAVE Data Cable with data switch	90,00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100,00

Consumable spares





04AZB512, 04AZB513



Cable orientation in thimble direction 959149, 959150

Digimatic Micrometer 300-500 mm

Series 293

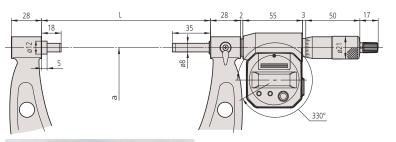
The Digimatic Micrometer 300-500mm has a measuring range of 300-500mm and offers the following benefits:

- The micrometer's 330° rotatable display unit enables easy reading in all measurement positions.
- 300-500mm measuring range.



293-582

Metric						
No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	Mass [g]	Price [€]
293-582	300-325	±6	353	187	2000	752,00
293-583	325-350	±6	378	199	2150	762,00
293-584	350-375	±б	403	212	2300	773,00
293-585	375-400	±7	428	224	2450	783,00
293-586	400-425	±7	453	236	2600	793,00
293-587	425-450	±7	478	248	2750	803,00
293-588	450-475	±8	503	261	2900	814,00
293-589	475-500	±8	528	273	3100	824,00



39



The display is 330° rotatable

Digimatic Micrometer

Series 293

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

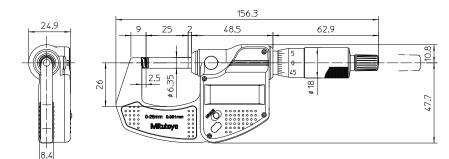
- Cost-effective with simplified functionality for standard applications.
- Without data output.
- It is available with a ratchet stop or friction thimble for a constant measuring force.



293-821-30

Metric	With ratchet stop					
No.	Range Accuracy Mass Price [mm] [μm] [g] [€]					
293-821-30	0-25	±2	275	144,00		







Functions	Series 293	
ORIGIN	0	
Auto Power OFF		<i>i</i>
after 20 min. non u	se	
Low voltage alarm		0
Specifications		
Accuracy	Refer to the list ((excluding quant	
Digital step	0,001 mm	
Scale Thimble and slee finish ø18 mm		eve satin chrome
Flatness	ess 0,3 μm	
Parallelism	2 µm	
Measuring surfaces	Carbide tipped, micro-lap fini	
Measuring spindle	ø 6,35 mm, spind	lle pitch 0,5 mm
Measuring force	Neasuring force 5-10 N	
Battery life approx. 2,4 year hours)		s (approx. 8700

Consumable spares

Delivered

No.	Description	Price €
938882	Battery SR44	6,00

Including box, key, 1 battery Certificate of inspection

Functions	Series 406
ORIGIN	0
ZERO/ABS	e
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	e
HOLD	0
Data output	i i i i i i i i i i i i i i i i i i i

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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00

Outside Micrometer Non-Rotating Spindle Type

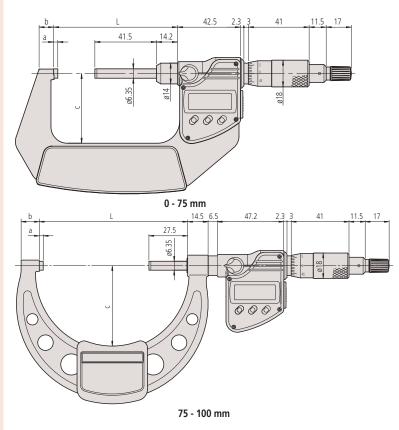
Series 406

- This micrometer features a non-rotating spindle, and offers the following benefits:
- Sliding spindle, not rotating.
- Ratchet stop.
- Data output.



Metric								
No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
406-250	0-25	±3	58,2	2,5	7,3	32	330	773,00
406-251	25-50	±3	83,2	2,5	10,1	47	470	839,00
406-252	50-75	±3	108,2	2,5	11,5	60	625	876,00
406-253	75-100	±4	105,3	2,8	14,1	57	460	922,00





41

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 de-

• IP54 protection allows a wider range of operating environments

• ABSOLUTE linear scale means no restriction on adjustment speed.

• It also has a larger measuring range - 30mm compared with

livers twenty times as fast as standard devices.

25mm - than standard micrometer.

(this only applies when a data cable is not fitted).





	Series 293			
Functions	293-661-10	293-666	293-667 up to 293-669	
ORIGIN	0	0	0	
ZERO/ABS			<i>i</i>	
ON/OFF	0	0	0	
Low voltage alarm	0	0	<i>i</i>	
HOLD		0	0	
Data output		0	0	

Specifications

F

1

E

E

Refer to the list of specifications (excluding quantizing error)
0,001 mm
0,3 μm
2 μm for models up to 80 mm 3 μm for models up to 105 mm
Carbide tipped, micro-lap finish
ø6,35 mm, non-rotating, 10 mm pitch
5-10 N
approx. 3 years (0-30 mm), 1 year (> 30 mm)
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)	58,00
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	6,00



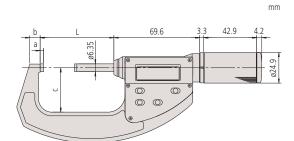
293-666 with fixing device 156-105-10 (optional accessories)

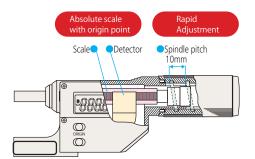
293-666	
	202 660

293-669

Range	Accuracy	L	а	b	С	Mass	Price
[mm]	[µm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
0-30	±2	348	2,8	6,2	25	275	343,00
0-30	±2	34,8	2,8	6,2	25	275	369,00
25-55	±2	598	2,8	8,5	36	355	479,00
50-80	±3	848	2,8	10,3	47	525	515,00
75-105	±3	1098	2,8	10,7	60	625	551,00
	[mm] 0-30 0-30 25-55 50-80	[mm] [μm] 0-30 ±2 0-30 ±2 25-55 ±2 50-80 ±3	[μm] [μm] 0-30 ±2 348 0-30 ±2 34,8 25-55 ±2 598 50-80 ±3 848	[μm] [μm] [mm] 0-30 ±2 348 2,8 0-30 ±2 34,8 2,8 25-55 ±2 598 2,8 50-80 ±3 848 2,8	[mm] [mm] [mm] [mm] 0-30 ±2 348 2,8 6,2 0-30 ±2 34,8 2,8 6,2 25-55 ±2 598 2,8 8,5 50-80 ±3 848 2,8 10,3	Imm Imm Imm Imm Imm 0-30 ±2 348 2,8 6,2 25 0-30 ±2 34,8 2,8 6,2 25 25-55 ±2 598 2,8 8,5 36 50-80 ±3 848 2,8 10,3 47	Imm Iµm Imm Imm Imm Imm Ig 0-30 ±2 348 2,8 6,2 25 275 0-30 ±2 34,8 2,8 6,2 25 275 25-55 ±2 598 2,8 8,5 36 355 50-80 ±3 848 2,8 10,3 47 525







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.



	Se	eries 227
Functions	227-201 227-205	227-203 up to 227-207
ORIGIN	0	
ZERO/ABS		e
ON/OFF	0	0
Low voltage alarm	<i>i</i>	e
HOLD	0	0
Data output	<i>i</i>	e
PRESET		0

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)	58,00
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	6,00







Measuring force adjustable

ABSOLUTE Digimatic Micrometer QuickMike

Series 227

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

The ABSOLUTE Digimatic Micrometer QuickMike offers the following benefits:

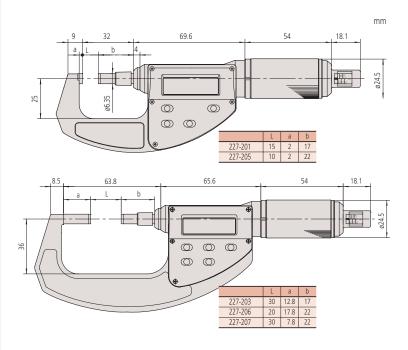
- It's dedicated to applications requiring a constant/low measuring force such as measuring wire, paper and plastic/rubber parts.
- Constant and low measuring force mechanism in the thimble.
- Non-rotating spindle.
- Speedy spindle feed of 10mm/rev.



wetric						
No.	Range [mm]	Accuracy [µm]	Measuring force settings ⁽¹⁾ [N]	Measuring force accuracy ⁽¹⁾ [N]	Mass [g]	Price [€]
227-201	0-15	±2	0,5; 1; 1,5; 2; 2,5	±0,1 + (force setting/10)	300	999,00
227-203	15-30	±2	0,5; 1; 1,5; 2; 2,5	±0,1 + (force setting/10)	380	1159,00
227-205	0-10	±2	2; 4; 6; 8; 10	±0,4 + (force setting/10)	340	963,00
227-206	10-20	±2	2; 4; 6; 8; 10	±0,4 + (force setting/10)	425	1060,00
227-207	20-30	±2	2; 4; 6; 8; 10	±0,4 + (force setting/10)	415	1159,00

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







ABSOLUTE°

Ratchet Thimble Micrometer

Series 102

operation.

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.

• It works both from the thimble and the speeder, enabling easy, one-handed

Mass

• The ratchet's clearly audible operation provides reassurance that measurements

The Ratchet Thimble Micrometer offers you the following benefits:

are being taken at a constant, preset measuring force.



Specifications

•	
Accuracy	Refer to the list of specifications
Scale	Thimble and sleeve satin chrome finish ø19 mm
Flatness	0,6 μm
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
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







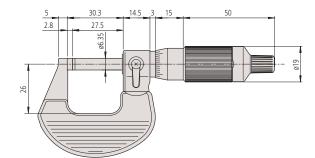


No.	[mm]	Graduation	[µm]	[g]	[€]
102-701	0-25	0,01 mm	±2	180	54,00
102-707	0-25	0,001 mm	±2	180	74,00
102-702	25-50	0,01 mm	±2	270	80,00
102-708	25-50	0,001 mm	±2	270	121,00

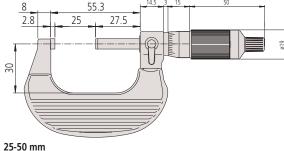
102-701



Metric









102-702

Coloured ratchet caps (optional accessories)

Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Flatness	0,6 μm
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
Parallelism	2 μm for 0 to 75 mm model 3 μm 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.



102-301

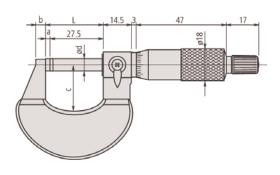
Metric								
No.	Range	Accuracy	L	а	b	С	d	Price
NO.	[mm]	[µm]	[mm]	[mm]	[mm]	[mm]	[mm]	[€]
102-301	0-25	±2	30,3	2,8	5	26	6,35	48,00
102-302	25-50	±2	55,3	2,8	8	32	6,35	73,00
102-303	50-75	±2	80,3	2,8	9	45	6,35	93,00
102-304	75-100	±3	105,3	2,8	10	58	6,35	113,00

Metric	Ν	Aicrometer set		
No. Rang [mm		Models included	Mass [g]	Price [€]
102-911-40	0-100	102-301, 102-302, 102-303, 102-304, 3 setting standards	1200	314,00



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.





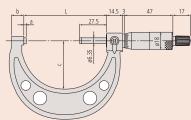
Metric			Graduation 0,001 mm								
	No.	Range [mm]	Accuracy [um]		a [mm]			d [mm]	Mass [g]	Price [€]	
	103-129	0-25	±2	30,3	2,8	9	28	6,35	175	60,00	
	103-130	25-50	±2	55,3	2,8	10	38	6,35	215	68,00	

Metric Graduation 0,01 mm									
No.	Range	Accuracy	curacy L		b	С	d	Mass	Price
INO.	[mm]	[µm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
103-137	0-25	±2	30,3	2,8	9	28	6,35	175	43,00
103-138	25-50	±2	55,3	2,8	10	38	6,35	215	63,00
103-139-10	50-75	±2	80,3	2,8	12	46	6,35	315	82,00
103-140-10	75-100	±3	105,3	2,8	14	57	6,35	375	89,00
103-141-10	100-125	±3	132,8	5,3	17	76	6,35	515	140,00
103-142-10	125-150	±3	158,2	5,7	19	90	6,35	665	156,00
103-143-10	150-175	±4	183,6	6,1	20	102	6,35	720	174,00
103-144-10	175-200	±4	208,8	6,3	19	115	6,35	920	190,00
103-145-10	200-225	±4	234,2	6,7	18	127	6,35	1080	213,00
103-146-10	225-250	±5	258	5,5	18	139	6,35	1255	235,00
103-147-10	250-275	±5	284	6,5	18	152	6,35	1405	248,00
103-148-10	275-300	±5	309	6,5	18	166	6,35	1565	266,00
103-149	300-325	±б	353	18	28	187	8	1985	337,00
103-150	325-350	±б	378	18	28	199	8	2155	365,00
103-151	350-375	±б	403	18	28	212	8	2305	393,00
103-152	375-400	±7	428	18	28	224	8	2455	423,00
103-153	400-425	±7	453	18	28	236	8	2715	454,00
103-154	425-450	±7	478	18	28	248	8	2965	485,00
103-155	450-475	±8	503	18	28	261	8	3215	515,00
103-156	475-500	±8	528	18	28	273	8	3450	557,00
103-157	500-525	±9	575	40	28	307	8	4060	623,00
103-158	525-550	±9	575	15	28	307	8	4080	650,00
103-159	550-575	±9	625	40	28	332	8	4500	687,00
103-160	575-600	±9	625	15	28	332	8	4525	716,00
103-161	600-625	±9	675	40	28	355	8	4915	767,00
103-162	625-650	±9	675	15	28	355	8	4930	800,00
103-163	650-675	±9	725	40	28	382	8	5200	838,00
103-164	675-700	±9	725	15	28	382	8	5215	876,00
103-165	700-725	±9	775	40	28	405	8	5835	917,00
103-166	725-750	±9	775	15	28	405	8	5860	948,00
103-167	750-775	±9	825	40	28	430	8	6385	999,00
103-168	775-800	±9	825	15	28	430	8	6410	1040,00
103-169	800-825	±9	875	40	28	455	8	6925	1070,00
103-170	825-850	±9	875	15	28	455	8	6940	1100,00
103-171	850-875	±9	925	40	28	480	8	7565	1143,00
103-172	875-900	±9	925	15	28	480	8	7590	1185,00
103-173	900-925	±9	975	40	28	505	8	8215	1230,00
103-174	925-950	±9	975	15	28	505	8	8240	1277,00
103-175	950-975	±9	1025	40	28	530	8	8860	1324,00
103-176	975-1000	±9	1025	15	28	530	8	8880	1370,00

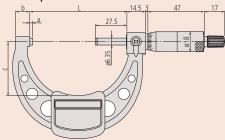


Specifications

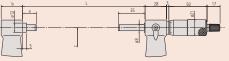
Accuracy	Refer to the list of specifications
Graduation	0,01 mm / 0,001 mm
Scale	Thimble and sleeve satin chrome finish
Flatness	0,6 μm for models up to 300 mm 1 μm for models over 300 mm
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	with spindle lock, spindle pitch 0,5 mm
Parallelism	(2+L/100) µm, L = max. range (mm)
Measuring force	5-10 N (from 100 mm upward : 5-15 N) N
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

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

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	Mi	crometer 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 set- ting standards	7695	1155,00
103-914-	50 0-300	All micrometers of 103-913-50 and 103-915-10 in one set, 11 setting standards	9300	1790,00



47

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.



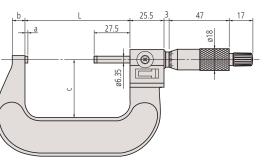
193-101

Metric		1. With ra	tchet st	top (rea	ding 0,0)1 mm)		
No.	Range	Accuracy	L	а	b	С	Mass	Price
NO.	[mm]	[µm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
193-101	0-25	±2	30	2,5	5	26	224	118,00
193-102	25-50	±2	55	2	8	32	275	175,00
193-103	50-75	±2	80	2	9	45	379	221,00
193-104	75-100	±3	105	2	9	57	489	242,00

Metric		2. With ra	atchet st	top (rea	ding 0,0	001 mm	is obta	ined with	vernier)
No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]	
193-111	0-25	±2	30	2,5	5	26	224	160,00	
193-112	25-50	±2	55	2	8	32	275	196,00	
193-113	50-75	±2	80	2	9	45	379	242,00	
193-114	75-100	±3	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

	Series 340			
Functions	340-251-10 340-252-10	340-520 up to 340-526		
ZERO/ABS	6	0		
ON		e		
Auto Power OFF	0	0		
after 20 min. non use				
2 x PRESET	9	e		
Low voltage alarm	0	0		
Function lock	9	e		
HOLD	0	0		
Data output	<u>()</u>	<u>()</u>		

Accuracy	±(4+L/75) μm, 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 ø18 mm, ø21 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, ø6,35 mm, ø8 mm (over 300 mm), spindle pitch 0,5 mm
Battery life	approx. 1,2 years, approx. 1,8 years (over 300 mm)
Measuring force	5-10 N, 10-14 N (over 300 mm) N
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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)	85,00
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
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	6,00

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.

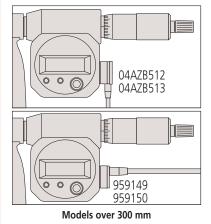




No.	Range [mm]	Setting standards pcs.	Interchangeable anvils pcs.	Protection IP65	Mass [kg]	Price [€]
340-251-10	0-150	5	6	0	0,96	834,00
340-252-10	150-300	6	6	0	1,88	1040,00
340-520	300-400	4	4		2,6	1082,00
340-521	400-500	4	4		4,1	1123,00
340-522	500-600	4	4		5,5	1267,00
340-523	600-700	4	4		6,8	1360,00
340-524	700-800	4	4		8,2	1432,00
340-525	800-900	4	4		9,5	1514,00
340-526	900-1000	4	4		10,9	1586,00







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
104-139A	0-100	3	4	0,79	376,00
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	1050,00
104-145A	600-700	4	4	7,72	1169,00
104-146A	700-800	4	4	9,08	1267,00
104-147A	800-900	4	4	10,41	1416,00
104-148A	900-1000	4	4	11,78	1524,00



Mitutoyo

Specifications

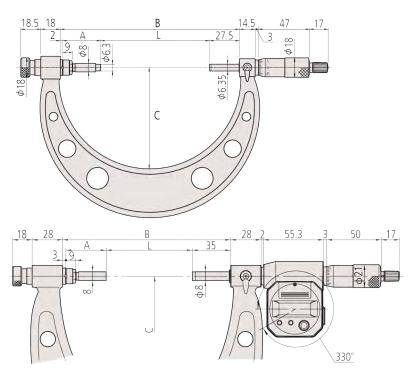
Accuracy	±(4+L/75) μm, L = max. range (mm)
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm (up to 300 mm) ø21 mm (over 300 mm)
Flatness	0,6 μm for models up to 300 mm 1 μm for models over 300 mm
Parallelism	2 μm for models up to 75 mm 3 μm for models up to 150 mm (2+L/100) μm for models over 150 mm L = max. range (mm)
Measuring surfaces	Hardened, lapped (anvil), carbide tipped, lapped (spindle side)
Measuring spindle	With spindle lock, ø 6,35 mm (up to 300 mm) ø8 mm (over 300 mm),
	spindle pitch 0,5 mm
Measuring force	5-10 N, 10-14 N (over 300 mm) N
Delivered	Including box, setting standard, anvils, key

50

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:

<u>B mm:</u>

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
Price	18,10	17,20	16,50	16,00	14,90	14,30
[€] 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
Price [€]	18,10	17,20	16,20	14,90
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.





Metric Extension Collar: 50 mm									
No.	Range [mm]	Extension collar [mm]	Mass [kg]	Price [€]					
105-103	500-600	50	5,53	1125,00					
105-104	600-700	50	6,35	1169,00					
105-105	700-800	50	7,17	1220,00					
105-106	800-900	50	7,99	1349,00					
105-107	900-1000	50	8,81	1535,00					
105-408	1000-1100	50	10,49	2280,00					
105-409	1100-1200	50	11,28	2570,00					
105-410	1200-1300	50	12,05	2930,00					
105-411	1300-1400	400 50		3210,00					
105-412	1400-1500	50	13,4	3620,00					
105-413	1500-1600	50	14,33	3919,00					
105-414	1600-1700	50	15,26	4259,00					
105-415	1700-1800	50	16,44	4465,00					
105-416	1800-1900	50	18,1	5040,00					
105-417	1900-2000	50	19,76	5356,00					

Metric	Ex	Extension Collar: 50 mm, 100 mm						
No.	Range [mm]	Extension collar [mm]	Mass [kg]	Price [€]				
105-418	1000-1200	50, 100	13,77	2800,00				
105-419	1200-1400	50, 100	15,77	3470,00				
105-420	1400-1600	50, 100	17,91	4140,00				
105-421	1600-1800	50, 100	20,8	4769,00				
105-422	1800-2000	50, 100	22,76	5459,00				



Specifications

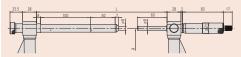
Accuracy	±(6+L/75) μm, L = max. range (mm)
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish, ø21 mm
Flatness	1,3 μm
Parallelism	(2+L/100) μm (mm), L = max. range (mm)
Measuring surfaces	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø8 mm spindle pitch 0,5 mm
Measuring 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

	Series 389					
Functions	389-251 up to 389-272	389-514				
ORIGIN	0					
ZERO/ABS	@	0				
Auto Power OFF	0	0				
after 20 min. non use						
2 x PRESET		0				
Low voltage alarm	0	0				
HOLD	9	0				
Data output	0	0				

Accuracy	Refer to the list of specifications (excluding guantizing 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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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)	85,00
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
02AZD790C	U-WAVE Data Cable with data switch	90,00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100,00
04AZB512/04AZB51 for 389-514	3/959149/959150/02AZD790C/06ADV380C	

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00

° O

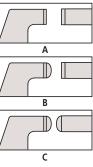
04AZB512 04AZB513

Digimatic Sheet Metal Micrometer

Series 389

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







Dust- and Waterpro IP65

www.tuv.e

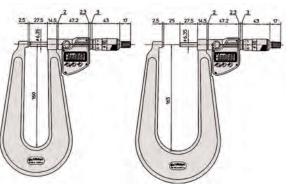
(IP)65

ÜVRheini CERTIFIE

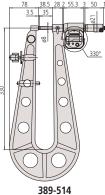
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	IP65	Mass [g]	Price [€]
389-251	0-25	А	±4	0	840	582,00
389-261	0-25	В	±4	0	840	582,00
389-271	0-25	С	±4	0	840	582,00
389-514	0-25	А	±5		2750	1040,00
389-252	25-50	А	±4	0	920	628,00
389-262	25-50	В	±4	0	920	628,00
389-272	25-50	С	±4	0	920	628,00



Metric



0-25 mm / 25-50 mm





Sheet Metal Micrometer

Series 118

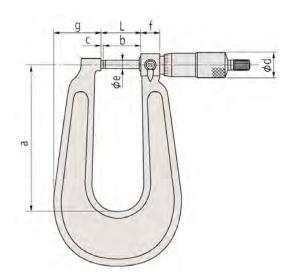
This Sheet Metal Micrometer is designed with a deep frame for measuring the thickness of sheet material.



118-102

Metric													
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	Mass [g]	Price [€]
118-101	0-25	А	±4	30,3	110	27,5	2,8	18	6,35	14,5	39	445	213,00
118-102	0-25	А	±4	30,3	160	27,5	2,8	18	6,35	14,5	48	740	213,00
118-103	0-25	А	±5	38,5	330	35	3,5	21	8	28	84	2650	432,00
118-110	25-50	А	±4	55,3	165	27,5	2,5	18	6,35	14,5	45	820	227,00
118-114	0-25	В	±4	30,3	160	27,5	2,8	18	6,35	14,5	48	740	281,00
118-118	0-25	С	±4	30,3	160	27,5	2,8	18	6,35	14,5	48	740	281,00
118-126	25-50	С	±4	55,3	165	27,5	2,5	18	6,35	14,5	48	820	227,00





Specifications

Refer to the list of specifications
0,01mm
Thimble and sleeve satin chrome finish, ø18 mm or ø21 mm
0,6 μm for models with 110, 160, 165 mm throat 1 μm for models with 300 mm throat
3 µm
Carbide-tipped, micro-lap finish
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
3-8 N
Including box, key, setting standard (from 25 mm upward)



Type A Flat-Flat



Type B Spherical-Flat



Spherical-Spherical

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.

Sheet Metal Micrometer Graduated Dial

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.

mm

55

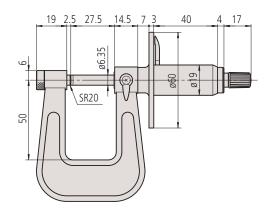
• Easy-to-read graduated dial.



 Metric
 Dial reading model

 No.
 Range [mm]
 Accuracy [µm]
 Throat [µm]
 Mass [g]
 Price [€]

 119-202
 0-25
 ±4
 50
 305
 292,00





Digimatic Caliper Jaw Micrometer

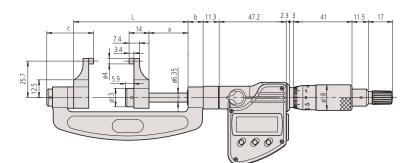
Series 343

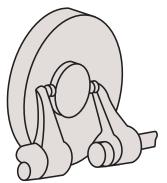
This Digimatic Caliper Jaw Micrometer has been specially designed for measuring in hard-to-reach places.

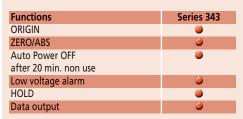


No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
343-250	0-25	±5	55,5	27,5	10,6	32,9	320	706,00
343-251	25-50	±б	80,5	27,5	10,6	32,9	340	767,00
343-252	50-75	±7	105,5	27,5	10,6	32,9	390	809,00
343-253	75-100	±8	130,5	27,5	10,6	32,9	440	845,00









Specifications

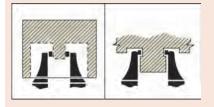
•		
Accuracy	Refer to the list of specifications (excluding quantizing error)	
Digital step	0,001 mm	
Scale	Thimble and sleeve satin chrome finish, ø18 mm	
Flatness	0,3 μm	
Parallelism	(3+L/75) μm, L = max. range (mm)	
Measuring surfaces	Carbide tipped, micro-lap finish	
Measuring spindle	With spindle 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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00





Caliper Jaw Micrometer

Series 143

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

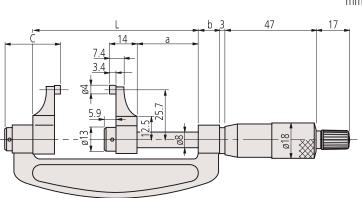


143-101

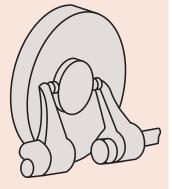
/letric

No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
143-101	0-25	±5	59,8	31,8	10,6	28,6	210	304,00
143-102	25-50	±6	84,8	31,8	10,6	28,6	230	321,00
143-103	50-75	±7	109,8	31,8	10,6	28,6	280	382,00
143-104	75-100	±8	134,8	31,8	10,6	28,6	330	403,00
143-105	100-125	±9	159,8	31,8	10,6	28,6	400	410,00
143-106	125-150	±9	184,8	31,8	10,6	28,6	450	425,00
143-107	150-175	±10	209,8	31,8	10,6	28,6	520	460,00
143-108	175-200	±10	234,8	31,8	10,6	28,6	600	494,00
143-109	200-225	±11	255,8	27,8	14,5	32,5	690	510,00
143-110	225-250	±11	280,8	27,8	14,5	32,5	790	523,00
143-111	250-275	±12	305,8	27,8	14,5	32,5	900	580,00
143-112	275-300	±12	330,8	27,8	14,5	32,5	920	617,00





57



Refer to the list of specifications

Thimble and sleeve satin chrome

ø 6,35 mm, spindle pitch 0,5 mm

standard (from 25 mm upward), key

0,01mm

0,3 µm

1-6 N

finish, ø18 mm

(3+L/75) µm (mm),

L = max. range (mm) Carbide tipped, micro-lap finish

Including box, setting

Specifications

Accuracy

Scale

Flatness

Parallelism

Measuring surfaces Measuring

spindle

Delivered

Measuring force

Graduation

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



mm

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.



Metric				
No.	Range [mm]	Accuracy [µm]	Mass [g]	Price [€]
116-101	0-25	±4	250	380,00
116-102	25-50	±4	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 anvilpindle-tip (flat)	59,00
116-802	Matched pair anvilpindle-tip (spline)	59,00
116-803	Matched pair anvilpindle-tip (spherical)	59,00
116-804	Matched pair anvilpindle-tip (point)	59,00
116-805	Matched pair anvilpindle-tip (knife-edge)	59,00
116-806	Matched pair anvilpindle-tip (disc)	59,00
116-807	Matched pair anvilpindle-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

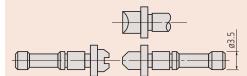
116-830 :

- 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

Functions	Series 326
ZERO/ABS	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
2 x PRESET	0
Low voltage alarm	<i>i</i>
Function lock	0
HOLD	<i>i</i>
Data output	0

•	
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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°	51,00
167-273	Setting standard 50 mm/55°	57,00
167-274	Setting standard 75 mm/55°	70,00
167-275	Setting standard 100 mm/55°	78,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00

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.



UVRhended CERTIFIED UVRhended CERTIFIED

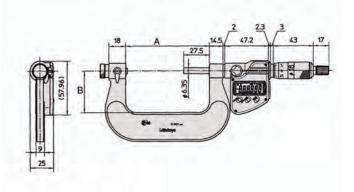


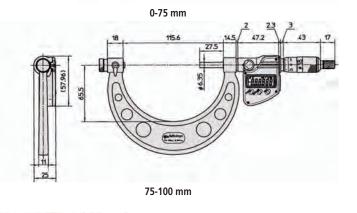
Interchangeable anvils/spindle tips in matching pairs

Metric

No.	Range [mm]	Accuracy [µm]	A [mm]	B [mm]	Mass [g]	Price [€]
326-251-10	0-25	±4	39,5	25	350	819,00
326-252-10	25-50	±4	64,5	32	380	839,00
326-253-10	50-75	±4	90	45	470	860,00
326-254-10	75-100	±5	115,6	65	510	906,00







OR

Anvil/spindle-tip matching pair



Screw Thread Micrometer with Interchangeable Tips

Series 126

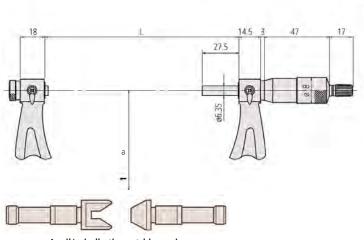
This Screw Thread Micrometer comes with optional, interchangeable, anvils/spindle-tips that allow you to measure a wide range of metric/unified and Whitworth screw-thread pitch diameters.



126-125

Metric						
No.	Range	Accuracy	L	а	Mass	Price
	[mm]	[µm]	[mm]	[mm]	[g]	[€]
126-125	0-25	±4	39,5	25	240	288,00
126-126	25-50	±4	64,5	32	290	346,00
126-127	50-75	±4	90	45	390	384,00
126-128	75-100	±5	115,6	65	450	407,00
126-129	100-125	±5	140,6	79	530	422,00
126-130	125-150	±5	165,6	93	620	510,00
126-131	150-175	±б	190,5	105	730	561,00
126-132	175-200	±б	214,5	120	860	599,00
126-133	200-225	±б	240,5	131	1030	626,00
126-134	225-250	±7	265,5	144	1200	688,00
126-135	250-275	±7	290,5	156	1370	752,00
126-136	275-300	±7	314,5	171	1540	806,00





Anvil/spindle-tip matching pair



mm

Interchangeable anvils/spindle tips in matching pairs

Specifications

•	
Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	With spindle lock, ø 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°	51,00
167-273	Setting standard 50 mm/55°	57,00
167-274	Setting standard 75 mm/55°	70,00
167-275	Setting standard 100 mm/55°	78,00
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		59,00
126-802	±20'	M2 (U2)	0,6-0,9	28-44		59,00
126-803	±15'	M3 (U3)	1-1,75	14-24		59,00
126-804	±10'	M4 (U4)	2-3	9-13		59,00
126-805	±10'	M5 (U5)	3,5-5	5-8		59,00
126-806	±10'	M6 (U6)	5,5-7	3,5-4,5		59,00
126-811	±30'	W1			48-60	59,00
126-812	±30'	W2			40-48	59,00
126-813	±20'	W3			32-40	59,00
126-814	±20'	W4			24-32	59,00
126-815	±15'	W5			18-24	59,00
126-816	±15'	W6			14-18	59,00
126-817	±10'	W7			10-14	59,00
126-818	±10'	W8			7-10	59,00
126-819	±10'	W9			4,5-7	59,00
126-820	±10'	W10			3,5-4,5	59,00

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	Ø	Thread pitch	Pitch
Nominal		Ø	Nomin	al	Ø
	Р	d2		Р	d2
M 1	0,25	0,838	M 14	2,00	12,701
M 1,2	0,25	1,038	M 16	2,00	14,701
M 1,4	0,30	1,205	M 20	2,50	18,376
M 1,7	0,35	1,473	M 22	2,50	20,376
M 2	0,40	1,740	M 24	3,00	22,051
M 2,3	0,40	2,040	M 27	3,00	25,051
M 2,6	0,45	2,308	M 30	3,50	27,727
M 3	0,50	2,675	M 33	3,50	30,727
M 3,5	0,60	3,110	M 36	4,00	33,402
M 4	0,70	3,545	M 39	4,00	36,402
M 5	0,80	4,480	M 42	4,50	39,077
M 6	1,00	5,350	M 45	4,50	42,077
M 8	1,25	7,188	M 48	5,00	44,752
M 10	1,50	9,026	M 52	5,00	48,752
M 12	1,75	10,863	M 56	5,50	52,428
			M 60	5,50	56,428

Screw Thread Micrometer

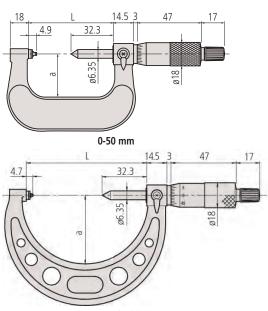
Series 125

- 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



50-100 mm

Specifications

Accuracy	±(2+L/75) μm L = max. range (mm)
Graduation	0,01 mm
Delivered	Including box, setting standard 60° (from 25 mm upward), key



	Series 324
Functions	324-251-10 up to 324-254-10
Low voltage alarm	0
HOLD	@

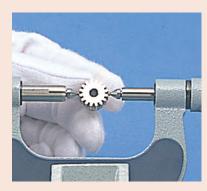
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery Interchangeable anvils/spindle tips not included

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00



Digimatic Gear Tooth Micrometer

Series 324

- This Gear Tooth Micrometer has an interchangeable ball insert.
- 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.

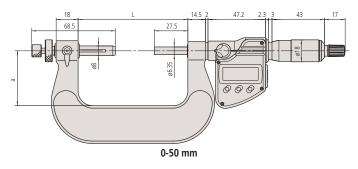


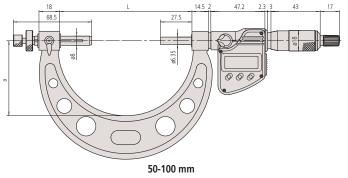


324-251-10

Metric Digital model					
No.	Range	Accuracy	L	Mass	Price
	[mm]	[µm]	[mm]	[g]	[€]
324-251-10	0-25	±4	64,5	400	803,00
324-252-10	25-50	±4	90	490	819,00
324-253-10	50-75	±4	115,6	530	839,00
324-254-10	75-100	±5	140,6	600	860,00







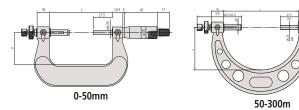


Gear Tooth Micrometer

Series 124



Metric		Analog mo	del			
No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	Mass [g]	Price [€]
124-173	0-25	±4	64,5	32	295	319,00
124-174	25-50	±4	90	45	400	341,00
124-175	50-75	±4	115,6	65	460	363,00
124-176	75-100	±5	140,6	79	540	379,00
124-177	100-125	±5	165,6	93	640	396,00
124-178	125-150	±5	190,5	105	760	433,00
124-179	150-175	±б	214,5	120	900	541,00
124-180	175-200	±б	240,5	131	1060	579,00
124-181	200-225	±б	265,5	144	1230	617,00
124-182	225-250	±7	290,5	156	1430	682,00
124-183	250-275	±7	314,5	171	1620	719,00
124-195	275-300	±7	353	187	2070	768,00



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.

wetric					
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
124-810 124-824 124-812 124-814 124-816	4 mm 4,5 mm 5 mm 6 mm 7 mm	2,25 2,5 2,75 3,5 4		11 10 9 7 6,5	118,0 118,0 118,0 118,0 118,0



Specifications

specifications	
Accuracy	Refer to the list of specifications
Graduation	0,01 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
Delivered	Including box, setting standard (from 25 mm upward), key, interchangeable anvils/spindle tips not included



Functions	Series 323
ORIGIN	0
ZERO/ABS)
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm)
HOLD	0
Data output	e

•	
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

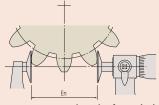
Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00





Root tangent length of gear (En)

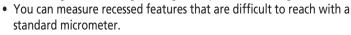
Digimatic Disc Micrometer

Series 323

This Digimatic Disc Micrometer enables you to measure hard-to-reach features,

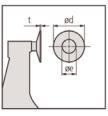
offering you the following benefits:

• Measuring the root tangent length of spur and helical gears.





323-250

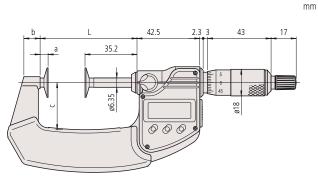


mm

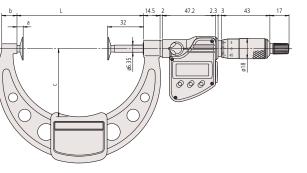
No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]	Price [€]
323-250	0-25	±4	39,7	4,5	9,2	25	20	8	0,7	290	654,00
323-251	25-50	±4	65,6	5,4	11	31	20	8	0,7	355	726,00
323-252	50-75	±б	90,7	5,5	12,2	50	20	8	0,7	555	773,00
323-253	75-100	±6	112,5	5,5	13,5	60	20	8	0,7	610	803,00



Metric



0-75 mm



75-100 mm



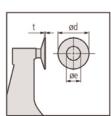
Disc Micrometer

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.

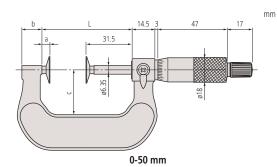


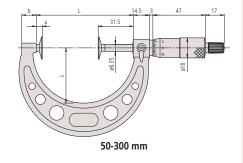


123-101

Metric												
No.	Range [mm]	Accuracy [µm]	Remarks	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]	Price [€]
123-101	0-25	±4		37,5	6	14	25	20	8	0,7	200	209,00
123-113	0-25	±4	disks have carbide tips	39,7	4,5	9,2	25	20	9,8	0,7	200	292,00
123-102	25-50	±4		62,5	6	14	32	20	8	0,7	250	233,00
123-114	25-50	±4	disks have carbide tips	65,6	5,4	11	31	20	9,8	0,7	250	327,00
123-103	50-75	±б		87	5,5	11	49	20	8	0,7	300	258,00
123-115	50-75	±6	disks have carbide tips	90,7	5,5	12,2	50	20	9,8	0,7	300	361,00
123-104	75-100	±6		112	5,5	11	63	20	8	0,7	375	300,00
123-116	75-100	±6	disks have carbide tips	112,5	5,5	13,5	60	20	9,8	0,7	375	420,00
123-105	100-125	±7		137,5	6	12	79	30	12	1	520	316,00
123-106	125-150	±7		162,5	6	15	94	30	12	1	570	333,00
123-107	150-175	±8		187,5	6	16	106	30	12	1	730	357,00
123-108	175-200	±8		212,5	6	15	118	30	12	1	890	385,00
123-109	200-225	±8		237,5	6	14	130	30	12	1	1000	395,00
123-110	225-250	±9		262,5	6	14	143	30	12	1	1200	408,00
123-111	250-275	±9		287,5	6	15	156	30	12	1	1410	428,00
123-112	275-300	±9		312,5	6	15	169	30	12	1	1680	447,00







Specifications

speaneauens	
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

Functions	Series 369
ORIGIN	0
ZERO/ABS	@
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	@
HOLD	0
Data output	@

•	
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 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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00



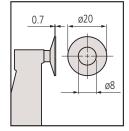
Digimatic Disc Micrometer Non-Rotating Spindle Type

Series 369

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

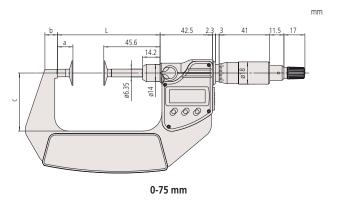
- Non-rotating spindle and disc-shaped measuring surfaces.
- Measuring the root tangent length of spur and helical gears
- Measurable range of gear pitch: 0,5-6 module
- Suitable for measuring felt, rubber, cardboard, fabric etc.





weinc								
No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
369-250	0-25	±4	58,5	12,9	7	32	340	762,00
369-251	25-50	±4	83,5	12,9	9,8	47	480	834,00
369-252	50-75	±б	108,5	12,9	11,2	60	635	870,00
369-253	75-100	±б	112,5	5,5	13,5	60	775	912,00





T5-100 mm

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

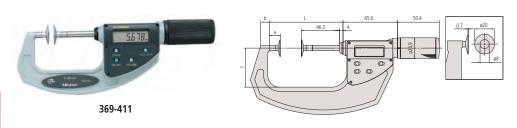
ABSOLUTE Digimatic Disc Micrometer QuickMike

ABSOLUTE

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.



Metric	

No.		Accuracy [µm]						
369-411	0-30	±4	63,8	13,5	8,5	36	360	803,00
369-412	25-55	±4	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.



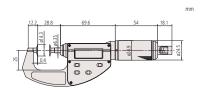




Surface

Metric		QuickMik	e 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	$\pm 0,4 + (for setting/10)$	340	1030,00
227-221	0-15	±4 μm	0,5; 1; 1,5; 2; 2,5	±0,1 + (for setting/10)	300	1123,00
				(1) (1) (1)		

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

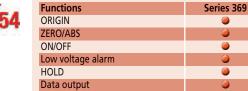




0,5-2,5 N (227-221)



2-10 N (227-223)



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 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)	58,00
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	6,00

Functions	Series 227
ORIGIN	0
ON/OFF	@
Low voltage alarm	0
HOLD	@
Data output	0

Specifications

ABSOLUTE°

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

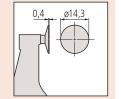
No.	Description	Price €
937387	Digimatic cable (1 m)	47,00
965013	Digimatic cable (2 m)	58,00
06ADV380E	USB Input tool Direct cable (2 m)	100,00
02AZD790E	Connecting cable U-Wave	85,00

Consumable spares

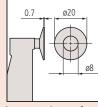
No.	Description	Price €
938882	Battery SR44	6,00

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
Measuring force	8,02 N ±5N (169-101169-103), 5 - 10N N
Delivered	Including box, setting standard (from 25 mm upward), key
Measuring force	N Including box, setting standard (from





With circular measuring surfaces 169-101/103



With annular measuring surfaces

Disc Micrometer Non-Rotating Spindle Type

Series 169

This Disc 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.
- · Measuring the root tangent length of spur and helical gears
- Measurable range of gear pitch: 0,5-6 module
- It's suitable for measuring materials such as felt, rubber, cardboard and fabric.

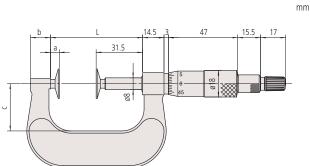


169-201

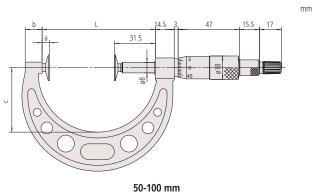
/letric	

No.	Range [mm]	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
169-101	0-25	±4	37,5	6	13,5	25	230	271,00
169-201	0-25	±4	37,5	6	13,5	25	230	291,00
169-202	25-50	±4	62,5	6	13,5	32	280	309,00
169-205	50-75	±б	87	5,5	13	49	315	327,00
169-207	75-100	±б	112	5,5	13	63	400	341,00





0-50 mm



69

Digimatic Spline Micrometer

Series 331

This Digimatic Spline Micrometer makes it easy for you to measure grooves and shaped parts.

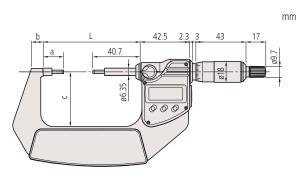
- It offers you the following benefits:
- Stepped measuring surfaces.
- Suitable for measuring grooves, splined shafts, recesses, shaped parts, etc.



331-251

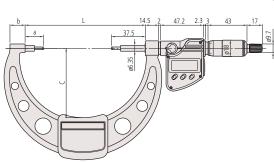
Metric									
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
331-251	0-25	А	±2	58,2	17,5	7,3	32	330	623,00
331-261	0-25	В	±2	58,2	17,5	7,3	32	330	623,00
331-252	25-50	А	±2	83,2	17,5	10,1	47	470	675,00
331-262	25-50	В	±2	83,2	17,5	10,1	47	470	675,00
331-253	50-75	А	±2	108,2	17,5	11,5	60	625	721,00
331-263	50-75	В	±2	108,2	17,5	11,5	60	625	721,00
331-254	75-100	А	±3	132,8	20,3	16,7	76	565	752,00
331-264	75-100	В	±3	132,8	20,3	16,7	76	565	752,00



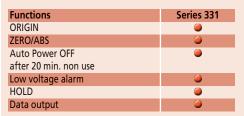




mm







Specifications

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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00





Туре А



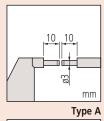
Туре В

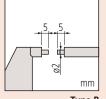
75-100 mm

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish ø18 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, Ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key





Туре В

Spinie withometer	S	pline	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.

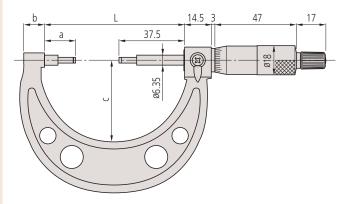


111-115

Metric

No.	Range	Anvil/ Tip	Accuracy	L	а	b	С	Mass	Price
NO.	[mm]	Anvii/ Tip	[µm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
111-115	0-25	А	±3	55,3	17,8	10	38	205	186,00
111-215	0-25	В	±3	55,3	17,8	10	38	205	186,00
111-116	25-50	А	±3	80,3	17,8	12	49	305	227,00
111-117	50-75	А	±3	105,3	17,8	14	60	370	260,00
111-118	75-100	А	±4	132,8	20,3	17	79	500	276,00
111-119	100-125	А	±4	158,2	20,7	19	94	655	315,00
111-120	125-150	А	±4	183,6	21,1	20	106	710	341,00
111-121	150-175	А	±5	208,8	21,3	19	118	900	376,00
111-122	175-200	А	±5	234,2	21,7	18	130	1040	412,00
111-123	200-225	А	±5	334	21,5	18	181	1245	486,00
111-124	225-250	А	±6	309	21,5	18	169	1395	529,00
111-125	250-275	А	±б	284	21,5	18	156	1555	573,00
111-126	275-300	А	±6	258	20,5	18	143	1975	628,00





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.

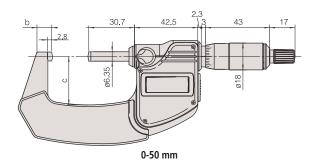


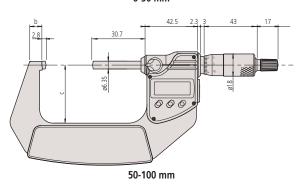
395-251

Metric		Model wit	h spherical	anvil				
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	D [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
395-251	0-25	Type A	±2	15	9	25	270	505,00
395-252	25-50	Type A	±2	15	9,8	32	330	556,00
395-253	50-75	Type A	±2	19	12,6	47	470	633,00
395-254	75-100	Type A	±3	20	14	60	625	670,00

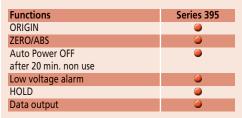
Metric	Model with two spherical anvils							
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	D [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
395-271	0-25	Туре В	±2	15	9	25	270	520,00
395-272	25-50	Туре В	±2	15	9,8	32	330	560,00
395-273	50-75	Туре В	±2	19	12,6	32	470	644,00
395-274	75-100	Туре В	±3	20	14	60	625	680,00







TURINAINAN CERTIFICO WWW.Wucom Hotorzowo



Specifications

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
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, setting standard (from 25 mm upward), key. 1 battery

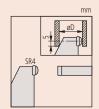
Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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

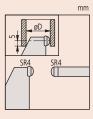
No.	Description	Price €
938882	Battery SR44	6,00





Туре А





Туре В

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Functions	Series 395
ORIGIN	0
ZERO/ABS	i i i i i i i i i i i i i i i i i i i
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	<i>i</i>
HOLD	0
Data output	<i>i</i>

•	
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00

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.









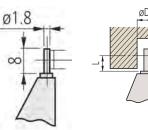
395-262

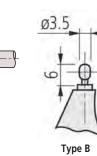


Weene							
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	L [mm]	D [mm]	Mass [g]	Price [€]
395-261	0-25	Туре А	±3	4	2	270	520,00
395-262	0-25	Type B	±3	4	3,6	270	520,00
395-263	0-25	Type C	±3	12	4,8	310	520,00
395-264	0-25	Type D	±3	22	8,2	310	520,00



Metric



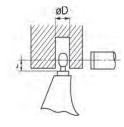


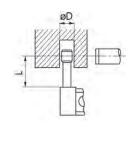
ø8

Type D

4

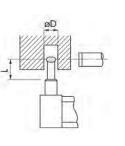
ø6.9







Type C



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

wetric							
No.	Range [mm]	Accuracy [µm]	Remarks	L [mm]	D [mm]	Mass [g]	Price [€]
115-302	0-25	±3	Туре А	4	2	180	162,00
115-308	0-25	±3	Туре В	4	3,6	180	162,00
115-315	0-25	±3	Type C	12	4,8	180	162,00
115-316	0-25	±3	Type D	22	8,2	180	162,00
115-303	25-50	±3	Type A	4	2	240	172,00
115-309	25-50	±3	Туре В	4	3,6	240	

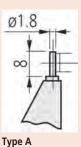
Metric		Model wi	th spherica	l anvil		
No.	Range [mm]	Accuracy [µm]	Remarks	D [mm]	Mass [g]	Price [€]
115-115	0-25	ιμπι ±3	Type E	10	180	136,00
115-116	25-50	±3	Type E	11	240	153.00
115-117	50-75	±3	Type E	17	315	161,00
115-118	75-100	±4	Type E	18	375	170,00

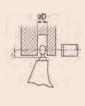
Metric		Model wi	th spherica	l anvil a	and spir	ndle face
No.	Range [mm]	Accuracy [µm]	Remarks	D [mm]	Mass [g]	Price [€]
115-215	0-25	±3	Type F	10	180	160,00
115-216	25-50	±3	Type F	11	240	179,00
115-217	50-75	±3	Type F	17	315	187,00
115-218	75-100	±4	Type F	18	375	195,00



Specifications

speanesting	
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
Measuring force	5-10 N/ 3-8 N (Type A, B, C, D) N
Delivered	Including box, setting standard (from 25 mm upward), key

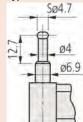




Type B

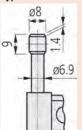
ø3.5

6



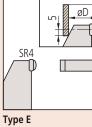


Type C





Type D



øD ÐĽ SR4 SR4

Type F

Functions	Series 342
ORIGIN	0
ZERO/ABS	e
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	e
Data output	0

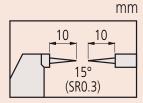
Accuracy	Refer to the list of specifications (excluding quantizing error)
Digital step	0,001 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring surfaces	Carbide tipped and conical spindle and anvil, measuring point radius 0,3 mm
Measuring spindle	with spindle lock, ø 6,35 mm, spindle pitch 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 batterv

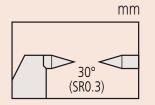
Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00







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.

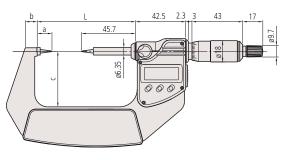


342-251

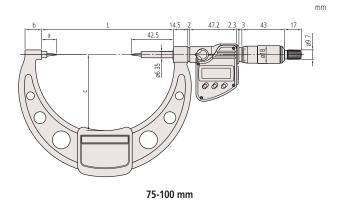
Metric

No.	Range	Accuracy	L	а	b	C	Point	Mass	Price
NO.	[mm]	[µm]	[mm]	[mm]	[mm]	[mm]	FUIII	[g]	[€]
342-251	0-25	±2	58,2	12,5	7,3	32	15°	330	587,00
342-261	0-25	±2	58,2	12,5	7,3	32	30°	330	587,00
342-252	25-50	±2	83,2	12,5	10,1	47	15°	470	659,00
342-262	25-50	±2	83,2	12,5	10,1	47	30°	470	659,00
342-253	50-75	±2	108,2	12,5	11,5	60	15°	625	695,00
342-263	50-75	±2	108,2	12,5	11,5	60	30°	625	695,00
342-254	75-100	±3	132,8	15,3	16,7	76	15°	565	731,00
342-264	75-100	±3	132,8	15,3	16,7	76	30°	565	731,00

mm



0-75 mm



CERTIFIED WWW.Structor D'0112000

Dust- an Waterpr P65



Point Micrometer

Series 112

140

- 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.

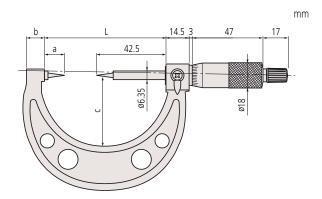


112-201

wetri	L.		Carbide t	р						
No.		Range	Accuracy	Point	L	a	b	۲ ریبی ا	Mass	Price
		[mm]	[µm]		[mm]	[mm]	[mm]	[mm]	[g]	[€]
112-	165	0-25	±3	15°	55,3	12,8	10	38	205	206,00
112-	213	0-25	±3	30°	55,3	12,8	10	38	205	206,00
112-	166	25-50	±3	15°	80,3	12,8	12	49	305	247,00
112-	214	25-50	±3	30°	80,3	12,8	12	49	305	247,00
112-	167	50-75	±3	15°	105,3	12,8	14	60	370	268,00
112-	215	50-75	±3	30°	105,3	12,8	14	60	370	268,00
112-	168	75-100	±4	15°	132,8	15,3	17	79	500	304,00
112-	216	75-100	±4	30°	132,8	15,3	17	79	500	304,00

Metric		Hardened steel tip							
No.	Range [mm]	Accuracy [µm]	Point	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
112-153	0-25	±3	15°	55,3	12,8	10	38	205	186,00
112-201	0-25	±3	30°	55,3	12,8	10	38	205	186,00
112-154	25-50	±3	15°	80,3	12,8	12	49	305	227,00
112-202	25-50	±3	30°	80,3	12,8	12	49	305	227,00
112-155	50-75	±3	15°	105,3	12,8	14	60	370	242,00
112-203	50-75	±3	30°	105,3	12,8	14	60	370	242,00
112-156	75-100	±4	15°	132,8	15,3	17	79	500	294,00
112-204	75-100	±4	30°	132,8	15,3	17	79	500	294,00

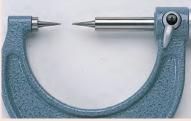






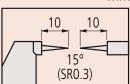
Specifications

•	
Accuracy	Refer to the list of specifiactions
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°

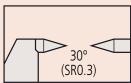
mm





Type angle : 30°

mm



	Series 342/ Series 112						
Functions	342-271	342-451					
ORIGIN	0	0					
ZERO/ABS	e						
ON/OFF		0					
Auto Power OFF	e						
after 20 min. non use							
Low voltage alarm	0	0					
HOLD	e	9					
Data output	0	0					

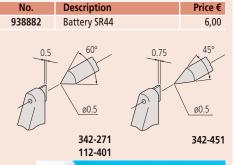
•	
Accuracy	Refer to the list of specifications
Digital step	0,001 mm
Graduation	0,01 mm
Measuring force	3-8 4-6 (342-451) N
Scale	Thimble and sleeve satin chrome finish, ø 18 mm (342-271, 342-371, 112-401)
Measuring surfaces	Hardened and precision ground
Measuring spindle	With spindle lock (342-271/342-371112-401), ø6,35 mm, spindle pitch 0,5 mm ø 6,35 mm, spindle pitch 10 mm (342-451)
Battery life	approx. 1,2 years (342-271342-371), 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)	58,00
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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





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.



342-451



342-271



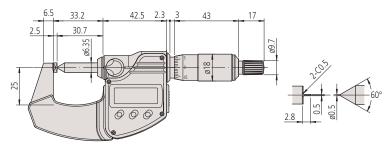
112-401

Metric		Analog model				
No.	Range [mm]	Accuracy [µm]	Mass [g]	Price [€]		
112-401	0-25	±3	165	233,00		

Metric		Digital model				
No.	Range [mm]	Accuracy [µm]	Mass [g]	Price [€]		
342-271	0-20	±3	270	551,00		
	[mm]	[µm]	[g]	[€]		

Metric		QuickMike type					
No.	Range [mm]	Accuracy [µm]	Mass [g]	Price [€]			
342-451	0-15	±3	275	1000,00			







Digimatic Blade Micrometer

Series 422

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

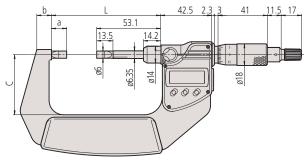
- Blade-shaped anvil and spindle for measuring the groove diameter of shafts, keyways, and other hard-to reach features.
- Non-rotating spindle.



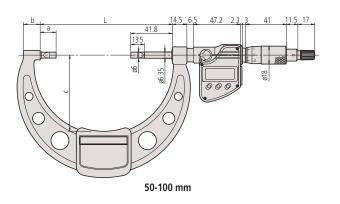
422-230

Metric									
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
422-230	0-25	Type A	±3	65,6	12,5	11	31	365	896,00
422-260	0-25	Туре В	±3	65,6	12,5	11	31	365	912,00
422-270	0-25	Type C	±3	65,6	12,5	11	31	365	948,00
422-271	0-25	Type D	±3	65,6	12,5	11	31	365	968,00
422-231	25-50	Type A	±3	90,7	12,6	12,2	50	565	973,00
422-261	25-50	Туре В	±3	90,7	12,6	12,2	50	565	989,00
422-232	50-75	Type A	±3	105,3	13,5	14,1	57	465	1010,00
422-233	75-100	Type A	±4	132,8	16	16,7	76	580	1045,00









Functions	Series 422
ORIGIN	0
ZERO/ABS	i
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	@
HOLD	0
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00





Type B (hardened steel)

ە

0.4







4 G

Type C (carbide-tipped)



Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Functions	Series 422
ORIGIN	0
ZERO/ABS	e
ON/OFF	0
Low voltage alarm	0
HOLD	0
Data output	i i i i i i i i i i i i i i i i i i i

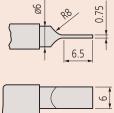
Refer to the list of specifications (excluding quantizing error)
0,001 mm
Thimble, ø 24,9 mm
3 µm
ø6,35 mm, spindle pitch 10 mm
5-10 N
approx. 1 year
Including box, setting standard (from 25 mm upward), 1 battery

Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47,00
965013	Digimatic cable (2 m)	58,00
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	6,00



ABSOLUTE Digimatic Blade Micrometer QuickMike

ABSOLUTE°

Series 422

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

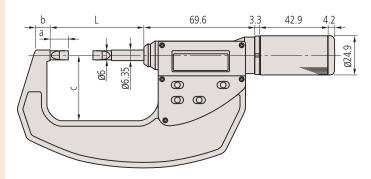
It offers the following benefits:

- 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.



Metric Accuracy Range L а b с Mass Price No. [mm] [µm] [mm] [mm] [mm] [mm] [g] [€] 422-411 0-30 59,8 788,00 ±3 13,5 8,5 36 350 **422-412** 25-55 ±3 84,8 13,5 10,3 47 490 829,00





79



Blade Micrometer

Series 122

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

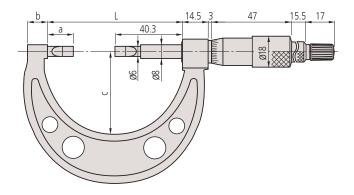
It offers the following benefits:

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



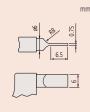
Metric									
No.	Range [mm]	Anvil/ Tip	Accuracy [µm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
122-101	0-25	А	±3	55,3	15	8	30	260	250,00
122-111	0-25	В	±3	55,3	15	8	30	260	250,00
122-161	0-25	С	±3	55,3	15	8	30	275	293,00
122-141	0-25	D	±3	55,3	15	8	30	275	293,00
122-102	25-50	А	±3	80,3	15	12	49	300	303,00
122-112	25-50	В	±3	80,3	15	12	49	300	303,00
122-162	25-50	С	±3	80,3	15	12	49	315	364,00
122-142	25-50	D	±3	80,3	15	12	49	315	364,00
122-103	50-75	А	±3	105,3	15	13	60	360	324,00
122-104	75-100	А	±4	132,8	17,5	17	79	525	352,00
122-105	100-125	А	±4	158,2	17,9	19	94	670	460,00
122-106	125-150	А	±4	183,6	18,3	20	106	775	496,00
122-107	150-175	А	±5	208,8	18,5	19	118	950	542,00
122-108	175-200	А	±5	234,2	18,9	19	118	1140	598,00
122-109	200-225	А	±5	258	17,7	18	143	1300	644,00
122-110	225-250	А	±6	284	18,7	18	156	1450	686,00
122-115	250-275	А	±6	309	18,7	18	169	1600	809,00
122-116	275-300	А	±6	334	18,7	18	181	2020	862,00

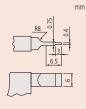




Specifications

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





Type A (hardened steel)





mm



Type C (carbide-tipped)

Type D (carbide-tipped)



Functions	Series 314
ZERO/ABS	0
Auto Power OFF	0
after 20 min. non use	
2 x PRESET	0
Low voltage alarm	9
Function lock	0
HOLD	9
Data output	0

•	
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
Measuring force	5-10N/ 3-8N (1-15 mm) N
Delivered	Including box, setting standard, key, 1 battery

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00

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.

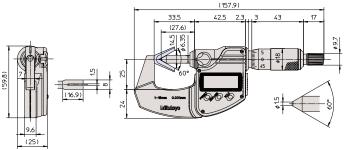


314-251-10

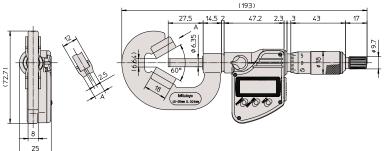
1etric

No.	Range [mm]	Accuracy [µm]	Remarks	Mass [g]	Price [€]
314-251-10	1-15	±4	with groove	275	788,00
314-261-10	1-15	±4	-	275	788,00
314-252-10	10-25	±4	with groove	410	824,00
314-262-10	10-25	±4	-	410	824,00
314-253-10	25-40	±5	-	465	845,00

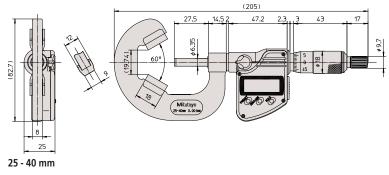








10 - 25 mm





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.



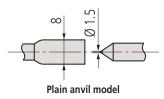
Metric		For 3-flute cutting tools (60°)					
No.	Range [mm]	Accuracy [µm]	Remarks	Setting standard	a [mm]	Mass [g]	Price [€]
114-101	1-15	±4	with groove	167-327 ø 5 mm	0,5	120	316,00
114-161	1-15	±4	-	167-327 ø 5 mm	0,5	120	296,00
114-204	2,3-25	±4	-	167-327 ø 5 mm	0,5	290	433,00
114-102	10-25	±4	with groove	167-328 ø 10 mm	6,2	280	371,00
114-162	10-25	±4	-	167-328 ø 10 mm	6,2	280	365,00
114-103	25-40	±5	-	167-329 ø 25 mm	19,14	400	377,00
114-104	40-55	±6	-	167-330 ø 40 mm	32,13	465	426,00
114-105	55-70	±6	-	167-331 ø 55 mm	45,12	675	461,00
114-106	70-85	±7	-	167-332 ø 70 mm	58,11	910	519,00
114-107	85-100	±7	-	167-333 ø 85 mm	71,1	1160	576,00

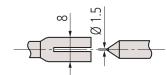
114-204, 114-137: carbide-tipped anvil and spindle others: carbide tipped spindle

Metric For 5-flute cutting tools (108°)						
No.	Range [mm]	Accuracy [µm]	Remarks	Setting standard	Mass [g]	Price [€]
114-121	5-25	±4	with groove	167-327 ø 5 mm	255	425,00
114-165	5-25	±4	-	167-327 ø 5 mm	255	411,00
114-137	2,3-25	±4	-	167-327 ø 5 mm	220	474,00
114-122	25-45	±5	-	167-329 ø 25 mm	400	590,00
114-123	45-65	±6	-	167-331 ø 55 mm	540	625,00
114-124	65-85	±7	-	167-332 ø 70 mm	760	786,00

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



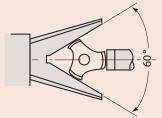




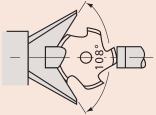
Grooved anvil model

Specifications

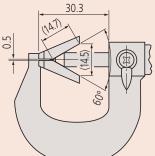
- -	
Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,6 μm (spindle) 1,3 μm (anvil)
Measuring surfaces	Prism angle 60°/108°
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,75 mm
Measuring force	5-10 N
Delivered	Including box, setting standard, key



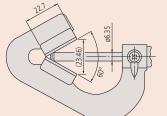
For 3-flute cutting tools



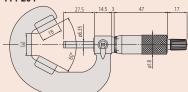
For 5-flute cutting tools



114-101/114-161



114-204



114-102 to 114-107

Accuracy	3 µm
Graduation	0,01mm
Scale	Thimble and sleeve satin chrome finish, ø13 mm
Delivered	Including box, key

Can Seam Micrometer

Series 147

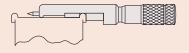
This Can Seam Micrometer allows you to measure different types of can seams. It offers the following benefits:

- Designed to measure the width, height and depth of can seams.
- Three types are available, for steel, aluminium and spray cans.

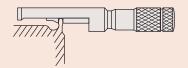
Metric

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

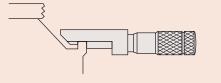




147-103 For steel cans



147-105 For aluminium cans

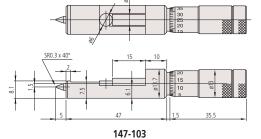


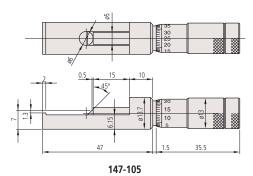
147-202 For spray cans

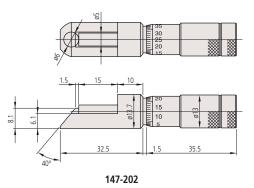


30 2

25 20 147-105











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.





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 [µm]	H [mm]	h1 [mm]	h2 [mm]	h3 [mm]	Mass [g]	Price [€]
147-301	0-25	±2	17,5	6	8,5	13,5	135	244,00
147-302	25-50	±2	20,5	6,5	11	14	150	263,00
147-303	50-75	±2	20,5	6,5	11	13	170	327,00
147-304	75-100	±3	20,5	6,5	11	13	185	368,00

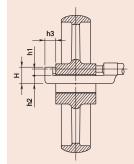


Specifications

•	
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





Mitutoyo

Functions	Series 317
ORIGIN	0
ZERO/ABS	i
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	i
HOLD	0
Data output	i

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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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
201218	V-anvil	21,00

Consumable spares

Description	Price €
Battery SR44	6,00
Cylindrical anvil ø 3	5,00
Cylindrical anvil ø 5	5,00
Flat anvil	26,00
	Battery SR44 Cylindrical anvil ø 3 Cylindrical anvil ø 5



950758 with micrometer

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.



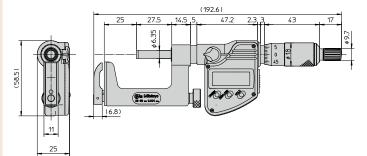
317-251

Metric

No.	Range [mm]	Accuracy [µm]	Anvils included	Mass [g]	Price [€]
317-251	0-25	±4	201217, 201216	335	556,00
317-252	25-50	±4	201379, 201216	360	618,00



1.5

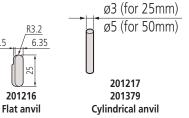


120°

201218

V-anvil

85





Micrometer Interchangeable Anvil Type

Series 117

This Micrometer Interchangeable Anvil Type lets you measure a range of different features. It offers the following benefits:

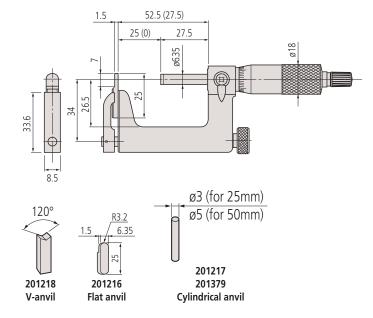
- It is designed to accept interchangeable anvils shaped for specific tasks.
- You can use it to measure the wall thickness of tubes, as well as openings and slots from edge to edge, and features in hard-to-reach locations.



117-101

Metric					
No.	Range [mm]	Accuracy [µm]	Anvils included	Mass [g]	Price [€]
117-101	0-25	±4	201217, 201216	255	260,00
117-102	25-50	±4	201379, 201216	320	327,00





Specifications

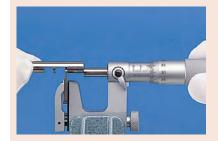
•	
Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Scale	Thimble and sleeve satin chrome finish, ø 18 mm
Flatness	0,6 μm (spindle) 2 μm (anvil)
Parallelism	3 µm
Measuring surfaces	Carbide tipped (spindle)
Measuring spindle	With spindle lock, Ø 6,35 mm, spindle pitch 0,5 mm
Measuring force	5-10 N
Delivered	Including box, setting standard (from 25 mm upward), key, anvils
	(nom 25 min apriara), key, annis

Optional accessories

No.	Description	Price €
201218	V-anvil	21,00
950758	Round platten (only for measuring range 0-25)	108,00

Consumable spares

No.	Description	Price €
201217	Cylindrical anvil ø 3	5,00
201379	Cylindrical anvil ø 5	5,00
201216	Flat anvil	26,00





950758 with micrometer

Mitutoyo

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



Limit Micrometer

Series 113

This Limit Micrometer offers the following benefits:

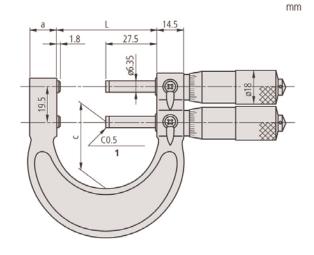
- Spindle and Anvil with chamfered edge.
- You can use it as a GO/±NG gauge by setting the upper and lower limits of dimension.



113-102

Metric

No.	Range [mm]	Accuracy [µm]			c [mm]		Price [€]
113-102	0-25	±3	29,3	15	23	340	371,00
113-103	25-50	±3	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:

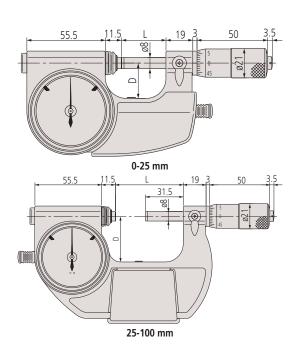
- A self-setting micrometer gauge lets you take rapid measurement of workpieces, especially cylindrical shapes, in batch or mass production situations.
- In the 25mm measuring range, the model line-up offers a choice of having the anvil retraction button positioned on the left or the right.
- Large dial comparator for easy reading (+/- 0,06mm).
- Tolerance markers for GO/NG measurements.
- 8mm spindle diameter gives you easy positioning and highly accurate measurements.



510-121

wetric								
No.	Range [mm]	Anvil retracting stroke	Indicating range	Operating button	L [mm]	D [mm]	Mass [g]	Price [€]
510-121	0-25	2 mm	±0,06 mm	Right	31,5	25	520	659,00
510-141	0-25	2 mm	±0,06 mm	Left	31,5	25	520	659,00
510-122	25-50	2 mm	±0,06 mm	Left	56,5	38	670	742,00
510-123	50-75	2 mm	±0,06 mm	Left	81,5	50	820	901,00
510-124	75-100	2 mm	±0,06 mm	Left	106,5	63	970	958,00





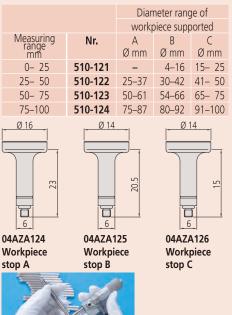


Specifications

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, ø 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, ø 8 mm
Measuring force	5-10 N
Delivered	Including box, key

Optional accessories

No.	Description	Price €
04AZA124	ø 16 workpiece stop A	14,00
04AZA125	ø 14 workpiece stop B	14,00
04AZA126	ø 14 workpiece stop C	14,00









Adjusting screw for dial comparator \pm 5 μ m

Mitutoyo

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



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.



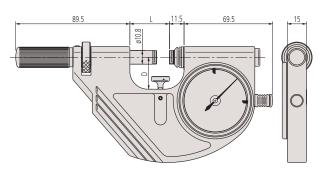


523-121

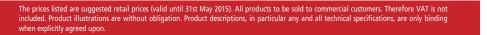
Metric

No.	Range [mm]	Anvil retracting stroke	Indicating range	L [mm]	D [mm]	Mass [g]	Price [€]
523-121	0-25	2 mm	±0,06 mm	31	25	740	546,00
523-122	25-50	2 mm	±0,06 mm	56	35	840	628,00
523-123	50-75	2 mm	±0,06 mm	81	47,5	950	690,00
523-124	75-100	2 mm	±0,06 mm	106	60	1080	762,00





89







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.

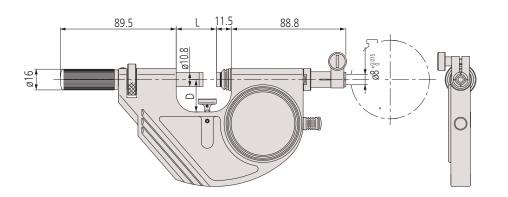


523-141 (Indicator: optional)

Wethe							
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



Motrie





Sample application: with dial indicator



Sample application: with digital indicator



Sample application: with Linear Gauge

Specifications Flatness 0,3 µm

Fidthess	υ, 5 μπ
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

Accuracy	Refer to the list of specifications
Graduation	0,01 mm
Anvil retracting stroke	3 mm
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Flatness	0,6 μm
Parallelism	(2+L/100) µm (mm) L = max. range
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
Delivered	Including box, setting standard (from 25 mm upward), key





Optional See dial indicators section

Dial Gauge Micrometer

Series 107

.

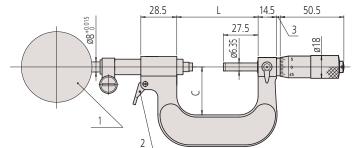
This Dial Gauge Micrometer allows you to quickly measure mass-produced parts.

- It offers the following benefits:
- Designed to mount a dial or a digital indicator for direct GO/NG judgement of mass-produced parts.
- You can take rapid measurements thanks to its anvil retracting trigger.
- 3mm anvil retracting stroke.

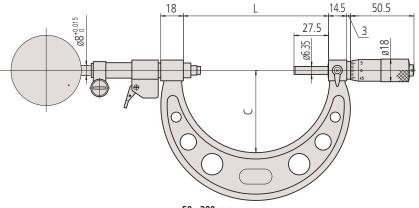


107-201 with optional dial indicator

wetric						
No.	Range [mm]	Accuracy [µm]	L [mm]	C [mm]	Mass [g]	Price [€]
107-201	0-25	±2	39,5	30	480	345,00
107-202	25-50	±2	64,5	38	520	386,00
107-203	50-75	±2	90	45	585	407,00
107-204	75-100	±3	115,6	65	630	417,00
107-205	100-125	±3	140,6	79	725	427,00
107-206	125-150	±3	165,6	93	810	443,00
107-207	150-175	±4	190,5	105	1050	464,00
107-208	175-200	±4	215,5	120	1170	484,00



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



50 - 200 mm

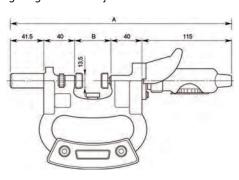
Dial Snap Gauges

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	A	В	Mass	Price
NO.	[mm]	[mm]	[mm]	[g]	[€]
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	2046SB (0,01 mm reading),
indicator (optional)	2109SB-10 (0,001 mm reading)
Anvil retracting	2 mm
stroke	
Anvil positioning	25 mm
range	
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 €
2046SB	Dial Indicator 10µm	32,00
2109SB-10	Dial Indicator 1µm	85,00
21DZA000	Protector for dial indicator	13,00
2972TB	One Revolution Dial Indicator	62,00



201-101 with holder 156-101 and dial indicator

Delivered without dial indicator and without holder

Mitutoyo

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



Man Man Stalles

Internal Groove Micrometer

Series 146

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

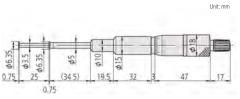
- It offers the following features:
- Two-directional ratchet stop.
- Non-rotating spindle models are also available.



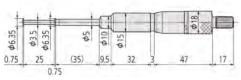
Non-rotating spindle type								
	No.	Range Outside	Range Inside	Diameter of measuring plate [mm]	l [mm]	L [mm]	Mass [g]	Price [€]
	146-221	0-25 mm	1,6-26,5 mm	6,35			135	423,00
	146-222	0-25 mm	1,6-26,5 mm	12,7	115	25	185	476,00
	146-223	25-50 mm	26,5-51,5 mm	12,7	90	50	175	505,00
	146-224	50-75 mm	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

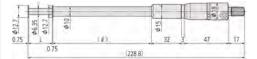




146-221



146-121



			\$15	
¢12.3	e	\$15		
0.75 1 0.75	(2)	32 , 8	.47	17

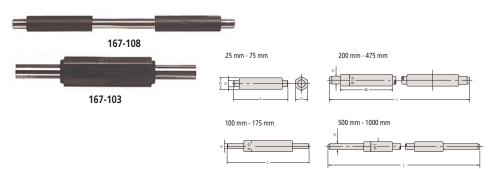
93



Micrometer Setting Standards \leq 1000 mm

Series 167

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



~			. 4	c •					
2	р	е	CI	TΙ	ca	τι	ο	ns	5

F

F

1

S

Refer to the list of specifications (Tolerance on deviation of measured central length from nominal at 20°C.)
0,3 μm
2 μm
micro-lap finish



Metric				
No.	Length (L)	Accuracy	Diameter (D)	Price
NO.	[mm]	[µm]	[mm]	[€]
167-101	25	±1,5	6,35	24,00
167-102	50	±2	6,35	25,00
167-103	75	±2,5	6,35	26,00
167-104	100	±3	7,9	27,00
167-105	125	±3,5	7,9	29,00
167-106	150	±4	7,9	31,00
167-107	175	±4,5	7,9	33,00
167-108	200	±5	9,4	38,00
167-109	225	±5,5	9,4	42,00
167-110	250	±6	9,4	46,00
167-111	275	±6,5	9,4	52,00
167-112	300	±7	9,4	57,00
167-113	325	±7,5	9,4	62,00
167-114	350	±8	9,4	73,00
167-115	375	±8,5	9,4	78,00
167-116	400	±9	9,4	88,00
167-117	425	±9,5	9,4	93,00
167-118	450	±10	9,4	103,00
167-119	475	±10,5	9,4	118,00
167-120	500	±11	11,9	124,00
167-121	525	±11,5	11,9	134,00
167-122	550	±12	11,9	139,00
167-123	575	±12,5	11,9	149,00
167-124	600	±13	11,9	160,00
167-125	625	±13,5	11,9	175,00
167-126	650	±14	11,9	185,00
167-127	675	±14,5	11,9	196,00
167-128	700	±15	11,9	206,00
167-129	725	±15,5	11,9	216,00
167-130	750	±16	11,9	221,00
167-131	775	±16,5	11,9	232,00
167-132	800	±17	11,9	247,00
167-133	825	±17,5	11,9	258,00
167-134	850	±18	11,9	278,00
167-135	875	±18,5	11,9	283,00
167-136	900	±19	11,9	304,00
167-137	925	±19,5	11,9	309,00
167-138	950	±20	11,9	330,00
167-139	975	±20,5	11,9	340,00
167-140	1000	±21	11,9	438,00

Metric	Se	ets	
No.	Length (L) [mm]	Number of standards	Price [€]
167-902	25-125	5	113,00
167-903	25-275	11	330,00

Accuracy	±(1+L/50) μm
Flatness	0,3 µm
Parallelism	2 µm
Measuring surfaces	Micro-lap finish

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)	Diameter (D)	Price
	[mm]	[mm]	[€]
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 [µm]	Length [mm]	Price [€]	
167-272	±4	25	51,00	
167-273	±5	50	57,00	
167-274	±б	75	70,00	
167-275	±7	100	78,00	
167-276	±8	125	88,00	
167-277	±9	150	88,00	
167-278	±10	175	105,00	
167-279	±11	200	105,00	
167-280	±12	225	109,00	
167-281	±13	250	109,00	
167-282	±14	275	113,00	

100 mm 60° 20°C N 0.167-264 50 mm 60° 20°C N 0.167-262

Metric		Angle 60°	
No.	Accuracy [µm]	Length [mm]	Price [€]
167-261	±4	25	51,00
167-262	±5	50	57,00
167-263	±6	75	70,00
167-264	±7	100	78,00
167-265	±8	125	88,00
167-266	±9	150	88,00
167-267	±10	175	105,00
167-268	±11	200	105,00
167-269	±12	225	109,00
167-270	±13	250	109,00
167-271	±14	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 [µm]	Length [mm]	Price [€]
	05	167-327	±2	5 mm	49,00
	25 mm	167-328	±2	10 mm	53,00
	±0 µm 20°С	167-329	±2	25 mm	81,00
	167-329	167-330	±3	40 mm	136,00
		167-331	±3	55 mm	190,00
		167-332	±3	70 mm	237,00
167-3	329	167-333	±3	85 mm	280,00



Mitutoyo

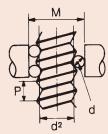
Specifications

Accuracy Refer to the list of specifications

Specifications

Accuracy Refer to the list of specifications

Accuracy wires	DIN 2269, Grade 1
Tolerance wires	±1 μm
Contents	18 pairs of wires ø 0,17 mm up to ø 3200 mm
Delivered	Sets including wooden box



 $M = d_2 + \frac{d_D}{\sin\frac{a}{2}} - \frac{P}{2\tan\frac{a}{2}} + d_D + d$

 $d = \frac{d_D}{2} \cdot \frac{P^2}{p^2} \cdot \frac{\cos \frac{a}{2} \cdot \cot \frac{a}{2}}{d_2^2}$



- $d_{_D}$ =measuring wire Ø
- d₂ =pitch diameter M =theoretical dimension at
- - measuring pressure d
- a =pitch angle
- d =correction factor

0	Thread pitch	Pitch	Measuring wire	Measurem	ent over wire
Nominal		ø	0		
	P	d2	dD	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
0	Thread pitch	Pitch	Measuring wire	Measurem	nent over wire
Nominal		Ø	0		
	P	d2	dD	M	(M-d2)
M1	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
M2	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
M4	0,70	3,545	0,455	4,305	0,760
M5	0,80	4,480	0,455	5,153	0,673
M6	1,00	5,350	0,620	6,346	0,996
M8	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

 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 nitch diameter of threads.
the pitch diameter of threads.

Series 313

3-Wire Measuring Process



313-101

97

1) Wire in set				
No.	Spindle diameter	Price		
NO.	[mm]	[€]		
313-101	6,35	1751,00		
313-102	8	1700,00		

Details of N° 313-101

Wire de	Wire delivered by pair for ø 6,35			
No.	Measuring wire ø [mm]	Price [€]		
952131	0,17	104,00		
952132	0,195	104,00		
952133	0,22	104,00		
952134	0,25	104,00		
952135	0,29	104,00		
952136	0,335	104,00		
952137	0,39	104,00		
952138	0,455	104,00		
952139	0,53	104,00		
952140	0,62	104,00		
952141	0,725	104,00		
952142	0,895	104,00		
952143	1,1	104,00		
952144	1,35	104,00		
952145	1,65	104,00		
952146	2,05	104,00		
952147	2,55	104,00		
952148	3,2	104,00		

Details of N°	313-102
Wire delivere	d by pair for ø 8

wire delivered by pair for Ø 8			
No.	Measuring wire ø [mm]	Price [€]	
952149	0,17	104,00	
952150	0,195	104,00	
952151	0,22	104,00	
952152	0,25	104,00	
952153	0,29	104,00	
952154	0,335	104,00	
952155	0,39	104,00	
952156	0,455	104,00	
952157	0,53	104,00	
952158	0,62	104,00	
952159	0,725	104,00	
952160	0,895	104,00	
952161	1,1	104,00	
952162	1,35	104,00	
952163	1,65	104,00	
952164	2,05	104,00	
952165	2,55	104,00	
952166	3,2	104,00	



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.

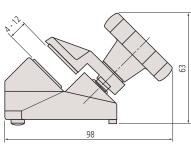




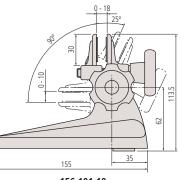




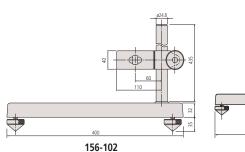
No.	Micrometer ranges	Remarks	Mass [g]	Price [€]
156-105-10	0-50 mm	Fixed angle type 45°	700	43,00
156-101-10	0 - 100 mm	Adjustable angle type	1210	54,00
156-102	100-300 mm	Vertical type	9000	505,00
156-103	300-1000 mm	Vertical type	8500	948,00

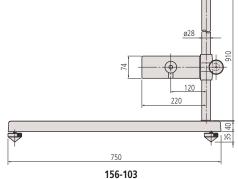


156-105-10















Colour Coded Ratchets and Speeders

Micrometer accessories







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

Colour-coded ratchets for analogue micrometer 0-300 mm

No.	Colour	Price [€]
985056	Black	8,00
985061	Red	8,00
985081	Blue	8,00
985071	Yellow	8,00
985076	Green	8,00
985066	Brown	8,00
04GZA239	Grey	6,00

Colour-coded ratchets for analogue micrometer 300-1000 mm

No.	Colour	Price [€]
04GZA243	Grey	6,00

Colour-coded speeders for digital micrometer 0-300 mm

No.	Colour	Frice [€]	
04GZA241	Grey	6,00	

Colour-coded speeders for series 102-7XX, QuantuMike and series 293 with ratched thimble

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 resin free

No.	Remarks	Price [€]
207000D	500 ml spray	24,00

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon. **Mitutoy**

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:

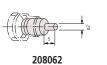
- You can use the tips on a micrometer spindle as an economical adaptation for particular measurement applications.
- They can also be mounted on micrometer anvils ø 6,35mm.
- The measuring range changes when a spindle attachment tip is mounted.











30°

208065





208066



Ball attachment

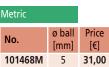
Micrometer accessories

Ball attachment to fit micrometer anvils (ø 6,35 mm only)





Sample application

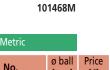


Mitutoyo

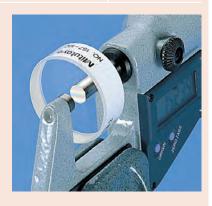
10 mm ±5 µm

208066

Specifications Tip length



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.

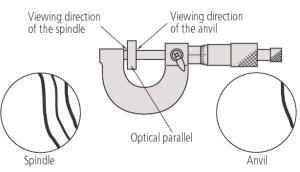


157-903

Metric

No.	Contents	Range of micrometer to be checked	Sizes of parallels included in set	Price [€]
157-903	157-101 157-102 157-103 157-104	0-25 mm	12 mm 12,12 mm 12,25 mm 12,37 mm	464,00
157-904	157-105 157-106 157-107 157-108	25-50 mm	25 mm 25,12 mm 25,25 mm 25,37 mm	690,00





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.

Mitutoyo

Optical flats

Series 158

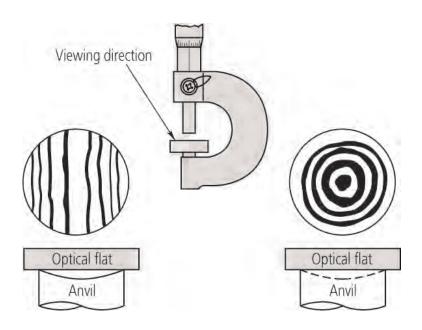
These optical flats are an essential tool for you to test the flatness of reflective surfaces such as gauge blocks and setting standards, through optical interference technology.

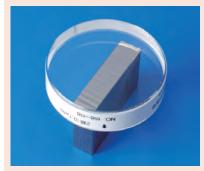


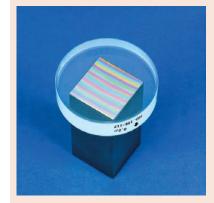
158-118

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









Mitutoyo

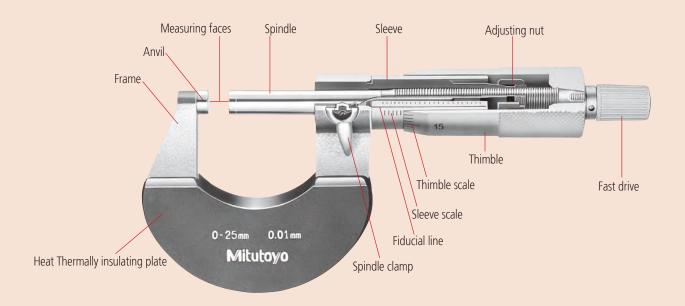
Quick Guide to Precision Measuring Instruments



Micrometers

Nomenclature

Standard Analogue Outside Micrometer



Digimatic Outside Micrometer

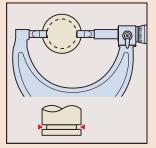




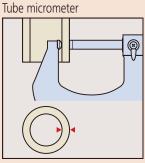


Special Purpose Micrometer Applications

Blade micrometer

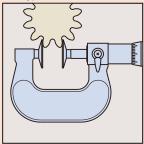


For diameter inside narrow groove measurement

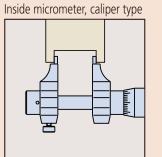


For pipe thickness measurement

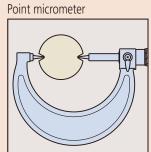
Disc type outside micrometer



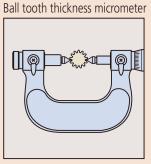
For root tangent measurement on spur gears and helical gears.



For small internal diameter, and groove width measurement

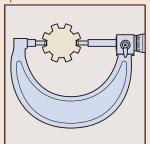


For root diameter measurement



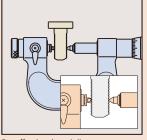
Measurement of gear over-pin diameter

Spline micrometer



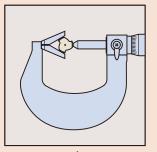
For splined shaft diameter measurement

Screw thread micrometer



For effective thread diameter measurement

V-anvil micrometer

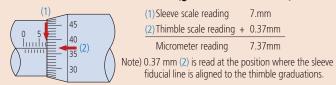


For measurement of 3- or 5-flute cutting tools



How to Read the Scale

Micrometer with standard scale (graduation: 0.01mm)

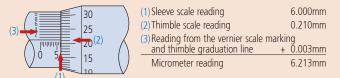


The thimble scale can be read directly to 0.01mm, as shown above, but may also be estimated to 0.001mm when the lines are nearly coincident because the line thickness is 1/5 of the spacing between them.



Micrometer with vernier scale (graduation: 0.001mm)

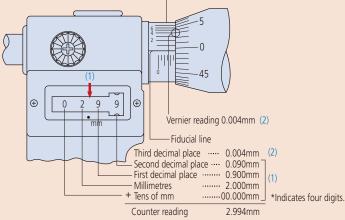
The vernier scale provided above the sleeve index line enables direct readings to be made to within 0.001mm.



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)

Third decimal place on vernier scale (0.001 mm units)



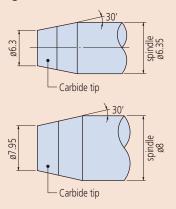
Note) 0.004 mm (2) is read at the position where a vernier graduation line corresponds with one of the thimble graduation lines.

Measuring Force Limiting Device

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

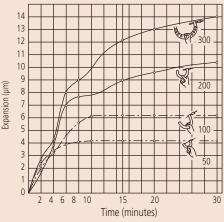
Measuring Face Detail

105



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

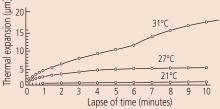
Micrometer Expansion due to Holding Frame with the Bare Hand



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 temperatureinduced 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

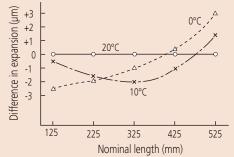
Change of Temperature (for 200mm bar initially at 20°C)



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: um)

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 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

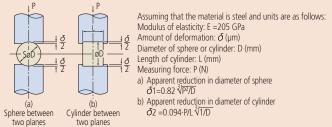
on the instrument's scale and this is an Abbe error ($\varepsilon = \ell - L$ in the diagram). Spindle straightness error, play in the spindle guide or variation of measuring force can all cause (Θ) to vary and the error increases with R.

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.



Mitutoyo

Screw pitch diameter measurement

Three-wire method

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

Screw

Spindle

Anvil

d (x3)

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

- Metric thread or unified screw (60°) E=M-3d+0.866025P(1)
- Whitworth thread (55°) E=M-3.16568d+0.960491P(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)	 Correct the pitch error (δp = δE) Measure several points and adopt their average. Reduce single pitch errors. 	±18µm assuming that the pitch error is 0.02 mm.	±3µm
Error of half angle (workpiece)	 Use the optimal wire diameter. No correction is needed. 	±0.3µm	±0.3µm
Due to anvil difference	 Use the optimal wire diameter. Use the wire which has a diameter close to the average at the one wire side. 	±8μm	±1µm
Wire diameter error	 Use the predetermined measuring force appropriate for the pitch. Use the predetermined width of measurement edge. Use a stable measuring force. 	–3μm	–1µm
Cumulative error		In the worst case +20µm —35µm	When measured carefully +3µm -5µm

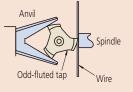
One-wire method

The pitch diameter of odd-fluted tap can be measured using the V-anvil micrometer with the one-wire method. Obtain the measured value (M_1) and calculate M with equation (3) or (4).

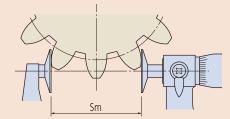
 M_1 = Micrometer reading during one-wire measurement D = Odd-fluted tap diameter

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): Sm = m cos α_0 { π (Zm - 0.5) + Z inv α_0 } + 2Xm sin α_0

Formula for calculating the number of teeth within the root tangent length (Zm): $Zm' = Z \cdot K (f) + 0.5 (Zm is the integer closest to Zm'.)$

where, K (f) = $\frac{1}{\pi}$ { sec $\alpha_0 \sqrt{(1 + 2f)^2 - \cos^2 \alpha_0}$ - inv α_0 - 2f tan α_0 }

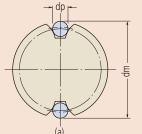
and, $f = \frac{X}{7}$

inv 20° ≒ 0.014904
inv 14.5° ≒ 0.0055448

- m: Module
- a: Pressure angle
- Z: Number of teeth
- X: Addendum modification coefficient
- Sm: Root tangent length
- Zm: Number of teeth within the root tangent length

Gear measurement

Over-pin method



For a gear with an even number of teeth:

$$dm = dp + \frac{dg}{\cos \varphi} = dp + \frac{Z \cdot m \cdot \cos \varphi}{\cos \varphi}$$

For a gear with an odd number of teeth:

dm = dp +
$$\frac{dg}{\cos \varphi} \cdot \cos\left(\frac{90^\circ}{z}\right)$$
 = dp + $\frac{z \cdot m \cdot \cos \alpha}{\cos \varphi} \cdot \cos\left(\frac{90^\circ}{z}\right)$

however,

$$\operatorname{inv} \varphi = \frac{\mathrm{dp}}{\mathrm{dg}} - \frac{\chi}{2} = \frac{\mathrm{dp}}{\operatorname{z} \cdot \operatorname{m} \cdot \cos \alpha_0} - \left(\frac{\pi}{2z} - \operatorname{inv} \alpha_0\right) + \frac{2 \tan \alpha_0}{z} \cdot \chi$$

Obtain ø (invø) from the involute function table.

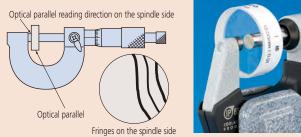
- z : Number of teeth
- α_0 : Pressure angle teeth

(b)

- m : Module
- X: Addendum modification coefficient



Testing Parallelism of Micrometer Measuring Faces

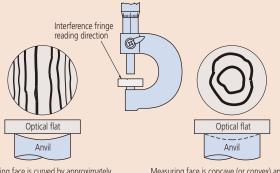


Parallelism can be estimated using an optical parallel held between the faces. Firstly, wring the parallel to the anvil measuring face. Then close the spindle on the parallel using normal measuring force and count the number of red interference fringes seen on the measuring face of the spindle in white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

In the above figure a parallelism of approximately 1 μ m is obtained from 0.32 μ m x 3=0.96 μ 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 (0.32µm for red).



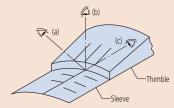
Measuring face is curved by approximately 1.3 μ m. (0.32 μ m x 4 paired red fringes.)

Measuring face is concave (or convex) approximately 0.6µm deep. (0.32µm x 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



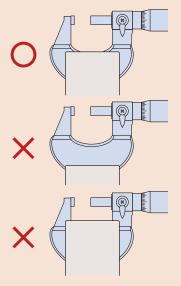
(c) From below the index line

4. Wipe off the measuring faces of both the anvil and spindle with lint-freepaper 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.
- 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.



Mitutoy

Survey Micrometer Head

Micrometer Head Selector

Stem w/ locknut	Plain stem	Range	1)	2)	4)	5)	6)	Grad.	х	у	а	b	с	ØD	Ø d1	Ø d2
No.	No.	mm						mm	mm	mm	mm	mm	mm	mm	mm	mm
110-105.		0-1				۲	۲	0,001			12,7	25	62,5	12	8	21
110-106.		0-1				0	0	0,0001			12,7	25	62,5	12	8	21
110-107.		0-1	0			۲	۲	0,001			12,7	25	62,5	12	8	21
110-108.		0-1	0			۲	۲	0,0001			12,7	25	62,5	12	8	21
110-101.		0-2,5				۲	0	0,001			12,7	25	70	12	8	21
110-102.		0-2,5				0	0	0,0001			12,7	25	70	12	8	21
148-216.	148-215.	0-5	0					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				0,01			15	9	22,5	6	3,5	9,3
148-223.	148-222.	0-6,5		0				0,01			17	7,5	22,5	6	3,5	9,3
148-317. 148-319.	148-316. 148-318.	0-6,5		0				0,01			18,7	9	22,5	9,5	6,35	15
148-207.	148-205.	0-6,5	0					0,01	8	3	7,5	7,5	21,7	6	3,5	9,3
148-323.	148-322.	0-6,5	0					0,01	14	4	9,5	9	23,5	9,5	6,35	15
148-143.	148-142.	0-6,5	0					0,002	14	4	9,5	14	31,5	9,5	5	13
148-343.	148-342.	0-6,5	0					0,002	14	4	9,5	9	23,5	9,5	6,35	15
148-243.	148-242.	0-6,5	0					0,002	8	3	6	9	21,9	6	3,5	9,3
152-283.		0-10					0	0,002	16	4	26	19	53	12	6,35	49
110-502.		0-13	0			0		0,0005			15	15	67,5	9,5	5	13
148-133. 148-802.	148-132. 148-801.	0-13	0					0,01	14	4	9,5	17,5	31,5	9,5	5	13
	148-853.	0-13	0					0,01			9,5	15,5	37	9,5	5	13
148-804.	148-803.	0-13	0	0				0,01	14	4	9,5	17,5	40	9,5	5	13
148-854.		0-13	0	0				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				0,01	14	4	9,5	17,5	40,1	9,5	5	13
148-504.	148-506.	0-13		0				0,01	14	4	9,5	15,5	45,6	9,5	5	13
148-151.	148-150.	0-13		0			~	9,5			18,7	17,5	31	12	5	13
148-153.	148-152.	0-13		0			0	9,5			18,7	17,5	31	12	5	13
149-131.	149-132.	0-15					0	0,01	14	4	15	17	43,5	9,5	6,35	15
	152-101.	0-15				6	0	0,01			16	18	60	12	8	30
440 404	153-101.	0-15		0		0	0	0,01	14		10	17	58,5	9,5	6,35	15,3
149-184.	149-183.	0-15		0			0	0,01	14	4	9,5	17	49 42 F	9,5	6,35	15
149-802.	149-801.	0-15	0				0	0,01	14	4	15	17 27	43,5	9,5	6,35	15
150-189.	150-190.	0-25			0		0	0,001	14	4	15	27	67	10	6,35	18
151-221.	151-222.	0-25			0		0	0,001	16	4	29	34	70	12	8	21
150-191.	150-192.	0-25			0		0	0,01	14	4	15	27	67	10	6,35	18
151-223.	151-224.	0-25			0		0	0,01	16	4	29	34	70	12	8	21
150-195.	150-196.	0-25					0	0,01	14	4	15	27	54	10	6,35	18
	152-102.	0-25					0	0,01			16	28	69 66	12	8	30
	152-332.	0-25	•				0	0,002 4) Wi			29	34	66	12	8	49

1) Spherical measuring surface

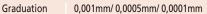
4) With ratchet

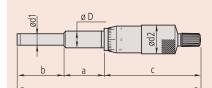
5) With non-rotating

spindle 6) Carbide tipped

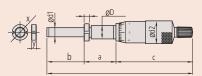
x and y apply to heads with clamp nut

Specifications





Total length l = a + b + c



Total length I = a + b + c

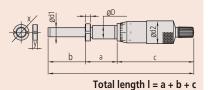


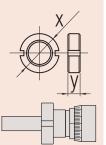
²⁾ With spindle lock

0,001mm/ 0,0005mm/ 0,0001mm Graduation

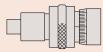
øD ød1 202 b С

Total length l = a + b + c





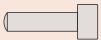
With clamp nut



With spindle lock



With spindle lock 250-301 / 350-2XX



With spherical measuring surfaces



With reverse reading

Survey Micrometer Head

Micrometer Head Selector

Stem w/ locknut	Plain stem	Range	1)	2)	3)	4)	5)	6)	7)	Grad.	х	у	а	b	с	ØD	Ø d1	Ø d2
No.	No.	mm								mm	mm	mm	mm	mm	mm	mm	mm	mm
150-220.	150-219.	0-25								0,01	14	4	15	65	53,5	10	6,35	18
	153-203.	0-25					0	0		0,01			10	27	70,5	12	8	18
	153-204.	0-25					0	0		0,001			10	27	71	12	8	18
	153-301.	0-25					0	۲		0,0005				28,6	31,8	18	8	85,5
	153-201.	0-25				0	0	۲		0,01			10	27	87,5	12	8	18
	153-202.	0-25				0	۲	۲		0,001			10	27	88	12	8	18
150-210.	150-209.	0-25		۲		0		۲		0,01	14	4	15	27	78,5	10	6,35	18
	250-301.	0-25		0		۲		۲		0,01			15	27	94	10	6,35	18
350-252- 10.	350-251- 10.	0-25		0		0		0		0,001	14	4	15	27	114,5	10	6,35	18
350-272- 20.	350-271- 10.	0-25		۲		۲		۲		0,001			16	27	113,5	12	6,35	18
350-282- 10.	350-281- 10.	0-25		۲		۲		0		0,001	16	4	15	27	114,5	12	6,35	18
150-212.	150-211.	0-25		0				0		0,01	14	4	15	27	65	10	6,35	18
151-226.	151-225.	0-25		0				0		0,01	16	4	19	34,5	66	12	8	21
350-261- 10.		0-25		0					0	0,001			14	38,7	101	12	6,35	18
150-802.	150-801.	0-25	0			0		0		0,01	14	4	15	27	67	10	6,35	18
350-254- 10.	350-253- 10.	0-25	0	۲		0				0,001	14	4	15	27	113,5	10	6,35	18
350-274- 20.	350-273- 10.	0-25	0	0		0				0,001	16	4	16	27	113,5	12	6,35	18
350-284- 10.	350-283- 10.	0-25	0	0		0				0,001	16	4	15	27	114,5	12	6,35	18
	152-348.	0-25-0			0			0		0,002			29	34	66	12	8	49
	152-401.	0-25-0	0					0		0,001			14	41,7	84,3	18	8	49
151-255.	151-256.	0-50				0		0		0,01	16	4	29	59	103	12	8	21
151-259.	151-260.	0-50						0		0,01	16	4	29	59	90	12	8	21
	152-103.	0-50						0		0,01			16	53	94	12	8	30
	164-161.	0-50					0	0		0,001			14	65	143	18	11	49
	197-101.	0-50					0	0		0,005			14	65	64	18	8	49
	152-380.	0-50-0			0			0		0,002			29	34	66	12	8	49
148-211.	148-209.	6,5-0			0					0,01	8	3	7,5	7,5	21,7	6	3,5	9
148-822.	148-821.	13-0			0					0,01	14	4	9,5	17,5	31,5	9,5	5	13
	148-863.	13-0			0					0,01			9,5	15,5	37	9,5	5	13
148-824.	148-823.	13-0		0	0					0,01	16	4	9,5	17,5	40,1	9,5	5	13
	148-864.	13-0		0	0			6		0,01			9,5	15,5	45,6	9,5	5	13
149-822.	149-821.	15-0			0			0		0,01	16	4	15	17	43,5	9,5	6,35	15
150-822.	150-821.	25-0			0	0		0		0,01	16	4	15	27	84	10	6,35	18
1) Spherica	l measuring	surface	. 2) Wi	th sp	bind	e lo	ck	3)	Reverse	readin	ıg	4) Wit	h ratch	et	5) With	n non-	

1) Spherical measuring surface rotating spindle

2) With spindle lock 6) Carbide tipped 7) Non-rotating measuring surface

x and y apply to heads with clamp nut



Digital Micrometer Head

Series 164

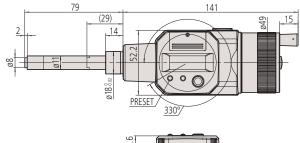
- Display and operating unit may be rotated by 330° for convenience.
- For integration into machinery and measuring instruments.
- Digital micrometer head with non-rotating spindle.

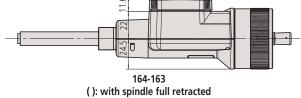


164-163

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







Functions	Series 164
ZERO/ABS	0
Auto Power OFF	9
after 20 min. non use	
2 x PRESET	0
Data output	9
Counting direction switchable	0

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)	44,00
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	6,00



Mitutoyo

Functions	Series 350
ZERO/ABS	0
Auto Power OFF	e
after 20 min. non use	
2 x PRESET	0
Function lock	e
HOLD	0
Data output	

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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00

Digital Micrometer Head with 10mm Stem

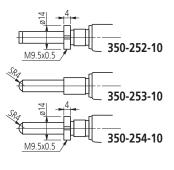
Series 350

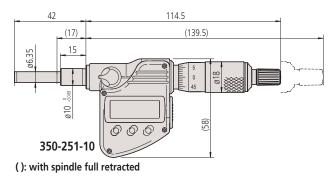
- This Micrometer Head has a 25mm range and a 10mm stem, and offers the following benefits:
- You can integrate it into machinery and measuring instruments.
- Measurement values are clearly displayed in 0,001mm increments.
- Stem diameter: 10mm.



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









Digital Micrometer Head with 12mm Stem

Series 350

This Micrometer Head has a 25mm range and a 12mm stem, and offers the following benefits:

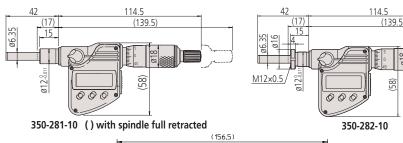
- You can integrate it into machinery and measuring instruments.
- Its excellent water and dust resistance (IP65 protection level) lets you use it in machining situations that include splashing coolant fluid (except types with threaded stem).
- Measurement values are clearly displayed in 0,001mm increments.

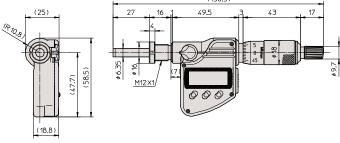


Metric

No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thick- ness for clamp nut [mm]	Remarks	Mass [g]	Price [€]
350-271-10	0-25	Flat (carbide tip)	Plain	12 /18 mm		IP65	230	402,00
350-272-20	0-25	Flat (carbide tip)	w/ clamp nut	M12 x 1	11,5	threaded stem	230	412,00
350-273-10	0-25	Spherical (SR4)	Plain	12 /18 mm		IP65	230	448,00
350-274-20	0-25	Spherical (SR4)	w/ clamp nut	M12 x 1	11,5	threaded stem	230	453,00
350-281-10	0-25	Flat (carbide tip)	Plain	12 mm		IP65	230	324,00
350-282-10	0-25	Flat (carbide tip)	w/ clamp nut	12 mm	11,5	IP65	230	412,00
350-283-10	0-25	Spherical (SR4)	Plain	12 mm		IP65	230	448,00
350-284-10	0-25	Spherical (SR4)	w/ clamp nut	12 mm	11,5	IP65	230	458,00
350-261-10	0-25	Flat	Plain	12 mm		IP65, w/ non-rotating measuring face w/o ratched stop	235	433,00







350-272-20





Series 350
0
<i>i</i>
0
<i>i</i>
0
e

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

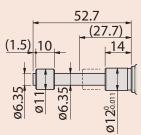
Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
02AZD790B	Connecting cable U-Wave with data switch	95,00
06ADV380B	USB Input Tool Direct cable with data switch (2 m)	115,00

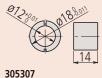
Consumable spares

No.	Description	Price €			
938882	Battery SR44	6,00			
305307	Slit bushing Ø 12/Ø 18 mm 14 mm length	2,60			
306625 Slit bushing Ø 12/Ø 18 mm 3,20 16 mm length					
306625 Standard for 350-271-10, 350-273-10					

305307 Standard for 350-261-10







Mitutoyo

Micrometer Head with Counter

Specifications

Scale Measuring spindle Graduation Thimble and sleeve satin chrome With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm 0,01mm

Series 250 - Digit counter type

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

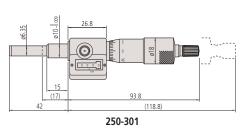


250-301

/letric

No.	Range [mm]	Spindle end	Stem Ø	Accuracy	Stem	Mass [g]	Price [€]
250-301	0-25	Flat (carbide tip)					





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.



Metric			
No.	Range [mm]	Remarks	Price [€]
7850	60-75	Max. load : 400kg	402,00

Specifications Graduation

0,01mm





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.



No.	Range [mm]	Spindle end	Accuracy [µm]	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-244	0-5	Spherical (SR1,5)	±5	Plain	3,5 mm		4	181,00
148-245	0-5	Spherical (SR1,5)	±5	w/ clamp nut	3,5 mm	3	5	190,00
148-142	0-6,5	Spherical (SR4)	±2	Plain	9,5 mm		31	89,00
148-143	0-6,5	Spherical (SR4)	±2	w/ clamp nut	9,5 mm	6	34	94,00
148-342	0-6,5	Spherical (SR4)	±2	Plain	9,5 mm		29	92,00
148-343	0-6,5	Spherical (SR4)	±2	w/ clamp nut	9,5 mm	6	31	97,00
148-242	0-6,5	Spherical (SR3)	±5	Plain	6 mm		10	90,00
148-243	0-6,5	Spherical (SR3)	±5	w/ clamp nut	6 mm	4	10	95,00

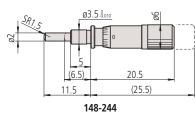
M9.5×0.

M9.5×0.5

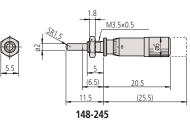
8

M6×0

23.5



Metric



ø9.5-8.009

148-143

9.5

148-343

7.5

(8.5)

148-243

ø6-8.00

(12)

18.5

ø9.5-8009

<u>ø</u>15

3.5

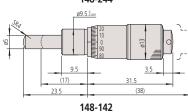
ø9.3

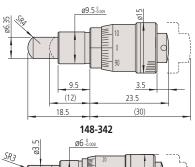
(28.2)

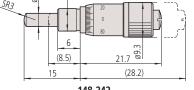
21.7

23.5

(30)



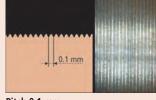




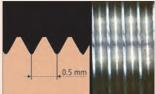
(): with spindle full retracted

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

148-242

Mitutoyo

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



Micrometer Head 5mm and 6,5mm Range

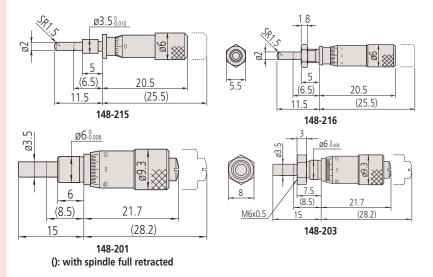
Series 148 - Ultra small

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



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	93,00
148-216	0-5	Spherical (SR1,5)	3,5 mm	w/ clamp nut	3	-	4	97,00
148-201	0-6,5	Flat	6 mm	Plain		-	10	58,00
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	63,00
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	58,00
148-211	0-6,5	Flat	6 mm	w/ clamp nut	4	Reverse reading	10	66,00







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:

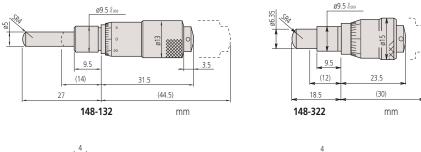
- Carbide-tipped spindle
- The small micrometer head gives you a 15mm measuring range and a tungsten carbide measuring surface.

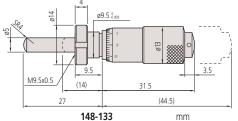


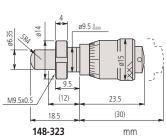
148-132

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	95,00
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			

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



148-305



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	59,00
148-302	0-6,5	Flat	9,5 mm	w/ clamp nut	6	15 mm	26	63,00
148-303	0-6,5	Flat	9,5 mm	Plain		20 mm	39	72,00
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	69,00
148-312	0-13	Flat	9,5 mm	w/ clamp nut	6	29 mm	103	73,00



<u>99.5 % 12</u> <u>9.5</u> <u>12</u> <u>23.5</u> <u>18.5</u> (30)

148-301

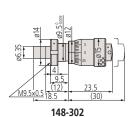
148-304

148-307

M9.5×0.

500

Sel a



148-305

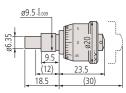
148-308

148-311

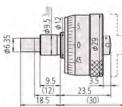
35

¢6.35

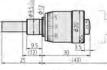
25



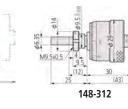
148-303



148-306







5635

(): with spindle full retracted

148-310

(43)



Micrometer Head 6.5mm Range with Spindle Lock

Series 148 - Locking screw Type

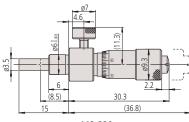
These micrometer heads feature a knurled locking screw so you can lock the spindle in any position with the knurled locking screw.



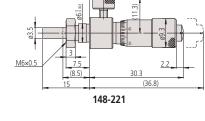
Metric

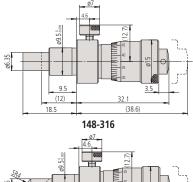
No.	Range [mm]	Spindle end	Stem Ø	Accuracy [µm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-220	0-6,5	Flat	6 mm	±5	Plain		16	61,00
148-221	0-6,5	Flat	6 mm	±5	w/ clamp nut	4	17	65,00
148-222	0-6,5	Spherical (SR3)	6 mm	±5	Plain		16	65,00
148-223	0-6,5	Spherical (SR3)	6 mm	±5	w/ clamp nut	4	17	68,00
148-316	0-6,5	Flat	9,5 mm	±2	Plain		40	71,00
148-317	0-6,5	Flat	9,5 mm	±2	w/ clamp nut	6	43	75,00
148-318	0-6,5	Spherical (SR4)	9,5 mm	±2	Plain		40	75,00
148-319	0-6,5	Spherical (SR4)	9,5 mm	±2	w/ clamp nut	6	43	78,00

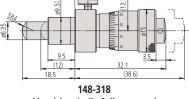




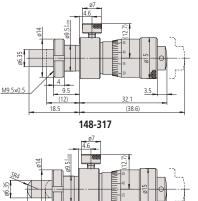
148-220







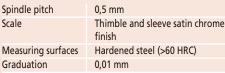
(): with spindle full retracted

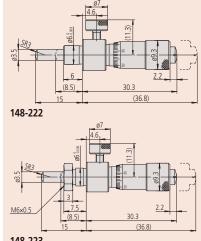


32. (3 148-319 3.5

(38.6)

Specifications





148-223



18.5

M9.5×0.

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

Micrometer Head 13mm Range with Spindle Lock

Series 148 - Locking screw Type

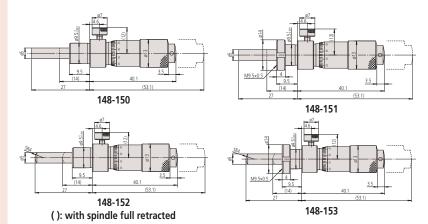
These micrometer heads feature a locking screw so you can lock the spindle in any position with the knurled locking screw.



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	74,00
148-153	0-13	Spherical (SR4)	9,5 mm	w/ clamp nut	6	43	77,00





The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



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.



148-503

148-504

weinc								
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	70,00
148-513	0-13	Flat	Plain	9,5 mm		Stainless steel	35	81,00
148-508	0-13	Flat	w/ clamp nut	9,5 mm	6	-	40	74,00
148-853	0-13	Spherical (SR4)	Plain	9,5 mm		-	40	75,00
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

Motr

Reverse reading / with spindle lock

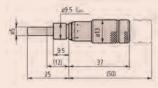
No.	Range [mm]	Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
148-864	0-13	Flat	w/ clamp nut	9,5 mm	6	40	82,00
148-866	0-13	Flat	Plain	9,5 mm		35	215,00

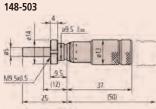
Metric		With spindle lo	With spindle lock						
No. Range [mm]		Spindle end	Stem	Stem Ø	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]		
148-506	0-13	Flat	Plain	9,5 mm		35	74,00		
148-504	0-13	Flat	w/ clamp nut	9,5 mm	6	40	78,00		
148-854	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	40	79,00		
148-856	0-13	Spherical (SR4)	Plain	9,5 mm		35	174,00		



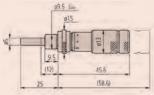
Specifications

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

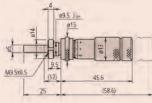




148-508

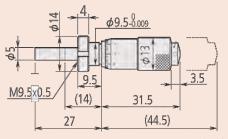


148-506

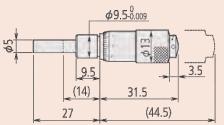


148-504 (): with spindle full retracted

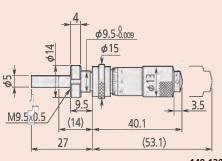
•	
Accuracy	±2 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened steel (> 60 HRC)
Graduation	0.01 mm



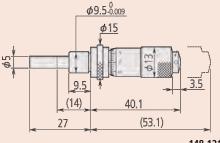
148-103



148-104



148-120



148-121

() with spindle full retracted

Micrometer Head 13mm Range

Series 148 - Small standard type

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



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	65,00
148-801	0-13	Spherical (SR4)	Plain	9,5 mm		-	30	62,00
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	63,00
148-822	0-13	Flat	w/ clamp nut	9,5 mm	6	Reverse reading	35	69,00

Metric		With spindle lo	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	70,00			
148-804	0-13	Spherical (SR4)	w/ clamp nut	9,5 mm	6	-	45	75,00			
148-823	0-13	Flat	Plain	9,5 mm		Reverse reading	40	67,00			
148-824	0-13	Flat	w/ clamp nut	9,5 mm	6	Reverse reading	45	72,00			

123





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

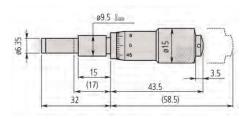
Metric

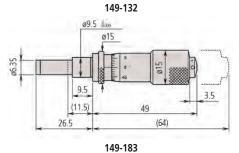
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
149-132	0-15	Flat (carbide tip)	9,5 mm	Plain		-	55	66,00
149-131	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	11,5	-	60	70,00
149-801	0-15	Spherical (SR4)	9,5 mm	Plain		-	55	67,00
149-802	0-15	Spherical (SR4)	9,5 mm	w/ clamp nut	11,5	-	60	71,00
149-821	0-15	Flat (carbide tip)	9,5 mm	Plain		Reverse reading	55	69,00
149-822	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	11,5	Reverse reading	60	73,00

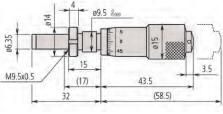
Metric With spindle lock

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	66,00
149-184	0-15	Flat (carbide tip)	9,5 mm	w/ clamp nut	6	-	60	70,00
149-803	0-15	Spherical (SR4)	9,5 mm	Plain		-	55	93,00
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

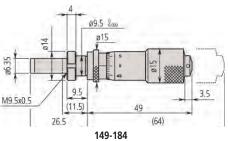












(): with spindle full retracted

	i ha	to	110
1 V/1	ILU	ILU	// U
			/ -

Specifications

Accuracy	±2 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0,01mm

Accuracy	±2 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0,01 mm

Micrometer Head 25mm Range

Series 150 - Medium-sized standard type

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



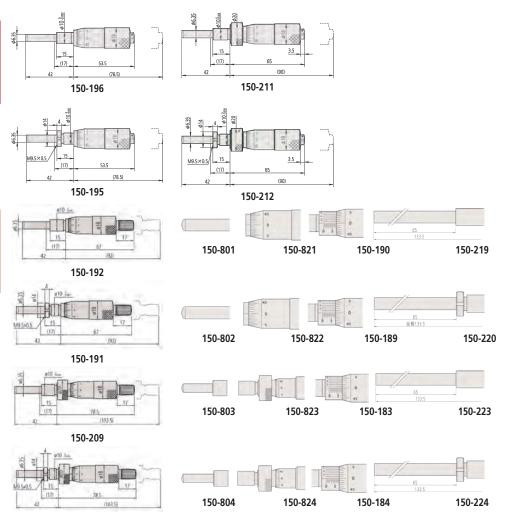
Metric								
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
150-192	0-25	Flat (carbide tip)	10 mm	Plain		-	95	55,00
150-191	0-25	Flat (carbide tip)	10 mm	w/ clamp nut	11,5	-	100	65,00
150-801	0-25	Spherical (SR4)	10 mm	Plain		-	95	66,00
150-802	0-25	Spherical (SR4)	10 mm	w/ clamp nut	11,5	-	100	72,00
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	62,00
150-219	0-25	Flat	10 mm	Plain		Long spindle	95	78,00
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	79,00

Metric		With spindle lock	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	91,00	
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	87,00	
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	

125

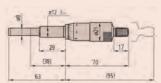


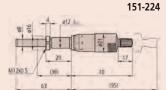
Micrometer Head 25mm Range

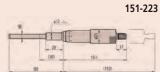


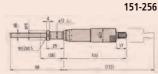
150-210 (): with spindle full retracted

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				

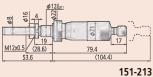






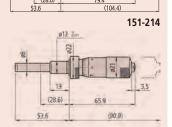


151-255



¢ 122ar

89



151-225

(28.6)

53.6

151-226 (): with spindle full retracted

65.9 (90.9)

Micrometer Head 25mm and 50mm

Series 151 - Medium-sized standard type with 8 diameter spindle.

These micrometer heads are a medium-sized, standard type. They offer the following benefits:

- 8mm diameter spindle
- Extremely sturdy micrometer head with or without a ratchet.







151-23

No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
151-224	0-25	Flat (carbide tip)	12 mm	Plain		-	150	92,00
151-223	0-25	Flat (carbide tip)	12 mm	w/ clamp nut	25,5	-	155	98,00
151-222	0-25	Flat (carbide tip)	12 mm	Plain		Graduation 0,001 mm	150	101,00
151-221	0-25	Flat (carbide tip)	12 mm	w/ clamp nut	25,5	Graduation 0,001 mm	155	108,00
151-227	0-25	Flat (carbide tip)	12 mm	Plain		w/o ratchet stop	150	92,00
151-228	0-25	Flat (carbide tip)	12 mm	w/ clamp nut	25,5	w/o ratchet stop	155	92,00
151-256	0-50	Flat (carbide tip)	12 mm	Plain		-	240	149,00
151-255	0-50	Flat (carbide tip)	12 mm	w/ clamp nut	25,5	-	250	160,00
151-260	0-50	Flat (carbide tip)	12 mm	Plain		w/o ratchet stop	240	144,00
151-259	0-50	Flat (carbide tip)	12 mm	w/ clamp nut	25,5	w/o ratchet stop	250	155,00

Metric With spindle lock								
No.	Range [mm]	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]	Price [€]
151-214	0-25	Flat (carbide tip)	12 mm	Plain		-	160	118,00
151-213	0-25	Flat (carbide tip)	12 mm	w/ clamp nut	15,5	-	165	129,00
151-212	0-25	Flat (carbide tip)	12 mm	Plain		Graduation 0,001 mm	160	175,00
151-211	0-25	Flat (carbide tip)	12 mm	w/ clamp nut	15,5	Graduation 0,001 mm	165	185,00
151-225	0-25	Flat (carbide tip)	12 mm	Plain		w/o ratchet stop	165	103,00
151-226	0-25	Flat (carbide tip)	12 mm	w/ clamp nut	15,5	w/o ratchet stop	165	113,00

127





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.





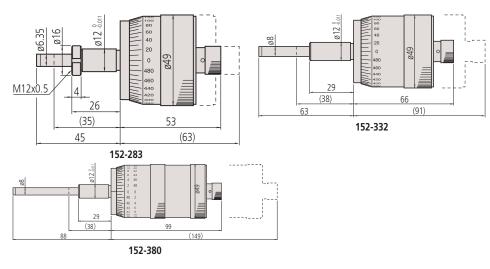
152-283



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



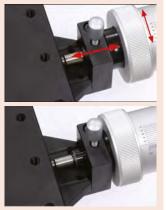


(): with spindle full retracted

Specifications

Accuracy	0,002 mm
Spindle pitch	0,5 mm
Scale	White anodized aluminium
Measuring surfaces	Carbide tipped

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:

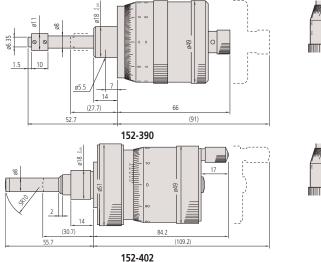
- Micrometer head with rotating spindle, non-rotating measuring surface and bidirectional reading 152-390/389.
- Graduations for each direction are engraved in a different colour (black or red).
- You can read measurement values directly from the 100-step graduation thimble without having to consider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



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 de- vice	Plain	18 mm	For X-axis Bidirectional grad.	270	229,00
152-389	0-25 mm/25-0 mm	Flat (hardened) with non-rotating de- vice	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

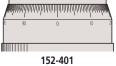




(): with spindle full retracted

	M	ahtahtahtahtahtah	lutututututut	
8	90	0	10	3
10	10	0	90	8

152-389





Quick Spindle Feed Micrometer Head

Series 152 - Quick spindle feed of 1/rev

This is a quick spindle micrometer head.

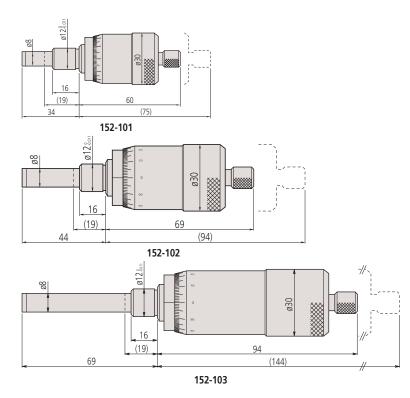
- It offers you the following benefits:
- Micrometer head with 1 mm / rotation





Metric

No.	Range [mm]	Spindle end	Accuracy [µm]	Stem	Stem Ø	Mass [g]	Price [€]
152-101	0-15	Flat (carbide tip)	±2	Plain	12 mm	205	97,00
152-102	0-25	Flat (carbide tip)	±2	Plain	12 mm	230	156,00
152-103	0-50	Flat (carbide tip)	±4	Plain	12 mm	355	228,00



(): with spindle full retracted

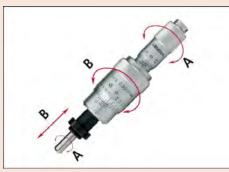
Specifications

Spindle pitch	1 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped
Graduation	0,01mm

Accuracy	±3 μm (1 mm) ±5 μm (2,5 mm) ±3 μm (13 mm)
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped

1

Version with non-rotating spindle



Version with rotating spindle 110-502/110-504

Micrometer Head with Non-Rotating Spindle

Series 110 - Differential screw translator (Extra-fine feed) type

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



Metric

No.	Range [mm]	Graduation	Spindle end	Stem Ø	Stem	Fixture thickness for clamp nut [mm]	Mass [g]	Price [€]
110-105	0-1 mm	0,001 mm	Flat (carbide tip)	12 mm	w/ clamp nut	9,5	150	216,00
110-106	0-1 mm	0,0001 mm	Flat (carbide tip)	12 mm	w/ clamp nut	9,5	150	221,00
110-107	0-1 mm	0,001 mm	Spherical (SR10)	12 mm	w/ clamp nut	9,5	150	237,00
110-108	0-1 mm	0,0001 mm	Spherical (SR10)	12 mm	w/ clamp nut	9,5	150	247,00
110-101	0-2,5 mm	0,001 mm	Flat (carbide tip)	12 mm	w/ clamp nut	9,5	150	376,00
110-102	0-2,5 mm	0,0001 mm	Flat (carbide tip)	12 mm	w/ clamp nut	9,5	150	386,00
110-502	A: 0-13 mm B: 0-0,2mm	A: 0,01 mm B: 0,0005mm	Spherical (SR3)	9,5 mm	w/ clamp nut	11,5	100	546,00

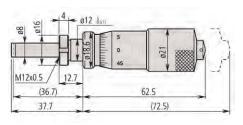
110-107 110-108

(80.

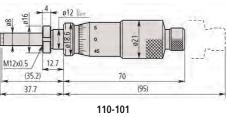
Mitutoy

110-502

MS



110-105 110-106



110-102

(): with spindle full retracted



Micrometer Head with Non-Rotating Spindle

Series 153

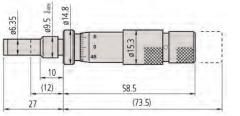
A state and 153-101 153-203 153-201

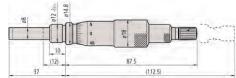


Vietric								
No.	Range [mm]	Graduation	Spindle end	Stem Ø	Stem	Special features	Mass [g]	Price [€]
153-101	0-15	0,01 mm	Flat (carbide tip)	9,5 mm	Plain		70	132,00
153-203	0-25	0,01 mm	Flat (carbide tip)	12 mm	Plain		125	138,00
153-204	0-25	0,001 mm	Flat (carbide tip)	12 mm	Plain	Graduation with vernier	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)	12 mm	Plain		125	146,00
153-202	0-25	0,001 mm	Flat (carbide tip)	12 mm	Plain	Graduation with vernier	125	155,00







153-201 + 153-202

153-101 014.8 012 80 018 10 (12) 70.5 37 (95.5)

153-203 + 153-204

(): with spindle full retracted

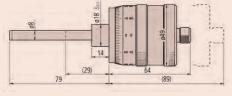
Specifications	
Accuracy	±3 μm
Spindle pitch	0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Carbide tipped



Version with non-rotating spindle



±5 μm
1 mm
White anodized aluminium
Carbide tipped



197-101

Micrometer Head with Non-Rotating Spindle

Series 197 - Non-rotating spindle and large thimble

- Micrometer Head with non-rotating spindle and 1 mm spindle pitch.
- Measurement values can be read directly from the 100-step graduation thimble without the complication of having to consider 1/2 mm values, which simplifies reading and therefore reduces the chance of error.
- The scale is set to zero by rotating the barrel.



Metric

No.	Range	Spindle end	Stem Ø	Stem	Special features	Mass [g]	Price [€]
197-101	0-50 mm/50-0 mm	Flat (carbide tip)	18 mm	Plain	Bidirectional graduation	300	433,00

Series 153 - Fine graduation and high accuracy

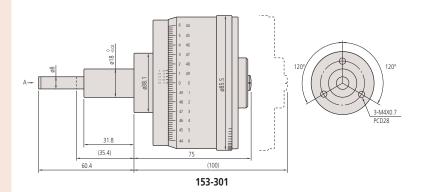
• Extra-large-diameter micrometer head with non-rotating spindle.



Metric

No.	Range	Spindle end	Stem Ø	Stem	Special features	Mass [g]	Price [€]
153-301	0-25 mm/25-0 mm	Flat (carbide tip)	18 mm	Plain	Bidirectional graduation	750	1125,00





133



Specifications

Accuracy	±1μm
Spindle pitch	0,5 mm
Scale	White anodized aluminium
Measuring surfaces	Carbide tipped

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:

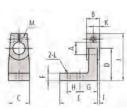
- These fixtures are high quality and durable, manufactured from nickel-plated cast iron.
- Two types of fixture for micrometer heads are available, depending on whether the head has a plain stem or is a clamp nut type.

Fixtures for micrometer heads with clamp nut

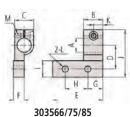
No.	Α	В	C	D	F	E	G	Н	- I -	J	K	L	Price
NO.	[mm]	[mm]	[mm]	[mm]	[€]								
303559	9,5	6	15	20	5	24	11	8	0,5	27,5	3,4		31,00
303568	9,5	11,5	20	30	7	35	16	12	1,75	40	4,5		34,00
303578	10	11,5	20	30	7	35	16	12	1,75	40	4,5		38,00
303563	9,5	6	30	37,5	15	4,5	10	15	3,4				31,00
303572	9,5	11,5	40	50	18	6,5	15	20	4,5				34,00
303582	10	11,5	40	50	18	6,5	15	20	4,5				38,00
303561	9,5	6	40	3,5	15	30	3,4						31,00
303570	9,5	11,5	60	5,5	20	40	4,5						34,00
303580	10	11,5	60	5,5	20	40	4,5						38,00
303565	9,5	6	15	15	8,5	25	7,5	10	10	27,5	3,4	0,75	31,00
303574	9,5	11,5	15	20	8,5	40	10	20	15	35	4,5	1,25	34,00
303584	10	11,5	15	20	8,5	40	10	20	15	35	4,5	1,25	38,00

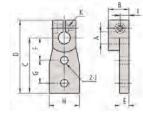
Fixtures for plain stem type micrometer heads

No.	Α	В	C	D	F	E	G	Н		J	K	L	М	Price
NO.	[mm]	[mm]	[mm]	[mm]	[€]									
303560	9,5	9	15	20	5	23	11	8	1,5	32,5	4,5	ø3,4	M3x0,5	31,00
303569	9,5	14,5	20	30	7	35	16	12	3,25	42,5	7,25	4,5	M3x0,5	34,00
303579	10	14,5	20	30	7	35	16	12	3,25	42,5	7,25	4,5	M3x0,5	38,00
303564	9,5	9	30	42,5	15	4	10	15	4,5	3,4	M3x0,5			31,00
303573	9,5	14,5	40	52,5	18	6	15	20	7,25	4,5	M3x0,5			34,00
303583	10	14,5	40	52,5	18	6	15	20	7,25	4,5	M3x0,5			38,00
303562	9,5	9	15	20	3	40	30	15	3,4	M3x0,5				31,00
303571	9,5	14,5	15	22,5	5	60	40	20	4,5	M3x0,5				34,00
303581	10	14,5	15	22,5	5	60	40	20	4,5	M3x0,5				38,00
303566	9,5	9	15	15	8,5	25	7,5	10	10	32,5	4,5	3,4	M3x0,5	31,00
303575	9,5	14,5	15	20	8,5	40	10	20	15	40	7,25	4,5	M3x0,5	34,00
303585	10	14,5	15	20	8,5	40	10	20	15	40	7,25	4,5	M3x0,5	38,00



303560/69/79

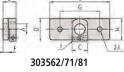


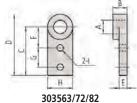


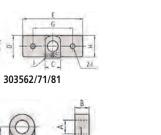
303564/73/83

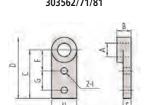
H. G

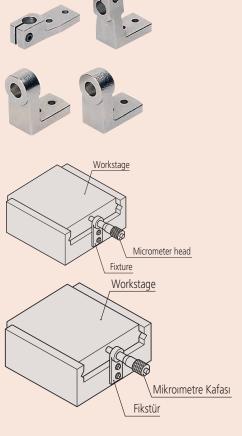
303559/68/78

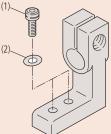




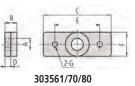








Fixtures for use with plain stem type micrometer heads are split, and clamp the stem by tightening a socket head screw (M3x0.5x12 mm).



0

303565/74/84

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Quick Guide to Precision **Measuring Instruments**



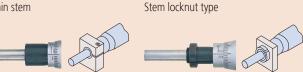
Micrometer Heads

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



- 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 requires a split-fixture clamping arrangement or adhesive fixing.
- General-purpose mounting fixtures are available as optional accessories.

Measuring Face

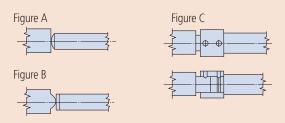






Anti-rotation device

- 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 antirotation 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: guicker 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 constantforce device (no ratchet)

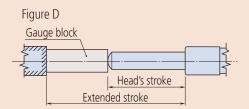
Spindle Lock

• 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.



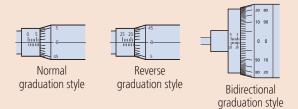
Thimble Diameter

 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.



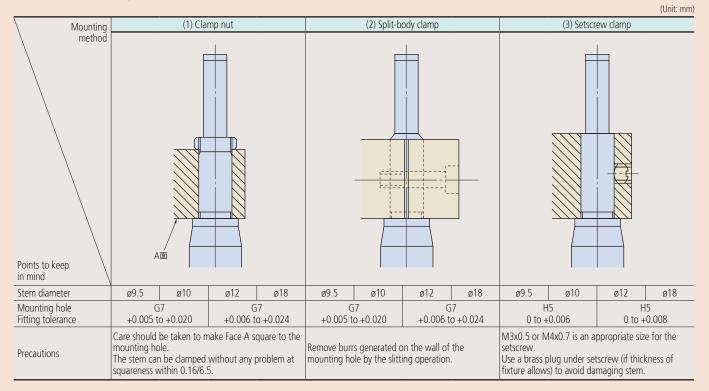
Graduation Styles

- 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.



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.



Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Maximum Loading Capacity on Micrometer Heads

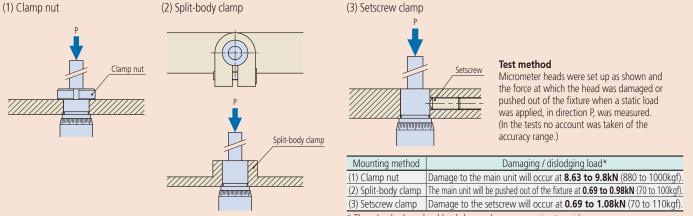
The maximum loading capacity of a micrometer head depends mainly on the method of mounting and whether the loading is static or dynamic (used as a stop, for example). Therefore the maximum loading capacity of each model cannot be definitively specified. The loading limits recommended by Mitutoyo (at 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
	Spindle pitch: 0.5mm	Up to approx. 39,227N / 4kgf
High-functionality type	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)



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





Inside Measuring Instruments

Inside Micrometer Page 139



Bore Gauges Page 161





138



Functions	Series 468
ZERO/ABS	0
Auto Power OFF	0
after 20 min. non use	
2 x PRESET	0
Low voltage alarm	e
Function lock	0
HOLD	9
Data output	0

•	
Accuracy	6-20 mm : ±2 μm
	20-100 mm : ±3 μm
	100-300 : ±5 μm
	(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
Battery life	approx. 1,2 years
Display	LCD, character height 7,5 mm
Delivered	Including box, key, 1 battery,
	certificate of inspection

Optional accessories

156-101-10 Micrometer stand 54,00 264-504-5D Digimatic Mini-Processor 445,00 Cables 05CZA662 Digimatic cable with data switch (1 m) 74,00 05CZA663 Digimatic cable with data switch (2 m) 83,00 06ADV380B USB Input Tool Direct cable with data switch (2 m) 115,00 02AZD790B Connecting cable U-Wave with data switch 95,00 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	No.	Description	Price €
264-504-5DDigimatic Mini-Processor445,00Cables05CZA662Digimatic cable with data switch (1 m)74,00 switch (2 m)05CZA663Digimatic cable with data switch (2 m)83,00 switch (2 m)06ADV380BUSB Input Tool Direct cable 115,00 switch (2 m)02AZD790BConnecting cable U-Wave with data switch95,00 switch (2 m)952322Extension 100 mm for 6 - 12 	04AZB157	Holder for micrometer stand	47,00
Cables05CZA662Digimatic cable with data switch (1 m)74,00 switch (2 m)05CZA663Digimatic cable with data switch (2 m)83,00 switch (2 m)06ADV380BUSB Input Tool Direct cable with data switch (2 m)115,00 with data switch (2 m)02AZD790BConnecting cable U-Wave with data switch95,00 with data switch952322Extension 100 mm for 6 - 12 mm91,00 20 mm952621Extension 150 mm for 12 - 20 mm91,00 20 mm952622Extension 150 mm for 20 - 50 mm101,00 50 mm	156-101-10	Micrometer stand	54,00
05CZA662Digimatic cable with data switch (1 m)74,00 switch (1 m)05CZA663Digimatic cable with data switch (2 m)83,00 switch (2 m)06ADV380BUSB Input Tool Direct cable with data switch (2 m)115,00 with data switch (2 m)02AZD790BConnecting cable U-Wave with data switch95,00 with data switch952322Extension 100 mm for 6 - 12 mm91,00 20 mm952621Extension 150 mm for 12 - 20 mm91,00 20 mm952622Extension 150 mm for 20 - 50 mm101,00 50 mm	264-504-5D	Digimatic Mini-Processor	445,00
switch (1 m)05CZA663Digimatic cable with data switch (2 m)83,00 switch (2 m)06ADV380BUSB Input Tool Direct cable with data switch (2 m)115,00 with data switch (2 m)02AZD790BConnecting cable U-Wave with data switch95,00 with data switch952322Extension 100 mm for 6 - 12 mm91,00 20 mm952621Extension 150 mm for 12 - 20 mm91,00 20 mm952622Extension 150 mm for 20 - 50 mm101,00 50 mm	Cables		
switch (2 m)06ADV380BUSB Input Tool Direct cable with data switch (2 m)115,00 with data switch (2 m)02AZD790BConnecting cable U-Wave with data switch95,00 withExtensions952322Extension 100 mm for 6 - 12 mm91,00 20 mm952621Extension 150 mm for 12 - 20 mm91,00 20 mm952622Extension 150 mm for 20 - 50 mm101,00 20 mm	05CZA662		74,00
with data switch (2 m)02AZD790BConnecting cable U-Wave with data switch95,00Extensions952322Extension 100 mm for 6 - 12 mm91,00952621Extension 150 mm for 12 - 20 mm91,00 20 mm952622Extension 150 mm for 20 - 50 mm101,00 20 mm	05CZA663	5	83,00
with data switch Extensions 952322 Extension 100 mm for 6 - 12 91,00 mm 952621 Extension 150 mm for 12 - 91,00 20 mm 91,00 mm 952622 Extension 150 mm for 20 - 101,00 50 mm 101,00 mm	06ADV380B		115,00
952322 Extension 100 mm for 6 - 12 91,00 mm 952621 Extension 150 mm for 12 - 91,00 20 mm 91,00 10 mm 952622 Extension 150 mm for 20 - 101,00 50 mm 101,00 10 mm	02AZD790B	5	95,00
mm 952621 Extension 150 mm for 12 - 20 mm 91,00 952622 Extension 150 mm for 20 - 50 mm 101,00	Extensions		
20 mm 952622 Extension 150 mm for 20 - 101,00 50 mm	952322		91,00
50 mm	952621		91,00
952623 Extension 150 mm for 50 - 175,00	952622		101,00
300 mm	952623		175,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00

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.



Metric			
No.	Range	Mass	Price
110.	[mm]	[g]	[€]
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	1030,00
468-167	25-30	480	1030,00
468-168	30-40	480	1060,00
468-169	40-50	500	1080,00
468-170	50-63	620	1130,00
468-171	62-75	630	1140,00
468-172	75-88	960	1150,00
468-173	87-100	970	1195,00
468-174	100-125	940	1530,00
468-175	125-150	1030	1640,00
468-176	150-175	1120	1800,00
468-177	175-200	1210	1900,00
468-178	200-225	1300	2010,00
468-179	225-250	1390	2070,00
468-180	250-275	1480	2130,00
468-181	275-300	1570	2235,00





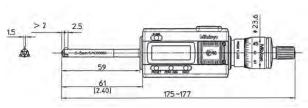


139

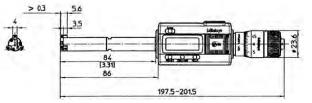
Titanium coated measuring surfaces for durability



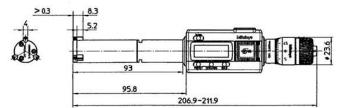
Digimatic Holtest Individual



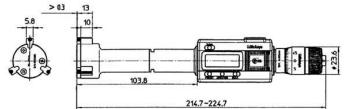
468-161, 468-162, 468-163



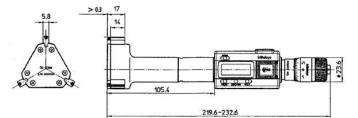
468-164, 468-165



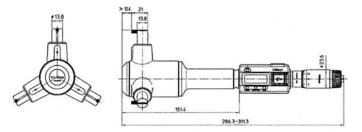
468-166, 468-167



468-168, 468-169



468-170, 468-171, 468-172, 468-173



468-174, 468-175, 468-176, 468-177, 468-178, 468-179, 468-180, 468-181



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





Extension rod for deep holes

Functions	Series 468
ZERO/ABS	0
Auto Power OFF	0
after 20 min. non use	
2 x PRESET	0
Low voltage alarm	e
Function lock	0
HOLD	e
Data output	0

Accuracy	6-20 mm : ±2 μm 20-100 mm : ±3 μm 100-200 mm : ±5 μm (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
Battery life	approx. 1,2 years
Display	LCD, character height 7,5 mm
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00





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.



468-973



Titanium coated measuring surfaces for durability

Waterpro

(IP)

meene						
No.	Range [mm]	Individual ranges [mm]	Setting rings included	Length of extensions [mm]	Mass [g]	Price [€]
468-971	6-12	6-8, 8-10, 10-12	ø8 mm (177-125) ø10 mm (177-126)	100	420	1647,00
468-972	12-20	12-16, 16-20	ø16 mm (177-177)	150	560	1441,00
468-973	20-50	20-25, 25-30, 30-40, 40-50	ø25 mm (177-139) ø40 mm (177-290)	150	1170	2390,00
468-974	50-100	50-63, 62-75, 75-88, 87-100	ø62 mm (177-314) ø87 mm (177-318)	150	2420	3420,00
468-975	100-200	100-125, 125-150, 150-175, 175-200	ø125 mm (177-298) ø175 mm (177-302)	150	3540	4944,00



Metric



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.



Titanium coated measuring surfaces for durability

468-983

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	2596,00
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	2884,00
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	3039,00
468-984	50-75	50-63, 62-75 mm	468-170 / 468-171	ø62 mm (177-314)	1270	2390,00
468-985	75-100	75-88, 87-100 mm	468-172 / 468-173	ø87 mm (177-318)	1990	2657,00



Metric

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 : ±2 μm 20-100 mm : ±3 μm (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
Battery life	approx. 1,2 years
Display	LCD, character height 7,5 mm
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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00



04AZB157



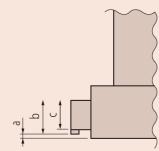
Extension

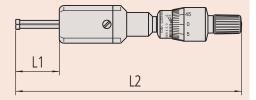


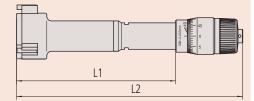
Accuracy	2-20 mm : ±2 μm 20-100 mm : ±3 μm 100-300 mm : ±5 μm
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : ø17 mm Over 12 mm : ø23 mm
Measuring Surface/Pins	2 - 6 mm: carbide 6 - 12 mm: titanium coated tungsten carbide 12 - 300 mm: titanium coated hardened steel taper: tungsten carbide
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

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.



368-174

	Range	L1	L2	а	b	с	Mass	Price
No.	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
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	1030,00
368-181	275-300	161	227-252	12,4	21	13,8	1870	1135,00

143

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.





Holtest Set

• Complete unit set.

impact resistance.

Series 368

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

• With setting rings and extensions, except for models 368-906/07 which are

• Titanium-coated measuring pins (> 6mm range) give you excellent durability and



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



• Carbide measuring surface (2-6mm range)

368-915

Metric	

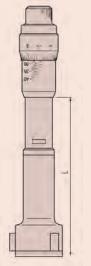
No.	Range [mm]	Individual ranges	Models included	Setting rings included	Extension rod	Mass [g]	Price [€]
368-906	2-3	2-2,5, 2,5-3 mm	368-001 / 368-002	ø2,5 mm (177-208)		310	1700,00
368-907	3-6	3-4, 4-5, 5-6 mm	368-003 / 368-004 / 368-005	ø4 mm (177-204) ø5 mm (177-205)		505	1950,00
368-911	6-12	6-8, 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	1675,00
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	1970,00
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	4015,00



Accuracy	12-20 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
Measuring	hardened steel
surfaces	Taper: hardened steel
Measuring spindle	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.



368-774

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	1085,00



The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.





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	1560,00
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	1895,00
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	3790,00





•	
Accuracy	12-20 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	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

Functions	Series 568
ZERO/ABS	0
GO/±NG judgement	i i i i i i i i i i i i i i i i i i i
ON/OFF	0
DATA/HOLD	i i i i i i i i i i i i i i i i i i i
2 x PRESET	0
Function lock	i i i i i i i i i i i i i i i i i i i
Data output	<u> </u>

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
Battery life	approx. 5000 hours
Display	LCD, character height: 11 mm
Delivered	Including box, key, 1 battery, certificate of inspection

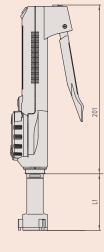
Optional accessories

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	6,00

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.







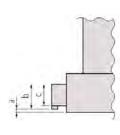
147



568-368

letric

No.	Range [mm]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
FC0 2C4				funni		-0-	
568-361	6-8	83	2		2,5	480	1125,00
568-362	8-10	83	2		2,5	485	1125,00
568-363	10-12	83	2		2,5	485	1125,00
568-364	12-16	53	0,3	5,6	3,5	475	1150,00
568-365	16-20	53	0,3	5,6	3,5	480	1150,00
568-366	20-25	59,3	0,3	8,3	5,2	540	1225,00
568-367	25-30	59,3	0,3	8,3	5,2	555	1225,00
568-368	30-40	67,3	0,3	8,3	5,2	565	1330,00
568-369	40-50	67,3	0,3	13	10	610	1330,00
568-370	50-63	75,4	0,3	17	14	730	1390,00
568-371	62-75	75,4	0,3	17	14	740	1420,00
568-372	75-88	75,4	0,3	17	14	790	1465,00
568-373	87-100	75,4	0,3	17	14	800	1465,00
568-374	100-113	75,4	0,3	17	14	900	1550,00
568-375	112-125	75,4	0,3	17	14	910	1575,00







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.



568-926

568-924





ABSOLUTE®



Functions	Series 568
ZERO/ABS	0
GO/±NG judgement	<i>i</i>
ON/OFF	0
DATA/HOLD	۵
2 x PRESET	0
Function lock	<i>i</i>
Data output	0

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
Battery life	approx. 5 hours
Display	LCD, character height: 11 mm
Delivered	Including box, key, 1 battery, setting ring, certificate of inspection

Optional accessories

No.	Description	Price €
INO.	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	6,00



Titanium coated measuring surfaces for durability

Functions	Series 568
ZERO/ABS	0
GO/±NG judgement	@
ON/OFF	0
DATA/HOLD	@
2 x PRESET	0
Function lock	<i>i</i>
Data output	0

•	
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
Battery life	approx. 5000 hours
Display	LCD, character height: 11 mm
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
 6,00



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.



568-959

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	3500,00
568-956	12-25	12-16 mm 16-20 mm 20-25 mm	Ø16 mm (177-177) Ø20 mm (177-286)	1520	3680,00
568-957	25-50	25-30 mm 30-40 mm 40-50 mm	Ø30 mm (177-288) Ø40 mm (177-290)	1750	4060,00
568-958	50-75	50-63 mm 62-75 mm	Ø62 mm (177-314)	1490	2925,00
568-959	75-100	75-88 mm 87-100 mm	Ø87 mm (177-318)	1610	3250,00





Measuring Heads for Borematic

Series 568



Metric			Display unit Borematic
	No.	Price [€]	
	568-014	989.00	

Metric Measuring heads		
No.	Range	Price
	[mm]	[€]
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.

1 : Measuring head

2 : Adapter 3 : Display unit Borematic

Functions	Series 345
Auto Power OFF	0
after 20 min. non use	
DATA/HOLD	i
2 x PRESET	0
Low voltage alarm	@
Function lock	0
Data output	@

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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00

Digimatic Caliper Jaw Inside Micrometer

Series 345

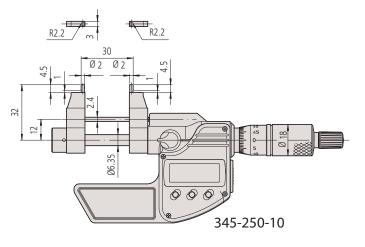
- The Digimatic Caliper Jaw Inside Micrometer offers you the following features:
- You can measure surfaces in carbide, micro-lap finish.
- An inside-length standard is needed to accurately set the micrometer.

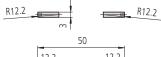


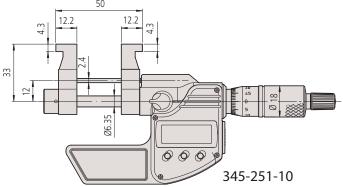
Metric

No.	Range [mm]	Accuracy [µm]	Mass [g]	Price [€]
345-250-10	5-30	±5	305	716,00
345-251-10	25-50	±б	310	752,00













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.

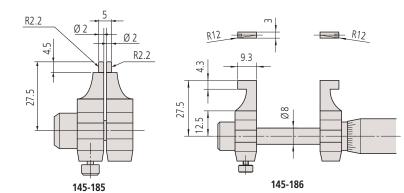


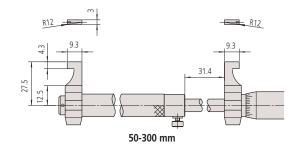


145-187

Metric				
No.	Range [mm]	Accuracy [µm]	Mass [g]	Price [€]
145-185	5-30	±5	130	227,00
145-186	25-50	±б	140	264,00
145-187	50-75	±7	160	274,00
145-188	75-100	±8	180	314,00
145-189	100-125	±9	210	423,00
145-190	125-150	±9	230	476,00
145-191	150-175	±10	250	499,00
145-192	175-200	±10	270	530,00
145-217	200-225	±11	310	595,00
145-218	225-250	±11	330	639,00
145-219	250-275	±12	350	692,00
145-220	275-300	±12	370	747,00

Also available: Inch Models





Specifications

Accuracy	Refer to the list of specifications
,	
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring	Carbide tipped
surfaces	
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

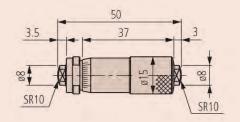
No.	Description	Price €
300400	Holder	6,20
300401	Сар	1,80



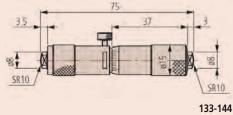
Holder and cap for: 145-185, 145-186, 145-193, 145-194

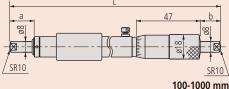
Accuracy	Refer to the list of specifications
Scale	Thimble and sleeve satin chrome finish, Ø18 mm
Measuring surfaces	Carbide tipped, crown lapped
Measuring spindle	With spindle lock (except 50-75 mm), spindle pitch 0,5 mm
Graduation	0,01mm
Delivered	Including box, insulation (from 100 mm), key





133-143





100	-10	00	mn
-----	-----	----	----

Series 133

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

....

• Carbide measuring faces.



Tubular Inside Micrometer

Metric							
No.	Range	Accuracy	L	а	b	Mass	Price
	[mm]	[µm]	[mm]	[mm]	[mm]	[g]	[€]
133-143	50-75	±3				50	121,00
133-144	75-100	±				75	125,00
133-145	100-125	±5	100	5	3	130	131,00
133-146	125-150	±5	125	5	3	160	135,00
133-147	150-175	±5	150	18	15	170	139,00
133-148	175-200	±5	175	18	15	180	151,00
133-149	200-225	±5	200	18	15	200	158,00
133-150	225-250	±6	225	18	15	210	163,00
133-151	250-275	±6	250	18	15	235	171,00
133-152	275-300	±6	275	18	15	245	184,00
133-153	300-325	±7	300	18	15	265	192,00
133-154	325-350	±7	325	18	15	285	195,00
133-155	350-375	±7	350	18	15	300	198,00
133-156	375-400	±8	375	18	15	315	201,00
133-157	400-425	±8	400	18	15	330	204,00
133-158	425-450	±8	425	18	15	340	209,00
133-159	450-475	±9	450	18	15	360	212,00
133-160	475-500	±9	475	18	15	370	215,00
133-161	500-525	±9	500	18	15	390	218,00
133-162	525-550	±10	525	18	15	400	223,00
133-163	550-575	±10	550	18	15	410	227,00
133-164	575-600	±10	575	18	15	415	232,00
133-165	600-625	±11	600	18	15	430	236,00
133-166	625-650	±11	625	18	15	450	240,00
133-167	650-675	±11	650	18	15	470	245,00
133-168	675-700	±12	675	18	15	480	249,00
133-169	700-725	±12	700	18	15	500	254,00
133-170	725-750	±12	725	18	15	510	258,00
133-171	750-775	±13	750	18	15	520	261,00
133-172	775-800	±13	775	18	15	540	265,00
133-173	800-825	±13	800	18	15	555	268,00
133-174	825-850	±14	825	18	15	570	271,00
133-175	850-875	±14	850	18	15	590	277,00
133-176	875-900	±14	875	18	15	600	281,00
133-177	900-925	±15	900	18	15	620	287,00
133-178	925-950	±15	925	18	15	630	292,00
133-179	950-975	±15	950	18	15	650	298,00
133-180	975-1000	±16	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

wetric		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, 133-145133-146 133-147, 133-148, 133-149133-150, 133-151, 133-152	1655	1420,00



.

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



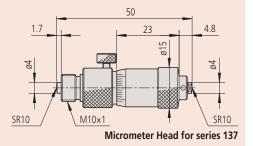
Accuracy	±(3+n+L/50) μm n = Number of extensions, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish, ø15 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	13 mm
Extension	ø12,5 mm
Graduation	0,01 mm
Delivered	Including box, key, extensions, micrometer head

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)	13,00
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)	37,00
980515	Extension 200 mm (metric/ hardened type)	42,00
980517	Extension 300 mm (metric/ hardened type)	47,00
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)	42,00
980529	Extension 200 mm (metric/ carbide type)	52,00
980531	Extension 300 mm (metric/ carbide type)	57,00



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	50-1000	8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)	845	668,00
137-210	50-1500	10 (13, 25, 50 (2 pcs.) 100, 200 (3 pcs.), 300 mm (2 pcs.))	1225	848,00

		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	50-1000	8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)	845	552,00
137-205	50-1500	10 (13, 25, 50 (2 pcs.), 100, 200 (3 pcs.), 300 mm (2 pcs.))	1225	723,00

155





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.

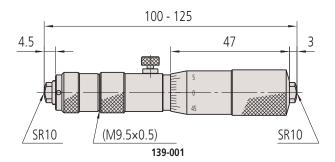




ΝЛ	etr	
171	cu	IC I
	сu	iC .

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	100-1300	6 (25, 50, 100, 200, 400 mm (2 pcs.))	1090	852,00
139-176	100-1700	7 (25, 50, 100, 200, 400 mm (3 pcs.))	1390	1000,00
139-177	100-2100	8 (25, 50, 100, 200, 400 mm (4 pcs.))	1690	1112,00
139-203	40-300	8 (10, 20, 30, 60, 90, 110, 120, 130 mm)	240	321,00
139-204	100-1000	10 (25, 50, 75, 150, 225, 300, 350, 400, 425, 450 mm)	770	440,00





Specifications

specifications	
Accuracy	±(3+n+L/50) µm ±(6+L/50) µm (139-203, 139-204) n = number of extensions, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish, ø18 mm ø13 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	ø17 mm ø10 mm (139-203, 139-204)
Graduation	0,01 mm
Delivered	Including box, key, extensions, micrometer head

Consumable spares

No. Description Drive C				
No.	Description	Price €		
981003	Extension 25 mm	31,00		
	139-173177			
981005	Extension 50 mm	37,00		
	139-173177			
981007	Extension 100 mm	73,00		
	139-173177			
981009	Extension 200 mm	83,00		
	139-173177			
981011	Extension 400 mm	98,00		
	139-173177			
981981	Extension 10 mm 139-203	21,60		
981982	Extension 20 mm 139-203	4,30		
981983	Extension 30 mm 139-203	24,80		
981984	Extension 60 mm 139-203	4,30		
981985	Extension 90 mm 139-203	4,30		
981986	Extension 110 mm 139-203	22,90		
981987	Extension 120 mm 139-203	23,00		
981988	Extension 130 mm 139-203	23,10		
981991	Extension 25 mm 139-204	18,20		
981992	Extension 50 mm 139-204	22,30		
981993	Extension 75 mm 139-204	20,70		
981994	Extension 150 mm 139-204	23,00		
981995	Extension 225 mm 139-204	25,30		
981996	Extension 300 mm 139-204	27,20		
981997	Extension 350 mm 139-204	27,20		
Optional ac	cessories for 139-173 to 139-1	77		
139-001	Analogue inside micrometer	194,00		
	for 139-17x			
Optional ac	cessories for 139-203/204			
139-003	Analogue inside micrometer	113,00		
	for 139-203			
139-005	Analogue inside micrometer	118,00		
	for 139-204			

Mitutoyo

Accuracy	±(7+n+L/50) μm n = number of extensions, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish, ø21 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	50 mm
Extension	ø32 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

Tubular Inside Micrometer with Extensions

Series 140

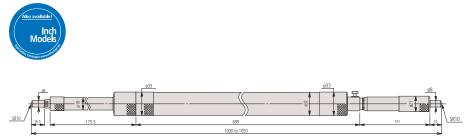
- This is a long range inside micrometer that offers you the following benefits:
- It has a long measuring range of up to 5000mm
- Extension tube type design.
- Measuring surfaces in carbide, micro-lap finish



140-158

Metric

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
140-157	1000-2000	5 (50, 100 (2 pcs.) 200, 500 mm)	3700	2730,00
140-158	1000-3000	6 (50, 100 (2 pcs.), 200, 500, 1000 mm)	5200	3030,00
140-159	1000-4000	7 (50, 100 (2 pcs.), 200, 500, 1000 mm (2 pcs.))	6700	4069,00
140-160	1000-5000	8 (50, 100 (2 pcs.) 200, 500, 1000 mm (3 pcs.))	8260	5026,00



Micrometer Head for series 140



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 springmounted 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.

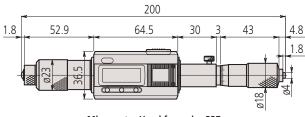




Metric

No.	Range [mm]	Extension rods	Mass [g]	Price [€]
337-301	200-1000	6 (25, 50, 100 (2 pcs.), 200, 300 mm)	1040	1390,00
337-302	200-1500	7 (25, 50, 100, 200, 300 (3 pcs.))	1410	1483,00





Micrometer Head for series 337





Functions	Series 337
ZERO/ABS	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
2 x PRESET	0
Low voltage alarm	@
Function lock	0
Data output	@

Specifications

Accuracy	±(3+n+L/50) μm n = Number of extensions, L = Maximum measuring length (mm) (excluding quantizing error)
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	25 mm
Extension	ø12,5 mm
Digital step	0,001 mm
Delivered	Including box, key, 1 battery, extensions, micrometer head
Display	LCD, character height 7,5 mm

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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)	1025,00
938882	Battery SR44	6,00



Functions	Series 339
ZERO/ABS	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
2 x PRESET	0
Low voltage alarm	<i>i</i>
Function lock	0
Data output	

Accuracy	±(3+n+L/50) μm n = number of extensions, L = Maximum measuring length (mm) (excluding quantizing error)
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring span	25 mm
Extension	ø17 mm
Digital step	0,001 mm
Delivered	Including box, key, 1 battery, extensions, micrometer head
Display	LCD, character height 7,5 mm

Optional accessories

No.	Description	Price €
05CZA662	Digimatic cable with data switch (1 m)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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 (Metric)	1025,00
938882	Battery SR44	6,00
981003	Extension 25 mm 139-173177	31,00
981005	Extension 50 mm 139-173177	37,00
981007	Extension 100 mm 139-173177	73,00
981009	Extension 200 mm 139-173177	83,00
981011	Extension 400 mm 139-173177	98,00
339-102	Digimatic Tubular Inside Micrometers	1025,00



Digimatic Tubular Inside Micrometer with Extensions

Series 339

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

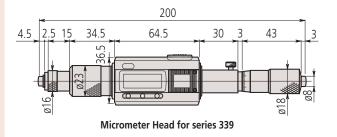
- Interchangeable extensions in a hollow pipe design.
- Carbide measuring faces.
- Digimatic type with data output.
- It has excellent resistance against water and dust (IP65 protection level) enabling you to use it in machining situations that include splashing coolant fluid.



339-301

wetric				
No.	Range [mm]	Extension rods	Mass [g]	Price [€]
339-301	200-1000	5 (25, 50, 100, 200, 400 mm)	1050	1494,00
339-302	200-2000	8 (25, 50, 100, 200 (2 pcs.), 400 mm (3 pcs.))	1800	1710,00









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.



extension rods supplied

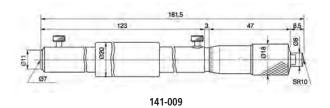
141-011 200-225



141-205

Metric							
No.	Range [mm]	Head adjust- ment range [mm]	Interchangeable rod	Extension collar	Accessories: inside micro- meter (standard in the set) No.	Mass [g]	Price [€]
141-001	25-32	7	-	-	-	20	60,00
141-101	25-50	7	2 (13 mm)	1 (6 mm)	141-001	60	170,00
141-025	50-63	13	-	-	-	40	94,00
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
141-009	200-225	25	-	-	-	220	134,00
141-117	200-500	25	3 (100 mm)	2 (25/50 mm)	141-009	520	403,00
141-118	200-1000	25	8 (100 mm)	2 (25/50 mm)	141-009	1940	610,00

Metric		With carbide mea	suring surface				
No.	Range [mm]	Head adjust- ment range [mm]	Interchangeable rod	Extension collar	Accessories: inside micro- meter (standard in the set) No.	Mass [g]	Price [€]
141-003	25-32	7	-	-	-	20	118,00
141-103	25-50	7	2 (13 mm)	1 (6 mm)	141-003	60	205,00
141-027	50-63	13	-	-	-	40	105,00
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

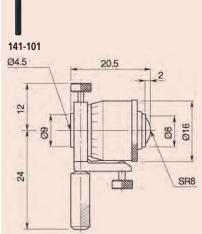


25

Specifications

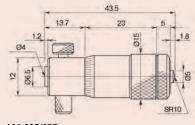
•	
Accuracy	±(6+L/50) μm, L = Maximum measuring length (mm)
Scale	Thimble and sleeve satin chrome finish
Measuring surfaces	Hardened
Measuring spindle	Spindle pitch 0,5 mm with spindle lock
Graduation	0,01 mm
Delivered	Including box, key







220 121,00



141-025/027

Mitutoyo

Accuracy	4 μm 6 μm for range 10-18 mm
Repeatability	2 μm
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.

Quick stand (optional) No. 215-120-10

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.





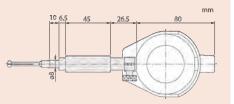
Plastic cover for Dial Indicator including

0,95 - 4 mm

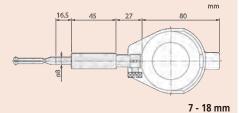
Metric

543-264B (optional)

mm



3,7 - 7,3 mm



Range No. Dial Price Number of anvils Graduation Measuring depth No. Indicator [€] [mm] 526-173-1 0,95-1,55 0,01 mm 2046SB 11,5 mm 5 706,00 526-163-1 2046SB 17,5-22,5 mm (1) 9 839,00 1,5-4 0,01 mm 526-153-1 2046SB 7 654,00 3,7-7,3 0,01 mm 32 mm 526-126 7-10 0,01 mm 2046SB 40-56 mm (2) 288,00 6 526-127 10-18 0,01 mm 2046SB 62 mm 314,00 8 526-172-1 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 2109SB-10 32 mm 7 708,00 0,001 mm 526-124 7-10 40-56 mm (2) 342,00 0,001 mm 2109SB-10 6 526-125 10-18 0,001mm 2109SB-10 368,00 62 mm 8

161

 $^{(1)}$ Holes Ø \leq 2,25 mm : measuring depth 17,5 mm / holes Ø > 2,25 mm : measuring depth 22,5 mm $^{(2)}$ Holes Ø \leq 8 mm : measuring depth 40 mm / holes Ø > 8 mm : measuring depth 56 mm



For details on indicators suitable for use with this instrument, refer to Dial Gauges section.



Bore Gauge for Extra Small Holes

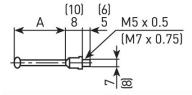
Series 526

Positioning of Bore Gauges

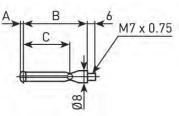
Bore Gauges for small holes feature contact points with a large curvature so they can be easily positioned for measuring the true diameter (in the direction a - a') of a hole. Bore Gauges (except those for small holes) are designed for easy alignment with the axis of the diameter to be measured.

Replacement contact points for Series 526

Replacement contact points						
No.	Range [mm]	Marking on the measuring head	A [mm]	B [mm]	C [mm]	Price [€]
	[mm]	(engraved)	[mm]	[mm]	[mm]	[€]
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			73,00
201420	1,8-2,2	2	17,5			73,00
201421	2,05-2,45	2,25	17,5			73,00
201422	2,25-2,75	2,5	22,5			73,00
201423	2,5-3	2,75	22,5			73,00
201424	2,75-3,25	3	22,5			73,00
201425	3-3,5	3,25	22,5			73,00
201426	3,25-3,75	3,5	22,5			73,00
201427	3,5-4	3,75	22,5			75,00
201428	3,7-4,3	4	32			64,00
201429	4,2-4,8	4,5	32			64,00
201430	4,7-5,3	5	32			64,00
201431	5,2-5,8	5,5	32			64,00
201432	5,7-6,3	6	32			64,00
201433	6,2-6,8	6,5	32			64,00
201434	6,7-7,3	7	32			64,00

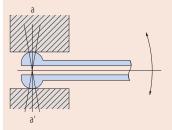


526-162-1, 526-163-1, 526-172-1, 526-173-1 () 526-152-1, 526-153-1



526-124, 526-125, 526-126, 526-127







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.

Bore Gauge for Small Holes

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%.

6 - 10mm



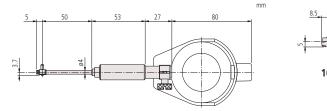


10 - 18.5mm

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



Motrie





Mitutoyo

6-10 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%.





Plastic cover for

			••••	•••
Dial	Indica	tor	incl	uding

555550	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.



	3
511-713	3

netric							
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



Motric

Mitutoyo

Specifications

point

Accuracy 2 µm Repeatability 0,5 µm 18 - 60 mm: 1,2 mm Stroke of contact 50 - 400 mm: 1,6 mm Delivered Including box, dial indicator, plastic cover for indicator

Price €

464,00

180,00

201,00

Optional accessories

Description

function

18-35 mm

ABSOLUTE Digimatic

Indicator with Min Hold

Extension 125 mm for range

Extension 250 mm for range

No.

543-264B

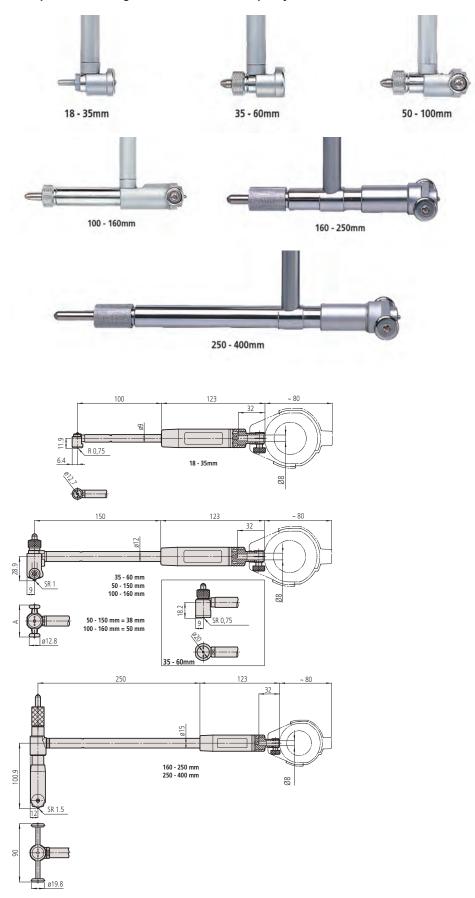
953549

953550

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

21 in the



Indicator 2109SB-10 included Indicator 543-264B included in the set 511-922 in the set 511-925

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



Metric

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 21DZA232J : 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.

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

Bore Gauge with Micrometer Head

Series 511

This is a micrometer head that enables measurements without interchangeable anvils. It offers you the following benefits:

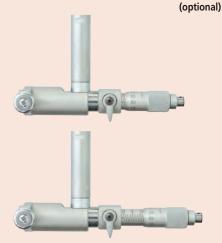
- A long plunger stroke gives you amazing accuracy.
- Contact points are carbide (> 18mm range), giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.
- Wide measuring range with sub-anvils.



Example of set

wetric								
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	1065,00
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	1010,00





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.

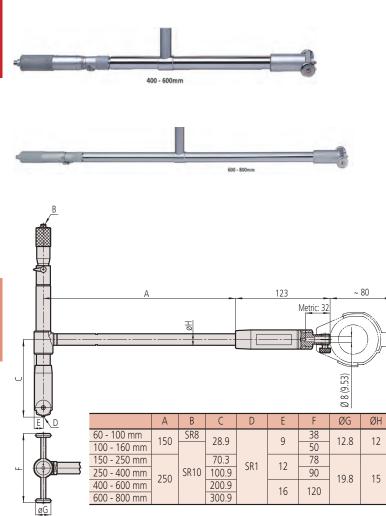
Mitutoyo

543-264B

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 1000mm.
- 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 [€]								
.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



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	Price €
212556	Wrench for Bore Gauges (range ≥35 mm)	3,20
102148	Wrench for Bore Gauges (range ≤35 mm)	0,90



Accuracy	2 µm
Repeatability	0,5 μm
Stroke of contact	18 - 60 mm: 1,2 mm
point	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
	A BARRE	Children



Bore Gauge Short Length Type

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%.



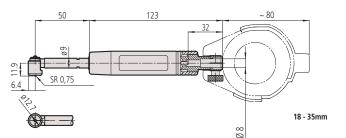
Example of set

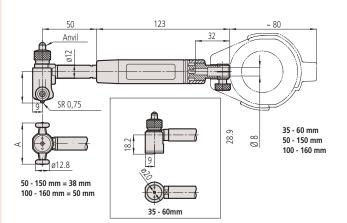


No.	Range [mm]	Graduation	No. Dial Indicator	Measuring depth	Number of anvils	Mass [g]	Price [€]
511-771	18-35	0,001 mm	2109SB-10	50 mm	9	320	296,00
511-772	35-60	0,001 mm	2109SB-10	50 mm	6	380	306,00
511-773	50-150	0,001 mm	2109SB-10	50 mm	11	400	321,00
511-774	100-160	0,001 mm	2109SB-10	50 mm	13	460	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



Metric





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.

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.





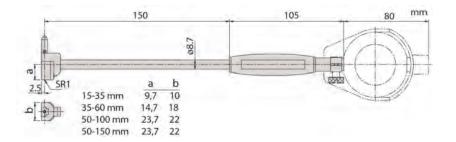
15 - 35mm

P

50 - 100mm, 50 - 150mm

Metric Range No. Dial Mass Price Graduation Measuring depth No. Indicator [€] [mm] [g] 511-411 15-35 0,01 mm 2046SB 150 mm 735 422,00 150 mm 2046SB 438,00 **511-412** 35-60 0,01 mm 760 2046SB 150 mm 489,00 511-413 50-100 0,01 mm 785 **511-414** 50-150 2046SB 150 mm 815 597,00 0.01 mm 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 2109SB-10 150 mm 820 651,00 **511-424** 50-150 0,001 mm





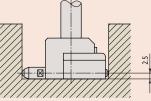
Specifications

•	
Accuracy	5 μm
Repeatability	2 µm
Delivered	Including box, dial indicator, plastic cover for indicator









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.

Mitutoyo

Functions	Series 543
PRESET (x3)	0
GO/±NG judgement	<i>i</i>
Digimatic data output	0
ON/OFF	۵
DATA/HOLD	0
Min. Value Hold	i i i i i i i i i i i i i i i i i i i

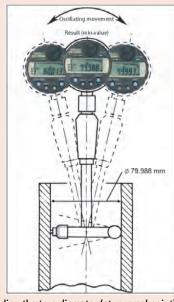
specifications	
Accuracy	Refer to the list of specifications (excluding quantizing error)
Scale	Capacitance ABSOLUTE linear encoder
Max. response speed	Unlimited
Stem Ø	8 mm (ISO/JIS type)
Contact point	Carbide ball, thread M 2,5 x 0,45 mm (ISO/JIS type)
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Sampling frequency	50 times/sec*
Measuring force	\leq 1,5 N
Power supply	2 batteries SR-44
Battery life	approx. 2000 hours
Display	LCD Character Height 7,5 mm

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	6,00



Finding the true diameter (at reversal point) with a 2-point bore gauge

*if the detecting speed is > 50 $\mu\text{m/s}$ the peak value may not be displayed correctly.

ABSOLUTE Digimatic Indicator for Bore Gauges

Series 543

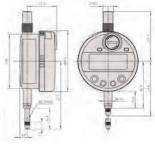
This indicator is exclusively designed for inside diameter measurement applications on bore gauges. The ABSOLUTE Digimatic Indicator ID-C offers you the following benefits:

- 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.



Metric					
No.	Range [mm]	Digital step	Accuracy [mm]	Mass [g]	Price [€]
543-264B	12,7	0,001 mm	0,003	160	464,00





543-264B



171

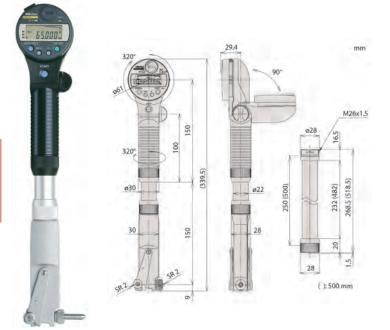
ABSOLUTE Digimatic Bore Gauge

Series 511

This is a Digimatic bore gauge that lets you take digital inside measurements with amazing accuracy even at the maximum 2m depth.

The ABSOLUTE Digimatic Bore Gauge offers you the following benefits:

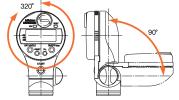
- Precision bore gauge lets you easily measure the diameter of deep bores without loss of accuracy.
- You can store and recall up to 3 sets of master values and upper/lower tolerance values at the push of a button.
- GO/±NG judgement can be set.
- Up to max. four extension rods (250 or 500mm) can be used.



511-501

Metric				
No.	Range [mm]	Number of anvils	Mass [g]	Price [€]
511-501	45-100	12	500	1100,00
511-502	100-160	13	570	1215,00

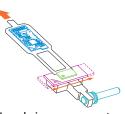




The display can be rotated 320° and turned 90°. The handle can also be rotated 320°.



Up to 3 sets of reference values can be preset, including top/ bottom tolerance limits.



Even during measurement with a 2 m extension the accuracy is secured, as measured-value transmission is electronic.



Functions	Series 511
PRESET (x3)	9
GO/±NG judgement	@
Digimatic data output	
ON/OFF	@
DATA/HOLD	
Min. Value Hold	<i>i</i>
Specifications	
Accuracy	0,003 mm (excluding quantizing error)
Repeatability	±1 digit
Measuring force	≤5 N
Sampling Frequency	50 times/sec*
Stroke of contact point	1,2 mm
Digital step	0,001 mm
Power supply	2 batteries SR-44
Battery life	approx. 2000 hours
Display	LCD Character Height 7,5 mm

Optional accessories

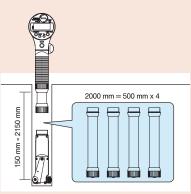
No.	Description	Price €
21DZA081	Extension rod 500 mm	494,00
21DZA089	Extension rod 250 mm	433,00
905338	Digimatic cable (1 m)	28,00
905409	Digimatic cable (2 m)	34,00
02AZD790F	Connecting cable U-Wave	85,00
06ADV380F	USB Input Tool Direct cable (2 m)	100,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00
MI (Main 5000 15 m	



The ABSOLUTE Digimatic Bore Gauge detects the minimum value (true diameter) and holds it automatically.



Four extension rods (500 mm each) connected together provide a 2 m extension.

*if the detecting speed is > 50 μ m/s the peak value may not be displayed correctly

Mitutoyo

172

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

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						

Bore Gauge Checker

Series 515

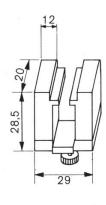
- For setting 2-point bore gauges series 511.
- The Bore Gauge Checker allows easy setting of dial bore gauges with ranges of 18 mm through 400 mm using gauge blocks.





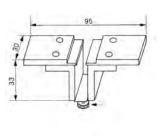
+ gauge block (optional)

No.	Applicable Range	Mass [kg]	Price [€]
515-590	18-400 mm	4,51	1329,00



940088

940089



940090





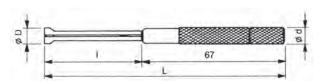
Gauge Set

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]	Ød [mm]	ØD	Mass [g]	Price [€]
154-902	154-101 154-102 154-103 154-104	3-5 mm 5-7,5 mm 7,5-10 mm 10-13 mm	90 97,6 108 108	5,5 5,5 8,5 8,5	2,8-5,2 4,8-7,8 7,3-10,3 9,8-13,2	17	113,00





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.



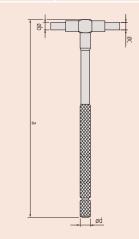
Metric								
No.	Gauges	included	Range	a [mm]	b [mm]	c [mm]	d [mm]	Price [€]
155-905	155- 155- 155- 155-		8-12,7 mm 12,7-19 mm 19-32 mm 35-54 mm 54-90 mm 90-150 mm	110 110 110 150 150 150	4 5 7,5 7,5 7,5	3 3,5 3,5 6 6 6	5 5,5 5,5 8 8 8 8	258,00



Specifications Delivered Including plastic wallet

Specifications Delivered

Including plastic wallet



Mitutoyo

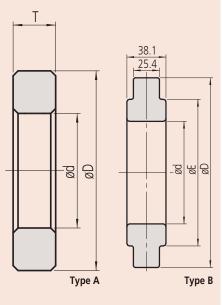
Specifications Cylindricity

1 µm for ø1-60 mm 1,5 μm for ø62-90 mm 2 µm for ø100-150 mm 2,5 µm for ø175-225 mm 3 µm for ø250-300 mm





177-139



Tolerance from nominal diameter is ±0,01 mm up to 45 mm, and \pm 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	Туре	ØD	ØE	T	Price
177-220	Steel	1 mm	A	[mm] 20	[mm]	[mm] 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	12 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
177-433	Steel	40 mm 45 mm	A	85		15	170,00
177-434	Ceramic	45 mm 45 mm	A	85		15	376,00
177-434	Steel	45 mm	A	85		20	170,00
177-140	Steel	60 mm	A	112		20	225,00
177-292	Steel	60 mm	A	112		20	235,00
177-147	Steel	62 mm	A	112		20	235,00
177-147	Steel	70 mm 75 mm	A	125		20 25	247,00
177-294	Steel	75 mm 80 mm	A	125		25 25	283,00
177-294	Steel	80 mm 87 mm	A	125			
177-148	Steel	87 mm 90 mm	A	140		25 25	324,00 324,00
177-296	Steel	100 mm	A	160	160	25	417,00
177-298	Steel	125 mm	B	210	168	38,1	788,00
177-300	Steel	150 mm	В	235	187	38,1	829,00
177-302	Steel	175 mm	В	260	215	38,1	994,00
177-304	Steel	200 mm	В	311	244	38,1	1566,00
177-306	Steel	225 mm	В	337	264	38,1	1751,00
177-308	Steel	250 mm	В	362	290	38,1 38,1	1895,00
177-310	Steel	275 mm	В	413	321		2184,00

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

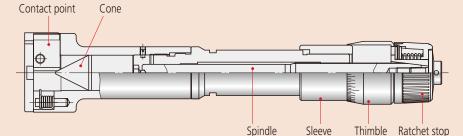


Quick Guide to Precision Measuring Instruments



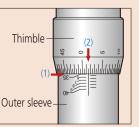
Internal Micrometers

Nomenclature



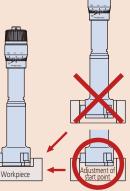
How to Read the Scale

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

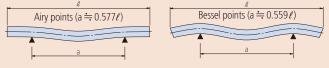
When Holtest is used, the measured value differs between measurement across the anvil and the measurement only at the tip of the anvil due to the product mechanism. Adjust the start point under the same condition before measurement.



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.



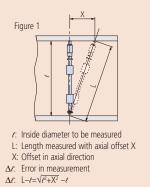
The ends of a bar (or micrometer) can be made exactly horizontal by spacing the two supports symmetrically as shown above. These points are known as the 'Airy Points' and are commonly used to ensure that the ends of a length bar are parallel to one another, so that the length is well defined.

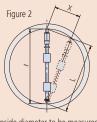
The change in length of a bar (or micrometer) due to bending can be minimized by spacing the two supports symmetrically as shown above. These points are known as the 'Bessel Points' and may be useful when using a long inside micrometer.

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).

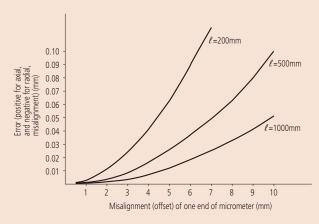
Misalignment Errors





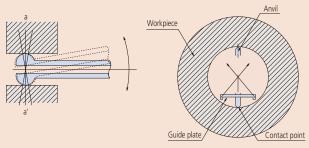
 $\begin{array}{l} \ell: \mbox{ Inside diameter to be measured} \\ L: \mbox{ Length measured with radial offset X} \\ X: \mbox{ Offset in radial direction} \\ \Delta \ell: \mbox{ Error in measurement} \\ \Delta \ell: \mbox{ L} - \ell = \sqrt{\ell^2 - X^2} - \ell \end{array}$

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).



176

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Calipers







Absolute Digimatic Caliper Page 178

Analog Caliper Page 192

Special Puropose Caliper Page 202

Caliper Accessories Page 218



177

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.

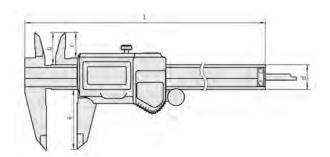


500-706-11

Metric	V	Vithout thum	nb 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	0	233	40	21	16,5	16	164	205,00
500-707-11	0-200	flat		290	50	24,5	20	16	194	225,00
500-717-11	0-200	flat	0	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	0	404	64	27,5	21,8	20	345	370,00

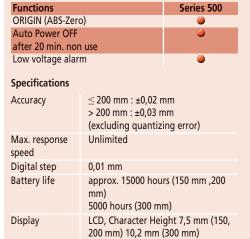
Metric	V	Vith thumb r	oller							
No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-702-10	0-150	flat		233	40	21	16,5	16	164	175,00
500-712-10	0-150	flat	0	233	40	21	16,5	16	164	225,00
500-719-10	0-150	Ø 1,9 mm	0	233	40	21	16,5	16	164	226,00
500-703-10	0-200	flat		290	50	24,5	20	16	194	249,00
500-713-10	0-200	flat	0	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	0	404	64	27,5	21,8	20	345	407,00











In a case, including 1 battery

Optional accessories

Delivered

No.	Description	Price €					
05CZA624	Digimatic cable with data switch (1 m)	71,00					
05CZA625	Digimatic cable with data switch (2 m)	80,00					
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	45,00					
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	6,00



Beam 150 and 200 mm or 300 mm



050083-10



Functions	Series 500
ORIGIN (ABS-Zero)	0
Auto Power OFF)
after 20 min. non use	
Low voltage alarm	0

Accuracy	\leq 200 mm : ±0,02 mm > 200 mm : ±0,03 mm (excluding quantizing error)
Max. response speed	Unlimited
Depth bar	Flat
Digital step	0,01 mm
Battery life	approx. 15000 hours
Display	LCD, Character height 7,5 mm
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	45,00
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	6,00	





ABSOLUTE Digimatic Caliper IP67 with 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.

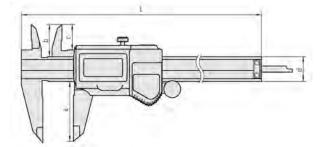


Metric	C	arbide-tipped	jaws for outside	e/inside	measur	ement				
No.	Range [mm]	Data output	Thumb roller	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-727-11	0-150	0		233	40	21	16,5	16	164	397,00
500-723-10	0-150	0	0	233	40	21	16,5	16	168	427,00
500-728-11	0-200	0		290	50	24,5	20	16	194	453,00
500-724-10	0-200	0	0	290	50	24,5	20	16	198	484,00

Metric Carbide-tipped jaws for outside measurement Range Data output Thumb roller , L, a, d Mass b С No

	[mm]			[mm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]	
500-721-10	0-150	0	0	233	40	21	16,5	16	168	330,00	
500-722-10	0-200	0	0	290	50	24,5	20	16	198	371,00	





Price



ABSOLUTE AOS Digimatic Caliper

Series 500

These Digimatic calipers allow you to take reliable measurements and offer you the following benefits:

- Now equipped with the same AOS (Advanced Onsite Sensor) induction type encoder used in top-of-the-line ABS coolant-proof calipers.
- Thanks to the adoption of the electromagnetic induction type ABS encoder, this caliper can be used without concern for contamination on the scale face during measurement. Detection signal is not affected by dirt (water, oil, etc.) on surface of a scale (except 300mm type).
- The slider provides smooth, stable and comfortable operation.
- Character height: 9mm (alleviation of fatigue with the high-contrast LCD)
- The ABS (ABSOLUTE) scale requires no origin setting after power-on and also has no limit to response speed.
- Extraordinary battery life



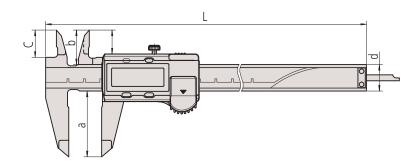
500-181-30

Metric	١	Nithout thum	nb roller							
No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-180-30	0-100	Ø 1,9 mm		182	40	21	16,5	16	142	191,00
500-201-30	0-100	Ø 1,9 mm	0	182	40	21	16,5	16	143	202,00
500-184-30	0-150	Ø 1,9 mm		233	40	21	16,5	16	164	109,00
500-203-30	0-150	Ø 1,9 mm	0	233	40	21	16,5	16	168	140,00
500-181-30	0-150	flat		233	40	21	16,5	16	164	109,00
500-161-30	0-150	flat	0	233	40	21	16,5	16	164	139,00
500-182-30	0-200	flat		290	50	24,5	20	16	194	170,00
500-162-30	0-200	flat	0	290	50	24,5	20	16	194	198,00
500-205	0-300	flat	0	404	64	27,5	22	20	350	359,00

Metric

Metric	۷	Vith thumb r	oller							
No.	Range [mm]	Depth bar	Data output	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
500-150-30	0-100	Ø 1,9 mm	0	182	40	21	16,5	16	143	221,00
500-151-30	0-150	flat	9	233	40	21	16,5	16	164	153,00
500-158-30	0-150	Ø 1,9 mm	0	233	40	21	16,5	16	164	153,00
500-152-30	0-200	flat	0	290	50	24,5	20	16	194	218,00
500-153	0-300	flat	0	404	64	27,5	22	20	350	394,00







Functions	Series 500
ORIGIN (ABS-Zero)	0
ZERO/ABS	<i>i</i>
ON/OFF	0
Low voltage alarm	@

specifications	
Accuracy	\leq 200 mm : ±0,02 mm /> 200 mm : ±0,03 mm (excluding quantizing error)
Digital step	0,01 mm
Max. response speed	Unlimited
Battery life	approx. 18000 hours
Display	LCD, Character Height 9 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)	44,00
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	45,00
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	6,00



Round depth bar type



050083-10

Mitutoyo

Functions	Series 500
ORIGIN (ABS-Zero)	0
ZERO/ABS	<i>i</i>
ON/OFF	0
Low voltage alarm	@
Depth bar	

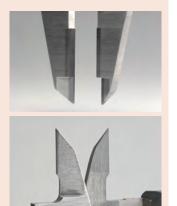
Accuracy	\leq 200 mm : ±0,02 mm > 200 mm : ±0,03 mm (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 18000 hours
Display	LCD, Character Height 9 mm
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
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	45,00
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	6,00



Carbide-tipped jaws



050083-10

ABSOLUTE AOS Digimatic Caliper with Carbide Tipped Jaws

Series 500

These Digimatic calipers have carbide-tipped jaws and allow you to take reliable measurements and offer you the following benefits:

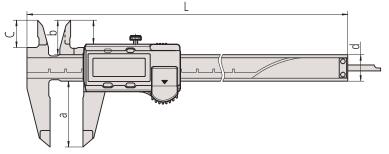
- Thanks to the adoption of the electromagnetic induction type ABS encoder, this caliper can be used without concern for contamination on the scale face during measurement. Detection signal is not affected by dirt (water, oil, etc.) on surface of a scale.
- The slider provides smooth, stable and comfortable operation.
- Character height: 9mm (alleviation of fatigue with the high-contrast LCD)
- The ABS (ABSOLUTE) scale requires no origin setting after poweron and also has no limit to response speed.
- 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 [€]
500-234-30	0-150	0		233	40	21	16,5	16	168	398,00
500-155-30	0-150	0	0	233	40	21	16,5	16	168	430,00
500-236-30	0-200	0		290	50	24,5	20	16	198	456,00
500-157-30	0-200	0	0	290	50	24,5	20	16	198	488,00

Aetric 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 [€]
500-233-30	0-150	0		233	40	21	16,5	16	168	234,00
500-154-30	0-150	0	0	233	40	21	16,5	16	168	266,00
500-235-30	0-200	0		290	50	24,5	20	16	198	276,00
500-156-30	0-200	0	0	290	50	24,5	20	16	198	308,00





181

ABSOLUTE°

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.



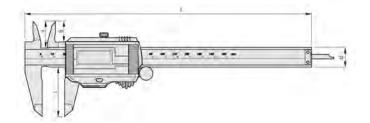
500-772

Metric		Without th	numb 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	0	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	0	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	0	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	9	290	24,5	20	50	16	210	336,00







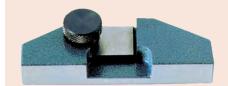


5@LAR

Functions		Series 500
ORIGIN (ABS-Zero)		0
Specifications		
Accuracy	±0,02 mm (excluding qu	uantizing error)
Max. response speed	Unlimited	
Power	Solar cell	
Digital step	0,01 mm	
Display	LCD; Charact	er Height 7,5 mm
Delivered	In a case	

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	45,00
050084-10	100 base for depth measurement for models up to 200	50,00



050083-10

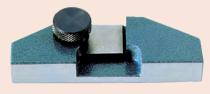
Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Functions		Series 500		
ORIGIN (ABS-Zero)		۲		
Specifications				
Accuracy	±0,02 mm (excluding quantizing error)			
Max. response speed	Unlimited			
Power	Solar cell			
Digital step	0,01 mm			
Display	LCD; Chara	cter 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)	44,00
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	45,00
050084-10	100 base for depth measurement for models up to 200	50,00



050083-10

ABSOLUTE Digimatic Solar Caliper

Series 500

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:



ABSOLUTE°

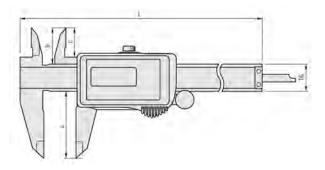
• You can operate it in just 60 lux ambient lighting.



Metric Without thumb roller Range L а b с Mass Price Depth bar Data output No. [mm] [mm] [mm] [mm] [mm] [g] [€] 500-457 0-150 flat 233 40 21 16,5 150 139,00 180 500-458 0-200 flat 290 50 24 20 185,00

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	0	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	0	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	0	290	50	24	20	200	237,00





183



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.

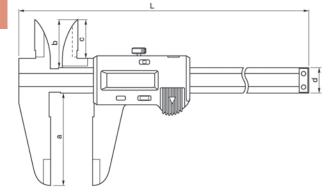


500-500-10

Metric

No.	Range [mm]		a [mm]	b [mm]	c [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	1485,00





ABSOLUTE°

Functions	Series 500
ORIGIN (ABS-Zero)	0
ZERO/ABS	<i>i</i>
ON/OFF	0
Low voltage alarm	@
Data output	0

Specifications

•	
Accuracy	\leq 600 mm : ±0,05 mm \leq 1000 mm : ±0,07 mm (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 20000 hours
Display	LCD; Character Height 10 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)	44,00
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	6,00

Mitutoyo

	Serie	Series 550						
Functions	550-203-10 up to 550-207-10	550-301-10	550-331-10					
ORIGIN (ABS-Zero)	0	0	۲					
OFFSET*		0	0					
ON/OFF	0							
Auto Power OFF		0	0					
after 20 min. non use								
Low voltage alarm	0	0	0					
Data output	<i>i</i>	0	0					
PRESET								

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 3 years (200 mm), 1 year (300 mm), 3,5 years (>300 mm)
Display	LCD, Character Height 7,5 mm (200 mm) 10,2 mm (300 mm) 10 mm (> 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)	44,00
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)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00



*10 mm

ABSOLUTE Digimatic Caliper with Nib Style Jaws

Series 550

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.

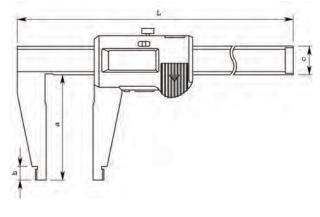


Metric										
No.	Range [mm]	Accuracy [mm]	Inside measuring from	Remarks	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
550-301-10	0-200	±0,03	10 mm	IP67	290	60	8	16	180	330,00
550-331-10	0-300	±0,04	10 mm	IP67	403	75	12	20	380	397,00

Metric									
No.	Range [mm]	Accuracy [mm]	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]	Price [€]
550-203-10	0-450	±0,05	20 mm	630	100	18	25	1110	587,00
550-205-10	0-600	±0,05	20 mm	780	100	18	25	1290	664,00
550-207-10	0-1000	±0,07	20 mm	1240	140	24	32	3350	1133,00

185









Round surfaces of jaws for measuring inside dimensions

WWW.

200/300 mm

ABSOLUTE[®]



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.



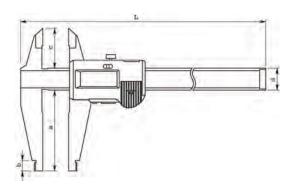
Metric

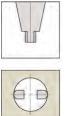
No.	Range [mm]	Inside measuring from	Accuracy [mm]	Remarks	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
551-301-10	0-200	10 mm	±0,03	IP67	290	60	8	30	16	196	355,00
551-331-10	0-300	10 mm	±0,04	IP67	403	90	10	40	20	420	395,00

Metric

No.	Range [mm]	Inside measuring from	Accuracy [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
551-204-10	0-500	20 mm	±0,06	680	150	18	56	25	1060	740,00
551-206-10	0-750	20 mm	±0,06	963	150	18	56	25	1410	1020,00
551-207-10	0-1000	20 mm	±0,07	1230	150	20	56	32	3430	1235,00



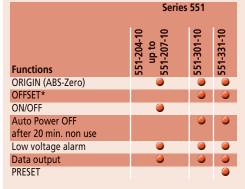




Round surface of jaws for measuring inside dimensions



ABSOLUTE



Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 3 years (200 mm), 1 years (300 mm), 3,5 year (>300 mm)
Display	LCD; Character Height 7,5 mm (200 mm) 10,2 mm (300 mm) 10 mm (> 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)	44,00
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)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00



*10 mm

Mitutoyo

Functions	Series 552
ORIGIN (ABS-Zero)	0
OFFSET*	i
DATA/HOLD	0
Auto Power OFF)
after 20 min. non use	
Low voltage alarm	0
Data output)
PRESET	

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response	Unlimited
speed	
Digital step	0,01 mm
Battery life	approx. 5000 hours
Display	LCD; Character Height 10 mm
Delivered	In a case, including 1 battery

Optional accessories

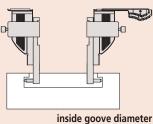
No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00
914055	Pair of jaws for measuring hole centre-to-centre dimensions (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	6,00



hole center to center



inside goove diameter * 20mm

ABSOLUTE Digimatic Carbon Fibre Caliper IP66

Series 552

This is a lightweight standard model of Digimatic caliper with steel jaws.

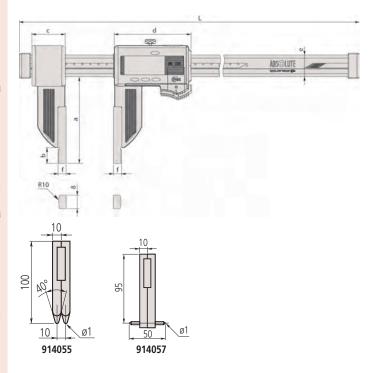
It offers you the following benefits:

- 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.



Metric												
No.	Range [mm]	Accuracy [mm]	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	20 mm	640	100	18	41,2	91,8	25	10	715	886,00
552-303-10	0-600	±0,04	20 mm	790	100	18	41,2	91,8	25	10	790	979,00
552-304-10	0-1000	±0,05	20 mm	1230	150	24	62,8	113,8	32	10	1760	1432,00
552-305-10	0-1500	±0,09	20 mm	1740	150	24	62,8	113,8	32	10	2160	1823,00
552-306-10	0-2000	±0,12	20 mm	2250	150	24	62,8	113,8	32	10	2560	2328,00





187

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Mitutoyo

Dust- and Water-Protected

ABSOLUTE

66

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.

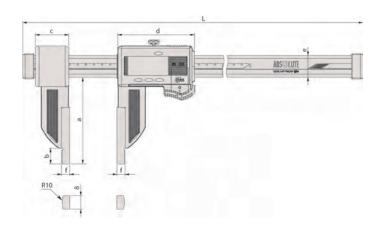


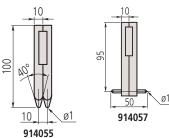


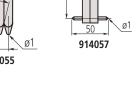
No.	Range	Accuracy	Inside measuring	L	а	b	С	d	е	f	Mass	Price
NO.	[mm]	[mm]	from	[mm]	[g]	[€]						
552-155-10	0-450	±0,04	20 mm	640	100	18	41,2	91,8	25	10	715	1329,00
552-156-10	0-600	±0,04	20 mm	790	100	18	41,2	91,8	25	10	790	1442,00



Metric













Functions	Series 552
ORIGIN (ABS-Zero)	0
OFFSET*	i
DATA/HOLD	0
Auto Power OFF	i
after 20 min. non use	
Low voltage alarm	0
Data output	i
PRESET	0

Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 5000 hours
Display	LCD, Character Height 10 mm
Delivered	In a case, including 1 battery

Optional accessories

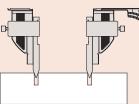
0

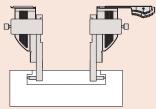
0

No.	Description	Price €					
05CZA624	Digimatic cable with data switch (1 m)	71,00					
05CZA625	Digimatic cable with data switch (2 m)	80,00					
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	6,00





* 20mm

Functions	Series 552
ORIGIN (ABS-Zero)	0
OFFSET*	9
DATA/HOLD	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
Low voltage alarm	0
Data output	9
PRESET	0

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 5000 hours
Display	LCD, Character Height 10 mm
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00



*	metric
\leq 600mm	20mm
≤ 1000mm	20mm

ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Extra Long Jaws

Series 552

This is a lightweight standard model of Digimatic caliper with extra-long jaws.

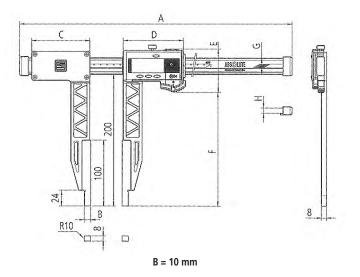
- It offers you the following benefits:
- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant 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.



Metric

No.	Range [mm]	Accuracy [mm]	Inside measuring from	A [mm]	C [mm]	D [mm]	F [mm]	E [mm]	H [mm]	G [mm]	Mass [g]	Price [€]
552-150-10	0-450	±0,06	20 mm	680	89	91,8	173	65,5	8	25	1215	1329,00
552-151-10	0-600	±0,06	20 mm	830	89	91,8	173	65,5	8	25	1290	1442,00
552-152-10	0-1000	±0,07	20 mm	1280	110	113,8	170,5	73	12	32	2090	1854,00
552-153-10	0-1500	±0,11	20 mm	1790	110	113,8	170,5	73	12	32	2490	2400,00
552-154-10	0-2000	±0,14	20 mm	2300	110	113,8	170,5	73	12	32	2890	3020,00







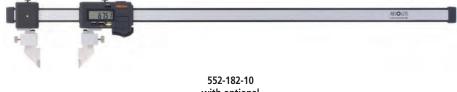


ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Interchangeable Jaws/ Scriber

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.



with optional accessories

Metric

No.	Range [mm]	Accuracy [mm]	Mass [g]	Price [€]
552-181-10	0-450	±0,04	650	1029,00
552-182-10	0-600	±0,04	725	1154,00
552-183-10	0-1000	±0,05	1480	1700,00
552-184-10	0-1500	±0,09	1880	2184,00
552-185-10	0-2000	±0,12	2280	2760,00
Accuracy witho	ut iouur			

Accuracy: without jaws



Standard contact point	Measuring range		0-450 mm / 0-18"	0-650 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	IN	50-500 mm	50-650 mm	50-1050 mm	50-1550 mm	50-2550 mm
	(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"
	Measuring range	Measuring range (mm)		30-630 mm	30-1030 mm	30-1530 mm	30-2030 mm
Centerline type	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 / ± 0.0030"	± 0,09 mm / ± 0.0035"	± 0,13 mm / ± 0.0055"	± 0,16 mm / ± 0.0065"
	Measuring range (mm)		30-480 mm	30-630 mm	30-1030 mm	30-1530 mm	30-2030 mm
Scriber type	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	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
+ Scriber	Combination error		± 0,10 / ± 0.0040"	± 0,10 / ± 0.0040"	± 0,11 / ± 0.0045"	± 0,15 / ± 0.0060"	± 0,18 / ± 0.0070"
	Measuring range		25-475 mm	25-625 mm	25-1025 mm	25-1525 mm	25-2025 mm
Surface Plate type	(mm)		0-450 mm	0-600 mm	0-1000 mm	0-1500 mm	0-2000 mm
+ Inside Point type -	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





Specifications

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 5000 hours
Display	LCD, Character Height 10 mm
Delivered	In a case, including 1 battery, scriber clamps (2pcs.)

Standard accessories

No.	Description
05GZA033	Scriber clamp (9 x 9 mm)

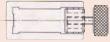
Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00





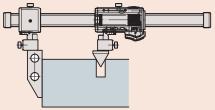
05GZA033

Mitutoy/o

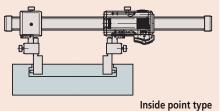
190

ABSOLUTE Digimatic Carbon Fibre Caliper IP66 with Interchangeable Jaws/ Scriber

Surface plate type + Standard type



Surface plate type + Centrerline type





Standard type

Interchangeable jaws (optional)

Series 552

Surface plate type



Centreline type

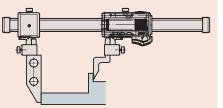


Inside point type



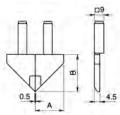
Scriber type

╺╋╧ _{┲┥} ┢	₅ ⊢_ #		
Ų	Ų		
		Scriber type	



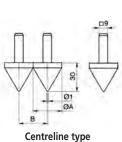
Surface plate type + Scriber for height gages

Mass Price No. Туре А В [g] [€] 07CZA056 Standard (pair) 289,00 28 mm 30 mm 90,6 07CZA057 119,6 356,00 Centreline (pair) 30 mm 30 mm 07CZA044 Surface plate (1 piece) 90 mm 28 mm 191,3 251,00 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

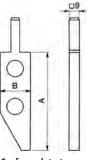




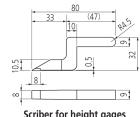
Inside point type



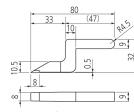
Scriber type



Surface plate 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.



	-		_
53	0 -'	12	2

N	letric		Graduatio	n 0,02 mm							
I	No.	Range [mm]	Depth bar	Accuracy [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
!	530-122	0-150	flat	±0,03	229	40	21	17	16	143	34,00
1	530-123	0-200	flat	±0,03	288	50	24,5	20,5	16	180	56,00
1	530-124	0-300	flat	±0,04	404	64	27,5	22	20	355	178,00

wetric		Graduatior	n 0,05 mm							
No.	Range [mm]	Depth bar	Accuracy [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-100	0-100	Ø 1,9 mm	±0,05	182	40	21,5	17	16	128	46,00
530-102	0-150	Ø 1,9 mm	±0,05	229	40	21	17	16	144	43,00
530-101	0-150	flat	±0,05	229	40	21	17	16	143	29,00
530-108	0-200	flat	±0,05	288	50	24,5	20,5	16	180	74,00
530-109	0-300	flat	±0,08	404	64	27,5	22	20	355	178,00
530-501	0-600	without	±0,1	780	90	47	38	25	1300	546,00
530-502	0-1000	without	±0,15	1240	130	60	50	32	3300	1060,00

Metric/Incl	h Gra	aduation 0,02	2 mm-1/1000							
No.	Range	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-312	0-150 mm / 0-6"	±0,03 mm / 0,0015"	flat	229	40	21	17	16	143	55,00
530-118	0-200 mm/ 0-8"	±0,03 mm/ 0,0015"	flat	288	50	24,5	20,5	16	180	79,00
530-119	0-300 mm/ 0-12"	±0,04 mm/	flat	404	64	27,5	22	20	355	196,00

Metric/Inch	Graduation 0,05	mm-1/128"

No.	Range	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-104	0-150 mm / 0-6"	±0,05 mm / 0,002"	flat	229	40	21	17	16	143	30,00
530-316	0-150 mm / 0-6"	±0,05 mm/ 0,002"	flat	229	40	21	17	16	145	46,00
530-114	0-200 mm / 0-8"	±0,05 mm/ 0,002"	flat	288	50	24,5	20,5	16	180	74,00
530-115	0-300 mm/ 0-12"	±0,08 mm / 0,003"	flat	404	64	27,5	22	20	355	178,00



Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case

Optional accessories

optional acce	Optional accessories						
No.	Description	Price €					
050083-10	75 base for depth measurement for models up to 200	45,00					
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					



530-316 Clamping screw below the slider



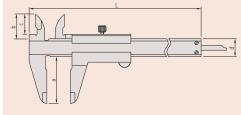
530-104 with metric/inch graduation



Easy reading due to vernier scales inclined by 14 degrees

Metr.ISO-Gew								
Nenn	Stg.	Kem	Bohr					
est.	Passo	fond	trap					
ext.	Pas	int.	meche					
extr.	Paso	nucleo	broca					
ø mm	mm	¢ mm	ø mm					
3	0.5	2.46	2.5					
4	0.7	3.24	3.3					
5	0.8	4.13	4.2					
6	1	4.92	5					
8	1.25	6.65	6.8					
10	1.5	8.38	8.5					
12	1.75	10.11	10.2					
16	2	13.84	14					
20	2.5	17.29	17.5					
	Whit	worth						
ø in.	Gg/in.	ø mm	ø mm					
1/4	20	4.72	5.0					
5/16	18	6.13	6.4					
3/8	16	7.49	7.7					
1/2	12	9.99	10.25					
5/8	11	12.92	13.25					
3/4	10	15.8	16.25					
7/8	9	18.61	19					
1	8	21.34	21.75					
		10100	5					

530-316 only



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	45,00
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.

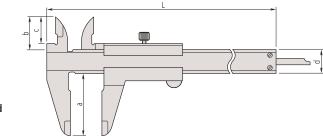


Metric		Carbide-ti	pped jaws fo	or outsid	le/inside	e measu	rement			
No.	Range [mm]	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
530-335	0-150	±0,05 mm	flat	229	40	21	17	16	145	178,00

Metric		Carbide-ti	pped jaws fo	or outsic	le meas	uremen	t			
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.



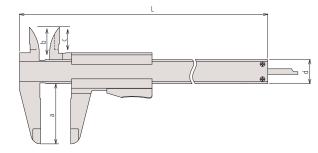
531-122

N //	etric	
IVI	eric	

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	83,00
531-103	0-300	0,05 mm	±0,08 mm	flat	403	64	27,5	22	20	360	191,00

Metric/Inch

No.	Range	Graduation	Accuracy	Depth bar	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
531-122	0-150 mm / 0-6"	0,05 mm- 1/128"	±0,05 mm / 0,002"	flat	229	40	21,5	17	16	142	35,00
531-108	0-200 mm / 0-8"	0,05 mm- 1/128"	±0,05 mm / 0,002"	flat	288	50	25	20,5	16	175	83,00
531-109	0-300 mm / 0-12"	0,05 mm- 1/128"	±0,08 mm / 0,003"	flat	403	64	27,5	22	20	360	191,00



14

Easy reading due to vernier scales inclined by 14 degrees

Specifications

Accuracy	Refer to the list of specifications
Delivered	In a case

Optional accessories

optional accessories							
No.	Description	Price €					
050083-10	75 base for depth measurement for models up to 200	45,00					
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					

Accuracy	Refer to the list of specifications
Graduation	0,02 mm
Delivered	In case

Optional accessories

Specifications

Accuracy

Graduation Delivered

No.	Description	Price €
050083-10	75 base for depth measurement for models up to 200	45,00
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

Refer to the list of specifications

UM. Reading free from parallax errors

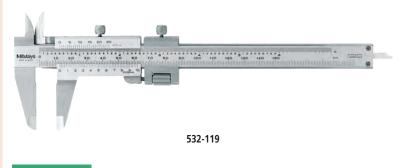
0,05 mm

In a case

Vernier Caliper with Fine Adjustment

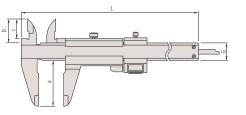
Series 532

This is a vernier Caliper with fine-adjustment to help you with slider positioning.



Metric										
No.	Range [mm]	Accuracy	Depth bar	L [mm]	а	b	С	d	Mass	Price
NO.	[mm]	Accuracy	Deptil bai	[mm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
532-101	0-130	±0,03 mm	flat	229	40	21,5	17	16	165	84,00
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







vernier scales inclined by 14 degrees

Left-Handed Vernier Caliper

Series 536

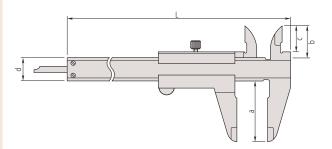
Metric

These are Parallax-free vernier scales for easy and positive measurement.



Range b d Jaw length Mass Price L а С No. Accuracy Depth bar [mm] [mm] [mm] [mm] [mm] [mm] [mm] [g] [€] 536-310 0-150 ±0,05 mm flat 229 40 21 17 16 40 150 **118,00**

195



The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



Dial Caliper

Series 505

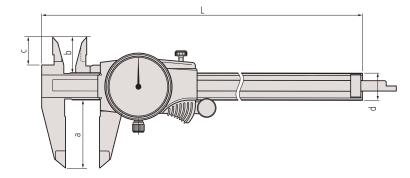
- This dial caliper offers you the following benefits:
- A titanium coating is applied to the sliding surfaces to give you enhanced durability.



505-688

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	۲	231	40	21	16,5	16	175	93,00
505-685	0-150	0,01 mm. 1 mm/rev	±0,02 mm	۲	231	40	21	16,5	16	176	108,00
505-688	0-150	0,01 mm. 1 mm/rev	±0,02 mm	۲	231	40	21	16,5	16	176	108,00
505-684	0-200	0,02 mm. 2 mm/rev	±0,03 mm	۲	288	50	24,5	20	16	185	191,00
505-686	0-200	0,01 mm. 1 mm/rev	±0,03 mm	۲	288	50	24,5	20	16	186	206,00

505-688: Without thumb roller





Functions		Series 505
Locking screw		۲
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	45,00					
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	0
Thumb roller	@

AccuracyRefer to the list of specificationsDeliveredIn a case

Optional accessories

No.	Description	Price €
050083-10	75 base for depth measurement	45,00
	for models up to 200	
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

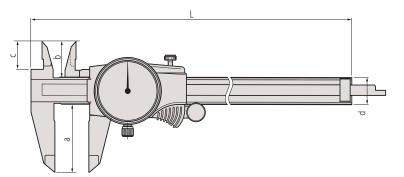
- This dial caliper offers you the following benefits:
- A titanium coating is applied to the sliding surfaces to give you enhanced durability (except for 0-300mm model).



505-673

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	۲	180	40	21	16,5	16	151	
505-671	0-150	0,02 mm. 2 mm/rev	±0,03 mm	۲	231	40	21	16,5	16	175	93,00
505-681	0-150	0,01 mm. 1 mm/rev	±0,02 mm	۲	231	40	21	16,5	16	176	108,00
505-672	0-200	0,02 mm. 2 mm/rev	±0,03 mm	۲	288	50	24,5	20	16	185	191,00
505-682	0-200	0,01 mm. 1 mm/rev	±0,03 mm	۲	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





197



Dial Caliper with Carbide Tipped Jaws

Series 505

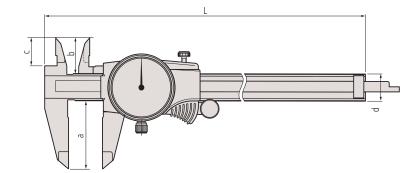
- This dial caliper offers you the following benefits:
- A titanium coating is applied to the sliding surfaces to give you enhanced durability.



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	۲	231	40	21	16,5	16	175	330,00

Metric		Carbide-tip	oed jaws for	outside measurem	nent						
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	۲	231	40	21	16,5	16	175	273,00







Functions		Serie	s 505
Locking screw	,	(
Thumb roller		()
Specifications	;		
Accuracy	Refer to the list of	of specificati	ons
Delivered	In a case		
Delivereu	in a case		
			Price €
Optional acce	ssories		Price € 45,00

125 base for depth

measurement

for 300 models

57,00



050085-10







Titanium coating

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:

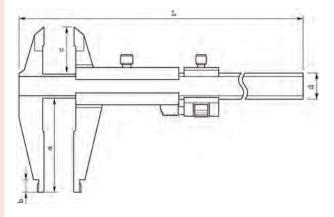
- You can read inside and outside measurements directly from the upper and lower vernier scales.
- Main scale and vernier scale satin chrome finish gives you high readability.



Without fine adjustment

Metric		With fine ac	ljustment								
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	0-1000	0,02 mm	±0,08 mm	20 mm	1230	150	20	56	32	3450	1010,00

Μ	letric		Without fine	e adjustmen [.]	t							
r	lo.	Range [mm]	Graduation	Accuracy	Inside measuring from	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
5	33-404	0-500	0,05 mm	±0,1 mm	20 mm	680	150	15	56	25	1200	525,00
5	33-405	0-750	0,05 mm	±0,12 mm	20 mm	963	150	15	56	25	1500	736,00
5	33-406	0-1000	0,05 mm	±0,15 mm	20 mm	1230	150	20	56	32	3300	891,00

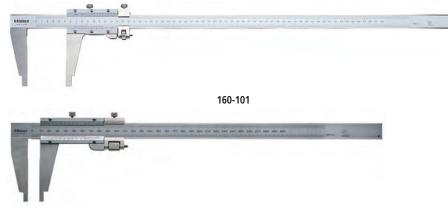


Vernier Caliper with Nib Style Jaws

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.



160-127

Metric		With fine adj	ustment		
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	1082,00
160-110	0 - 1500	0,02 mm	±0,1 mm	20 mm	2215,00
160-113	0 - 2000	0,02 mm	±0,12 mm	20 mm	3142,00

No.	L	R	а	b	С	d	е	f	Mass
	[mm]	[g]							
160-127	445	5	95	75	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	±0,1 mm	20 mm	515,00
160-131	0 - 600	0,05 mm	±0,1 mm	20 mm	587,00
160-132	0 - 1000	0,05 mm	±0,15 mm	20 mm	1082,00
160-133	0 - 1500	0,05 mm	±0,22 mm	20 mm	2215,00
160-134	0 - 2000	0,05 mm	±0,28 mm	20 mm	3142,00

No.	L	R	а	b	С	d	е	f	Mass
NO.	[mm]	[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

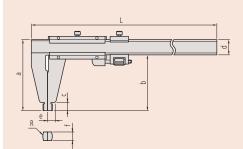
AccuracyRefer to the list of specificationsNoteUp to 300 mm: parallax-free designDeliveredIn a case







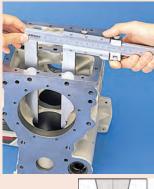
Rounded outside measuring surfaces for measuring inside dimensions



Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Refer to the list of specifications Accuracy Delivered In a case







Rounded outside measuring surfaces for measuring inside dimensions

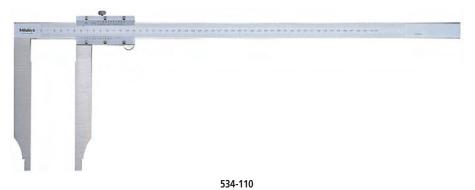


Series 534

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.



No.	[mm]	Graduation	Accuracy	Inside measuring from	[€]
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	±0,1 mm	20 mm	1154,00

With fine adjustment

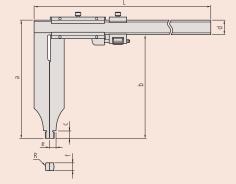
No.	L	R	а	b	С	d	е	f	Mass
NO.	[mm]	[g]							
534-113	445	5	110	90	12	20	7	3,8	460
534-114	682	10	225	200	18,5	25	12	6	1500
534-115	995	10	232	200	18,5	32	12	8	2900
534-116	1230	10	232	200	18,5	32	12	8	3500

Metric		Without fine	e adjustmen	t	
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	R	а	b	с	d	е	f	Mass
NO.	[mm]	[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

201





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:

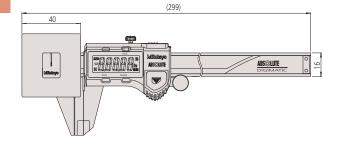
- Due to their low and constant measuring force these calipers are ideal for measuring elastic workpieces such as plastic and rubber parts that standard calipers cannot measure accurately.
- They allow fine feeding easily by using thump roller.



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)		0
ZERO/ABS		@
ON/OFF		0
Low voltage alarm		@
Data output		0
Specifications		
Accuracy	list of specifications	

Accuracy	(excluding quantizing error)
Jaw retraction	0,3 mm
Max. response speed	Unlimited
Measuring force	0,5-1 N
Digital step	0,01 mm
Battery life	approx. 20000 hours
Display	LCD, Character Height 9 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)	44,00
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	6,00





A consistently low measuring force can be guaranteed by only taking measurements when the pointer is between the two fiducial lines.

Functions	Series 573
ORIGIN (ABS-Zero)	0
ZERO/ABS	<i>i</i>
ON/OFF	0
Low voltage alarm	<i>i</i>
Data output	0

•	
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
Battery life	approx. 20000 hours
Display	LCD, Character height 9 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)	44,00
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	6,00



ABSOLUTE Digimatic Caliper for Tolerance Measurement

Series 573

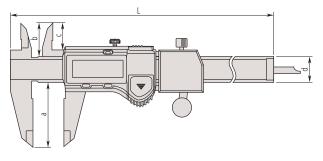
ABSOLUTE°

The ABSOLUTE Digimatic snap caliper features a spring-loaded mechanism to allow quick and efficient $GO/\pm NO$ -GO inspection for mass produced parts.



Metric								
No.	Range	L	а	b	С	d	Mass	Price
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
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







Scribing Caliper with Carbide Tipped Jaws

Series 573

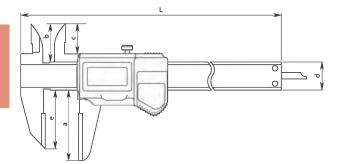
These calipers are designed for scribing tasks.

- They offer you the following benefits:
- Carbide-tipped jaws facilitate fine scribing on workpiece.
- With depth bar.

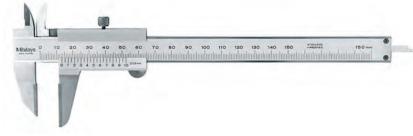


573-676

Metric										
No.	Range	Accuracy	L	а	b	C	d	е	Mass	Price
NO.	[mm]	Accuracy	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]	[€]
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





runctions	Series 575				
ORIGIN (ABS-Zero	o)	0			
Auto Power OFF	0				
after 20 min. non	use				
Low voltage alar	m	0			
Data output		0			
Specifications					
Accuracy	Refer to the list of (excluding quantiz				
Max. response speed	Unlimited				
Digital step	0,01 mm				
Battery life	15000 hours (150 mm, 200 mm) 5000 hours (300 mm)				
Display	LCD, Character Hei 200 mm) 10,2 mm				

Delivered In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00

Consumable spares

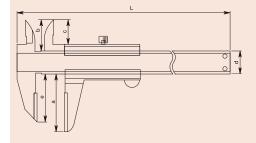
No.	Description	Price €
938882	Battery SR44	6,00



Sample application Specifications

Accuracy Graduation Delivered

Refer to the list of specifications 0,05mm In a case



Functions	Series 573
ORIGIN (ABS-Zero)	0
Auto Power OFF)
after 20 min. non use	
Low voltage alarm	0
Data output	0

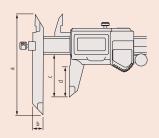
Accuracy	Refer to the list of specfications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 15000 hours (150 mm, 200 mm) 5000 hours (300 mm)
Display	LCD, Character Height 7,5 mm (150 mm, 200 mm) 10,2 mm (300 mm)
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00

Consumable spares

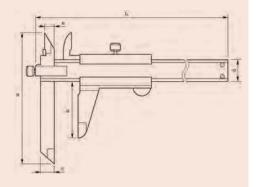
No.	Description	Price €
938882	Battery SR44	6,00



Specifications

Accuracy Graduation Delivered

Refer to the list of specifications 0,05 mm 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.



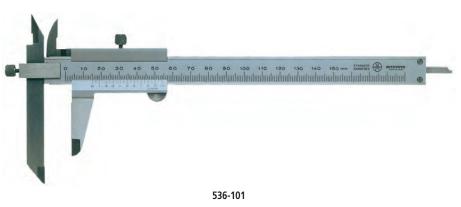


Metric		Without t	humb ro	oller				
No.	Range [mm]	Accuracy	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]	Price [€]
573-611	0-150	±0,02 mm	95	10	40	30	168	525,00
573-612	0-200	±0,02 mm	95	10	50	38,5	198	587,00
573-614	0-300	±0,03 mm	135	15	64	51	350	742,00

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



Metric											
No.		Range [mm]	Accuracy	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [g]	Price [€]
536-1	01	0-150	±0,05 mm	229	95	40	10	16	7,5	150	251,00
536-1	02	0-200	±0,05 mm	286	95	50	10	16	8,5	200	305,00
536-1	03	0-300	±0,08 mm	403	135	64	15	20	12	400	408,00

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.





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 .



573-615

Metric		Without th	numb ro	oller		
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 thum	nb roller			
No.	Range	Accuracy	а	t	Mass	Price
NO.	[mm]	Accuracy	[mm]	[mm]	[g]	[€]
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

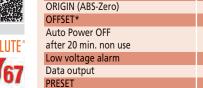


Series 536



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

Specifications Accuracy Refer to the list of specifications (excluding quantizing error) Max. response Unlimited speed Digital step 0,01 mm approx. 15000 hours (150 mm, 200 Battery life mm) 5000 hours (300 mm) Display LCD, Character Height 7,5 mm (150 mm, 200 mm) 10,2 (300 mm) Delivered In a case, including 1 battery

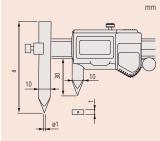
Series 573

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00

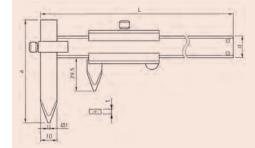
Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00



* 10 mm

Refer to the list of specifications
0,02mm
In a case

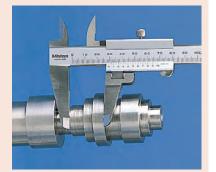




Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

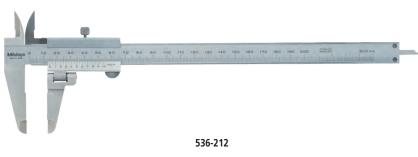
Accuracy	±0,05 mm
Graduation	0,05mm
Delivered	In a case



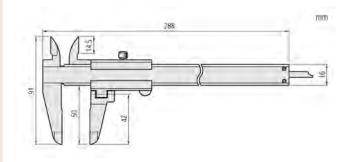
Swivel Caliper

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.











ABSOLUTE Digimatic Back-Jaw Centreline Caliper

Series 573

These Digimatic back-jaw centreline calipers offer you the following benefits:

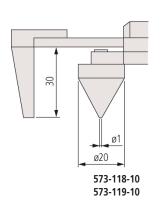
- Specially designed to allow you to measure hole centre-to-centre or edge-to-centre distances.
- You can read measurements more easily from above, thanks to the jaws being on the back of the slide.
- Direct reading of pitch measurements is also available due to the offset value setting function.

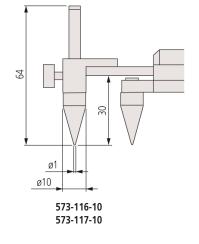


573-118-10 Edge-to-centre type

Metric	C	entre-to-cen	tre type	9
No.	Range [mm]	Accuracy	Mass [g]	Price [€]
573-116-10	10-200	±0,1 mm	485	1226,00
573-117-10	10-300	±0,15 mm	580	1339,00

Metric	E	Edge-to-centre type				
No.	Range [mm]	Accuracy	Mass [g]	Price [€]		
573-118-10	10-200	±0,1 mm	490	1123,00		
573-119-10	10-300	±0,15 mm	585	1236,00		





ABSOLUTE®

Functions	Series 573
ORIGIN (ABS-Zero)	0
ZERO/ABS	<i>i</i>
OFFSET*	0
ON/OFF	@
Low voltage alarm	0
Data output	@
PRESET	0

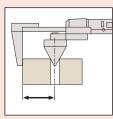
Specifications	
Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 5000 hours
Display	LCD, Character Height 7 mm
Delivered	In a case, including 1 battery

Optional accessories

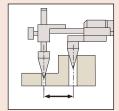
No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
959143	Data-hold unit	25,00
02AZD790C	U-WAVE Data Cable with data switch	90,00
06ADV380C	USB Input tool Direct cable with data switch (2 m)	100,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00



Edge-to-center type



Centre-to-centre type

* 10 mm



Functions	Series 573
ORIGIN (ABS-Zero)	0
Auto Power OFF	<i>i</i>
after 20 min. non use	
Low voltage alarm	0
Data output	<i>i</i>

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 15000 hours
Display	LCD, Character Height 7,5 mm
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00



Point Caliper

Series 573

These point calipers have extra fine ground measuring jaws. They offer you the following benefits: Ê

ÜVRhein

Dust- and Water-Protected

Mitutoyo

ABSOLUTE

IP/67

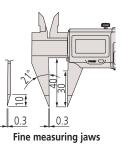
 Narrow-tip jaws fit into very small grooves and tracks, making it much easier for you to obtain many previously difficult outside measurements.

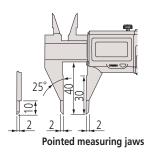


Metric		Fine measuring jaws				
No.	Range [mm]	Accuracy	curacy I humb roller		Price [€]	
573-62	5 0-150	± 0,02 mm	0	163	515,00	
573-62	6 0-150	± 0,02 mm		163	464,00	

Metric			Pointed me	easuring jaws		
	No. Range [mm]		Accuracy	Accuracy Thumb roller		Price [€]
	573-621	0-150	± 0,02 mm	0	163	464,00
	573-622	0-150	± 0,02 mm		163	412,00

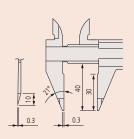




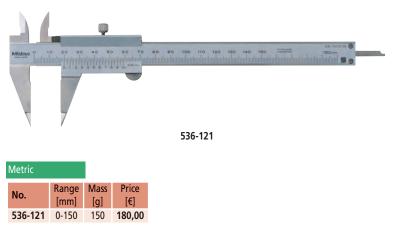


Specifications

•	
Accuracy	±0,05 mm
Graduation	0,05 mm
Delivered	In a case



Series 536



mm

Blade Caliper

Series 573

These blade calipers have thin measuring jaws. They offer you the following benefits:

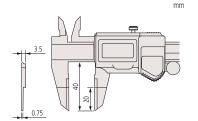
- The thin blade-type jaws fit into very small grooves making it much easier for you to obtain many previously difficult outside measurements.
- The outside measuring faces are carbide.



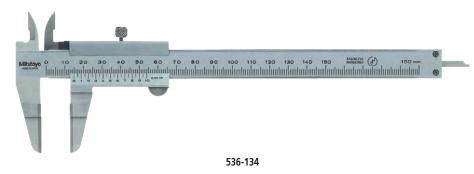
573-635

Metric					
No. Range [mm]		Accuracy	Thumb roller	Mass [g]	Price [€]
573-634	0-150	±0,02 mm	0	168	649,00
573-635	0-150	±0,02 mm		168	597,00





Series 536



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)		0
Auto Power OFF		0
after 20 min. non use		
Low voltage alarm		0
Data output		0
Specifications		
Accuracy		ist of specifications antizing error)
Max. response speed	Unlimited	
Digital step	0,01 mm	

approx. 15000 hours

LCD, Character Height 7,5 mm

In a case, including 1 battery

0	
Optional	accessories

Battery life

Display

Delivered

-		
No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00

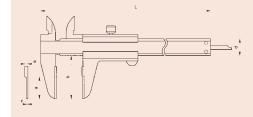
Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00



Specifications

specifications	
Accuracy	Refer to the list of specifications
Graduation	0,05mm
Delivered	In a case



Functions	Series 573
ORIGIN (ABS-Zero)	0
Auto Power OFF	9
after 20 min. non use	
Low voltage alarm	0
Data output)

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	aprox. 15000 hours
Display	LCD, Character Height 7,5 mm
Delivered	In a case, including 1 battery

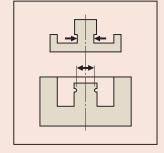
Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00





ABSOLUTE Digimatic Neck Caliper

Series 573

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.





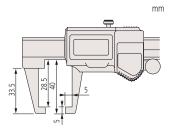


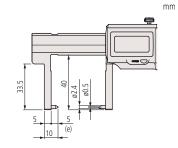
No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-651	0-150	±0,03 mm	0	157	577,00
573-653	0-150	±0,03 mm		157	525,00

Metric	
IVIETTIC	

Metric		Point jaw	type		
No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-652	0-150	±0,03 mm	0	157	670,00
573-654	0-150	±0,03 mm		157	618,00







Point jaw type

211

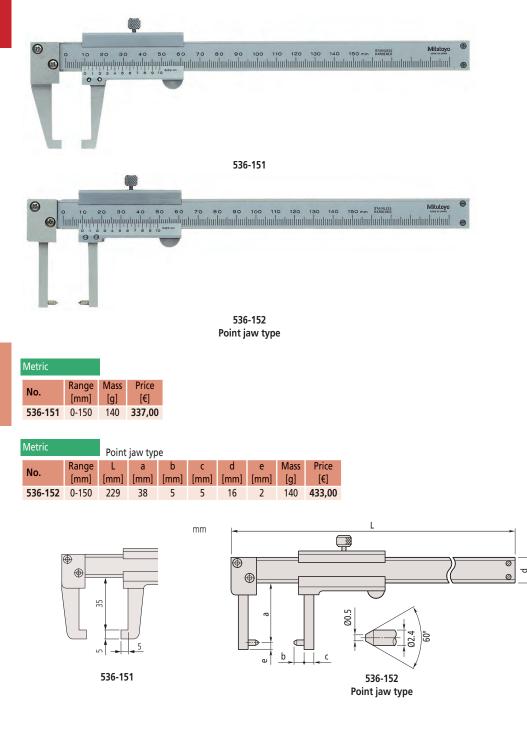
Metric

Neck Caliper

Series 536

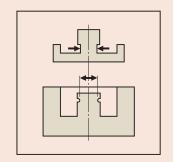
These neck calipers enable measurements in hard to reach places. They offer you the following benefits:

• You can measure wall thickness inside bores and recesses.



Specifications

Accuracy Graduation Delivered ±0,05 mm 0,05mm In a case



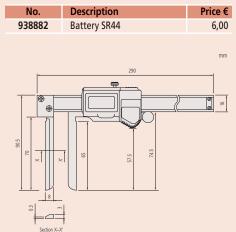
Functions	Series 573
ORIGIN (ABS-Zero)	0
Auto Power OFF	i
after 20 min. non use	
Low voltage alarm	0
Data output	i

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response	Unlimited
speed	
Digital step	0,01 mm
Battery life	approx. 15000 hours
Display	LCD, Character Height 7,5 mm
Delivered	In a case, including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00

Consumable spares



Specifications

Accuracy	±0,12 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:

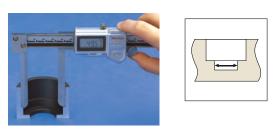
- Specially designed to let you take inside measurements in hard-toreach places.
- With long narrow jaws.



tric

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-642	10-200	±0,05 mm	0	227	731,00
573-643	10-200	±0,05 mm		227	680,00





Series 536





mm





ABSOLUTE Digimatic Inside Caliper

Series 573

Inside groove type

• Specially designed for inside measurements in hard-to-reach places.

Mitutoyo





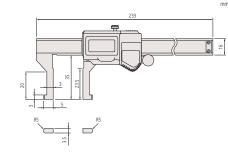


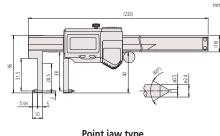
Point jaw type

No.	Range [mm]	Accuracy	Thumb roller	Mass [g]	Price [€]
573-64	5 10-160	±0,05 mm	0	147	649,00
573-64	7 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	0	157	680,00
573-648	20-170	±0,03 mm		157	628,00







Point jaw type

	ORIGIN (ABS-Zero)		0
7	OFFSET*		0
	Auto Power OFF		0
0	after 20 min. non use		
	Low voltage alarm		0
1	Data output		۲
	Specifications		
	Accuracy		ist of specifications antizing error)
	Max. response speed	Unlimited	
	Digital step	0,01 mm	
	Battery life	approx. 15000) hours
	Display	LCD, Characte	er Height 7,5 mm
	Delivered	In a case, incl	uding 1 battery

Series 573

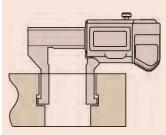
Optional accessories

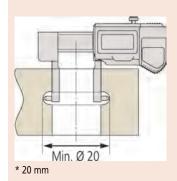
Functions

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	6,00





Mitutoyo

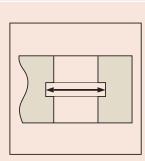
The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

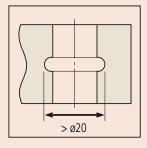
Accuracy	Refer to the list of specifications
Graduation	0,05mm
Delivered	In a case

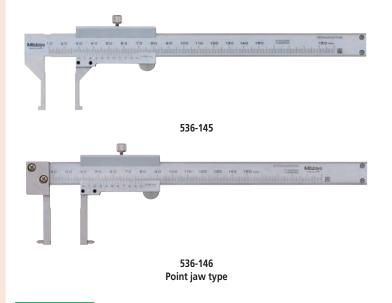
Inside Caliper

Series 536

• Specially designed for inside measurements in hard-to-reach places.

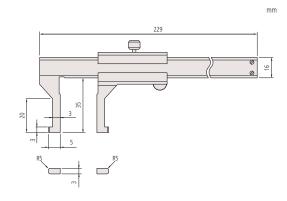




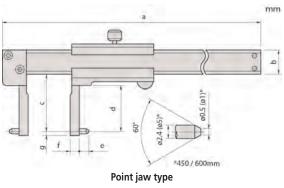


wetric				
No.	Range [mm]	Accuracy	Mass [g]	Price [€]
536-145	10-150	±0,05 mm	130	412,00

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	±0,1 mm	1250	820,00
536-149	70-600	±0,12 mm	1430	843,00



536-145





Tube Thickness Caliper

Series 573

These tube thickness calipers are designed especially for round-shaped workpieces.

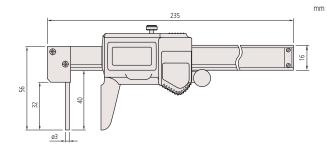
- They offer you the following benefits:
- The beam-mounted jaw is a round bar that lets you easily measure tube wall thickness.



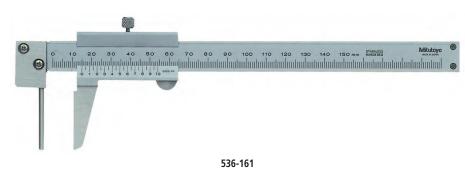
573-661







Series 536



Metric			
No.	Range [mm]	Mass [g]	Price [€]
536-161	0-150	150	304,00





Functions		Series 573
ORIGIN (ABS-Zero)	ORIGIN (ABS-Zero)	
Auto Power OFF		@
after 20 min. non use		
Low voltage alarm		0
Data output		@
Specifications Accuracy		ist of specifications antizing error)
Max. response speed	Unlimited	
speed		
Digital step	0,01 mm	
	0,01 mm approx. 15000) hours
Digital step	approx. 15000) hours er Height 7,5 mm

LCD, Character Height 7,5 mm In a case, including 1 battery

Optional accessories

Delivered

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
02AZD790A	Connecting cable U-Wave with data switch	95,00
06ADV380A	USB Input Tool Direct cable (2 m)	115,00

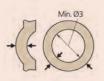
Consumable spares

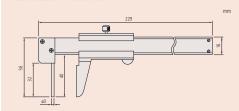
No.	Description	Price €
938882	Battery SR44	6,00

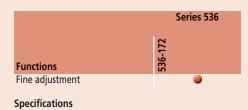


Specifications

Accuracy	±0,05 mm
Graduation	0,05mm
Delivered	In a case







Accuracy

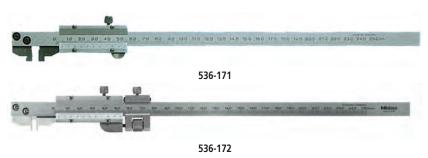
Graduation

Delivered

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.

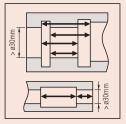


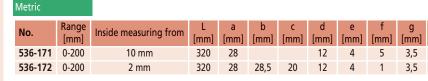


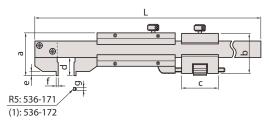
±0,03 mm

0,02mm

In a case







(1) flat touch for 536-172

217



Mass

[g]

170

200

Price

[€] 445,00

562,00

Optional Accessory for Calipers

Depth base attachment

This is an optional depth base attachment for calipers.

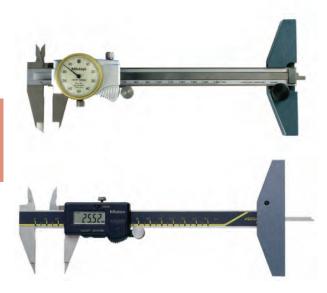
- It offers you the following benefits:
- For digital, vernier and dial calipers which have a depth measuring bar.
- Finely ground base surface.
- Secure locking clamp.



050084-10

050083-10

No.	Size [mm]	Applicable measuring range of caliper		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	45,00
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



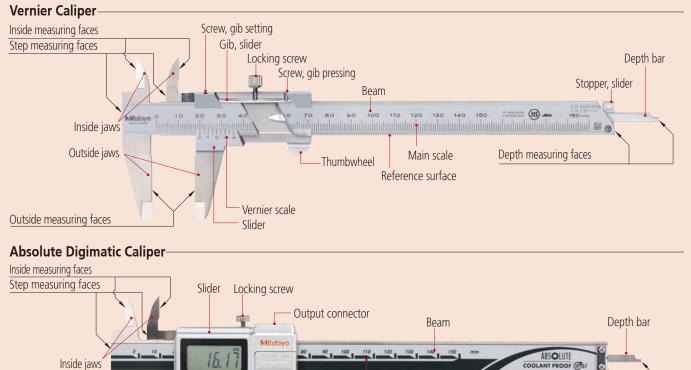


Quick Guide to Precision Measuring Instruments



Calipers

Nomenclature



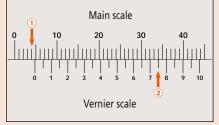
Main scale

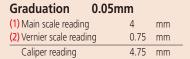
Thumb-roller ZERO Set/ABSOLUTE button Reference surface

Outside measuring faces



Outside jaws



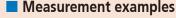


Main scale Dial face (1) Main scale reading 16 mm

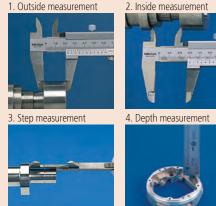
0.13 mm

16.13 mm

Blade jaw type

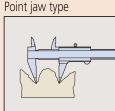


Depth measuring faces

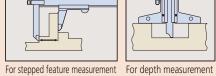


Note) Above left, 0.75 mm (2) is read at the position where a main scale graduation line corresponds with a vernier graduation line.

Special Purpose Caliper Applications Point jaw type Offset jaw type D



For uneven surface measurement

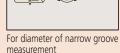


(2) Dial face reading

Dial Caliper reading

Depth type

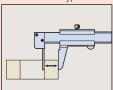
Dial Calipers



For outside diameter measurement such as thickness of recess

Neck type

Tube Thickness type



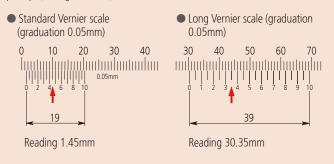
For pipe thickness measurement

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Types of Vernier Scale

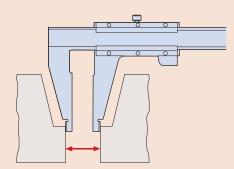
The Vernier scale is attached to the caliper's slider and each division on this scale is made 0.05mm shorter than one main scale division of 1 mm. This means that, as the caliper jaws open, each successive movement of 0.05mm brings the succeeding vernier scale line into coincidence with a main scale 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.



About Long Calipers

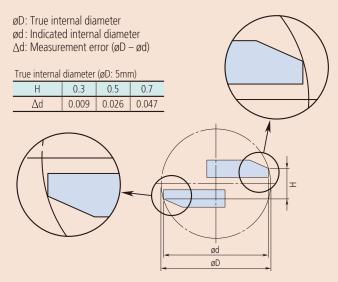
Steel rules are commonly used to roughly measure large workpieces but if a little more accuracy is needed then a long caliper is suitable for the job. A long caliper is very convenient for its user friendliness but does require some care in use. In the first place it is important to realize there is 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.

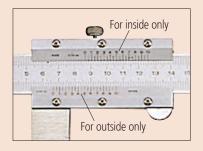


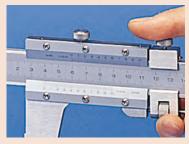
Inside Measurement with a Nib Style Caliper

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 an 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-jawthickness correction on a single-scale caliper.

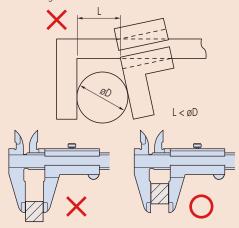




General notes on use of caliper

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.

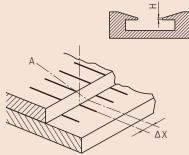
3. Depth measurement

Read the minimum indicated value during depth measurement.

4. Parallax error when reading the scales

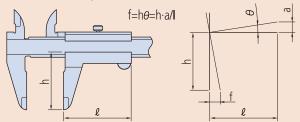
Look straight at the vernier graduation line when checking the alignment of vernier graduation lines to the main scale graduation lines.

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)x0.01mm = 0.008mm. 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. $(10.2 \pm 1) \times 10^{-6}$ / 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.

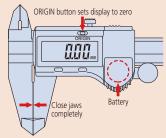
Avoid damaging the scale of a digital caliper and do not engrave an identification number or other information on it with an electric marker pen. Avoid damaging a caliper by subjecting it to impact with hard objects or by dropping it on a bench or the floor.

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.

Mitutoyo

Do not leave the jaws of a caliper completely closed during storage.



Depth Measuring Instruments

Depth Micrometer Page 223



Depth Gauge Page 226

Depth Gauge Accessories Page 232

Delivered

Scale	thimble and sleeve satin chrome finish, ø 18 mm
Measuring span	25 mm
Spindle pitch	0,5 mm with spindle lock
Micrometer Head Feed (0-25 mm)	±3 μm
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) μm 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



Including box and key

Depth Micrometer

Series 128

- This micrometer allows you to measure depth and offers you the following features:
- ø4mm measuring rod.
- Ratchet stop provides you with constant measuring force.
- Measuring rod lock.
- Carbide-tipped measuring rod model is available.



128-101

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 roo		
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

223





Digimatic Depth Micrometer with Interchangeable Rod

Series 329

This interchangeable rod type micrometer can be used for wide range measurements. It offers you the following benefits:

- ø4mm interchangeable rods, with lapped measuring surfaces, enable you to make wide-range measurement
- The ratchet stop provides constant measuring force.
- Measuring rod lock.

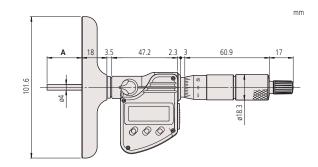




Metric

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	0
DATA/HOLD	<i>i</i>
Lock function	0
Auto Power OFF)
after 20 min. non use	
2 x PRESET	0
Low voltage alarm)
Data output	0

Specifications

specifications	
Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring span	25 mm
Spindle pitch	0,5 mm with spindle lock
Zero point errors of rods	±4 μm (0-150 mm) ±6 μm (0-300 mm)
Micrometer Head Feed (0-25 mm) (excluding quantizing error)	±3 μm
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) μm 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)	74,00
05CZA663	Digimatic cable with data switch (2 m)	83,00
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	6,00



Thimble and sleeve satin chrome finish ø18 mm
25 mm
0,5 mm, with spindle lock
±3 μm
±4 μm (0-150 mm) ±6 μm (0-300 mm)
1,3 μm for 63,5 mm 2 μm for 101,6 mm
0,3 μm
(4+ L/50) µm L=max. measuring length (mm)
Hardened, precision ground, micro-lap finish
Hardened tool steel
5-10 N
0,01 mm
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:

- ø4mm interchangeable rods, with lapped measuring surfaces, enable you to make wide-range measurement
- The ratchet stop provides constant measuring force.
- Measuring rod lock.

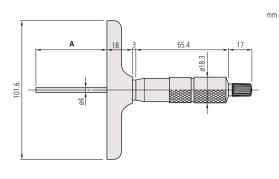


129-112

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

225



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:

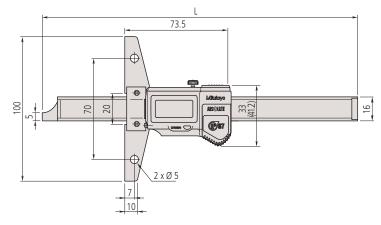
- ABSOLUTE System gives you reliable measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- Large character height of 9mm makes measurements easy to read.
- Exceptional battery life.





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





Up to 300 mm range models

ABSOLUTE°

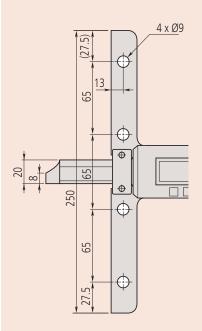
Functions		Series 571
ORIGIN (ABS-Zero)	0	
ZERO/ABS) ا
ON/OFF		0
Low voltage alarm		<i>i</i>
Data output		0
Specifications		
Accuracy		ist of specifications antizing error)
Max. response speed	Unlimited	
Repeatability	0,01 mm	
Digital step	0,01 mm	
Battery life	approx. 2000	0 hours
Display		er height 9 mm mm), 10 mm (>300
Delivered	In a case (450 including 1 b	,

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
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	52,00
900371	Base length 260 for range up to 300 Thickness 8	73,00
900372	Base length 320 for range up to 300 Thickness 8	81,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00



Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Functions	Series 571
ORIGIN (ABS-Zero)	0
Auto Power OFF	e
after 20 min. non use	
Low voltage alarm	0
Data output	i

Accuracy	Refer to the list of specifications (excluding quantizing error)
Max. response speed	Unlimited
Repeatability	0,01 mm
Digital step	0,01 mm
Battery life	approx. 15000 hours (150, 200 mm) 5000 hours (300 mm)
Display	LCD, Character Height 7,5 mm (150, 200 mm) 10,2 mm (300 mm)
Delivered	In a case including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	52,00
900371	Base length 260 for range up to 300 Thickness 8	73,00
900372	Base length 320 for range up to 300 Thickness 8	81,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00
	Bore dept Washer Screw Mounting the interco	

ABSOLUTE Digimatic Depth Gauge

Series 571

This depth gauge is IP67 coolant proof and offers you the following benefits:

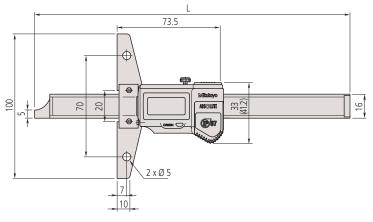
- ABSOLUTE System gives you reliable measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Extremely resistant to both coolants and lubricants.



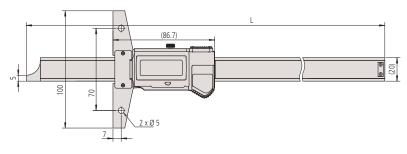
571-251-10

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





Range: 0-150 mm, 0-200 mm



Range: 0-300 mm

227







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.

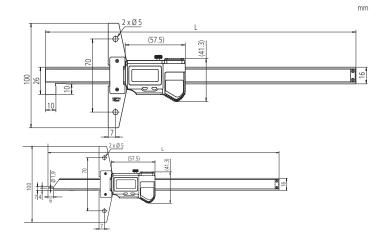


Metric	Hook	Туре				
No.	Depth range	Hook range	Base (W x T)	L [mm]	Mass [g]	Price [€]
571-254-10	10-160 mm	0-150 mm	100 x 6 mm	247	216	402.00

571-255-10 10-210 mm 0-200 mm 100 x 6 mm 297 236 458,00

Metric	Р	in 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					
Functions		571-254-10 571-255-10	571-301-10 571-302-10			
ORIGIN (ABS-Zero)		0	0			
OFFSET		0				
Auto Power OFF		0	0			
after 20 min. non use						
Low voltage alarm		0	e			
Data output		۲	0			
Specifications						
Accuracy	±0,03 mm					
·	(excludi	ng quantiz	ing error)			
Max. response speed	Unlimited					
Repeatability	0,01 mm	n				

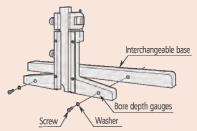
	(excluding quantizing error)
Max. response speed	Unlimited
Repeatability	0,01 mm
Digital step	0,01 mm
Battery life	approx. 15000 hours
Display	LCD, Character Height 7,5 mm
Delivered	In a case including 1 battery

Optional accessories

No.	Description	Price €
05CZA624	Digimatic cable with data switch (1 m)	71,00
05CZA625	Digimatic cable with data switch (2 m)	80,00
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	52,00
900371	Base length 260 for range up to 300 Thickness 8	73,00
900372	Base length 320 for range up to 300 Thickness 8	81,00

Consumable spares

I	No.	Description	Price €
	938882	Battery SR44	6.00

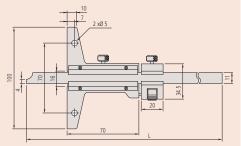


Mounting the interchangeable base

Accuracy Refer to the list of specifications

Optional accessories

optional accessories						
No.	Description	Price €				
900370	Base length 180 for range up to 300 Thickness 8	52,00				
900371	Base length 260 for range up to 300 Thickness 8	73,00				
900372	Base length 320 for range up to 300 Thickness 8	81,00				



Up to 300 mm range models



Vernier Depth Gauge

Series 527

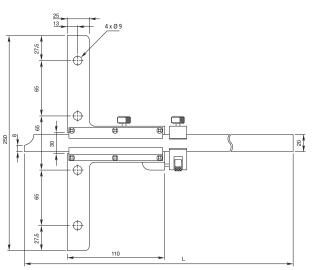
- This vernier depth gauge offers you the following benefits:
- Its base and measuring faces are hardened and micro-lapped for robustness.
- Fine adjustment models are available.



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	±0,1 mm	250 x 10 mm	800	1510	649,00
527-205	0-1000	0,05 mm	±0,15 mm	250 x 10mm	1200	1880	700,00

Metric		With fine ac	ljustment				
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	0-1000	0,02 mm	±0,07 mm	250 x 10mm	1200	1880	742,00





Over 300 mm range models

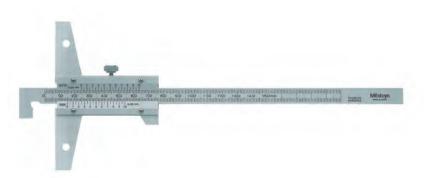
229



Vernier Depth Gauge Hook Type

Series 527

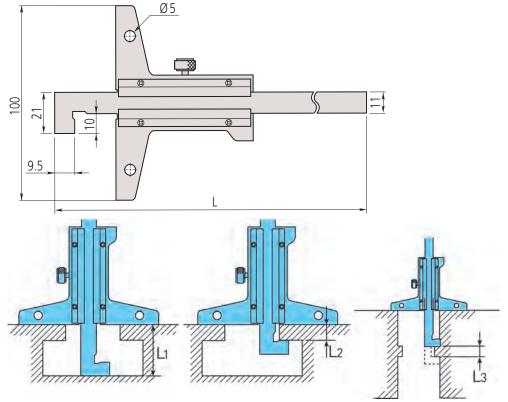
- This hook type vernier depth gauge offers you the following benefits:
- The end of the beam is hook-shaped so you can take depth and thickness measurements of a projected portion or lip in a hole, as well as standard depth measurements.
- Fine adjustment models are available.



527-401

Metric							
No.	Depth	Hook	Graduation	Accuracy	L	Mass	Price
NO.	range	range	Graduation	Accuracy	[mm]	[g]	[€]
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	Wi	th fine adjus	stment				
No.	Depth	Hook	Graduation	Accuracy	L [mm]	Mass	Price
NO.	range	range	Graduation	Accuracy	[mm]	[g]	[€]
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



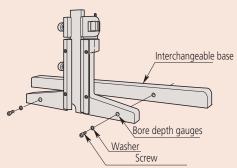
L1 = depth-vernier reading / L2 = hook-vernier reading / L3 = (depth-vernier reading) - (hook-vernier reading)

Specifications

Accuracy Refer to the list of specifications

Optional accessories

No.	Description	Price €				
900370	Base length 180 for range up to 300 Thickness 8	52,00				
900371	Base length 260 for range up to 300 Thickness 8	73,00				
900372	Base length 320 for range up to 300 Thickness 8	81,00				



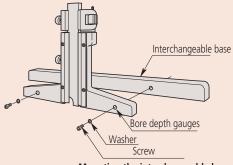
Mounting the interchangeable base

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	52,00
900371	Base length 260 for range up to 300 Thickness 8	73,00
900372	Base length 320 for range up to 300 Thickness 8	81,00





Mounting the interchangeable base

Dial Depth Gauge

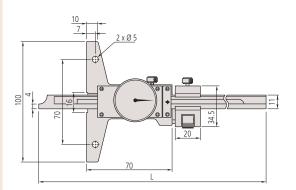
Series 527

- 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.



No. Range [mm] Accuracy ±0,05 mm L [mm] Mass [g] Price [e] 527-301-50 0-150 ±0,05 mm 260 280 199,00 527-302-50 0-200 ±0,05 mm 310 300 216,00	Metric					
527-302-50 0-200 ±0,05 mm 310 300 216,00	No.		Accuracy	L [mm]		
	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	527-303-50	0-300	±0,08 mm	410	340	242,00





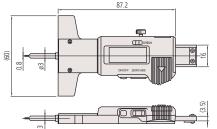
231

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.





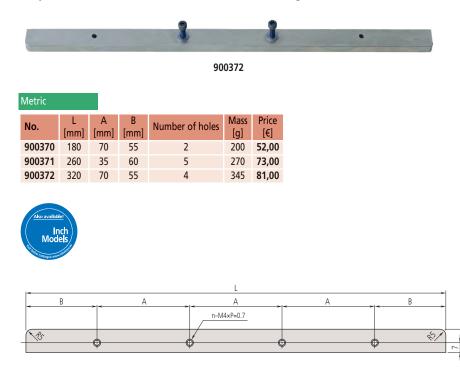
Metric				
No.	Range [mm]	Accuracy	Mass [g]	Price [€]
571-100MOT-10	0-25	±0,02 mm	160	204,00



Optional Accessories for Depth Gauge

Extension bases

These optional extension bases can be fitted to depth gauge models up to 0-300mm range. They cannot be attached to 0-600mm or 0-1000mm range models.



ABSOLUTE°

mm

Functions	Series 571
ORIGIN (ABS-Zero)	0
ZERO/ABS	<i>i</i>
ON/OFF	0
Auto Power OFF	@
after 20 min. non use	
Low voltage alarm	0
Data output	<i>i</i>

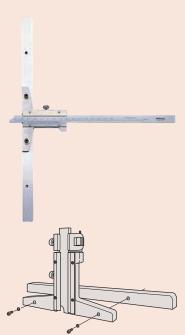
Specifications				
Accuracy	Refer to the list of specifications (excluding quantizing error)			
Max. response speed	unlimited			
Repeatability	0,01 mm			
Digital step	0,01 mm			
Battery life	approx. 20 hours			
Display	LCD, Character height 7,5 mm			
Delivered	Including 1 battery			

Optional accessories

No.	Description	Price €
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
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	6,00



Attaching the extension base

Height Gauges



Height Gauge Page 234



Height Gauge Accessories Page 241



Height Gauge with Data Processing Unit Page 243





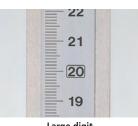
Lightweight Vernier Height Gauge

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.







Large digit

		a 1 500
Functions		Series 506
Fine adjustment		۲
Specifications		
Accuracy	Refer to the list o	f specifications.
Graduation	0,02 mm	

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)	12,00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25,00



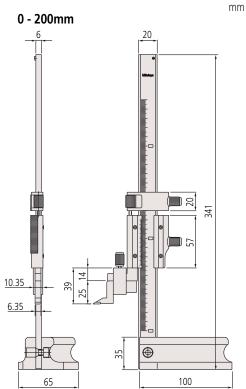
953639



900321

Metric				
No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
506-207	0-200	±0,03 mm	1,4	330,00







Functions		Series 514
Fine adjustment		0
Specifications		
Accuracy	Refer to the list	t of specifications.
Graduation	0,02 mm	
Scale	15 mm for mod	lels up to 600 mm
adjustment	25mm for mod	els 1000 and 1500 mm
Delivered	Including scribe	er, scriber clamp and

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
07G7A033. for all e	excent 514-170

<u>v752A035</u> for all except 514-170 <u>0762A000</u>: 514-102, 514-104, 514-106 <u>905200</u>: 514-108, 514-109 <u>905008</u>: 514-170514-103, 514-105, 514-107 <u>900390</u>: 514-170

Optional accessories

No.	Description	Price €
953638	Holding bar 50 mm (9 x 9 mm)	17,00
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)	33,00

953638: except 514-170







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.

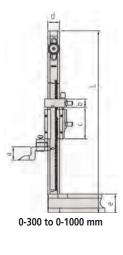


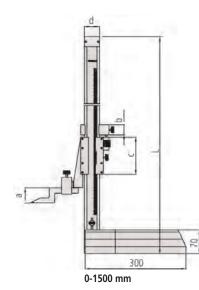
514-102

1	
	Metric

No.	Range [mm]	Accuracy	Fine adjustment	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	Mass [kg]	Price [€]
514-102	0-300	±0,04 mm	4 mm	525	32	20	70	28	45	3,1	397,00
514-104	0-450	±0,05 mm	4 mm	675	32	20	70	28	45	3,4	767,00
514-106	0-600	±0,05 mm	7 mm	870	32	24	85	35	54	7,4	1056,00
514-108	0-1000	±0,07 mm	6 mm	1340	42	30	110	45	65	20	2245,00
514-170	0-1500	±0,18 mm	20 mm	1760	45	30	110,5	45	70	26	5550,00
1500mm delivered with magnifier											









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.

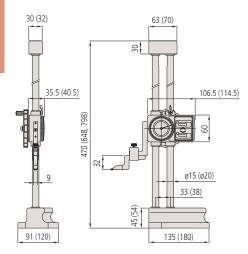




192-133

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	1010,00
192-133	0-1000	±0,07 mm	17	1854,00





35 8 40.5 114.5 ø20 5 150 250

213

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

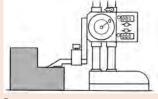
No.	Description	Price €
953638	Holding bar 50 mm (9 x 9 mm)	17,00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25,00



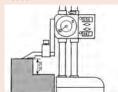
953638



900321



Reset



Reading off : 58,00 mm Counter Dial Gauge : 0,50 mm

Result : 58,50 mm

0 - 300 mm (0 - 450 mm, 0 - 600 mm)





Functions	Series 570
ORIGIN	0
ZERO/ABS	e
±SWITCHING	0
ON/OFF	۵
DATA/HOLD	0
Low voltage alarm	@
Data output	0
PRESET	i i i i i i i i i i i i i i i i i i i

Accuracy	Refer to the list of specifications. (excluding quantizing error)
Scale	ABSOLUTE electrostatic linear encoder
Max. response speed	Unlimited
Digital step	0,01 mm
Battery life	approx. 5000 hours
Display	LCD, 6-digit
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: 57	0-227, 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)	12,00
953638	Holding bar 50 mm (9 x 9 mm)	17,00
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
900321	•	25

<u>953639</u>: 570-227 <u>953638, 900209</u>: 570-230

Consumable spares

	•	
No.	Description	Price €
938882	Battery SR44	6,00
	953638	8
		900321

Series 570

This Digimatic height gauge is very precise and reliable, and offers you the following benefits:

ABSOLUTE Digimatic Height Gauge

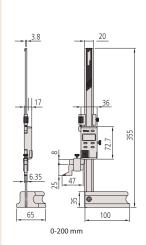
- Its built-in ABSOLUTE linear encoder means you don't have to set the reference point at every power-on, improving reliability as over-speed errors cannot occur.
- Fine-adjustment gives you precise positioning.
- It comes with large and smooth-acting slider hand wheel for coarse- and fine-adjustments (570-3xx only).
- A carbide-tipped scriber is provided.
- SPC data output.

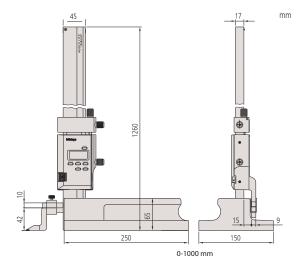


570-227

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	0-1000	±0,07 mm		1,3	16,8	2637,00







ABSOLUTE°



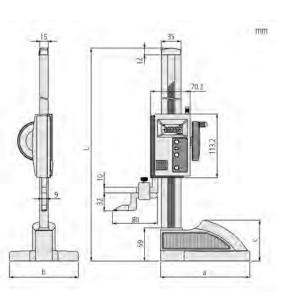
ABSOLUTE Digimatic Height Gauge

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.
- A carbide-tipped scriber is provided.
- SPC data output.





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



Fits the hand comfortably



Large clamp lever

Mitutoyo



ABSOLUTE

Functions		Series 570
ORIGIN		0
ZERO/ABS		@
ON/OFF		0
DATA/HOLD		i
Low voltage alarm		0
Data output		@
Specifications		
Accuracy	Refer to the list of the specifications. (excluding guantizing error)	
Scale	ABSOLUTE electrostatic linear encoder	
Max. response speed	Unlimited	

0,01 mm
approx. 20000 hours
LCD, Character Height 10 mm
Including 1 battery, scriber and scriber clamp

Standard accessories

Digital step Battery life Display Delivered

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)	17,00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25,00

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00



953638



900321



The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Functions	Series 192
ZERO/ABS	6
Preset (2 values)	<i>i</i>
±SWITCHING	0
ON/OFF	9
DATA/HOLD	0
Low voltage alarm	<i>i</i>
Data output	<u>()</u>

•	
Accuracy	Refer to the list of specifications. (excluding quantizing error)
Max. response speed	500 mm/s
Digital step	0,01/0,005 mm
Battery life	approx. 3500 hours
Display	LCD, Character Height: 11 mm
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)	17,00
900321	Swivel clamp for Ø 4/ Ø 8 mm stem and dove tail	25,00

953639









Digimatic Height Gauge Double Column Type

Series 192

- This is a high accuracy height gauge, and 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.





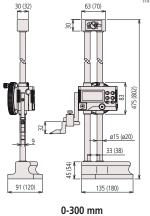


l	y	L	-6	1	3	-1	1	J

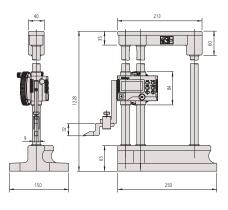
Wethe				
No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
192-613-10	0-300	±0,02 mm	4,7	834,00
192-614-10	0-600	±0,05 mm	8,3	1145,00
192-615-10	0-1000	±0,07 mm	15,7	2165,00

mm









0-1000 mm





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.







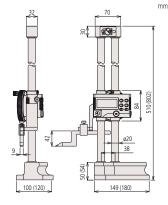
192-007

mm

192-663-10

Metric				
No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
192-663-10	0-300	±0,02 mm	7,5	1112,00
192-664-10	0-600	±0,04 mm	10,4	1421,00
192-665-10	0-1000	±0,06 mm	19,2	2462,00





0-300 mm

(0-600 mm)

213

0-1000 mm

Functions	Series 192
ZERO/ABS	0
Preset (2 values)	e
±SWITCHING	0
ON/OFF	e
DATA/HOLD	0
Probe tip diameter compensation	e
Touch-trigger probe	0
Low voltage alarm	e
Data output	0

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
Battery life	approx. 3500 hours
Display	LCD, Character Height: 11 mm
Delivered	Including scriber, scriber holder, 1 battery and cover

Standard accessories

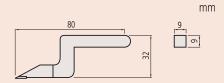
No.	Description
05GZA033	Scriber clamp (9 x 9 mm)
905200	Carbide-tipped scriber (9 x 9 mm) 150 mm length
450291	Cover 300
450292	Cover 600
450290	Cover 1000

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)	17,00
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	6,00



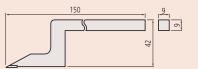
07GZA000

905200 mm

900173 mm

10 16

Ц



6.35

Ľ

144

12.7

47

05GZA033

Carbide-tipped scribers

	spea sensers		
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)	44,00
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

900390 mm 150 6.35 12.7 45.7

905201

when explicitly agreed upon.

Mitutoy

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 scribers are available for all height gauges.

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 scribers are available for all height gauges.

Center master

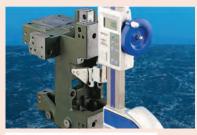
No.	Applicable height gauges	Remarks	Price [€]
900581	570-227, 570-244 506-207 192-630-10, 192-631-10, 192-632-10, 192-633-10 570-248	Center master (12,7 x 6,35 mm)	125,00
951144	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-632-10, 192-633-10 570-312, 570-313, 570-314 192-670-10, 192-671-10, 192-672-10, 192-673-10 514-108, 514-109	Center master (9 x 9 mm)	144,00

Depth measurement attachement

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, 570-304 192-663-10, 192-664-10, 192-665-10 514-108, 514-109	Depth measurement attachment (9 x 9 mm)	43,00
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)	43,00

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





Center master



Depth Gage Attachment





Electrical contact sensor 900872

Repeatability (±2ơ)	1,8 µm
Accuracy	±(2,4+2,1L/600) μm L = Measuring length (mm)
Scale	ABSOLUTE electromagnetic inductive
Measuring force	1,5 ± 0,5 N
Drive method	Manual
Guiding method	Roller bearing
Digital step	0,001mm/0,005mm;
Power supply	alkaline battery size AA LR6 (4pcs.), rechargeable battery size AA Ni-MH (4pcs.), AC-Adapter (optional)
Battery life	Approx. 300h (without air floating) Approx. 80h (with air floating)
Measuring function	1D measurement: height diameter, pitch, Max/Min/TIR (Max-Min), tolerance, preset, data memory
Display	TN monochrome LCD

Standard accessories

No.	Description
011037	4 batteries LR6 (AA)
12AAA715	Setting block
05HZA148	Ball offset probe Ø5

Optional accessories

No.	Description	Price €
936937	Digimatic cable (1 m)	44,00
965014	Digimatic cable (2 m)	58,00
02AZD790D	Connecting cable U-Wave	85,00
06ADV380D	USB Input Tool Direct cable (2 m)	100,00
02AZE990	U-WAVE-T installation Kit for QMH	
06AEG180D	AC Adapter 6V DC, 2A	67,00



Application example of QM-Height with air floating



05HZA148



Linear QM-Height brochure on request



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.
- Types with and without pneumatic drive mechanism
- Automatic running of prelearnt part programs
- 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.
- Extraordinary battery life
- GO/±NG judgement is performed by setting the upper and lower tolerances.
- Display is mounted fixed to the housing for more comfortable usage. Probe moves independently during measurements.



No.	Range [mm]	Perpendicularity	Air floating	Mass [kg]	Price [€]
518-230	0-350/0-465*	7µm	no	25	3350,00
518-232	0-600/0-715*	12µm	no	26	4110,00
518-234	0-350/0-465*	7µm	yes	29	3700,00
518-236	0-600/0-715*	12µm	yes	30	4460,00

*Range with probe turned to upward position





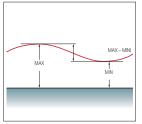


GO

243



ABSOLUTE°





The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Optional Accessories for QM-Height

Series 518

QM-Height

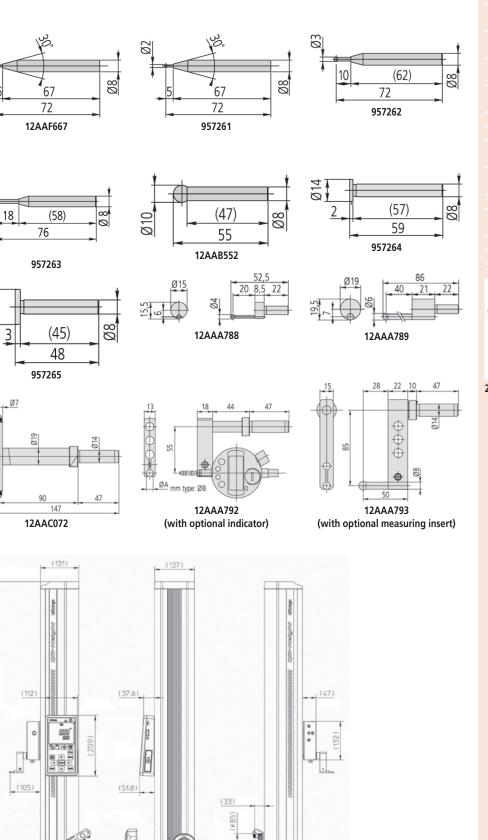
<u>Ø</u>2

ø4

Ø20

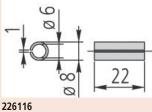
(94,6)

1016:600mm 784:350mm



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	
226116	Ø 6 collar		





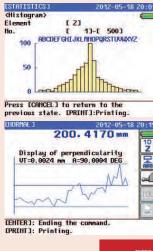
(280)

65.5

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	60000 (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 12V





Linear Height LH-600 brochure on request

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-learnt part programs.
- GO/± NG 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

M

TOL

Mitutoyo

101.4356

100.0008 mm

surement Connand] key nt. III#03:Display of

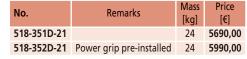
-**‡**=

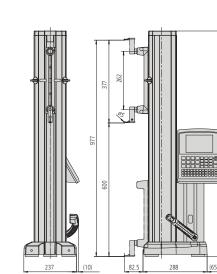
4

ZXCVBNM

1003



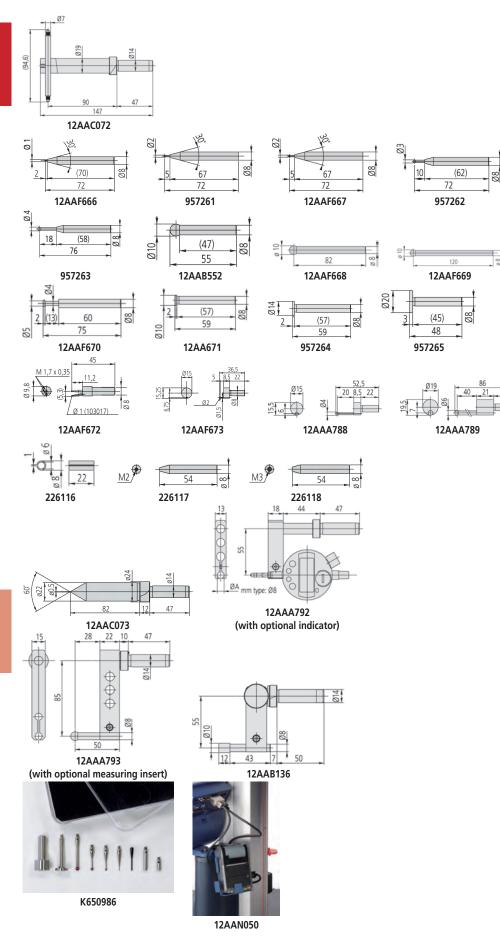




1013

Optional Accessories for Linear Height

Series 518



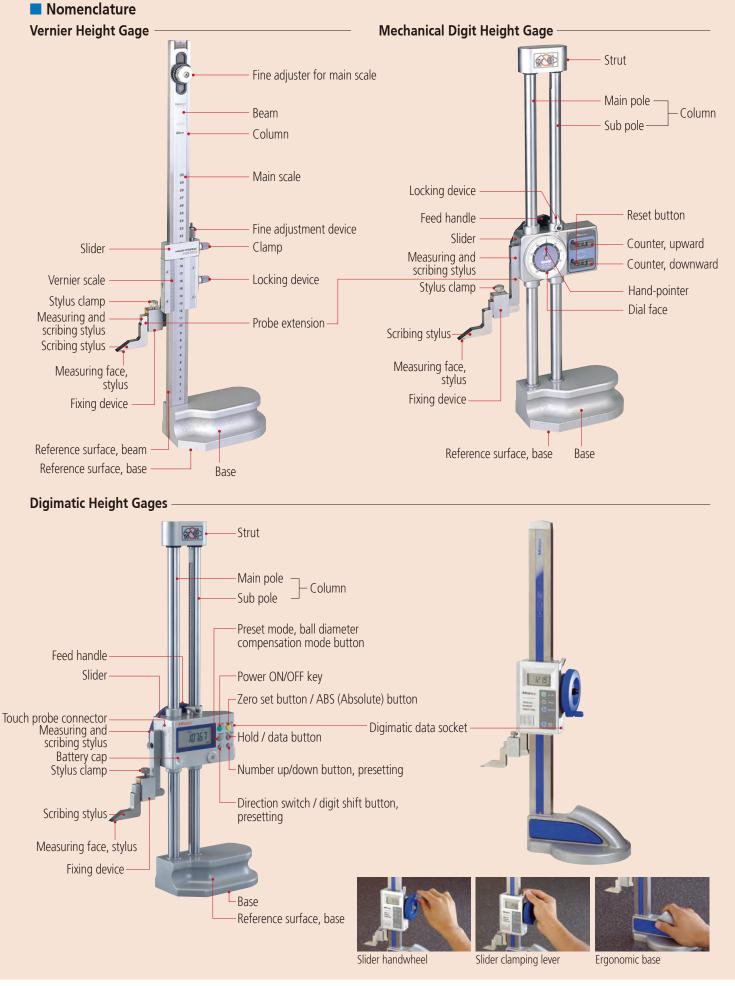
Description Price € No. 1. Probe diameter calibration block Probe diameter calibration 12AAA787 227,00 block (applicable to tapered probe) 2. Depth measurement 12AAC072 Depth probe 160,00 3. Interchangeable measuring insert (or stylus) for eccentric probe (standard accessory) 12AAF666 Ø1 spherical measuring 160,00 insert (coaxial type) Ø2 spherical measuring 957261 88,00 insert (coaxial type) 12AAF667 Ø2 spherical measuring 254,00 insert (coaxial type) Ruby ball 957262 Ø3 spherical measuring 93,00 insert (coaxial type) 957263 Ø4 spherical measuring 103,00 insert (coaxial type) Ø10 spherical measuring 12AAB552 146,00 insert (coaxial type) Ø10 spherical measuring 12AAF668 183,00 insert (coaxial type) L=82 Ø10 spherical measuring 12AAF669 199,00 insert (coaxial type) L=120 12AAF670 Ø5 disk measuring insert 175,00 12AAF671 Ø10 disk measuring insert 140,00 Ø14 disk measuring insert 957264 185,00 957265 Ø20 disk measuring insert 232,00 12AAF672 Ø1 spherical measuring 142,00 insert (eccentric type) 12AAF673 Ø2 spherical measuring 190,00 insert (eccentric type) Ø4 spherical measuring 12AAA788 62,00 insert (eccentric type) 12AAA789 Ø6 spherical measuring 68,00 insert (eccentric type) 226116 Ø 6 collar 226117 Shank with M2 thread for 41,00 CMM stylus 226118 Shank with M3 thread for 41,00 CMM stylus 4. Special holder, special probe 12AAC073 Tapered measuring insert 125,00 (Ø22 mm) 12AAA792 Holder; for Dial Gage mm 105,00 for Ø 8 mm stem 12AAA793 Holder; long 105,00 12AAB136 Probe; Ø10 cylincrical 231,00 universal 5. Others 12AAF674 Auxiliary weight 27,00 K650986 Box probes 386,00 6. Printer and interface 12AAN052 Printer paper for receipt 95,00 printer (10 rolls pack) 12AAA804 Printer cable; 2m (for A4 printer) 12AAA807D RS-232C cable (2m) 56,00 12AAN050 Receipt printer (for EU; 1225,00 except UK) 7. Battery 12AAF712 123,00 **Battery Pack** 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

Optional accessories

Quick Guide to Precision Measuring Instruments



Height Gages

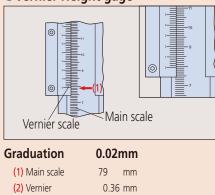


The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.





How to read Vernier Height gage



General notes on use of Height Gages

79.36 mm

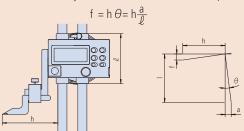
1. Potential causes of error

Reading

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.

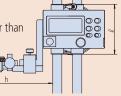
2. Reference edge (column) warping and scriber installation

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.

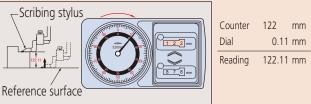
Example: Effect of measuring point position When h is 150 mm, the error is 1.5 times larger than when h is 100 mm.



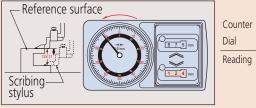
3. Lifting of the base from the reference surface

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



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.

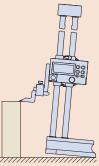
Notes on using the height gage

- 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.



Mitutoyo

248

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Indicators



ABSOLUTE Digimatic Indicator Page 250



Dial Indicator Page 262



Accessories for Indicator Page 280



Dial Test Indicator Page 289



Accessories for Dial Test Indicators Page 297



Thickness Gauge, Depth Gauge, Caliper Gauge and Coating Thickness Gauge Page 299



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 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.



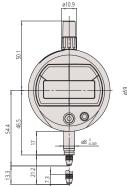


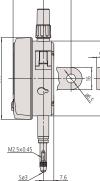
543-500B

543-505B

Metric

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Mass lug/plain [g]	Price [€]
543-500B	543-500	12,7	0,001 mm	0,003 mm	150/140	289,00
543-505B	543-505	12,7	0,01 mm	0,02 mm	150/140	145,00
No. with "B": Flat back plate						









Functions	Series 543
ORIGIN (ABS-Zero)	0
Digimatic data output	e
Counting direction switchable	0

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 30 mm	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 Too	Direct cable:		

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 ufacturing ma

150 Lux

ages with vehicles loading zone

100 Lux

50 Lux warehouse storage room

Functions	Series 543
ORIGIN (ABS-Zero)	0
Digimatic data output	9
ON/OFF	0
Counting direction switchable	

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. 18000 hours (0,001 mm type) approx. 20000 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 30 mm	26,00	
21EZA105	Spindle lifting knob (12,7 models)	26,00	
238774	Silicon rubber boot	11,00	
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. 238774 only for 543-794B

Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00
938882	Battery SR44	6,00
02ACA376	Rubber boot (NBR rubber)	

02ACA376 only for 543-794B

21EZA198



ABSOLUTE Digimatic Indicator ID-S

Series 543

Metric

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.

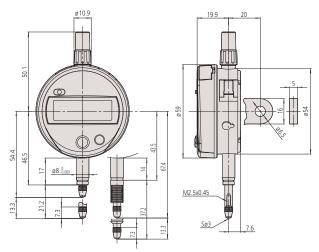


543-794B

Mitutoy

ABSOLUTE*

No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Remarks	Mass Lug/flat [g]	Price [€]
543-781B	543-781	12,7	0,01 mm	0,02 mm	IP42	140/150	142,00
543-790B	543-790	12,7	0,001 mm	0,003 mm	IP42	140/150	287,00
543-794B	543-794	12,7	0,001 mm	0,003 mm	IP53	140/150	329,00
No. with "B": Flat back plate							



ABSOLUTE Digimatic Indicator ID-U

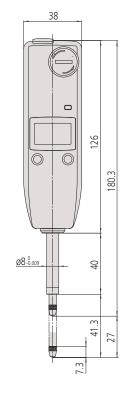
Series 575

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.





575-121

Metric				
No.	Range [mm]	Accuracy	Mass [g]	Price [€]
575-121	25,4	0,02 mm	140	196,00





Functions	Series 575	
ORIGIN (ABS-Zero)		0
Digimatic data out	put	@
ON/OFF		0
Counting direction	switchable	<i>i</i>
Specifications Accuracy	ecifications g error)	
Scale	Capacitance type, AB encoder	SOLUTE linear
Stem Ø	8 mm (ISO/JIS type)	
Max. response	Unlimited	

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. 20000 hours	
Digital step	0,01 mm	
Display	LCD, character height 8,5 mm	

Standard accessories

No.	Description
137693	Spindle lifting handle

Optional accessories

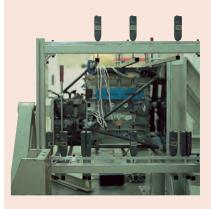
No.	Description	Price €
540774	Spindle lifting cable 30 mm	26,00
Digimatic Si	gnal Cables	
905338	Digimatic cable (1 m)	28,00
905409	Digimatic cable (2 m)	34,00
02AZD790F	Connecting cable U-Wave	85,00
06ADV380F	USB Input Tool Direct cable (2 m)	100,00

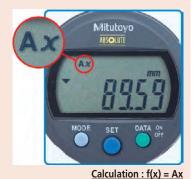
540774: moving measuring range max. 12mm

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	6,00
901312	Standard contact point	11,00





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).

25,4 mm range model

84.8

- Large character height of 11mm provides good readability.
- Display 330° rotatable.
- A function lock protects the display against unauthorised use.





12,7 mm range model



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

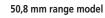
Ensures reliability of measurement by locking the settings to prevent preset function settings from being changed by mistake

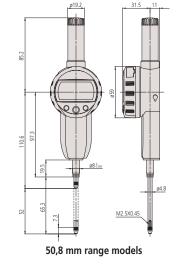


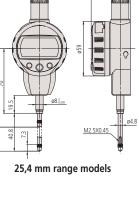
Large LCD The large LCD incorporates 11 mm characters making measurement values much easier to read



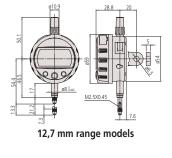
Tolerance function 2 kinds of tolerance visualisation







253





ABSOLUTE Digimatic Indicator ID-C

Series 543

Metric							
No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Remarks	Mass [g]	Price [€]
543-390B	543-390	12,7	0,001/0,01 mm	0,003 mm		170	330,00
543-394B	543-394	12,7	0,001/0,01 mm	0,003 mm	Low force	170	410,00
543-400B	543-400	12,7	0,01 mm	0,02 mm		170	249,00
543-404B	543-404	12,7	0,01 mm	0,02 mm	Low force	170	304,00
543-470B		25,4	0,001/0,01 mm	0,003 mm		190	400,00
543-474B		25,4	0,01 mm	0,02 mm		190	348,00
543-490B		50,8	0,001/0,01 mm	0,005 mm		260	597,00
543-494B		50,8	0,01 mm	0,04 mm		260	541,00

No. with "B": Flat back plate

Specification low measuring force models : see below







Spindle lifting lever

Spindle lifting handle





Spindle lifting lever



Spindle lift knop

Spindle lifting cable 500 mm

Spindle lifting cable 300 mm

Setting measuring force on low measuring force models

•543-404/404B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
	Yes	Yes	0.5N
Pointing vertically	Yes	No	0.4N
downward	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
	Yes	Yes	0.7N
Pointing vertically	Yes	No	0.6N
downward	No	Yes	0.4N
	No	No	Not defined
Horizontal	Not def	ined	

Functions	Series 543
ZERO/ABS	0
GO/±NG judgement	<i>i</i>
Digimatic data output	0
ON/OFF	<i>i</i>
DATA/HOLD	0
Lock function	<i>i</i>
PRESET	0
Counting direction switchable	<i>i</i>
Calculation	0
function	
Selectable resolution*	<i>i</i>

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. 7000 hours	
Display	LCD character height 11 mm Rotatable 330°	

Optional accessories

•		
No.	Description	Price €
540774	Spindle lifting cable 30 mm	26,00
901975	Spindle lifting cable 300 mm	22,00
21EZA198	Spindle lifting lever (12,7 model)	8,00
21EZA105	Spindle lifting knob (12,7 models)	26,00
21EZA197	Spindle lifting knob (25,4 models)	57,00
21EZA200	Spindle lifting knob (50 models)	69,00
137693	Spindle lifting handle	2,00
02ACA571	Auxiliary spindle spring (25,4 models)	10,00
02ACA773	Auxiliary spindle spring (50 models)	10,00
Digimatic S	ignal 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
2ACA571/02ACA772 : required when orienting the indicator uncide down		

<u>02ACA571/02ACA773</u> : required when orienting the indicator upside down <u>21EZA105</u> : not available for low measuring force models <u>540774</u> : moving measuring range max. 28 mm

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00
901312	Standard contact point	11,00

*0,001 mm type

Functions	Series 543
ZERO/ABS	0
GO/±NG judgement	<i>i</i>
Digimatic data output	0
ON/OFF	<i>i</i>
DATA/HOLD	0
Max/Min value reading	<i>i</i>
Lock function	0
PRESET	<i>i</i>
Calculation	0
function	
Selectable resolution	<u>()</u>

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 $\mu m/sec,$ 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 30 mm	26,00
902011	Spindle lifting lever	6,00
Digimatic S	ignal 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	6,00
901312	Standard contact point	11,00

21FAJ394

011395

011394

21FAJ395

ABSOLUTE Digimatic Indicator Calculator ID-C

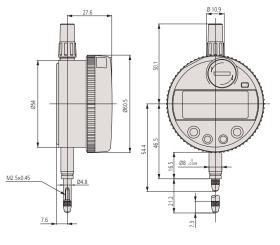
Series 543

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.





ABSOLUTE*

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	1080,00
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.





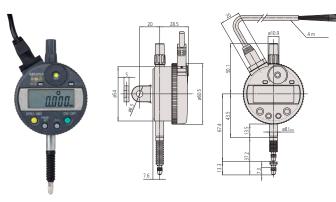
ABSOLUTE Digimatic Indicator Signal ID-C

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

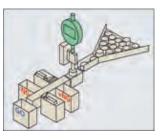
No.	No. Lug back plate	Range [mm]	Digital step	Accuracy	Mass [g]	Price [€]
543-280B	543-280	12,7	0,001 mm	0,003 mm	335	685,00

Wire colour	Signal name	I/O	Description
Black	- V (GND)	-	Connect to the minus (-) terminal
Red	+ V (plus power voltage)	Ι	Supply a power voltage between 12 VDC and 24 VDC
Orange	- NG	0	Tolerance judgement result output terminals (NPN open-collector
Green	OK	0	output) : Only the terminal to a judgement result is set to the low
Brown	+ NG	0	level. (See the output circuit diagram)
Yellow	PRESET_RECALL/ZERO	I	External input terminals (no-voltage input) : If the relevant terminal is set to the low level,
Blue	HOLD_RESET	I	its signal becomes true. (See the input circuit diagram)
Shield	FG (Grame Ground)	-	Connect to the ground.

I/O Specifications

Wire	-NG	ОК	+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	<	0	>	"x.xxE" indication

Output pattern





Functions	Series 543
Signal output:	0
NPN open-collector,	
(+NG , OK , -NG)	
Signal input:	<i>i</i>
No-voltage input,	
(PRESET_RECALL/ZERO, HOLD_RESET)	
ZERO/ABS	0
GO/±NG judgement	0
ON/OFF	0
Max/Min/Runout value	<i>i</i>
Tolerance assessment via LED	0
PRESET	0
Counting direction switchable	0
Tolerance display	0

Specifications

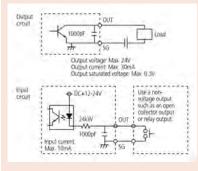
specifications						
Refer to the list of specifications (excluding quantizing error)						
\leq 2 N						
Capacitance type, ABSOLUTE linear encoder						
At a speed of \geq 50 $\mu\text{m/sec},$ the peak value may not always be correctly displayed						
Unlimited						
8 mm (ISO/JIS type)						
Carbide ball, thread M 2,5 x 0,45 mm (ISO/JIS type) or						
Counting value composition error, overflow error, tolerance limit setting error						
DC 12 - 24V±10%						
LCD, character height 8,5 mm						
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 30 mm	26,00
902011	Spindle lifting lever	6,00
238774	Silicon rubber boot	11,00

Consumable spares

No.	Description	Price €
02ACA376	Rubber boot (NBR rubber)	
901312	Standard contact point	11,00



Functions	Series 543
ZERO/ABS	0
GO/±NG judgement	e
Digimatic data output	0
ON/OFF	@
Max/Min/Runout value	0
PRESET	e
Counting direction switchable	0

Accuracy	Refer to the list of specifications (excluding quantizing error)
Measuring force	\leq 1,5 N
Scale	Capacitance ABSOLUTE linear encoder
Max/Min function	At a speed of \geq 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 - 1300 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 30 mm	26,00
Digimatic Si	ignal 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

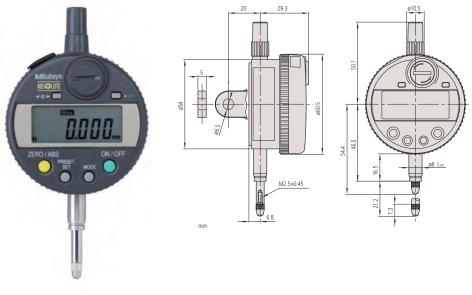
No.	Description	Price €
938882	Battery SR44	6,00
901312	Standard contact point	11,00

ABSOLUTE Digimatic Indicator Max/Min/RANGE ID-C

Series 543

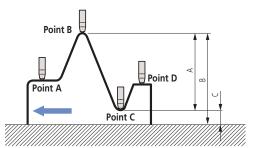
This indicator is the max/min value holding function model, and offers you the following benefits:

- 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.

257





ABSOLUTE Digimatic Indicator ID-N

Series 543

This is a slim back-plunger model that is highly resilient and robust. The ABSOLUTE Digimatic Indicator ID-N offers you the following benefits:

- It 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.







Width of 35 mm instead of 60 as standard **Digimatic indicators**

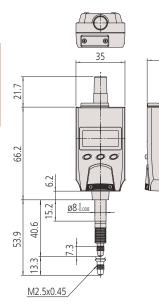
543-575

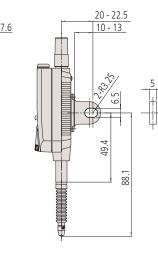
Flexible installation options switchable display orientation (overhead use)

Metric

		•				
No.	Range	Digital step	Accuracy	Measuring force	Mass	Price
NO.	[mm]	Digital step	Accuracy	[N]	[g]	[€]
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











Functions	Series 543
GO/±NG judgement	0
Digimatic data output	<i>i</i>
ON/OFF	0
DATA/HOLD	@
Signal input	0
PRESET or external ZERO	
PRESET	9
Counting direction switchable	0
Selectable resolution*	i
	-

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. 7000 hours
Display	LCD, character hight: 6,2 mm

Optional accessories

No.	Description	Price €
238774	Silicon rubber boot	11,00
21EZA145	Back plate with centre lug	16,00
21EZA105	Spindle lifting knob (12,7 models)	26,00
Digimatic Si	ignal Cables	
21EAA194	Digimatic cable 1 m	52,00
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	6,00
02ACA376	Rubber boot (NBR rubber)	



21EAA194



194EAA210

* 0,001 mm type



The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Functions	Series 543
GO/±NG judgement	0
Digimatic data output)
ON/OFF	0
DATA/HOLD)
Signal input PRESET or external ZERO	
PRESET)
Counting direction switchable	0
Selectable resolution*) ا

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. 7000 hours
Display	LCD, character hight: 6,2 mm

Optional accessories

No.	Description	Price €
21EAA212	Silicon rubber boot	10,00
21EZA145	Back plate with centre lug	16,00
Digimatic Si	ignal Cables	
21EAA194	Digimatic cable 1 m	52,00
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	6,00
901312	Standard contact point	11,00
125317	Rubber boot (NBR Rubber)	6,00



*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.



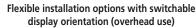


Dust-Wate Prote

ABSOLU1

6

IP66

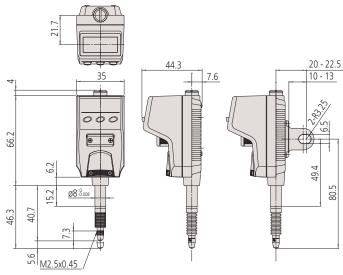


543-580

Motric

Range [mm]	Digital step	Accuracy	3		Price [€]
funni	[iiiiii]		[IN]	[9]	(C)
5	0,01 mm	0,02 mm	≤ 2	130	243,00
5	0,001 mm/0,01 mm	0,01/0,003 mm	≤ 2	130	324,00
	[mm] 5	[mm] Digital step 5 0,01 mm	[mm] Digital step Accuracy 5 0,01 mm 0,02 mm	[mm] Digital step Accuracy [N] 5 0,01 mm 0,02 mm ≤ 2	Imm] Digital step Accuracy [N] [g] 5 0,01 mm 0,02 mm ≤ 2 130

Also available! Inch/Metric Models



The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



Digimatic Indicator ID-H

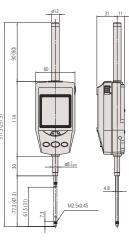
Series 543

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.







543-561D

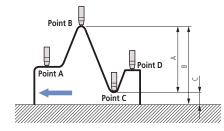
weuric					
No.	Range [mm]	Accuracy	Measuring force [N]	Mass [g]	Price [€]
543-561D	30,4	0,0015 mm	≤ 2	290	608,00
543-563D	60.9	0.0025 mm	≤2,5	305	659.00

Data export

Reset Max/Min/TIR Max/Min/TIR switchover

Call PRESET value





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



Functions	Series 543
ZERO	0
GO/±NG judgement	e
Digimatic data output	0
Digimatic data input	e
ON/OFF	0
DATA/HOLD	e
RS-232C data output*	0
Analogue measuring range switchable	e
Max/Min/Runout value	0
RS-232C data input*	e
Lock function	0
PRESET	0
Counting direction switchable	0
Selectable resolution	e

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	Spindle lifting handle

Optional accessories

No.	Description	Price €
21EZA099	Remote control	75,00
540774	Spindle lifting cable 30 mm	26,00
21EZA101	Spindle lifting knob	26,00
543-004D	Digimatic Presetter	
Digimatic Signal Cables		
936937	Digimatic cable (1 m)	44,00
965014	Digimatic cable (2 m)	58,00
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 / AAA)	10,00
901312	Standard contact point	11,00

* RS-232 Input/Output

Digimatic presetter (optional) :

External keyboard for entering tolerance data or preselecting

values

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.





Functions	Series 543 - Superior multifunction indicator
ZERO/ABS	0
GO/±NG judgement	e
Digimatic data output	0
Digimatic data input	e
ON/OFF	0
Analogue measuring range switchable	۲
Max/Min/Runout value	0
Lock function	e
PRESET	0
Counting direction switchable	۲
Selectable resolution	e

Refer to the list of specifications (excluding quantizing error)
Capacitance type, ABSOLUTE linear encoder
8 mm (ISO/JIS type)
Unlimited
Carbide ball, thread M 2,5 x 0,45 mm (ISO/JIS type)
Counting value composition error, overflow error, tolerance limit setting error
AC adapter 9V DC, 500mA
0,001 mm/0,01 mm
LCD character height 8,5 mm

Standard accessories

No.	Description
06AEG302D	AC Adapter 9V, 500mA
137693	Spindle lifting handle

Optional accessories

Description	Price €
Spindle lifting cable 30 mm	26,00
Auxiliary spindle spring (25,4 models)	10,00
Auxiliary spindle spring (50 models)	10,00
Digimatic Presetter	
ignal Cables	
Digimatic cable (1 m)	44,00
Digimatic cable (2 m)	58,00
Connecting cable U-Wave	85,00
USB Input Tool Direct cable (2 m)	100,00
	Spindle lifting cable 30 mm Auxiliary spindle spring (25,4 models) Auxiliary spindle spring (50 models) Digimatic Presetter ignal Cables Digimatic cable (1 m) Digimatic cable (2 m) Connecting cable U-Wave USB Input Tool Direct cable

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

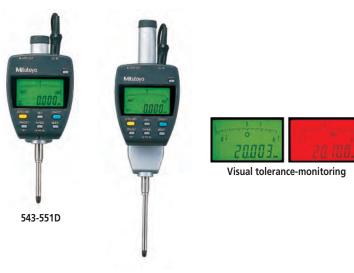
Digimatic presetter (optional) : External keyboard for entering tolerance data or preselecting values

ABSOLUTE Digimatic Indicator ID-F

Series 543 - Superior multifunction indicator

This is a superior multifunction indicator.

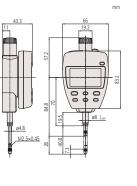
- The ABSOLUTE Digimatic Indicator ID-F offers you the following benefits: • 2-colour LCD backlight (green and red) provides you with visual GO/±NG
- tolerance judgement and analogue bar-graph display.
- You can display the maximum, minimum or range (runout value) during measurement.
- External power supply via AC-Adapter.

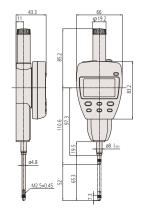


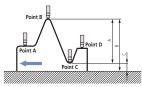
543-553D

NO	ange 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°

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 31mm, ø 36mm, ø 40mm





1109S-10

0 10 20

0

80 90 100 90

40

50

60

70

40

50

60

70

80

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
1913TB-10	1913T-10	0,5	0,2 mm	0,002 mm	0-100-0	50/46	143,00
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
1911TB-10	1911T-10	2,5	1 mm	0,01 mm	0-50-0	50/46	136,00
1124SB	1124S	3,5	0,5 mm	0,005 mm	0-50 (50-0)	90/70	93,00
1003TB	1003T-10	4	1 mm	0,01 mm	0-50-0	51/48	98,00

No.	Α	В	С	D	E	F	G	Н		Measuring force
NO.	[mm]	[N]								
1913TB-10	15,5	39,4	31	12,5	19,4	15,2	8,9	30	6	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
1911TB-10	15,5	42	31	12,5	19,4	15,1	11,5	30	6	0,3 - 1,8
1124SB	32,5	46	40	14,5	20	13,8	12,2	38	6,6	0,4 - 1,4
1003TB	18	40,3	36	13	15	9,5	12,8	32	6	0,3 - 1,4

No.	DIN	878 (1	983)			EN IS	O 463		
				Errors	of indi rang	cation o Je of	ver a		Ļ
	fe µm	fges µm	fu µm	\\ \= Any 1/10 revolution	∃ Any 1/2 Frevolution		⊤ Tange	🚡 Repeatability	玉 Hysteresis error
1913TB-10	5	7	2	2,5	4	5	6	1	2,5
1109SB-10	4	6	2	2,5	4	4,5	5,5	1	2
1013SB-10	8	4	2	2,5	4	4,5	5,5	1	2
1911TB-10	10	13	3	8	9	10	12	3	4
1124SB	12	14	3	5	8	9	10	3	3
1003TB	12	13	3	8	10	11	13	3	4

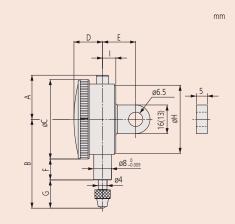


		Seri	es 1	
Functions	1003TB 1911TB-10	1913TB-10	1013SB-10 1109SB-10	1124SB
🔄 Balanced dial	0	۲	0	
🔁 Continuous dial				0
Shockproof			0	
Jeweled bearing		0	0	

Consumable spares

No.	Description	Price €
21AZA319	Standard contact point	3,00
901312	Standard contact point	11,00
	10 / 1013S-10 / 1124S 3T-10 / 1911T-10 / 1003T-10	

For accessories and contact points, see end of dial indicators section





1911T-10





10135-10

1124S

	Series 1						
Functions	1040SB	1044SB	1044SB-60	1044SB-15	1041SB	1045SB	
🔄 Balanced dial					۲	۲	
🔁 Continuous dial	0	0	0	0			
Seweled bearing				۲			
O IP63			0				
🖾 Double scale spacing	۲				۲		

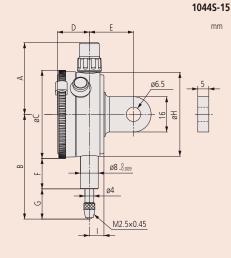
Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00
136838	Rubber boot (NBR rubber)	7,00
902119	Standard contact point for waterproof type	16,00

136838 and 902119 : for 1044S-60 (IP model)

For accessories and contact points, see end of dial indicators section

10445-60 IP63



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	80,00
1041SB	10415	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

1044SB-15: 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]	l [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	
1045SB	32,5	47,5	40	14,5	20	13,8	13,7	38	6,6	0,4 - 1,4	

No.	DIN	878 (19	983)	EN ISO 463						
				Errors of indication over a range of					Ļ	
	fe µm	fges µm	fu µm	\\ \= Any 1/10 revolution	∃ Any 1/2 Frevolution	玉 Any 1	⊤ Range	🚡 Repeatability	玉 Hysteresis error	
1040SB	12	14	3	5	8	9	12	3	3	
1041SB	12	14	3	5	8	9	10	3	3	
1044SB	12	14	3	5	8	9	12	3	3	
1044SB-15	12	14	3	5	9	10	12	3	3	
1044SB-60	12	14	3	5	9	10	12	3	3	
1045SB	12	14	3	5	9	10	12	3	3	

263

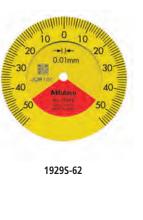
The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

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.







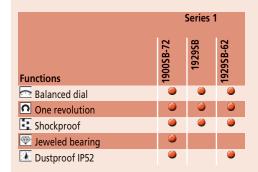
1900S-72

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
1929SB	19295	1 (plunger stroke:3,5)	1,4 mm	0,01 mm	50-0-50	90/70	88,00
19295B-62	19295-62	1 (plunger stroke: 3,5)	1,4 mm	0,01 mm	50-0-50	90/70	112,00
1900SB-72	19005-72	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]	F [mm]	E [mm]	H [mm]	G [mm]	l [mm]	Measuring force [N]
1929SB	32,5	47,5	40	14,5	13,8	20	38	13,7	6,6	0,4 - 1,4
1929SB-62	32,5	47,5	40	14,5	13,8	20	38	13,7	6,6	0,4 - 1,4
1900SB-72	32,5	53,5	40	14,5	16,8	20	38	16,7	6,6	0,4 - 1,4

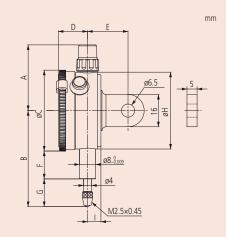
No.	DIN	878 (1	983)	EN ISO 463						
				Errors	of indi rang		<u> </u>			
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution	∃ Repeatability	玉 Hysteresis error			
1929SB	10	13	3	5			7	3	3	
1929SB-62	10	13	3	5			7	3	3	
1900SB-72	3	5	2	2			4	1	2	



Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00

For accessories and contact points, see end of dial indicators section.

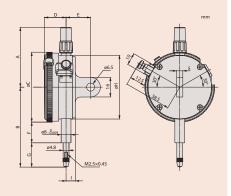


	Series 2						
Functions	2044SB	2044SB-60	2044SB-09	2045SB			
E Balanced dial				۲			
🔁 Continuous dial	0	0	0				
Shockproof			0				
0 IP64		0					

Consumable spares

No.	Description	Price €						
901312	1312 Standard contact point							
125317	Rubber boot (NBR Rubber)	6,00						
902119	Standard contact point for waterproof type	16,00						
902119 and 125317	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 0,01mm scale graduation, with bezel Ø 57mm, 5mm/10mm range





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	63,00

No.	Α	В	С	D	F	E	Н	G	1	Measuring force
NO.	[mm]	[N]								
2044SB	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4
2044SB-09	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4
2044SB-60	48,8	70	57	17,7	12,3	20	52	29,2	7,6	0,4 - 2,5
2045SB	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4

No.	DIN	878 (19	983)			EN IS	D 463		
				Errors	of indic rang		2		
	fe µm	fges µm	fu µm		∃ Any 1/2 Trevolution	∃ Any 1 Trevolution	⊤ Tange	🚡 Repeatability	도 Hysteresis error
2044SB	10	13	3	5	9	10	12	3	3
2044SB-09	10	13	3	5	9	10	12	3	3
2044SB-60	10	13	3	5	9	10	12	3	3
2045SB	10	13	3	5	9	10	12	3	3



Dial Indicator Series 2

Series 2

This is a standard type metric dial indicator with 0,01mm scale graduation, with bezel \emptyset 57mm, 10mm range







2047S

letric	

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	32,00
2046SB-09	2046S-09	10	1 mm	0,01 mm	0-100 (100-0)	146/137	56,00
2046SB-60	2046S-60	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	20475	10	1 mm	0,01 mm	0-50-0	144/135	61,00

Ne	Α	В	С	D	F	E	Н	G		Measuring force
No.	[mm]	[N]								
2046SB	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4
2046SB-09	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4
2046SB-60	48,8	70	57	17,7	12,3	20	52	29,2	7,6	0,4 - 2,5
2310SB-10	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4
2902SB	48,8	65,2	57	17,7	16,9	20	52	19,8	7,6	0,4 - 1,4
2047SB	48,8	65,2	57	17,7	16,9	20	52	19,5	7,6	0,4 - 1,4

No.	DIN 878 (1983)					EN IS	0 463		_
				Errors	of indic rang		<u>ب</u>		
	fe µm	fges µm	fu µm	ਜ਼ Any 1/10 Tevolution	∃ Any 1/2 Frevolution	∃ Any 1 Tevolution	⊞ Range	🚡 Repeatability	玉 Hysteresis error
2046SB	12	15	3	5	9	10	13	3	3
2046SB-09	15	17	3	5	9	10	15	3	3
2046SB-60	12	15	3	5	9	10	13	3	3
2310SB-10	12	15	3	5	9	10	15	3	3
2902SB	12	15	3	5	9	10	13	3	3
2047SB	12	15	3	5	9	10	13	3	3

			Seri	es 2		
Functions	2046SB	2046SB-60	2310SB-10	2046SB-09	2902SB	2047SB
🔄 Balanced dial						۲
🔁 Continuous dial	0	0	0	0	0	
Reverse reading					0	
Shockproof				0		
Seweled bearing			0			
O 1P64		0				
Coaxial revolution counter			۲			

Consumable spares

No.	Description	Price €						
901312	Standard contact point	11,00						
902119	Standard contact point for waterproof type	16,00						
125317	Rubber boot (NBR Rubber)	6,00						
902119 and 125317	02119 and 125317 · for 20465-60 (IP model)							

902119 and 125317 : for 2046S-60 (IP model)

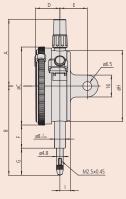
For accessories and contact points, see end of dial indicators section



20465-60



2310S-10



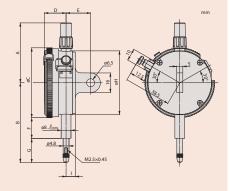
	Series 2								
Functions	2109SB-10	2109SB-70	2110SB-10	2110SB-70					
Ealanced dial	0	0							
🔁 Continuous dial			0	0					
Shockproof	0	0	0	0					
E Jeweled bearing	0	0	0	0					
O IP64		0		۲					
🖾 Double scale spacing			0	0					

Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00
21AZA320	Standard contact point	8,00
902119	Standard contact point for waterproof type	16,00
136838	Rubber boot (NBR rubber)	7,00

902119 : for 21105-70 21AZA320 and 136838 : for 21095-70

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





Metric No. Lug Mass lug/plain Range Price Range Graduation No. Scale back plate [mm] per rev. [g] [€] 2110SB-10 21105-10 0,001 mm 0-100 (100-0) 149/140 110,00 0,1 mm 1 2110SB-70 21105-70 0,1 mm 0,001 mm 0-100 (100-0) 150/141 147,00 1 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.	Α	В	С	D	F	E	Н	G	1	Measuring force
NO.	[mm]	[N]								
2110SB-10	48,8	66,5	57	17,7	16,9	20	52	21,2	7,6	0,9 - 1,5
2110SB-70	48,8	67,5	57	17,7	12,3	20	52	26,7	7,6	0,9 - 2
2109SB-10	48,8	60,5	57	17,7	16,9	20	52	15,1	7,6	0,9 - 1,5
2109SB-70	48,8	65,5	57	17,7	12,3	20	52	24,5	7,6	0,9 - 2

No.	DIN	878 (19	983)			O 463				
				Errors	of indic rang		Ļ			
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution	ਜ਼ Any 1	⊤ Range	∃ Repeatability	玉 Hysteresis error	
2110SB-10	3	5	2	2,5	4	4,5	5	1	2	
2110SB-70	3	5	2	2,5	4	4,5	5	1	2	
2109SB-10	3	5	2	2,5	4	4,5	5	1	2	
2109SB-70	3	5	2	2,5	4	4,5	5	1	2	



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









2119S-10

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	83,00

No.	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	E [mm]	H [mm]	G [mm]	l [mm]	Measuring force [N]
2113SB-10	48,8	61	57	17,7	16,9	20	52	15,6	7,6	0,4 - 1,5
2118SB-10	48,8	60,3	57	17,7	16,9	20	52	14,9	7,6	0,4 - 1,5
2119SB-10	48,8	60,3	57	17,7	16,9	20	52	14,9	7,6	0,4 - 1,5
2124SB-10	48,8	60,3	57	17,7	16,9	20	52	14,9	7,6	0,4 - 1,5

No.	DIN	DIN 878 (1983)			EN ISO 463						
				Errors of indication over a range of					<u>ب</u>		
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution		⊤ ⊟ Range	∃ Repeatability	玉 Hysteresis error		
2113SB-10	5	7	2	2,5	4	4,5	7	1	2		
2118SB-10	8	10	2	4	6	6,5	9,5	1,5	2,5		
2119SB-10	8	10	2	4	6	6,5	9,5	1,5	2,5		
2124SB-10	10	5	3	5	9	10	11	2	3		

	Series 2								
Functions	2113SB-10	2119SB-10	2118SB-10	2124SB-10					
Balanced dial	0	0							
🔁 Continuous dial				0					
Shockproof	0								
Jeweled bearing	0	0	0	0					

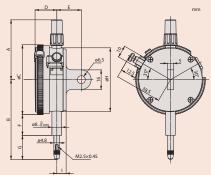
Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00

For accessories and contact points, see end of dial indicators section.



21245

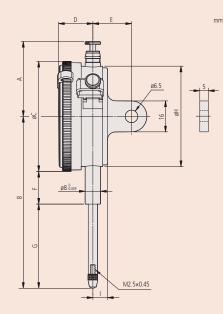


Series 2									
Functions	2050SB	2320SB-10	2050SB-60	2050SB-19					
Continuous dial	۲	۲	۲	0					
Shockproof				0					
🞯 Jeweled bearing	۲	۲	۲	0					
☑ IP64			0						
Cushioned end point	0	۲	۲	0					
Coaxial revolution counter		0							

Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00
21AZA321	Standard contact point	13,00
21AZA321 : for 205		

For accessories and contact points, see end of dial indicators section.



Dial Indicator with 20 mm Stroke Series 2

Mitutoyo

50 23205-10

瀧

Series 2

This is a standard metric dial indicator that offers you the following benefits:



- 20mm stroke.
- Bezel ø 57mm, graduation 0,01mm



Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2050SB	20505	20	1 mm	0,01 mm	0-100 (100-0)	149/140	83,00
2050SB-60	2050S-60	20	1 mm	0,01 mm	0-100 (100-0)	155/146	119,00
2050SB-19	2050S-19	20	1 mm	0,01 mm	0-100 (100-0)	149/140	83,00
2320SB-10	2320S-10	20	1 mm	0,01 mm	0-100 (100-0)	150/141	83,00

No.	Α	В	С	D	F	E	Н	G	1	Measuring force
NO.	[mm]	[N]								
2050SB	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2
2050SB-60	38,8	75,2	57	17,7	12,3	20	52	29,8	7,6	0,4 - 2,5
2050SB-19	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2
2320SB-10	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2

No.	DIN	878 (19	983)	EN ISO 463					
				Errors of indication over a range of					Ļ
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution		⊤ Range	풀 Repeatability	玉 Hysteresis error
2050SB	25	30	4	6	10	11	20	3	4
2050SB-60	25	30	4	6	10	11	20	3	4
2050SB-19	25	30	4	6	10	11	20	3	4
2320SB-10	25	30	4	6	10	11	20	3	4



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







29525



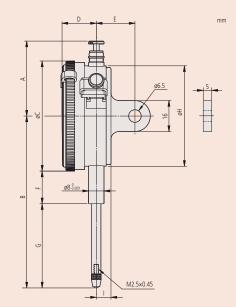
2330S-10

	Jen	C3 Z	
2052SB	2330SB-10	2052SB-19	2952SB
۲	۲	۲	
			0
		0	
0	0	0	0
0	0	0	0
	0		
	C 0525B		 23: 23: 20:

Sarias 2

No.	Description	Price €
901312	Standard contact point	11,00

For accessories and contact points, see end of dial indicators section.



2052S 20525-19

Metric

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2052SB	20525	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	29525	30	1 mm	0,01 mm	100-0	152/143	113,00

No.	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	E [mm]	H [mm]	G [mm]	l [mm]	Measuring force [N]
2052SB	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2,5
2052SB-19	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2,5
2330SB-10	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2,5
2952SB	38,8	75,2	57	17,7	16,9	20	52	29,8	7,6	0,4 - 2,5

No.	DIN	878 (1	983)			EN IS	ISO 463			
				Errors of indication over a range of					Ļ	
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution	∃ Any 1 Frevolution	⊤ Range	∃ Repeatability	玉 Hysteresis error	
2052SB	30	35	4	7	11	12	20	3	5	
2052SB-19	30	35	4	7	11	12	20	3	5	
2330SB-10	30	35	4	7	11	12	20	3	5	
2952SB	30	35	4	7	11	12	20	3	5	

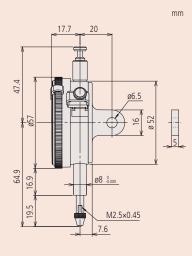
	Seri	es 2
Functions	2046SB-80	2048SB-10
E Balanced dial		0
🔁 Continuous dial	0	0
🞯 Jeweled bearing		0
🔛 Peak retaining	0	
Coaxial revolution counter		0
📥 Adjustable pointer		0

Consumable spares

No.	Description	Price €
21AZA319	Standard contact point	3,00
901312	Standard contact point	11,00
901312 : for 20465	-80	

21AZA319 : for 2048S-10

For accessories and contact points, see end of dial indicators section.



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

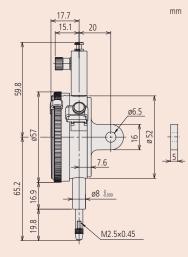


20485-10

No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Measuring force [N]	Price [€]
2048SB-10	2048S-10	10	1 mm	0,01 mm	0-100 (100-0)	144/135	0,4 - 1,4	76,00
2046SB-80	20465-80	10	1 mm	0,01 mm	0-100 (100-0)	158/149	0,4 - 5	127,00

271

No.	DIN	878 (1	983)	EN ISO 463						
				Errors of indication over a range of					<u> </u>	
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution	∃ Repeatability	Hysteresis error			
2048SB-10	15	17	3	5	9	3	3			
2046SB-80	12	15	3	5	9	10	15			



20465-80

20485-10

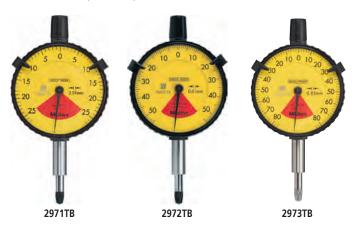


One Revolution Dial Indicator Series 2

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





No.	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2971TB	0,5 (plunger stroke: 3,5)	0,7 mm	0,01 mm	25-0-25	75	71,00
2972TB	1 (plunger stroke: 3,5)	1,4 mm	0,01 mm	50-0-50	75	62,00
2973TB	1,6 (plunger stroke: 3,5)	2 mm	0,02 mm	80-0-80	75	72,00

No.	A [mm]							l [mm]	Measuring force [N]
2971TB	43,2	65,6	57	16,5	20,3	16,8	55	7,6	0,4 - 1,4
2972TB	43,2	66	57	16,5	20,3	17,2	55	7,6	0,4 - 1,4
2973TB	43,2	66,3	57	16,5	20,3	17,5	55	7,6	0,4 - 1,4

No.	DIN	878 (1	983)		EN ISO 463						
				Errors	of indi rang		_				
	fe µm	fges µm	fu µm		Any 1/10 Tevolution Any 1/2 revolution E Any 1 E Any 1 F ange				玉 Hysteresis error		
2971TB	8	11	3	5			8	3	3		
2972TB	10	13	3	5 8				3	3		
2973TB	15	19	4	8			16	5	6		



Should the workpiece be approx. 1 mm larger than the nominal dimension, the part is assessed as good if the smaller pointer is ignored.



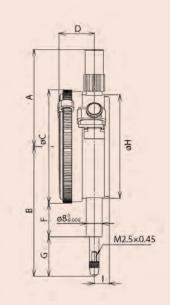
Fault-free identification of rejects.



	Series 2
Functions	2971TB up to 2973TB
• One revolution	0
🔀 Cushioned end point	
Dustproof IP52	0

Consumable spares

No.	Description	Price €						
901312	Standard contact point	11,00						
For accessories and contact points, see end of dial indicators section.								





	Seri	Series 2						
Functions	29285B up to 29595B	2929SB-62	29295B-60					
• One revolution	0	0	0					
Shockproof	<i>i</i>	0	0					
O IP64			0					
Dustproof IP52		0						

Consumable spares

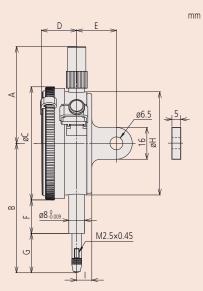
No.	Description	Price €
125317	Rubber boot (NBR Rubber)	6,00
902119	Standard contact point for waterproof type	16,00
901312	Standard contact point	11,00
902119 and 125317	<u>/</u> : for 2929S-60 (IP model)	

For accessories and contact points, see end of dial indicators section.





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 0,01mm/ 0,1mm



wetric							
No.	No. Lug back plate	Range Range [mm] per rev. Graduation		Scale	Mass lug/plain [g]	Price [€]	
2929SB	29295	0,8 (plunger stroke: 5)	1 mm	0,01 mm	40-0-40	145/136	84,00
29295B-60	29295-60	0,8 (plunger stroke: 5)	1 mm	0,01 mm	40-0-40	146/137	146,00
29295B-62	29295-62	0,8 (plunger stroke: 5)	1 mm	0,01 mm	40-0-40	145/136	128,00
2959SB	29595	1,6 (plunger stroke: 5)	2 mm	0,01 mm	80-0-80	145/136	136,00
2928SB	29285	4 (plunger stroke: 10)	5 mm	0,1 mm	2-0-2	145/136	142,00

No.	Α	В	C	D	F	E	G	Н	I.	Measuring force
NO.	[mm]	[N]								
2929SB	48,8	65,2	57	17,7	16,9	20	19,8	52	7,6	0,4 - 1,4
2929SB-60	48,8	70	57	17,7	12,3	20	29,2	52	7,6	0,4 - 2
2929SB-62	48,8	65,2	57	17,7	16,9	20	19,8	52	7,6	0,4 - 2
2959SB	48,8	65,2	57	17,7	16,9	20	19,8	52	7,6	0,4 - 1,4
2928SB	48,8	65,2	57	17,7	16,9	20	19,8	52	7,6	0,4 - 1,4

No.	DIN	878 (1	983)			EN IS	O 463		
				Errors	of indio rang		_		
	fe µm	fges µm	fu µm	∃ Any 1/10 Fevolution	∃ Any 1/2 Fevolution	➡ Any 1 ■ revolution	⊞ Range	🚡 Repeatability	토 Hysteresis error
2929SB	7	10	3	5			7	3	3
2929SB-60	7	10	3	5			7	3	3
2929SB-62	7	10	3	5			7	3	3
2959SB	12	16	4	5			9	3	4
2928SB	40	50	5	15			25	20	12





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





2901S-10

2900S-72

Motrie

weute							
No.	No. Lug back plate	Range [mm]	Range per rev.	Graduation	Scale	Mass lug/plain [g]	Price [€]
2900SB-10	29005-10	0,08 (plunger stroke: 4,5)	0,1 mm	0,001 mm	40-0-40	149/140	142,00
2900SB-70	29005-70	0,08 (plunger stroke: 4,5)	0,1 mm	0,001 mm	40-0-40	150/141	152,00
2900SB-72	29015-72	0,08 (plunger stroke: 4,5)	0,1 mm	0,001 mm	40-0-40	149/140	144,00
2901SB-10	29015-10	0,16 (plunger stroke: 4,5)	0,2 mm	0,001 mm	80-0-80	149/140	134,00

No.	Α	В	С	D	F	E	G	Н		Measuring force
NO.	[mm]	[N]								
2900SB-10	48,8	66	57	17,7	16,9	20	20,6	52	7,6	0,4 - 1,4
2900SB-70	48,8	67	57	17,7	12,3	20	26,2	52	7,6	0,4 - 2
2900SB-72	48,8	66	57	17,7	16,9	20	20,6	52	7,6	0,4 - 2
2901SB-10	48,8	66,1	57	17,7	16,9	20	20,7	52	7,6	0,4 - 1,4

No.	DIN	878 (19	983)	3) EN ISO 463					
				Errors of indication over a range of			ver a		Ļ
	fe µm	fges µm	fu µm	\\ \= Any 1/10 revolution	∃ Any 1/2 Frevolution	∃ Any 1 Tevolution	⊤ ⊤ Range	🗄 Repeatability	玉 Hysteresis error
2900SB-10	2	3	1,5	2			3	1	2
2900SB-70	2	3	1,5	2			3	1	2
2900SB-72	2	3	1,5	2			3	1	2
2901SB-10	3	4,5	1,5	2			4	1	2



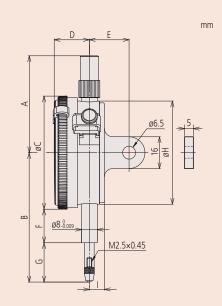


	Sei	ries 2	
Functions	29005B-10 29015B-10	29005B-72	2900SB-70
• One revolution	0	0	0
Shockproof	0	0	0
E Jeweled bearing	0	0	0
0 IP64			0
Dustproof IP52		0	

Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00
902119	Standard contact point for waterproof type	16,00
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.

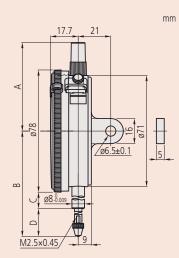


	Series 3				
Functions	3046SB	3047SB	3109SB-10		
E Balanced dial		0	0		
🔁 Continuous dial	0				
Shockproof			0		
🞯 Jeweled bearing			0		

Consumable spares

No.	Description	Price €
901312	Standard contact point	11,00

For accessories and contact points, see end of dial indicators section.



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.



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	31095-10	1	0,2 mm	0,001 mm	0-100-0	270/255	165,00

No.	А	В	С	D	Measuring force
NO.	[mm]	[mm]	[mm]	[mm]	[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						
				Errors	of indi rang	cation o Je of	ver a		Ļ	
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution		⊤ Range	🚡 Repeatability	도 Hysteresis error	
3046SB	15	17	3	5	9	10	15	3	3	
3047SB	15	17	3	5	9	10	15	3	3	
3109SB-10	3	5	2	2,5	4	4,5	5	1	2	

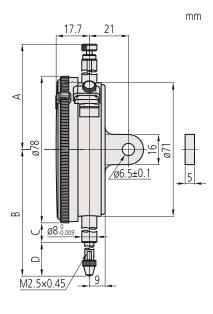


Dial Indicator with Large Diameter Scale Series 3

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	30505	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	B [mm]	C	D [mm]	Measuring force [N]
	[mm]	fuuul	[mm]	fuuul	[IN]
3050SB	52,6	94	25,9	29,1	0,4 - 2
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
3060SB-19	120,9	202,3	73,9	89,4	0,4 - 3
3062SB-19	141,9	243,3	94,9	109,4	0,4 - 3,2

No.	DIN	878 (1	983)			EN IS	0 463		
				Errors	of indi rang	cation o Je of	ver a		<u>ب</u>
	fe µm	fges µm	fu µm	\\ \= Any 1/10 revolution	∃ Any 1/2 Fevolution	➡ Any 1 ■ revolution	⊞ Range	🚡 Repeatability	玉 Hysteresis error
3050SB	25	30	4	6	10	11	18	3	4
3052SB-19	30	35	4	7	11	12	20	3	4
3058SB-19	50	55	5	8	12	13	30	3	6
3060SB-19	50	60	9	10	14	15	33	3	8
3062SB-19	60	75	13	12	17	20	35	3	9



		Series 3
Functions	3050SB	3052SB-19 up to 3062SB-19
🔁 Continuous dial	0	0
Shockproof		0
🞯 Jeweled bearing	0	0
🛃 Cushioned end point	0	
🖾 Coaxial revolution counter		۲

Consumable spares

No.	Description	Price €
21AZA319	Standard contact point	3,00
901312	Standard contact point	11,00
901312 : for 30505		

21AZA319 : for 3052S-19 / 3058S-19 / 3060S-19 / 3062S-19

For accessories and contact points, end of dial indicators section.



30585-19

Dial Indicator Series 4

Series 4

8020

Series 4

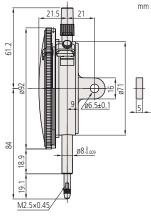
• Bezel ø 92 mm



Functions

Consumable spares							
No.	Description	Price €					
901312	901312 Standard contact point						
For accessories and	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 (19	983)	EN ISO 463					
				Errors	of indi rang		ver a		Ļ
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution	∃ Any 1 Tevolution	⊤ Range	∃ Repeatability	玉 Hysteresis error
4046SB	15	16	3	5	9	10	15	3	3





Dial Indicator Back Plunger Type Series 1

Series 1

This is a back plunger type dial indicator with bezel ø 39mm.



1960T

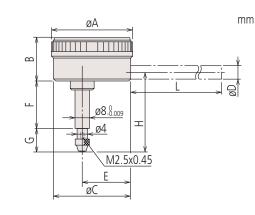
M	etri	r
		•

No.	Range [mm]	Range per rev.	Graduation	Scale	Price [€]
1960T	1 (plunger stroke: 4,5)	1,27 mm	0,01 mm	50-0-50	129,00
1160T	5	1 mm	0,01 mm	0-100	111,00
1162T	5	1 mm	0,01 mm	100-0	111,00

No.		B [mm]						Measuring force [N]	Mass [g]
1960T	40	22,1	35	22	28,7	12,8	46	0,4 - 1,4	108
1160T	40	22,1	35	22	25	13,8	43,3	0,4 - 1,4	105
1162T	40	22,1	35	22	25	13,8	43,3	0,4 - 1,4	

No.	DIN	DIN 878 (1983)				EN IS	0 463		
				Errors	of indi rang	cation o Je of	ver a		_
	fe µm	fges µm	fu µm		∃ Any 1/2 Frevolution		च_Range	∃ Repeatability	玉 Hysteresis error
1960T	12	15	3	8			14	3	4
1160T	15	19	4	8	12	14	16	3	4
1162T	15	19	4	8	12	14	16	3	4





Mitutoyo



	Series 1					
Functions	1160T	1162T	1960T			
🔄 Balanced dial			0			
🔁 Continuous dial	0	0				
Reverse reading		0				
• One revolution			0			
Shockproof			0			

Specifications

Delivered Delivered with factory certificate

Optional accessories

No.	Description	Price €
136568	Holding bar Ø8 mm, L81 mm	5,00
21AAA168	Holding bar Ø8 mm, L42 mm	5,00
136567	Holding bar Ø6 mm, L81 mm	4,00
21AAA166	Holding bar Ø6 mm, L42 mm	5,00

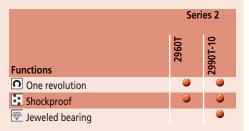
Consumable spares

No.	Description	Price €			
901312	Standard contact point	11,00			
21AZA319	1AZA319 Standard contact point				
901312 : for 1960 21AZA319 : for 1160 and 1162					

For accessories and contact points, see end of dial indicators section.



With optional holding bar



Specifications

Delivered Delivered with factory certificate

Optional accessories

No.	Description	Price €
136568	Holding bar Ø8 mm, L81 mm	5,00
21AAA168	Holding bar Ø8 mm, L42 mm	5,00
136567	Holding bar Ø6 mm, L81 mm	4,00
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 2990T		

For accessories and contact points, see end of dial indicators section.



With optional holding bar

Dial Indicator Back Plunger Type Series 2

Series 2

This is a back plunger type dial indicator with bezel ø 55 - 58mm

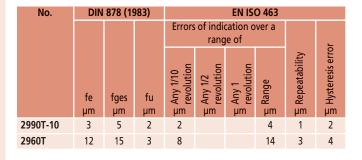




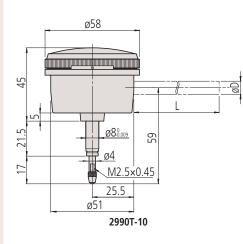


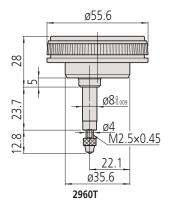
2990T-10

No.	Range [mm]	Range per rev.	Graduation	Scale	Measuring force [N]	Mass [g]	Price [€]
2990T-10	0,1 (plunger stroke: 4)	0,14 mm	0,001 mm	50-0-50	0,4 - 1,5	220	258,00
2960T	1 (plunger stroke: 4,5)	1,27 mm	0,01 mm	50-0-50	0,4 - 1,4	215	143,00











Contact Points

Ball Point

Metric	A: M2,5 x 0,45									
L	Carbid	e	Carbid waterproo		Plas	tic	Ruby		Sappl	nire
[mm]	No.	Price [€]	No.	Price [€]	No.	Price [€]	No.	Price [€]	No.	Price [€]
12,1	—		21AZA320	8,00	—		—		—	
14	21JAA225	6,00	—		—		-		—	
14	21JZA242	8,00								
15	120049	15,00	—		—		120051	12,00	120050	12,00
17	21JAA224	7,00	—		—		—		—	
19,3	—		21AZA321	13,00	—		—		—	
20	137391	23,00	—		—		137392	37,00	—	
22	21JAA226	9,00	—		—		—		—	
25	120053	15,00	—		—		120055	12,00	120054	12,00
30	21AAA252	22,00	—		—		21AAA253	33,00	—	
7,3	901312	11,00	—		901994	11,00	120047	11,00	—	
8	120045	10,00	_		_		_		120046	11,00
8,3	21AZA319	3,00	902119	16,00	—		—		—	



Ball Point

Metric	A:	A: M2,5 x 0,45			
No.	Material	DØ [mm]	Price [€]		
21AAA349	Carbide	1	54,00		
21AAA350	Carbide	1,5	45,00		
101122	Steel	1,8	9,00		
21AAA351	Carbide	2,5	45,00		
21AAA352	Carbide	4	54,00		

Shell Type Point - Steel

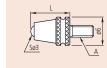
Metric		A: M2,5 x 0,45
No.	L [mm]	Price [€]
101386	5	9,00
101118	10	9,00
137393	15	5,00
101387	20	9,00
101388	25	9,00
21AAA254	30	18,00



L mm



mm

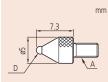


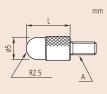
902119

901312

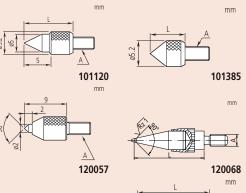
21AZA320

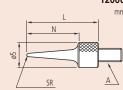
21AZA319





For all drawings A = M 2,5 x 0,45 mm (metric)





Conical Point

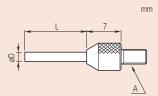
Metric		A: M2,5 x 4,5			
No.	Material	Tip angle	L [mm]	Price [€]	
101385	Steel	90°	5	9,00	
101120	Steel	60°	10	9,00	
120057	Carbide	90°	9	29,00	
120068	Carbide	90°	15	51,00	

Needle Point - Steel

Metric		A: M2,5 x 4,5			
No.	Ν	SR	L	Price	
NO.	[mm]	[mm]	[mm]	[€]	
101121	11	0,4	15	9,00	
137413	13	0,2	17	7,00	
21AAA255	21	0,4	25	8,00	
21AAA256	31	0,4	35	11,00	



Cylinder Point - Carbide



For all drawings A = M 2,5 x 0,45 mm (metric)

Metric		A: M2,5	5 x 4,5
No.	L [mm]	DØ [mm]	Price [€]
120066	3	0,45	25,00
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	59,00
21AAA258	28	2	59,00
21AAA339	40	2	134,00

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Contact Points

Spherical Point

Metric		A: M2,	5 x 4,5		
No.	Material	SR [mm]	L [mm]	DØ [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	9,00
120060	Carbide	10	10	10,5	52,00



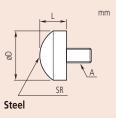
Flat Point - Steel

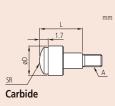
Metric A: M2,5 x 4,5					
No.	Flatness [µm]	L [mm]	DØ [mm]	Price [€]	
131365	3	8	5	8,00	
21AAA340	3	10	5	44,00	
101117	5	10	10	14,00	
21AAA341	5	10	15	44,00	
21AAA342	5	10	20	62,00	
21AAA343	5	10	25	79,00	
21AAA344	5		30	88,00	

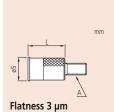


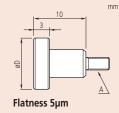
Flat Point - Carbide

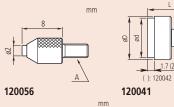
Metric A: M2,5 x 4,5						
No.	Flatness [µm]	L [mm]	DØ [mm]	Ød [mm]	Price [€]	
120056	3	8	5	2	17,00	
120041	3	5	5,2	4,3	29,00	
120042	3	10	7	6,5	33,00	
120043	3	10	10,5	9,5	39,00	
21AAA345	5	10	17	15	129,00	
21AAA346	5	10	22	20	146,00	
21AAA347	5	10	27	25	172,00	
21AAA348	5	10	32	30	199,00	
137255		10	7	6,4	63,00	
137399		10	9	8	67,00	

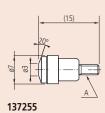


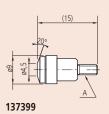












1.7 (2)

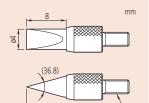
mm

mm

For all drawings A = M 2,5 x 0,45 mm (metric)

Mitutoyo

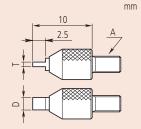
Contact Points



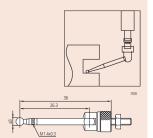
Knife Edge Point - Carbide



Blade Point - Carbide



Metric		A: N	Л2,5 x 4,5
No.	D [mm]	T [mm]	Price [€]
120061	2	0,4	33,00
120062	2	0,6	38,00
120063	4	1	40,00

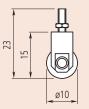


Lever Point - Steel





mm Roller Point - Steel



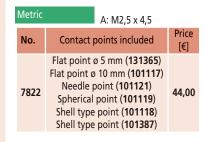
901954 For all drawings **A** = M 2,5 x 0,45 mm (metric)

Metric		A: M2,5 x 4,5
No.	Price [€]	
901954	52,00	



Interchangeable Contact Point Set

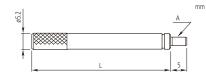






Extension Rods

Steel Ø 5



A = M 2,5 x 0,45 mm (metric)

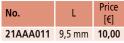
M2.5x0.45

21AAA011

Adapter Metric

-48 UNF

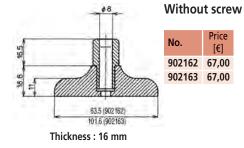
Metric		
No.	L [mm]	Price [€]
303611	10	3,00
21AAA259A	15	5,00
303612	20	5,00
21AAA259B	25	5,00
303613	30	6,00
21AAA259C	35	6,00
21AAA259D	40	8,00
21AAA259E	45	8,00
21AAA259F	50	9,00
21AAA259G	55	11,00
304146	60	13,00
21AAA259H	65	13,00
21AAA259L	75	15,00
21AAA259J	70	15,00
21AAA259M	80	16,00
304147	90	18,00
303614	100	18,00





Bases for Indicators





25 mm 21AAA259B 60 mm 100 mm 304146 303614

Optional accessories

No.	Description	Price €
21JAA269	Screw	2,00

Mitutoyo



a

Ø 44

With centre lug



With magnet

12

28

<u>46×1</u> - **≜** ∾

M 6 x 1

5,3 (6,4)



With laterally offset back lug



With post



With threaded ring



With adjustable stem



With rack



With rack and adjustable stem

2-Ø7.

38,2

Back Plate with Dovetail

For old indicator models, please contact Mitutoyo

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	4,00
136872	Flat Back Plate	1 (waterproof)	a = 1,5 mm	7,00
137906	Flat Back Plate	1003	a = 1 mm	2,0
101039	Flat Back Plate	2/ ID-C/ ID-S/ ID-SS	a = 2,5 mm	3,0
21AZB231	Flat Back Plate	2 (waterproof S type)	a = 2,5 mm	8,0
100836	Flat Back Plate	3/ 4	a = 3 mm	4,0
190561	Back Plate with centre lug	1 (1)	a = 5 mm	9,0
101210	Back Plate with centre lug	1	a = 5 mm	9,0
137905	Back Plate with centre lug	for 1003	a = 5 mm	10,0
101040	Back Plate with centre lug	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	a = 5 mm	8,0
21AZB230	Back Plate with centre lug	2 (waterproof S type)	a = 5 mm	6,0
100691	Back Plate with centre lug	3/ 4	a = 5 mm	9,0
21EZA145	Back Plate with centre lug	ID-N, ID-B, LGS ⁽²⁾	5 mm	16,0
900928	Back Plate with magnet	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		43,0
900929	Back Plate with magnet	3/ 4		67,0
101167	Back Plate with laterally offset back lug	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		14,0
100837	Back Plate with laterally offset back lug	3/ 4		62,0
193172	Back Plate with post	1		44,0
101169	Back Plate with post	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		14,0
100839	Back Plate with post	3/ 4		62,0
193173	Back Plate with threaded ring	1	M 6 x 1	44,0
136023	Back Plate with threaded ring	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	M 6 x 1	14,0
136024	Back Plate with threaded ring	3/ 4	M 6x 1	54,0
136025	Back Plate with adjustable stem	1	M 6 x 1	26,0
136026	Back Plate with adjustable stem	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	M 6 x 1	14,0
136027	Back Plate with adjustable stem	3/ 4	M 6 x 1	54,0
129902	Back Plate with rack	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		42,0
901963	Back Plate set including rear lid with rack and adjustable stem	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		75,0
900008	Back Plate with Dovetail	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		33,0

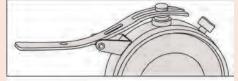


Spindle Lifting Accessories

• 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.

21AZB149

902011





Spindle lifting cable

902100

21BZA205

21EZA198

No.	Description			
901975	With auto-stop function 300 mm length	22,00		
540774 Without auto-stop function 500 mm length				
No high grade IP-Protection (e.g. IP-64)				

Spindle lifting handle

No.	Description	Price [€]
137693	Suitable for 4,8 mm spindle diameter	2,00

No high grade IP-Protection (e.g. IP-64)

Spindle lifting lever

No.	Use for			
902100	S type Series 1 100 F type Series 2 (former model) (up to 5 mm range)			
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)	6,00		
21AZB151	S type No. 7322 / 7323	7,00		
21BZA205	F type Series 1 (former model)	6,00		
902011	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)			
21EZA198	21EZA198 Indicators ID-C (up to 12 mm range) ID-S, ID-SS			
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)	7,00		

No high grade IP-Protection (e.g. IP-64)



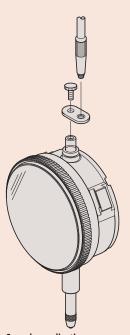




21AZB150

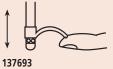
903424





Sample application for No. 901975





Mitutoyo

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.

		Standard		Water-resistant	
Colo	ur	No.	Price [€]	No.	Price [€]
Blac	k 19	3051	4,00	193595	4,00
Blu	e 19	3051B	4,00	193595B	4,00
Dark k	olue 19	3051S	4,00	193595S	4,00
Gree	en 19	3051G	4,00	193595G	4,00
Oran	ge 19	3051D	4,00	193595D	4,00
Pin	k 19	3051P	4,00	193595P	4,00
Red	d 19	3051R	4,00	193595R	4,00
Whi	te 19	3051W	4,00	193595W	4,00
Yello	w 19	3051Y	4,00	193595Y	4,00

Plastic cover

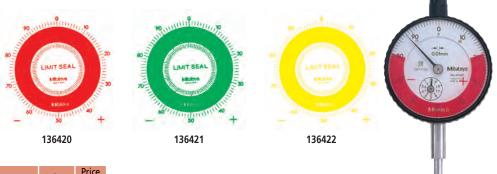
- Protection against oil and splash water.
- For dial indicators Series 2.
- 10 pieces per set.





Limit Stickers

- Tolerance markings.
- For dial indicators, Series 2 Ø 55,6 mm or 57 mm.
- 10 pieces per set.



287

No.	Colour	Price [€]
136420	Red	10,00
136421	Green	10,00
136422	Yellow	10,00



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

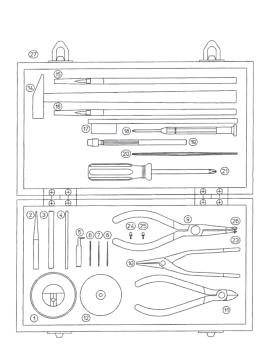


Tool set

• For repairing analogue dial indicators.



7823EU



Specifications

Set configuration	No. 7823EU :
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

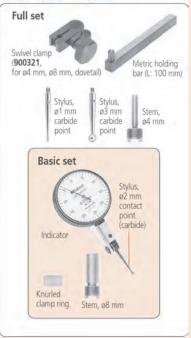
No. 7823EU

	Series 513													
standards s13-404E s13-404E s13-404E s13-414E s13-414E s13-414E s13-414E s13-414E s13-404E s13-406E s13-406E														
Jeweled bearing	0	0	0	0	0	0	0							
Couble Scale spacing				0	9	0	0							
Coaxial revolution counter							۲							
Compact type			0			0								
Long stylus		0		0										
Nonmagnetic	9	9	0	0	9	0	0							

Specifications

Contact point Thread M 1,7 x 0,35 For optional accessories, see end of lever indicators section.

Set Configuration: Metric



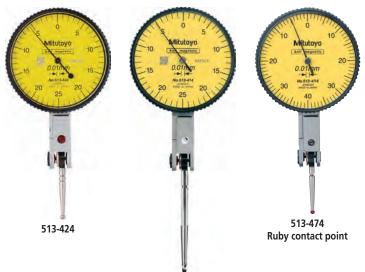
Lever Indicator Horizontal Type - 0,01 mm

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.



513-414

Metric		Basic set												
No.	Range [mm]	Graduation	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide sty- lus 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		

Price

[€] 149,00

98,00

152,00

mm	
	ſ

Ν	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]			
	513-478E	0,5	0,01 mm	0-25-0	5	3	10	21CZA210	22,3	39	≤ 0,3	42			
	513-474E	0,8	0,01 mm	0-40-0	8	3	13	21CZA201	20,9	39	≤ 0,3	42			
	513-477E	1	0,01 mm	0-50-0	10	4	13	21CZA211	44,5	39	≤ 0,3	42			

Metric		Full set										
No.	Range [mm]	Gradua- tion	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide sty- lus 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	\leq 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

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.
- A rotatable scale enables easy zero setting.
- Jewelled bearings and precision gears and pinions give you smooth, accurate movement and quick response.





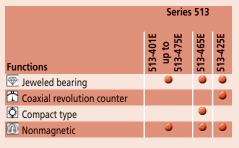


Ruby contact point

Metric		Basic set										
No.	Range [mm]	Gradua- tion	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide stylus tip ø2 mm No.	L [mm]	Ø D [mm]	Measur- ing force [N]	Mass [g]	Price [€]
513-401E	0,14	0,001 mm	0-70-0	3	2	4	21CZA036	12,8	39	\leq 0,3	42	143,00
513-465E	0,2	0,002 mm	0-100-0	3	2	4	103010	14,7	28	\leq 0,3	39	139,00
513-405E	0,2	0,002 mm	0-100-0	3	2	4	103010	14,7	39	\leq 0,3	42	105,00
513-425E	0,6	0,002 mm	0-100-0	6	3	11	103010	14,7	39	\leq 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

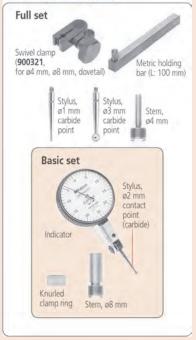
Μ	etric		Full set										
Ν	lo.	Range [mm]	Gradua- tion	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide sty- lus tip ø2 mm No.	L [mm]	Ø D [mm]	Measuring force [N]	Mass [g]	Price [€]
5	13-405T	0,2	0,002 mm	0-100-0	3	2	4	103010	14,7	39	≤ 0,3	42	136,00

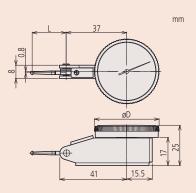


Specifications

Contact point Thread M 1,7 x 0,35 For optional accessories, see end of lever indicators section.







Lever Indicator and Magnet Stand

Series 513



513-908



Indicator

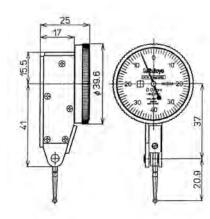
Mass : 180 g.

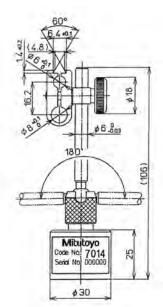
Centered, bi-directional action for automatic reversal of measuring direction. Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.

> Stand Magnetic force : 150 N.

Metric			
No.	Contents include	Mass [g]	Price [€]
513-908	513-404E : Lever Indicator 7014 : Mini Magnetic Stand	222	126,00









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.



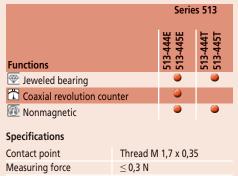




Measuring

Mass

Price



For optional accessories, see end of lever indicators section.

513-445E

Me	tric		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 [€]
51	3-445E	0,4	0,002 mm	0-100-0	5	3	10	103010	14,7	\leq 0,3	48	157,00
51	3-444E	1,6	0,01 mm	0-40-0	10	3	13	103006	20,9	\leq 0,3	48	139,00

Metric Full set No. Range [mm] Graduation Sca 513-445T 0.4 0.002 mm 0-10

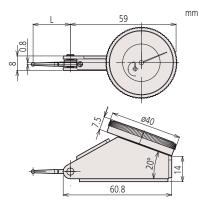
NO.	[mm]	Graduation	Scale	[µm]	[µm]	[µm]	tip ø2 mm No.	[mm]	[N]	[g]	[€]
513-445T	0,4	0,002 mm	0-100-0	5	3	10	103010	14,7	≤0,3	48	177,00
513-444T	1,6	0,01 mm	0-40-0	10	3	13	103006	20,9	≤0,3	48	160,00

Carbide stylus

fu fges

fe





	Series 513
Functions	513-454E up to 513-455T
E Jeweled bearing	0
🔟 Nonmagnetic	۵

Specifications

Contact pointThread M 1,7 x 0,35For optional accessories, see end of lever indicators section.

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.

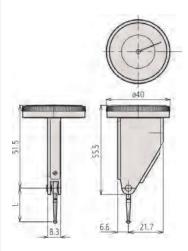


N	letric		Basic set											
1	No.	Range [mm]	Graduation	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]		
1	513-455E	0,2	0,002 mm	0-100-0	3	2	6	103010	14,7	\leq 0,3	50	144,00		
1	513-454E	0,8	0,01 mm	0-40-0	8	3	13	103006	20,9	\leq 0,3	50	98,00		

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	\leq 0,3	50	165,00
513-454T	0,8	0,01 mm	0-40-0	8	3	13	103006	20,9	\leq 0,3	50	129,00

293







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.

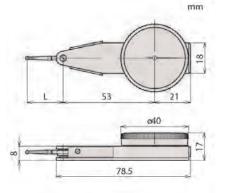


Metric	B	Basic set									
No.	Range [mm]	Gradua- tion	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-284GE	0,8	0,01 mm	0-40-0	8	3	13	103006	20,9	≤ 0,3	68	111,00

Metric	Full set

No.	Range [mm]	Gradua- tion	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





Mitutoyo



Specifications

Contact pointThread M 1,7 x 0,35For optional accessories, see end of lever indicators section.

294

	Series 513
Functions	513-304GE 513-304GT
Jeweled bearing	۲

Specifications

Contact point Thread M 1,4 x 0,3 For optional accessories, see end of lever indicators section.

Set Configuration: Metric

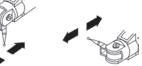


Lever Indicator Universal Type

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.





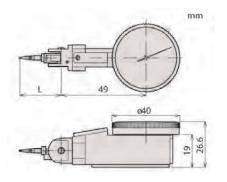
Stylus can be set at any angle while keeping the dial stationary

Metric	В	asic set									
No.	Range [mm]	Gradua- tion	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]	Gradua- tion	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	\leq 0,3	80	407,00





Lever Indicator Small Type

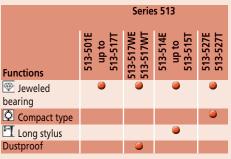
Series 513

- 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.



Basic set Measuring Carbide stylus Т Mass Range fe fu fges Price Graduation No. Scale force [mm] [µm] [µm] [µm] tip ø2 mm No. [mm] [g] [€] [N] 4 12,1 41 513-501E 0,14 0,001 mm 0-70-0 3 2 136104 \leq 0,4 177,00 513-503E 0,002 mm 0-100-0 4 103010 14,7 41 149,00 0,2 3 2 ≤0,4 513-514E 0,01 mm 0-25-0 129949 144,00 0,5 10 4 13 36,8 ≤0,3 41 513-517E 0,8 0,01 mm 0-40-0 8 3 13 103006 21 \leq 0,3 41 118,00 513-517WE 0,8 0-40-0 8 3 13 21CZA097 21 41 174,00 0,01 mm \leq 0,3 103010 36 513-527E 0,8 0,01 mm 0-40-0 8 3 13 14,7 \leq 0,3 118,00

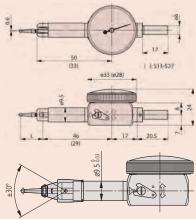
Metric	Full set										
No.	Range [mm]	Graduation	Scale	fe [µm]	fu [µm]	fges [µm]	Carbide stylus tip ø2 mm No.	L [mm]	Measuring force [N]	Mass [g]	Price [€]
513-501T	0,14	0,001 mm	0-70-0	3	2	4	136104	12,1	≤0,4	41	198,00
513-503T	0,2	0,002 mm	0-100-0	3	2	4	103010	14,7	≤0,4	41	170,00
513-514T	0,5	0,01 mm	0-25-0	10	4	13	129949	36,8	\leq 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



Specifications Contact point Thread M 1,7 x 0,35 For optional accessories, see end of lever indicators section.

Set Configuration: Metric





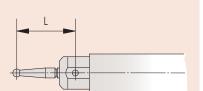
The stylus angle should be restricted within the range $\pm 30^{\circ}$ (as shown above) for dustproof models 513-517WE/T.

Mitutoyo

Motri

Optional accessories

Price € No. Description 209829 Extension for universal type 4,00



Styli for small type model

Styli for Standard models

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	0	0	14,7	0,5 mm steel	21,00
190549	0	0	20,9	0,5 mm steel	21,00
190654	0		22,3	0,5 mm steel	21,0
190656	0	0	44,5	0,5 mm steel	23,0
190548	0	0	14,7	0,7 mm steel	17,0
190550	0	0	20,9	0,7 mm steel	17,0
190653	0		22,3	0,7 mm steel	17,0
190655	0	0	44,5	0,7 mm steel	20,0
136756		0	12,1	1 mm carbide	9,0
21CZA044	0		12,8	1 mm carbide	9,0
103017	0	0	14,7	1 mm carbide	9,0
103013	9	۲	20,9	1 mm carbide	9,0
21CZA098		۲	20,9	1 mm carbide* ³	14,0
137558	0		22,3	1 mm carbide	9,0
102824	۲		24	1 mm carbide* ²	9,0
137746	0	۲	36,8	1 mm carbide	9,0
136235	9	9	44,5	1 mm carbide	9,0
136104		0	12,1	2 mm carbide	11,0
21CZA036	0		12,8	2 mm carbide	9,0
103010	9	9	14,7	2 mm carbide	14,0
103006	9	9	20,9	2 mm carbide	14,0
21CZA097		0	20,9	2 mm carbide* ³	20,0
137557	0		22,3	2 mm carbide	14,0
102825	0		24	2 mm carbide*2	14,0
129949	0		36,8	2 mm carbide	13,0
136013	0	0	44,5	2 mm carbide	11,0
21CZA212			12,8	2 mm ruby	24,0
21CZA209	0	0	14,7	2 mm ruby	24,0
21CZA201	0	0	20,9	2 mm ruby	24,0
21CZA210			20,3	2 mm ruby	24,0
21CZA211	0		44,5	2 mm ruby	24,0
136758		0	12,1	3 mm carbide	9,0
21CZA045	0		12,8	3 mm carbide	9,0
103018	0	0	14,7	3 mm carbide	9,0
103014			20,9	3 mm carbide	9,0
21CZA099		0	20,9	3 mm carbide	14,0
137559	0		22,3	3 mm carbide	9,0
102826			24	3 mm carbide*2	9,0
137747			36,8	3 mm carbide	9,0
			44,5		

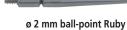
*2 : Used extension 209829 *3 : For 513-517W models

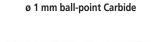
ø 0,5 mm ball-point

ø 2 mm ball-point Carbide

ø 0,7 mm ball-point









ø 3 mm ball-point Carbide





Styli, Stems and Holders

Styli, Stems and Holders

Centeri	ng Holder		
No.	Standard models	Stem	Price [€]
901959	0	ø8mm	65,00

Holding Bars

N	о.	Standard models	Small type models	L	Description	Price [€]
9	53638.	0	0	50 mm	9 x 9 mm	
90	00209.	0	0	100 mm	9 x 9 mm	
9	00211	0	0	115 mm	ø 8 mm	18,00

Spanner

No.	Standard models	Small type models	Price [€]
102037	0		3,00
301336		0	4,00

Stems

No.	Standard models	Small type models	Diameter	Description	Price [€]
902802	0		4 mm	With Knurled Clamp Ring	12,00
902803	0		6 mm	With Knurled Clamp Ring	11,00
902804	0		8 mm	With Knurled Clamp Ring	11,00
902806	9		4 mm, 8 mm	With Knurled Clamp Ring	20,00
902807	0		6 mm, 8 mm	With Knurled Clamp Ring	23,00
102036		0	4 mm		5,00
102389		0	6 mm		5,00
102822		0	8 mm		6,00
190318	0		4 mm		12,00
190319	0		6 mm		12,00
190320	0		8 mm		9,00
190322	0			Knurled Clamp Ring	6,00

Swivel Clamps

No.	Standard models	Small type models	Description	Price [€]
900321	0	0	For ø 4, 8 mm stems and dovetail	25,00

Universal Holder

No.	Standard models	Small type models	Stem	Price [€]
901461	0		ø6mm	42,00
901916	0		ø8mm	49,00
901547		0	ø6mm	33,00
901917		9	ø8mm	49,00



Spanner 301336



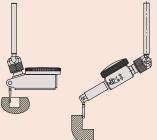




900321



Universal Holder



Mitutoyo

Functions	Series 547
ZERO/ABS	0
GO/±NG judgement	<i>i</i>
Digimatic data output	0
ON/OFF	۵
DATA/HOLD	0
Lock function)
PRESET	0
Counting direction switchable)
Calculation	0
function	

Specifications

Accuracy	±10 μm (excluding quantizing error)
Measuring force	\leq 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. 7000 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	6,00
21EZA198	Spindle lifting lever (12,7 model)	8,00

ABSOLUTE Digimatic Thickness Gauge

Series 547

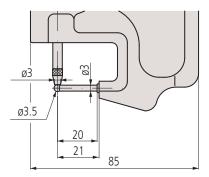
This ABSOLUTE Digimatic Thickness Gauge enables you to measure tube wall thickness.



CODE 547-547-360

Metric		With indica	tor ID-C No. 543-40	OBS			
	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

299





ABSOLUTE Digimatic Thickness Gauge

Series 547

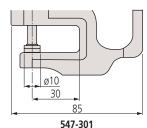


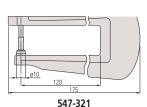


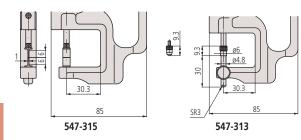


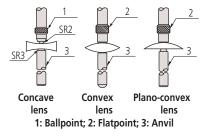
ABSOLUTE°

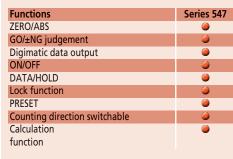
Metric		With indicat	tor ID-C No. 543-400BS			
No.	Range [mm]	Digital step	Max. measuring depth [mm]	Туре	Mass [g]	Price [€]
547-301	0-10	0,01 mm	30	Ceramic disc contact points	255	433,00
547-321	0-10	0,01 mm	120	Ceramic disc contact points and large jaw capacity	425	453,00
547-313	0-10	0,01 mm	30	Adjustable anvil ¹	275	443,00
547-315	0-10	0,01 mm	30	Blade steel contact point	270	464,00











Specifications

Accuracy	±10 μm (excluding quantizing error)
Measuring force	\leq 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. 7000 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	6,00
21EZA198	Spindle lifting lever (12,7 model)	8,00



547-321

Mitutoyo

300

Functions	Series 547
ZERO/ABS	0
GO/±NG judgement	i
Digimatic data output	0
ON/OFF)
DATA/HOLD	0
Lock function	i
PRESET	0
Counting direction switchable	<i>i</i>
Calculation	0
function	

Accuracy	±3 μm (excluding quantizing error)
Measuring force	\leq 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. 7000 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	6,00
21AZB149	Lifting lever	5,00

Functions	Series 700
ORIGIN	0
ZERO/ABS	@
ON/OFF	@

Specifications

Accuracy	±0,02mm		
	(excluding quantizing error)		
Measuring force	2 N		
Power supply	Battery SR-44		
Battery life	approx. 20 hours		
Display	LCD, Character height 9 mm		
Delivered	In case		

Consumable spares

No.	Description	Price €
938882	Battery SR44	6,00

ABSOLUTE Digimatic Thickness Gauge

Series 547

For measuring film, paper, etc., with a resolution of 0,001 mm.





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



Metric

QUICK MINI Thickness Gauge

Series 700

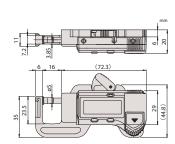
This is a lightweight, palm-sized thickness gauge.



Metric

No.	Range [mm]	Digital step	Mass [g]	Price [€]
700-119-20	0-12	0,01 mm	70	111,00





ABSOLUTE°



Dial Indicator Thickness Gauge

Series 7

This metric dial indicator thickness gauge 73315 has a lightweight design.



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

Ceramic disc contact points

Metric

Metric

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	±0,02 mm		25 mm	≤1,4	140	78,00
7305	0-20	0,01 mm	±0,02 mm	2050SB	30 mm	≤ 2	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

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	355	175,00

Metric Tube thicknesses - Minimum inside diameter 3,5 mm

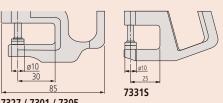
No.	Range [mm]	Graduation	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]	
7360	0-10	0,01 mm	±0,015 mm	2046SB	20 mm	≤1,4	200	118,00

Specifications

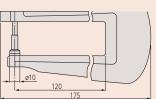
Accuracy	Refer to the list of specifications
Parallelism	5 µm

Consumable spares

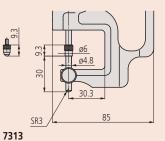
No. Description		Price €			
21AZB149	Lifting lever	5,00			
21AZB150	Lifting Lever	6,00			
<u>21AZB149</u> : for 7301/7327/7321/7313/7315/7360 <u>21AZB150</u> : for 7305/7323					

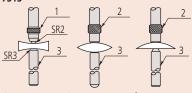


7327 / 7301 / 7305

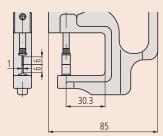


7321 / 7323

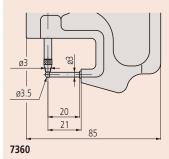




Concave Convex Plano-convex lens lens lens 1: Ballpoint; 2: Flatpoint; 3: Anvil







Functions	Series 547
ZERO/ABS	0
GO/±NG judgement	<i>i</i>
Digimatic data output	0
ON/OFF)
DATA/HOLD	0
Lock function	i
PRESET	0
Counting direction switchable	i
Calculation	0
function	

Accuracy	Refer to the list of specifications (excluding quantizing error)
Measuring force	\leq 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. 7000 hours
Extensions	Metric 5 pcs : 10, 20, 30, 30, 100 mm
Delivered	Including Box and extensions

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	6,00
21AZB149	Lifting lever	5,00
21JAA224	Standard contact point 17	7,00
	mm	

ABSOLUTE Digimatic Depth Gauge

Series 547

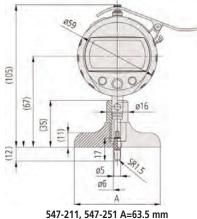
- This ABSOLUTE Digimatic Indicator Depth Gauge offers you the following benefits:
- It is equipped with the ABSOLUTE Digimatic Indicator ID-C.
- It has a hardened, precision ground and micro-lapped reference face on its base.



Metric			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			

Metric			With indica	With indicator No. 543-400BD						
No	o. Range [mm]		Digital step	Base flatness	Accuracy	Base size Ma [mm] [g]		Price [€]		
54	7-211	0-200	0,01 mm	5 µm	±20 μm	63,5 x 16	290	412,00		
54	7-212	0-200	0,01 mm	5 µm	±20 μm	101,6 x 16	340	422,00		





547-212, 547-252 A=101,6 mm

ABSOLUTE°

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



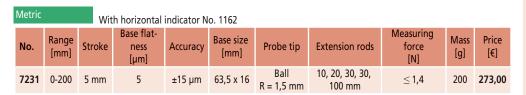
Dial Indicator Depth Gauge

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.







Metric		Wit	h indicator	No. 2902SB						
No.	Range [mm]	Stroke	Base flat- ness [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		\leq 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	\leq 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	\leq 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	\leq 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	\leq 1,4	820	232,00

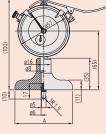
With indicator No. 2952SB

No	0.	Range [mm]	Stroke	Base flat- ness [µm]	Accuracy	Base size [mm]	Probe tip	Extension rods	Measuring force [N]	Mass [g]	Price [€]
72	213	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
72	214	0-210	30 mm	5	±30 µm	101,6 x 16	Ball R = 1.5 mm	30, 60, 90 mm	\leq 2,5	315	278,00

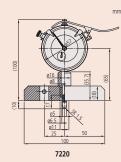


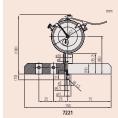
 0,01 mm

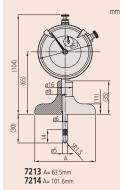
Specifications Graduation

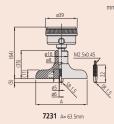












Graduation	0,01 mm
Consumable spares	

	•	
No.	Description	Price €
137413	Needle point	7,00
21JAA224	Standard contact point 17	7,00
	mm	
21JAA226	Standard contact point 22	9,00
	mm	

Dial Indicator Depth Gauge

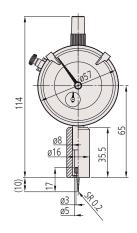
Series 7

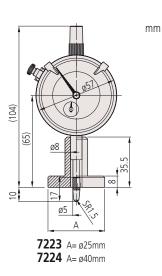
- This round base type dial indicator depth gauge offers you the following benefits:
- Round base type
- It has a hardened, precision ground and micro-lapped reference face on its base.



Metric		Circ	ular base with	ndicator N	o. 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

mm





7222



Internal Dial Caliper Gauge

Series 209



209-901

	Measuring force [N]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]	
209-301	0,8/1,2 N	0,015 mm							

Measuring contacts : Carbide ball ø1,5 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-901	15-65	0,9/1,9 N	0,05	0,05 mm	5,5	1,9	188	fig. 4	355	452,00

Measuring contacts : Carbide ball ø1 mm	
---	--

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-302	10-30	1,1/1,6 N	0,01	0,03 mm	5,2	1,2	85	fig. 4	180	394,00
209-303	20-40	1,1/1,6 N	0,01	0,03 mm	7	1,2	85	fig. 2	180	394,00
209-304	30-50	1,1/1,6 N	0,01	0,03 mm	7	1,2	85	fig. 2	185	394,00
209-305	40-60	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	195	394,00
209-306	50-70	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	195	394,00
209-307	60-80	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	200	394,00
209-308	70-90	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	200	394,00
209-309	80-100	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	200	394,00

Measuring contacts : Carbide ball ø2 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-902	40-90	0,9/1,9 N	0,05	0,05 mm	8,5	2,6	192	fig. 3	370	452,00
209-903	70-120	0,9/1,9 N	0,05	0,05 mm	8,5	2,6	192	fig. 3	380	521,00

Measuring contacts : Carbide bevel (radius 0,1 mm)

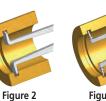
No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-300	2,5-12,5	0,8/1,2 N	0,005	0,015 mm	0,7	0,4	12	fig. 1	155	394,00

Measuring contacts : Interchangeable, carbide ball ø1 mm

No.	Range	Measuring force	Graduation	Accuracy	A (2)	B (3)	L (1)	Туре	Mass	Price
	[mm]	[N]	[mm]	Accuracy	[mm]	[mm]	[mm]	Type	[g]	[€]
209-310	50-100	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 5	220	595,00
209-311	90-140	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 5	230	595,00
209-312	130-180	1,1/1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 5	230	638,00

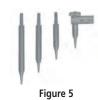


Figure 1









(IP)65





209-305



209-902



209-903



(1) Maximum reach of contact arms over workpiece ⁽²⁾ Maximum groove depth ⁽³⁾ Minimum groove width

Internal Digimatic Caliper Gauge

Functions	Series 209
Mode key	0
SET key	<i>i</i>
DATA key	0
ON/OFF/0-Preset	@
Max. reading	0
Min. reading) ا
ABS/INC switchable	0
HOLD function)
Data output	0
Counting direction switchable)
Tolerance LED (green/red)	0
Tolerance judgement	۵

Specifications

Power supply 2 batteries AAA Delivered Including battery and factory certificate

Optional accessories

No.	Description	Price €
011530	Holder for stand	112,00
011551	Digimatic interface adapter	57,00
937387	Digimatic cable (1 m)	47,00
965013	Digimatic cable (2 m)	58,00
06ADV380E	USB Input tool Direct cable (2 m)	100,00
02AZD790E	Connecting cable U-Wave	85,00

Consumable spares

No.	Description	Price €
011511	Battery for remote control (4 x LR03 / AAA)	10,00

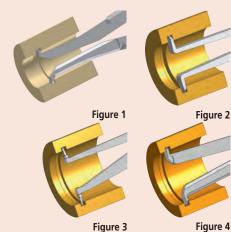


Figure 3



В

(1) Maximum reach of contact arms over workpiece ⁽²⁾ Maximum groove depth (3) Minimum groove width

Series 209







Measuring contacts : Carbide ball ø0,6 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-551	5-15	0,8-1,2 N	0,005	0,015 mm	2,3	0,8	35	fig. 4	230	404,00

Measuring contacts : Carbide ball ø1,3 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-904	13-43	1,2/1,7 N	0,02	0,04 mm	5,7	1,5	127	fig. 2	360	404,00

Measuring contacts : Carbide ball ø1,5 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-905	15-65	1/1,8 N	0,02	0,06 mm	5,5	1,9	188	fig. 2	415	555,00
209-906	30-60	1,2/1,7 N	0,02	0,04 mm	6,5	2,5	132	fig. 3	370	404,00

Measuring contacts : Carbide ball ø1 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-552	10-30	1,1-1,6 N	0,01	0,03 mm	5,2	1,2	85	fig. 4	250	404,00
209-553	20-40	1,1-1,6 N	0,01	0,03 mm	7	1,2	85	fig. 2	250	404,00
209-554	30-50	1,1-1,6 N	0,01	0,03 mm	7	1,2	85	fig. 2	255	404,00
209-555	40-60	1,1-1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	265	404,00
209-556	50-70	1,1-1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	265	404,00
209-557	60-80	1,1-1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	270	404,00
209-558	70-90	1,1-1,6 N	0,01	0,03 mm	8,3	1,2	85	fig. 3	270	404,00

Measuring contacts : Carbide ball ø2 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]	
209-907	50-80	1,2/1,7 N	0,02	0,04 mm	8,5	2,6	132	fig. 3	370	404,00	
209-908	70-100	1,2/1,7 N	0,02	0,04 mm	8,5	2,6	132	fig. 3	375	404,00	
209-909	90-120	1,2/1,7 N	0,02	0,04 mm	8,5	2,6	132	fig. 3	380	404,00	
209-910	40-90	1/1,8 N	0,02	0,06 mm	8,5	2,6	192	fig. 3	420	554,00	

Measuring contacts : Carbide bevel (radius 0,1 mm)

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	A ⁽²⁾ [mm]	B ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-550	2,5-12,5	0,8-1,2 N	0,005	0,015 mm	0,7	0,4	12	fig. 1	225	404,00

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



External Dial Caliper Gauge

Series 209



Measuring contacts : Ball ø2 mm/radius 0,5 mm

N	0.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Contact radii	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
20	09-603	0-10	0,3/1,3 N	0,1	0,1 mm	5	1/0,5 mm	36	fig. 5	40	127,00

Measuring contacts : Carbide ball / carbide bevel

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Contact radii	L ⁽¹⁾ [mm]	Туре	Mass [g]	
209-401	0-10	0,8/1,2 N	0,005	0,015 mm	18,8	0,4/0,75 mm	35	fig. 8	165	394,00
209-406	0-20	1,1/1,6 N	0,01	0,03 mm	24,7	0,4/0,75 mm	80	fig. 3	200	394,00

Measuring contacts : Carbide ball ø1,5 /2 mm

No.	Range [mm]	Measuring force [N]	Gradua- tion [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Contact radii	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-911	0-50	0,8/1,7 N	0,05	0,05 mm	30	30	1,5/1,5 mm	167	fig. 2	430	452,00
209-402	0-10	0,8/1,2 N	0,005	0,015 mm	19,1	18,6	0,75/0,75 mm	35	fig. 2	170	394,00
209-404	0-20	1,1/1,6 N	0,01	0,03 mm	24,7	24,6	0,75/0,75 mm	85	fig. 2	210	394,00
209-407	0-20	1,1/1,6 N	0,01	0,03 mm	24,7	2,5	0,75/0,75 mm	85	fig. 4	200	394,00

Measuring contacts : Carbide ball ø2 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-912	0-50	0,8/1,7 N	0,05	0,05 mm	30	4,3	169	fig. 4	400	452,00
209-843	0-10	0,3/1,3 N	0,1	0,1 mm	5	5	36	fig. 7	40	112,00

Measuring contacts : Carbide bevel

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	Contact radii	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-405	0-20	1,1/1,6 N	0,01	0,03 mm	24,7	24,6	0,4/0,4 mm	85	fig. 1	210	394,00

Measuring contacts : Disc measuring faces ø10 mm

No.	Range	Measuring force [N]	Graduation	Accuracy	Hb ⁽²⁾	Hf ⁽³⁾	L ⁽¹⁾	Type	Mass	Price	
	[mm]	[N]	[mm]	,	[mm]	[mm]	[mm]		[g]	[€]	
209-403	0-10	0,8/1,2 N	0,005	0,02 mm	21,7	14,8	36	fig. 6	175	394,00	

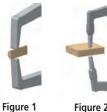






Figure 2



Figure 5



Figure 6



Figure 3



Figure 8

Figure 4

Optional accessories



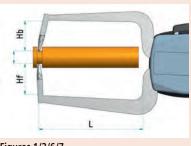
209-402



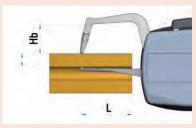
209-405



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

Functions Series 209 Mode key ۲ SET key DATA key ON/OFF/0-Preset Max. reading Min. reading ABS/INC switchable ۲ HOLD function Data output ۲ Counting direction switchable Tolerance LED (green/red) ۲ Tolerance judgement

Specifications

2 batteries AAA Power supply Delivered Including battery and factory certificate

Optional accessories

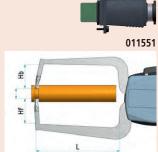
No.	Description	Price €
011530	Holder for stand	112,00
011551	Digimatic interface adapter	57,00
937387	Digimatic cable (1 m)	47,00
965013	Digimatic cable (2 m)	58,00
06ADV380E	USB Input tool Direct cable (2 m)	100,00
02AZD790E	Connecting cable U-Wave	85,00

Consumable spares

No.	Description	Price €
011511	Battery for remote control (4 x LR03 / AAA)	10,00







(1) Maximum reach of contact arms over workpiece ⁽²⁾ Maximum penetration depth of upper contact ⁽³⁾ Maximum penetration depth of lower contact









Measuring contacts : Carbide ball ø1,5 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-570	0-10	0,8/1,2 N	0,005	0,015 mm	19,1	18,6	35	fig. 1	240	404,00
209-572	0-20	1,1/1,6 N	0,01	0,03 mm	24,7	24,6	85	fig. 1	280	404,00
209-573	0-20	1,1/1,6 N	0,01	0,03 mm	24,7	2,5	80	fig. 2	270	404,00

Measuring contacts : Carbide ball ø3 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-913	0-30	0,9/1,6 N	0,02	0,04 mm	30	30	114	fig. 1	430	404,00
209-914	0-30	0,9/1,6 N	0,02	0,04 mm	30	4,4	116	fig. 2	410	404,00

Measuring contacts : Disc measuring faces ø10 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]
209-571	0-10	0,8/1,2 N	0,005	0,02 mm	21,7	14,8	35	fig. 3	245

Measuring contacts : Disc measuring faces ø50 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-915	0-30	0,9/1,6 N	0,02	0,04	36	24	116	fig. 4	430	404,00







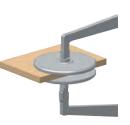


Figure 4

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



External Digimatic Caliper Gauge

Series 209



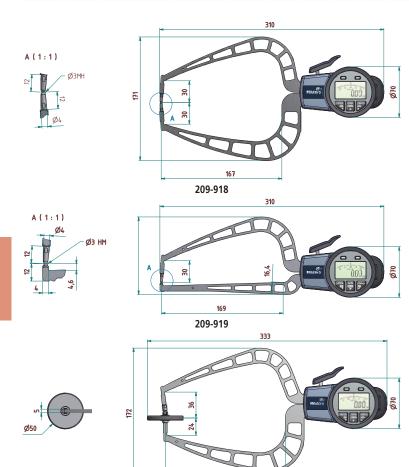
209-918

Ν	/leasuring	contacts	Carhide	hall	ø٦	mm
- 17	vicasui il lu	CUIILACIS	Carbine	Dall	22	

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-918	0-50	0,8/1,7 N	0,02	0,06 mm	30	30	167	fig. 1	490	554,00
209-919	0-50	0,8/1,7 N	0,02	0,06 mm	30	4,3	169	fig. 2	460	554,00

Measuring contacts : Disc measuring faces ø50 mm

No.	Range [mm]	Measuring force [N]	Graduation [mm]	Accuracy	Hb ⁽²⁾ [mm]	Hf ⁽³⁾ [mm]	L ⁽¹⁾ [mm]	Туре	Mass [g]	Price [€]
209-920	0-50	0,8/1,7 N	0,02	0,08 mm	36	24	167	fig. 3	500	554,00



209-920

167



Functions	Series 209
Mode key	0
SET key	9
DATA key	0
ON/OFF/0-Preset	9
Max. reading	0
Min. reading	i
ABS/INC switchable	0
HOLD function	i
Data output	0
Counting direction switchable	i
Tolerance LED (green/red)	0
Tolerance judgement	0

Specifications

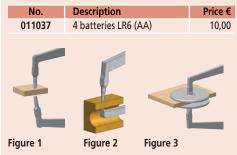
Power supply Delivered

ly 2 batteries LR03 AAA Delivered Including Battery and factory certificate

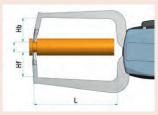
Optional accessories

No.	Description	Price €
937387	Digimatic cable (1 m)	47,00
965013	Digimatic cable (2 m)	58,00
06ADV380E	USB Input tool Direct cable (2 m)	100,00
02AZD790E	Connecting cable U-Wave	85,00
011550	Digimatic interface adapter with cover	110,00
011530	Holder for stand	112,00

Consumable spares



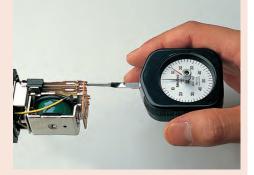


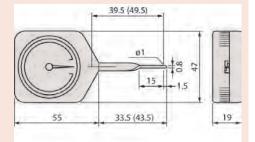


(1) Maximum reach of contact arms over workpiece
 (2) Maximum penetration depth of upper contact
 (3) Maximum penetration depth of lower contact

Specification	S	pe	cifi	cati	ons
---------------	---	----	------	------	-----

•	
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.



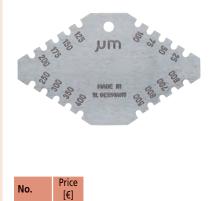
Peak Hol	ld		
No.	Range	Graduation	Price [€]
546-133	10-100 mN	5 mN	180,00
546-134	30-300 mN	10 mN	165,00
546-135	0,06-0,5 N	0,02 N	165,00
546-136	0,1-1 N	0,05 N	165,00
546-137	0,15-1,5 N	0,05 N	165,00
546-138	0,3-3 N	0,1 N	165,00
546-139	0,6-5 N	0,2 N	227,00

S	Standard							
No	D .	Range	Graduation	Price [€]				
54	6-112	6-50 mN	2 mN	201,00				
54	6-113	10-100 mN	5 mN	139,00				
54	6-114	30-300 mN	10 mN	124,00				
54	6-115	0,06-0,5 N	0,02 N	124,00				
54	6-116	0,1-1 N	0,05 N	124,00				
54	6-117	0,15-1,5 N	0,05 N	124,00				
54	6-118	0,3-3 N	0,1 N	124,00				
54	6-119	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.

311



011030 38,00

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°.





179-720F5

179-720FN5

179-606-740

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	1038,00
179-720FN5	DIGI-DERM 720	internal, fixed	10	max. 10 000	175	1352,00
179-606-740	DIGI-DERM 740	external interchangeable	100	max. 100 000	175	1309,00

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***	817,00
011508	0 - 5 mm	F 5	magnetic-inductive**	642,00
011509	F 0-1,5 mm N 0-0,7 mm	FN 1,5	magnetic-inductive and eddy current***	1125,00
011510	0 - 0,7 mm	N 07	eddy current***	842,00



011508



011509

Specifications

specifications					
Scale units	µm, mm, mils				
Statistics functions	minimum, maximur standard deviation,	Number of measurement values, minimum, maximum, average, standard deviation, variation coefficient, block statistics			
Limit gauging	Optical and acoustic measurement is out			n	
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)-ba	tteries			
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	Casting	6.			
Materia	Coatings	F	nsor ty N	pe FN	
Iron and steel : including alloyed and ferromagnetic	Insulating coatings : Varnish, enamel, plastic	•	-	•	
steel	Non-ferrous metal coating : Chromium, copper, zinc, tin	•	-	۲	
Non ferrous metal : Aluminium,	Insulating coatings : Varnish, enamel, plastic	-	•	0	
copper, zinc, austenitic steel	Non-ferrous metal				

**

- 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

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Quick Guide to Precision Measuring Instruments



Dial Gages and Digital Indicators

Nomenclature Cap Bezel clamp Limit hand Ó Pointer 0.01mm Bezel Mitutoyo 30 Revolution counting device Stem Plunger Contact element

Dial faces

0.01mm



Continuous dial (Bi-directional graduation)



Balanced dial (Multi-revolution)



50

40

Continuous dial (Reverse reading) Balanced dial (One revolution)

Continuous dial: Balanced dial:

For direct reading 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

30

40

0.001mm



Continuous dial (Standard scale spacing)



Continuous dial (Double scale spacing) Balanced dial (One revolution)



Balanced dial (Multi-revolution)



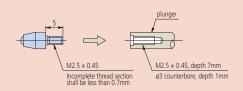


Mounting a Dial gage

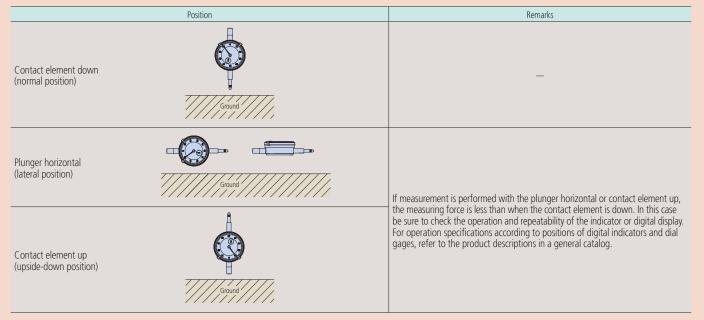
Stem mounting	Method	Clamping the stem directly with a screw	Clamping the stem by split-clamp fastening
	Note	 Mounting hole tolerance: ø8G7(+0.005 to 0.02) Clamping screw: M4 to M6 Clamping position: 8mm or more from the lower edge of the stem Maximum clamping torque: 150N·cm when clamping with a single M5 screw Note that excessive clamping torque may adversely affect spindle movement. 	• Mounting hole tolerance: ø8G7(+0.005 to 0.02)
Lug mounting	Method	Hain was	
	Note	 Lugs can be changed 90 degrees in orientation according to the application. (Th Lugs of some Series 1 models (No.1911,1913-10&1003), however, cannot be al To avoid cosine-effect error, ensure that any type of gage or indicator is mounte 	e lug is set horizontally when shipped.) tered to horizontal. d 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



Setting the origin of a digital indicator



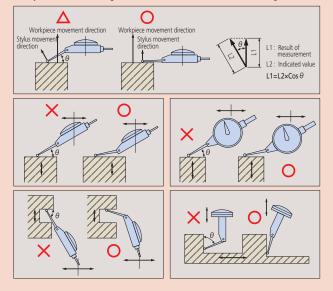
The specification in the range of 0.2 mm from the end of the stroke is not guaranteed for digital indicators. When setting the zero point or presetting a specific value, be sure to lift the spindle at least 0.2 mm from the end of the stroke.

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 resulut of measurement.

Result of measurement = indicated value x compensation value

Compensating for a non-zero angle

Angle	Compensation value	Examples
10°	0.98	If a 0.200mm measurement is indicated on the dial at
20°	0.94	various values of θ , the result of measurements are:
30°	0.86	For $\theta = 10^\circ$, 0.200mm×.98 = 0.196mm
40°	0.76	
50°	0.64	For $\theta = 20^{\circ}$, 0.200mm×.94 = 0.188mm
60°	0.50	For θ = 30°, 0.200mm×.86 = 0.172mm

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.)





Auxiliary Equipment and Miscellaneous

Stands, Bench Tools, Vices, V-Blocks, Plates, Protrectors, Levels, Squares, Rules, Spring Calipers Page 317





Gauge Stand with Hardened Steel Anvil

Specifications

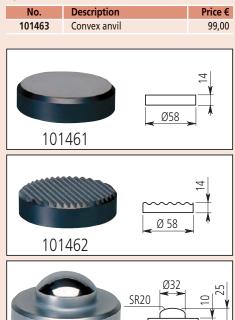
Fine adjustment	1 mm
Table flatness	1,3 µm
Squareness table-stem hole	0,4/100 µm/mm

Standard accessories

No.	Description
101461	Flat anvil
101462	Serrated anvil
21JAA316	Bushing Ø 8

Optional accessories

101463



Ø 58

Series 7

Standard version



7001-10



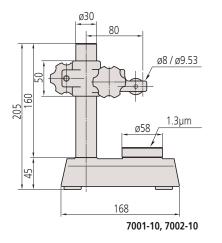
7002-10

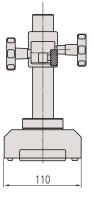


519-109-10

Mitutoyo

No.	Effective ta- ble dimen- sions [mm]	Column Ø [mm]	Max. measure- ment height [mm]	Measuring ta- ble	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





The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



Gauge Stand with Hardened Steel Anvil

Series 215, Series 7

Standard version







215-505-10

215-405-10

Specifications

Fine adjustment

Squareness table-

Table flatness

stem hole

1 mm (215-505-10: screw on column) 1,3 (7007-10) 2,3 (215-405-10, 215-505-10) µm 0,4/100 µm/mm µm/mm

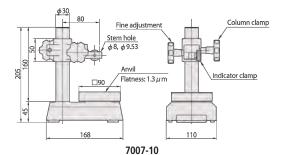
Standard accessories

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				

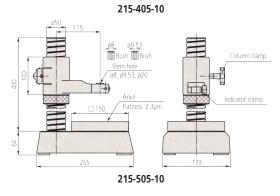
Optional accessories

No.	Description	Price €		
21JAA331	Bushing Ø 15	27,00		
21JAA331 : only for 215-505-10				

No.	Effective table dimen- sions [mm]	Column Ø [mm]	Max. measure- ment 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 3/8" / 9,53 mm 8 mm with bush)	19,7	659,00



Fine adjustment Column clamp Stem hole ø8, ø9.53 4 3 Ø8 Bush Indicator clamp 320 Anvil □110 Flatness: 2.3µm 5 201 134





Charification

specifications	
Column Ø	22 mm

Optional accessories

Optional accessories No.

902798

Description

Detachable angle stop for

safe and quick workpiece positioning under the

measuring instrument, for Ø

No.	Description	Price €
913-201	Horizontal measuring bow for comprehensive measuring applications. Centre distance : max. 45.	165,00



913-102 with 913-201

Price €

149,00

Gauge Stand with Hardened Steel Anvil

Series 913

Standard version

• Simple standard version.

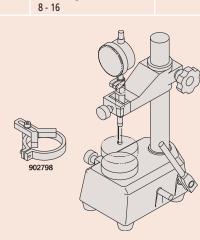


No.	Effective table dimensions [mm]	Max. measurement height [mm]	Stem hole ø [mm]	Price [€]
913-101	ø 50	100	8 mm	308,00
913-102	60 x 70	100	8 mm	440,00

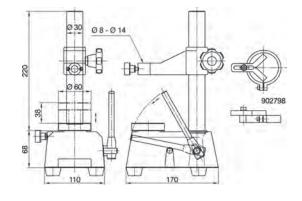
Stand for Precision Bore Gauge

Series 215

• For batch-measurement of small parts.







215-120-10

No.	Maximum measuring height	Effective table dimensions	Measuring stroke	Mass	Price
	[mm]	[mm]	[mm]	[kg]	[€]
215-120-10	110	ø 60	max. 38	6,5	937,00



Gauge Stand with Granite Base

Series 912

This gauge stand comes with a wear-resistant black granite table.



912-101

No.	Base size [mm]	Effective ta- ble dimen- sions [mm]	Column Ø [mm]	Max. meas- urement 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	340,00

Series 912

- Black granite, fine diamond-lapped measuring table.
- Arm with 120 mm projection.



912-105

No.	Base size [mm]	Effective ta- ble dimen- sions [mm]	Column Ø [mm]	Max. meas- urement height [mm]	Throat [mm]	Fine ad- justment	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	769,00

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	27,00
only for 215-156-10		

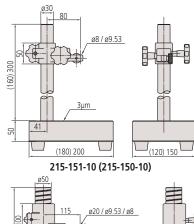
Gauge Stand with Granite Base

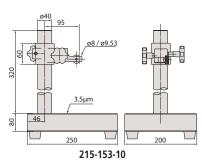
Series 215

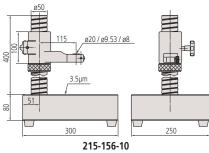
- This jointed magnetic stand offers you the following benefits:
- It comes with a mechanical locking system and allows fine adjustment.
- You can also fix a dial indicator in any position by mechanically clamping the articulated arm.



No.	Column Ø [mm]	Max. measure- ment height [mm]	Fine ad- justment [mm]	Stem hole ø [mm]	Mass [kg]	Table flatness [µm]	Squareness table-stem hole [µm/mm]	Price [€]
215-150-10	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	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	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	50	300	1	ø 20 mm (ø 3/8" / 9,53 mm , 8 mm with bush)	27,5	3,5	0,2/100	639,00









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 articulateded arm.



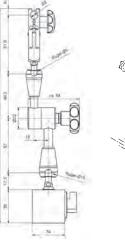




011360

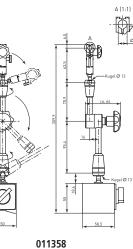
No.	Clamping de- vice	Clamp- ing force (verti- cal) [N]	Base size (LxWxH) [mm]	Total height [mm]	Stem hole ø [mm]	Working radius [mm]	Mass [kg]	Thread Arm/ Base	Price [€]
011533	magnetic	300	34 x 30 x 35	220	8	130	0,45	M6 x 1	180,00
011358	magnetic	750	60 x 50 x 55	310	8	200	1,55	M8 x 1,25	202,00
011359	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

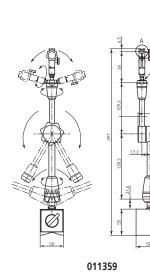


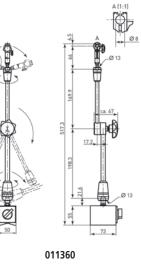


A (1:1)

hÐ







Mitutoyo

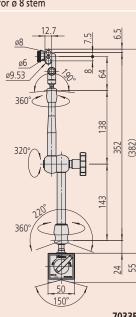
Standard accessories

No. Description 02AZA292 Bush for ø 8 stem

Specifications

M 8 x 1,25 mm

Thread



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.



7031B



7032B

7033B

7	n	З	3	R	
	v	-	-	~	

No.	Clamping device	Clamp- ing force (verti- cal) [N]	Base size (LxWxH) [mm]	Fine ad- just- ment °	Total height [mm]	Work- ing radi- us [mm]	Stem hole ø [mm]	Mass [kg]	Thread Arm/Base	Price [€]
703	1B magnetic	300	36 x 30 x 36	±4	214	159	6, 8, 3/8" / 9,53 mm	0,59	M5 x 0,8	167,00
703	2B magnetic	600	59 x 50 x 55	±4	345	260	6, 8, 3/8" / 9,53 mm	1,6	M8 x 1,25	174,00
703	3B magnetic	600	59 x 50 x 55	±4	425	352	6, 8, 3/8" / 9,53 mm	1,75	M8 x 1,25	180,00

Flexible Jointed Arm

Series 011 / 56A



Mechanical clamping Dimensions: see 7033B



011361 Mechanical clamping Dimensions : see 011359



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
56AAK793	±320	6 mm, 8 mm, 3/8" / 9,53 mm	170,00





Magnetic Base

Series 011 / 7

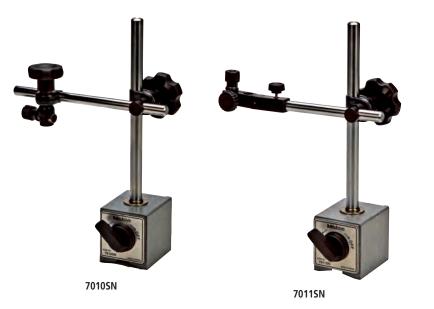
• V-block type.

No.	Base size (LxWxH) [mm]	Clamping force (vertical) [N]	Threaded bore	Mass [kg]	Price [€]
56AAL200	59 x 50 x 55	600	M 8 x 1,25 mm	1	45,00
011364	75 x 50 x 55	900	M 8 x 1,25 mm	1,25	89,00

Magnetic Stand

Series 7

V-block base type.



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	78,00
7011SN	magnetic	yes	235	160	1,45	M8 x 1,25	86,00

Series 7

With V-block base and flexible arm.



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



56AAL200

Specification

Specifications	
Base size (LxWxH)	59 x 50 x 55 mm
Stem hole ø	ø8mm with stem bush mm

Standard accessories

No.	Description
02AZC291	Reducing sleeve to hold 8 stems

Optional accessories

	D escription	D. La C
No.	Description	Price €
02AZC282	300 cross arm	17,00
¢12 000 500 MBx1,25		09.55 0 0 0 0 0 0 0 0 0 0 0
25		
5	050	

Specifications

Base size (LxWxH) Stem hole ø

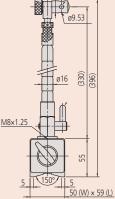
WxH) 59 x 50 x 55 mm ø8mm with stem bush mm

7011SN

Standard accessories

7010SN

No.	Description
02AZC291	Reducing sleeve to hold 8 stems
	Ø9.53



Specifications

Base diameter

Stem hole ø

Base size (LxWxH)
Stem hole ø

Magnetic Stand

Series 7

ø 30 mm

6/8 mm

Ø 8

ØØ

106

25

 ∞

Ø 6

- 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.



	Attudoyo 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

Pneumatic Stand

Series 913

• Adheres to all smooth surfaces such as granite, polished steel, etc.

No.	Clamping device	mping device Clamping force (vertical) [N]		Cross arm	Total height [mm]	Mass [kg]	Price [€]
913-103	pneumatic	400	200 x ø16	200 x ø16	245	2,3	392,00

325



90 mm

8 mm



Precision Bench Centre

Series 967

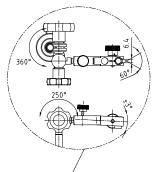
These precision bench centres are used for cylindrical and tapered parts.

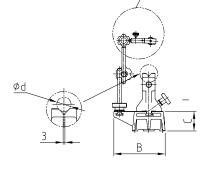
- They offer you the following benefits:
- You can make fast and precise checks of runout on cylindrical/tapered parts.
- The base and centre-stocks are manufactured from stress-relieved and aged cast iron.
- The centres are made from hardened and precision ground steel.

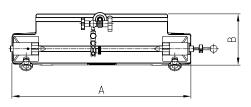


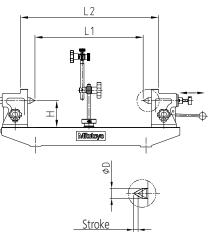
967-201-10

No.	Stand No.	Ød Min-Max [mm]	L1 [mm]	L2 [mm]	A [mm]	B [mm]	C [mm]	H [mm]	Ø D [mm]	Stroke [mm]	Mass [kg]	Price [€]
967-203-10	56AAK066	22	150	220	310	113	40	50	16	10	7	999,00
967-201-10	56AAK066	22	300	400	500	144	55	75	16	12	13	1360,00
967-202-10	56AAK426	30	600	730	900	222	100	125	20	15	70	2709,00









Specifications

Stem hole ø ø 8 mm with stem bush mm

Standard accessories

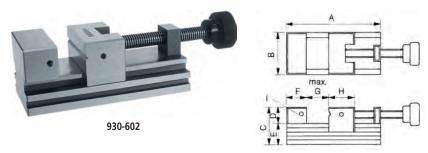
No.	Description								
56AAK066	Stand								
56AAK426	Stand								
02AZA292	Bush for ø 8 stem								
56AAK066 Stand for 967-203-10, 967-201-10 56AAK426 Stand for 967-202-10									

Parallelism Squareness 0,002 mm / 100 mm 0,005 mm / 100 mm

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.



No.	Α	В	С	D	F	E	G	Н		Mass	Price
NO.	[mm]	[kg]	[€]								
930-611	90	60	50	25	25	25	30	30	M 5	1,6	775,00
930-601	160	70	62	30	33	32	80	45	M 6	4	960,00
930-602	210	90	80	40	40	40	120	50	M 6	7,6	1273,00
930-612	285	120	90	40	55	50	150	70	M 6	17,4	2588,00

Specifications

Parallelism Squareness 0,002 mm / 100 mm 0,005 mm / 100 mm

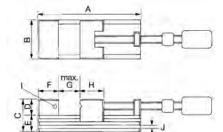
Series 930

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]		H [mm]	l [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-616	285	120	90	40	55	50	150	70	M 6	10 x 7	17,7	3491,00



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.





930-632

930-607

With horizontally ground V-groove in the movable jaw

No.	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	E [mm]	G max. [mm]	H [mm]	l [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-630	70	30	35	15	20	20	25	25	M4	-	0,35	568,00
930-631	110	45	45	20	25	25	50	35	M5	8 x 6	1	838,00
930-632	285	120	90	40	60	50	150	70	M6	12 x 7	13,5	2430,00
930-633	370	175	95	45	60	50	200	110	M8	12 x 10	28,7	4594,00

With quick adjustment and vertically and horizontally ground V-groove in the movable jaw

No.	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	E [mm]	G max. [mm]	H [mm]	l [mm]	J Height x Depth [mm]	Mass [kg]	Price [€]
930-606	160	70	62	30	33	32	80	45	M 6	8 x 7	3	859,00
930-607	210	90	80	40	40	40	120	50	M 6	10 x 7	5,8	1273,00

Precision Sine Plate

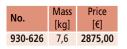
Series 930

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°.



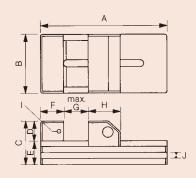
930-626



Specifications Parallelism

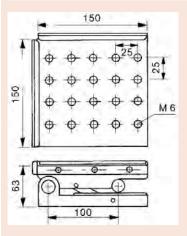
Squareness

0,002 mm / 100 mm 0,005 mm / 100 mm



Specifications

Parallelism Squareness Setting accuracy at 45° 0,002 mm / 100 mm 0,005 mm / 100 mm ±15"



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 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°.

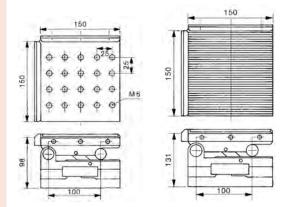


930-629

Compound-axis type With M6 clamping holes								
No. Mass Price [kg] [€]								
930-628	5305,00							

Coumpound-axis type With lever-operated magnetic chuck Mass Price

No.	[kg]	[€]	
930-629	20	6854,00	





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 ismetric in pairs.
- For scribing, adjusting and testing cylindrical parts.



No.	Length [mm]	Width [mm]	Height [mm]	Max. workpiece ø [mm]	Mass [kg]	Price [€]
910-111	100	40	30	6-40	1,5	80,00
910-112	150	50	40	8-50	3,5	111,00
910-113	200	70	50	8-70	6,5	175,00
910-114	250	85	60	12-85	10	355,00
910-115	300	100	70	12-100	15	414,00

Cast Iron V-Block

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	239,00
911-112	75	150	130	8-110	13,5	382,00
911-113	90	200	170	8-150	23	594,00

Specifications

Hardness	180-250 HBW
Parallelism between V-groove and	16 µm
base surface	
Difference of the height of the pair	16 µm
Delivered	in pairs

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

•	
Hardness	58-63 HRC
Parallelism between V-groove and all side surfaces	6 µm
	0
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

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.	5		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	1071,00
181-946	64	58	79	50,8	25,4	490	3,8	394,00

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)

Specifications

181 181



Cast Iron Surface Plate

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 [€]
	frinti	[Kg]	[4]
902-301	300 x 300 x 85	15	315,00
902-302	400 x 400 x 90	35	454,00
902-303	500 x 400 x 100	40	584,00
902-304	600 x 500 x 120	65	881,00
902-305	800 x 500 x 140	95	1432,00
902-306	1000 x 750 x 170	210	2472,00
902-307	1200 x 800 x 180	230	3286,00
902-308	1500 x 1000 x 200	490	5480,00
902-309	2000 x 1000 x 220	780	7643,00

Specifications

Accuracy

According to DIN 876 Grade 1 : fine scraped Grade 3 : fine planed

•	
Accuracy	Grade 00
Flatness	DIN 876
Perpendicularity	DIN 875
Delivered	In a wooden case, with certificate of inspection

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.

No.	Width	Leg length	Mass	Price
	[mm]	[mm]	[kg]	[€]
972-106	50	300 x 200	6,5	456,00
972-107	50	400 x 250	10	626,00
972-108	60	500 x 300	17	796,00
972-109	70	600 x 400	30	1251,00



972-106







Granite Surface Plate DIN876

Series 901

- These Granite Surface Plates offer you the following benefits:
- Delivery is without a stand but with steel ball inserts.

1. Accuracy Grade 00

No.	Dimensions L x W x H	Max. Load	Mass	Price
NO.	[mm]	[kg]	[kg]	[€]
901-131	400 x 250 x 50	50	15	220,00
901-132	400 x 400 x 50	60	25	294,00
901-133	630 x 400 x 70	65	53	469,00
901-134	630 x 630 x 70	75	83	735,00
901-135	1000 x 630 x 100	150	189	1401,00
901-136	1000 x 1000 x 100	250	300	2112,00
901-137	1200 x 800 x 160	600	460	2163,00
901-138	1600 x 1000 x 160	650	768	3682,00
901-139	2000 x 1000 x 220	750	1320	5021,00

2. Accuracy Grade 0

No.	Dimensions L x W x H	Max. Load	Mass	Price
NO.	[mm]	[kg]	[kg]	[€]
901-121	400 x 250 x 50	100	15	197,00
901-122	400 x 400 x 50	120	25	262,00
901-123	630 x 400 x 70	130	53	420,00
901-124	630 x 630 x 70	150	83	661,00
901-125	1000 x 630 x 100	300	189	1226,00
901-126	1000 x 1000 x 100	500	300	1931,00
901-127	1200 x 800 x 160	1200	460	1978,00
901-128	1600 x 1000 x 160	1300	768	3373,00
901-129	2000 x 1000 x 220	1500	1320	4594,00

3. Accuracy Grade 1

No.	Dimensions L x W x H	Max. Load	Mass	Price
NO.	[mm]	[kg]	[kg]	[€]
901-111	400 x 250 x 50	100	15	153,00
901-112	400 x 400 x 50	120	25	214,00
901-113	630 x 400 x 70	130	53	350,00
901-114	630 x 630 x 70	150	83	541,00
901-115	1000 x 630 x 100	300	189	1082,00
901-116	1000 x 1000 x 100	500	300	1772,00
901-117	1200 x 800 x 160	1200	460	1803,00
901-118	1600 x 1000 x 160	1300	768	3100,00
901-119	2000 x 1000 x 220	1500	1320	4213,00

4. Accuracy Grade 2

Dimensions L x W x H [mm]	Max. Load [kg]	Mass [kg]	Price [€]
400 x 250 x 50	100	15	142,00
400 x 400 x 50	120	25	197,00
630 x 400 x 70	130	53	323,00
630 x 630 x 70	150	83	500,00
1000 x 630 x 100	300	189	1002,00
1000 x 1000 x 100	500	300	1627,00
1200 x 800 x 160	1200	460	1648,00
1600 x 1000 x 160	1300	768	2843,00
2000 x 1000 x 220	1500	1320	3863,00
	[mm] 400 x 250 x 50 400 x 400 x 50 630 x 400 x 70 630 x 630 x 70 1000 x 630 x 100 1000 x 1000 x 100 1200 x 800 x 160 1600 x 1000 x 160	[mm] [kg] 400 x 250 x 50 100 400 x 400 x 50 120 630 x 400 x 70 130 630 x 630 x 70 150 1000 x 630 x 100 300 1000 x 1000 x 100 500 1200 x 800 x 160 1200 1600 x 1000 x 100 1300	[mm] [kg] [kg] 400 x 250 x 50 100 15 400 x 400 x 50 120 25 630 x 400 x 70 130 53 630 x 630 x 70 150 83 1000 x 630 x 100 300 189 1000 x 1000 x 100 500 300 1200 x 800 x 160 1200 460 1600 x 1000 x 100 1300 768



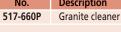
Specifications

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.







• Stress relieved for maximum stability.

• Harder than steel.

Granite Surface Plate DIN876

Stand			
No.	Plate dimensions L x W x H [mm]	Mass [kg]	Price [€]
901-931	630 x 400 x 50	22	305,00
901-932	630 x 630 x 70	25	333,00
901-933	1000 x 630 x 100	28	368,00
901-934	1000 x 1000 x 100	30	420,00
901-935	1200 x 800 x 160	30	420,00
901-936	1600 x 1000 x 160	35	527,00
901-937	2000 x 1000 x 220	40	587,00

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]
180-910U	Combination set : square head (180-102U) center head (180-202U) protractor head (180-301U) 300 mm blade size (180-505U)	1110

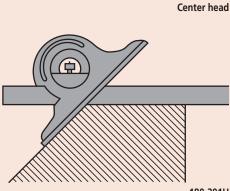
Blade (individual)

Blace (manuala)					
No.	Range	Graduation	Mass [g]	Price [€]	
180-405U	150mm	1 mm. 0,5 mm. 1 mm. 0,5 mm	40	39,00	
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	
180-301U	Reversible protractor head, with spirit level, bidirectional graduation from 0 to 180°	520	90,00





Ð

180-102U Square head

180-202U

180-301U Revesible protectorhead

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.



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.





187-908 with height gage holder



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 scriber shaft	
187-106 for 187-901, 187-908 187-107 for 187-901, 187-907 950750 for Height Gage with 9x 9 mm scriber shaft		

Optional accessories

No.	Description	Price €
187-105	Acute angle attachment	57,00
87-105 standard accessory for 187-901		



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]	
187-201	135	150	212	143,00

Mitutoyo

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 scriber shaft	33,00



Application with acute angle attachment

Functions	Series 187
ON/OFF	0
DATA/HOLD	e
Data output	0
Zero set	0
PRESET	0
Angle sexagesimal/decimal	0

Specifications

•	
Range	-360° - 360°
Repeatability	1' (0,01°)
Digital step	1' (0,01°)
Max. permissible error	2' (0,03°)
Battery life	approx. 2 hours
Display	LCD with Character Height
	6,5 mm
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	100,00
	(2 m)	

Consumable spares

No.	Description	Price €
05SAA217D	Lithium battery CR-2032	6,00

Digimatic Universal Protractor

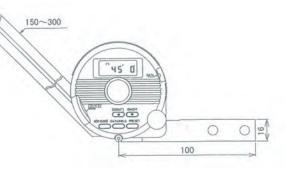
Series 187

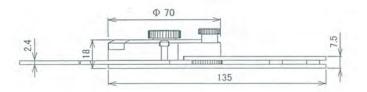
- This is a Digimatic Universal Protractor with data output that offers you the following features:
- It has an easy-to-read digital display.
- It automatically turns off after 10 minutes, and gives you fixed reference points for easy adjustment.
- You can slide and clamp the measuring blade over the 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





337

Metric			
No.	Blade length	Mass [g]	Price [€]
187-501	150 mm	624	759,00
187-502	300 mm	662	782,00





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 (inidication 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"	\pm 0,7 graduations = \pm 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

Mitutoyo

No.	Sensibility (mm/m per division)	Sensibili- ty "(Arc- second)	Max. Permissible Error (indication accuracy) [mm/m]	Flatness of reference faces [µm]	Parallelism of reference the faces [µm]	Perpendicu- larity 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

Specifications

Dimensions (WxDxH)	200 x 44 x 38,2 mm
Vee angle	140°
Delivered	In a wooden case

Specifications

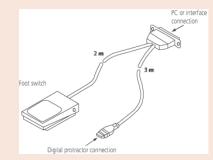
•	
Dimensions (WxDxH)	200 x 44 x 200 mm
Vee angle	140°
Delivered	In a wooden case

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	202,00				
- Note: 50AAA983A is for 950-318 only						



Digital Precision Level

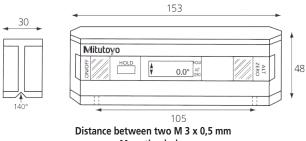
Series 950

- 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	۲	0,01 (0 to 9,99) 0,1 (10 to 90)	300	577,00



Mounting holes

Thickness Gauge

Series 184 - Thickness Gauge

- Size clearly stamped on each leaf.
- Leaves are easy to remove and can be individually locked open.

1etric

No.	Range	Accuracy	Number of leaves	Leaf length [mm]	Price [€]
184-3045	0,05-1 mm by 0,05 mm steps	0,05 up to 0,15 mm : ±0,005 mm 0,2 up to 0,5 mm : ±0,012 mm 0,55 up to 1 mm : ±0,02 mm	20	150	34,00

184-304S





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.







Bevelled-edge square

Try square

Try square with shoulders

Bevelled-edge square

No.	Leg length [mm]	Cross section [mm]	Grade	Remarks	Price [€]
916-105	50x40	14x4	00	stainless steel	66,00
916-106	75x50	15x4	00	stainless steel	73,00
916-107	100x70	20x5	00	stainless steel	95,00
916-108	150x100	25x6	00	stainless steel	118,00
916-109	200x130	30x7	00	stainless steel	170,00

Try square

No.	Leg length [mm]	Cross section [mm]	Grade	Remarks	Price [€]
916-201	50x40	15x5	0	stainless steel	66,00
916-202	75x50	15x5	0	stainless steel	58,00
916-203	100x70	20x5	0	stainless steel	64,00
916-204	150x100	25x5	0	stainless steel	89,00
916-205	200x130	30x6	0	stainless steel	133,00
916-206	250x165	35x7	0	stainless steel	204,00
916-207	300x200	40x8	0	stainless steel	233,00
916-208	400x265	45x10	0	stainless steel	330,00
916-209	500x330	50x10	0	stainless steel	454,00
916-221	50x40	15x5	1	steel	35,00
916-222	75x50	15x5	1	steel	23,00
916-223	100x70	20x5	1	steel	27,00
916-224	150x100	25x5	1	steel	32,00
916-225	200x130	30x6	1	steel	43,00
916-226	250x165	35x7	1	steel	57,00
916-227	300x200	40x8	1	steel	71,00
916-228	400x265	45x10	1	steel	166,00
916-229	500x330	50x10	1	steel	187,00
916-231	50x40	15x5	2	steel	26,00
916-232	75x50	15x5	2	steel	18,00
916-233	100x70	20x5	2	steel	19,00
916-234	150x100	25x5	2	steel	26,00
916-235	200x130	30x6	2	steel	33,00
916-236	250x165	35x7	2	steel	42,00
916-237	300x175	35x7	2	steel	55,00
916-238	400x100	35x7	2	steel	92,00
916-239	500x150	40x8	2	steel	127,00

Mitutoyo

Specifications

Accuracy

According to DIN 875

90° Steel Square

Try square with shoulders					
No.	Leg length [mm]	Cross section [mm]	Grade	Remarks	Price [€]
916-310	50x40	15x5	0	stainless steel	89,00
916-311	75x50	15x5	0	stainless steel	80,00
916-312	100x70	20x5	0	stainless steel	82,00
916-313	150x100	25x5	0	stainless steel	142,00
916-314	200x130	30x6	0	stainless steel	201,00
916-315	250x165	35x7	0	stainless steel	252,00
916-316	300x200	40x8	0	stainless steel	316,00
916-317	400x265	45x10	0	stainless steel	677,00
916-318	500x330	50x10	0	stainless steel	842,00
916-320	50x40	15x5	1	steel	44,00
916-321	75x50	15x5	1	steel	32,00
916-322	100x70	20x5	1	steel	39,00
916-323	150x100	25x5	1	steel	55,00
916-324	200x130	30x6	1	steel	69,00
916-325	250x165	35x7	1	steel	83,00
916-326	300x200	40x8	1	steel	104,00
916-327	400x265	45x10	1	steel	204,00
916-328	500x330	50x10	1	steel	280,00
916-330	50x40	15x5	2	steel	31,00
916-331	75x50	15x5	2	steel	26,00
916-332	100x70	20x5	2	steel	28,00
916-333	150x100	25x5	2	steel	38,00
916-334	200x130	30x6	2	steel	39,00
916-335	250x165	35x7	2	steel	60,00
916-336	300x175	35x7	2	steel	78,00
916-337	400x200	35x7	2	steel	145,00
916-338	500x250	40x8	2	steel	191,00

341

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	Price
NO.	Remarks	[mm]	[€]
528-101		75	32,00
528-100		50	32,00
528-102	-	100	34,00
528-110	-	125	40,00
528-103	-	150	45,00
528-104		200	59,00
528-105	Supplied in a wooden case	300	111,00
528-106	Supplied in a wooden case	400	175,00
528-107	Supplied in a wooden case	500	239,00

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	26,00
182-251	450 mm	1 mm. 5 mm (on both sides)	18 mm	40,00
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	26,00
182-151	450 mm	1 mm - 0,5 mm (on both faces)	30 mm	40,00
182-171	600 mm	1 mm - 0,5 mm (on both faces)	30 mm	60,00



Mitutoyo

Specifications

Accuracy Section According to DIN 874 60°

Calibration Instruments



Height Master Page 344



Check Master Page 348



Calibration Tools Page 353



Digital Height Master

Series 515

This is a standard model with a digital display, that offers you the following bene-

- fits:
- 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 μm	2 µm	480	9,5	2390,00
515-376	10-460	±2 μm	2 µm	630	13,6	3605,00
515-378	10-610	±2,5 μm	2,5 µm	785	16	4233,00





Functions	Series 515
ZERO/ABS	0
DATA/HOLD	@
Auto Power OFF	0
after 20 min. non use	
Low voltage alarm	i
Data output	0
PRESET	۵

Specifications	
Block arrangement	Staggered
Block step	20 mm
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	$\begin{array}{l} 0 < range \leq 310 \text{ mm}: \pm 1,5 \mu\text{m} \\ 310 < range \leq 450 \text{ mm}: \pm 2,5 \\ \mu\text{m} \\ 450 < range \leq 610 \text{ mm}: \pm 3,5 \\ \mu\text{m} \end{array}$
Parallelism of blocks	0 < range \leq 310 mm : 2 μm 310 < range \leq 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	185,00
959149	Digimatic cable with data switch (1 m)	38,00
959150	Digimatic cable with data switch (2 m)	44,00
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	6,00





Staggered 20 mm blocks (movable)

Vertical orientation



Riser block (optional)

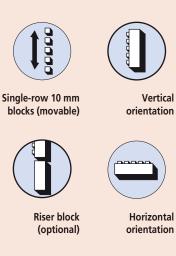
Specifications

Block arrangement	Straight
Block step	10 mm
Micrometer adjustment	20mm
Micrometer feed	0,5mm
Block pitch accuracy	$0 < range \le 310mm: \pm 1,5\mu m$ $310 < range \le 610mm:$ $\pm 2,5\mu m$ $610 < range \le 1010mm:$ $\pm 3,5\mu m$
Parallelism of blocks	0 < range \leq 610mm: 1,5µm 610 < range \leq 1010mm: 2µm
Graduation	0,001 mm

Optional accessories

No.	Description	Price €
900574	Supporting base for vertical operation	259,00
515-110	Auxiliary block kit for bore gauge	207,00

900574 : supplied as a standard for 515-523 and 515-513





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.





Using in horizontal orientation

345

metre					
No.	Range [mm]	Feed error	Retrace error	Mass [kg]	Price [€]
515-520	5-610	±1,2 μm	1,2 µm	45	7612,00
515-523	5-1010	±1,5 μm	1,5 µm	63,5	13153,00



Metric





Universal Height Master

Series 515

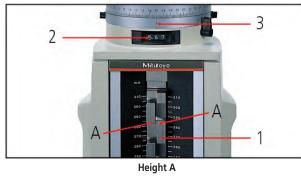
- This Universal Height Master offers you the following benefits:
- It is designed for both vertical and horizontal orientations, enabling you to carry out a wide range of applications such as accuracy checking of machine tool table movements.
- It is supplied in a fitted wooden case.



515-322

Metric						
No.	Range [mm]	Block step	Feed error	Retrace error	Mass [kg]	Price [€]
515-322	5-310	20 mm (staggered)	±1µm	1 µm	23	3286,00





1. Scale 280.000 mm 2. Counter 5.670 mm 3. Thimble 0.000 mm

285.670 mm

Mitutoyo



Specifications

Block arrangement

Staggered (515-310 : straight)
20 mm
0,5 mm
±1,5 μm
1 µm
0,001 mm

Optional accessories

No.	Description	Price €
515-112	Auxiliary block kit for bore gauge	228,00







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).

No.	Suitable for Height Master	Mass [g]	Price [€]
515-110	515-520 / 515-523	140	207,00
515-111	515-374 / 515-376 / 515-378	142	185,00
515-112	515-322	142	228,00







Content of set

Specifications

Hardness of feet Hardness of upper support 88 HRA (Carbide) 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.





515-114

Metric

No.	Accuracy	Height [mm]	Parallelism	Mass [kg]	Price [€]
515-113	±0,6 µm	150 mm	0,6 µm	5,7	483,00
515-114	±1 μm	300 mm	0,8 µm	11,3	637,00
515-115	±2 μm	600 mm	1 µm	31	1112,00



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 Block pitch accuracy

±0,5 µm ±(1+L/150)µm L= lenght to check (mm)



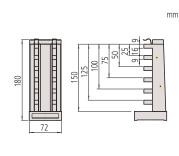


515-571

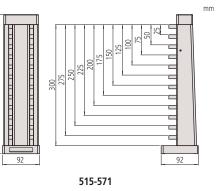
Metric				
No.	Range [mm]	Reference checking lengths available	Mass [kg]	Price [€]
515-570	0-150	25, 50, 75, 100, 125, 150 mm	3	1267,00
515-571	0-300	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	17	3451,00

345





515-570



Specifications

Block pitch accuracy	$\label{eq:Range} \begin{array}{l} \text{Range} \leq 300 \text{ mm}: \pm 0,005 \text{ mm} \\ \text{Range} \leq 600 \text{ mm}: \pm 0,007 \text{ mm} \end{array}$
Parallelism of blocks	Range \leq 300 mm : 0,002 mm Range \leq 600 mm : 0,004 mm

Optional accessories

No.	Description	Price €
602162	Wooden case for 300 model	135,00
602164	Wooden case for 600 model	176,00



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.

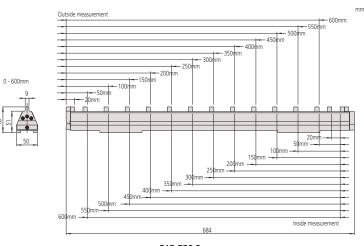


Metric				
No.	Range [mm]	Reference checking lengths available for outside/inside measurement	Mass [kg]	Price [€]
515-555	0-300	20, 50, 100, 150, 200, 250 and 300 mm	4	1833,00
515-556-2	0-600	20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550 and 600 mm	8,5	4233,00



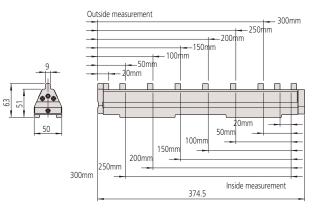
Checking a height gauge





515-556-2

mm







Inside Micro Checker

Series 515

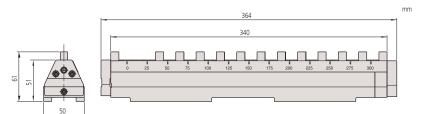
- This Inside Micro Checker offers you the following benefits:
- Applicable for Series 133 only!
- It designed to act as a setting standard for inside micrometers.
- It comes with ceramic gauge blocks.



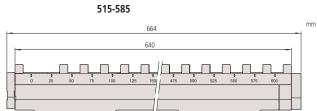
515-585



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	1483,00
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	3131,00







515-586



Specifications

Block pitch accuracy ±(1+L/150) μm L = Length to check (mm)

Delivered With accessory set

Optional accessories

No.	Description	Price €
602160	Wooden case for 300 Inside Micro Checker	197,00
602163	Wooden case for 600 Inside Micro Checker	236,00



Application with Series 133 only.

Specifications		Ser
Block step	10 mm	Th:
Block pitch accuracy	$\begin{array}{l} 0 < range \leq \ 310 \ mm : \pm 2,5 \ \mum \\ 310 < range \leq \ 610 \ mm : \pm 3,5 \ \mum \\ 610 < range \leq 1010 \ mm : \pm 5 \ \mum \\ 1010 < range \leq 1510 \ mm : \pm 8 \ \mum \end{array}$	This chir • Y d • It
Parallelism of blocks	$\begin{array}{l} 0 < range \leq \ 310 \ mm : 1,2 \ \mu m \\ 310 < range \leq \ 610 \ mm : 1,5 \ \mu m \\ 610 < range \leq 1010 \ mm : 2 \ \mu m \\ 1010 < range \leq 1510 \ mm : 2,5 \ \mu m \end{array}$	• It
Hardness	More than 64 HRC	
Delivered	In wooden box	

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.



Single-row 10 mm blocks

00000



Horizontal orientation



Vertical orientation







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.





515-742

515-740

Metric		Cerar	nic blocks
No	Range	Mass	Price
No.	[mm]	[kg]	[€]
515-760	300	3,4	3296,00
515-761	450	5,2	3801,00
515-762	600	6,9	4038,00
515-763	1000	11,5	9867,00
515-764	1500	17,3	16892.00

Metric		Steel	blocks
No.	Range [mm]	Mass [kg]	Price [€]
515-740	300	3,6	2287,00
515-741	450	5,4	2390,00
515-742	600	7,2	2760,00
515-743	1000	12	6047,00
515-744	1500	18	10079,00



 $\begin{tabular}{|c|c|c|} \hline Specifications \\ \hline Block step & 10 mm \\ \hline Block pitch & 0 < range \le 310 mm : \pm 1,2 \ \mu m \\ accuracy & 310 < range \le 610 mm : \pm 1,8 \ \mu m \\ 610 < range \le 1010 mm : \pm 2,5 \ \mu m \\ 1010 < range \le 1510 mm : \pm 4 \ \mu m \\ \hline \hline Parallelism of & 0 < range \le 450 mm : 1 \ \mu m \\ 450 < range \le 1010 mm : 1,5 \ \mu m \\ 1010 < range \le 1510 mm : 2 \ \mu m \\ \hline \hline \end{array}$

Delivered

Optional accessories

No.	Description	Price €
601167	Supporting base for vertical operation	350,00

In a wooden box



Single-row 10 mm blocks



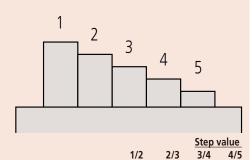
Vertical orientation



Horizontal orientation



601167 (optional) Supporting base for vertical operation



516-198, 516-498 10 μm 5 μm 2 μm 1 μm 516-199, 516-499 300 μm 100 μm 50 μm 20 μm **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 ±0,2 $\mu m.$
- Both steel and ceramic types are available.

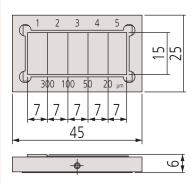


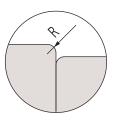


516-198 Steel type

Metric	Ceramic blocks	
No.	Remarks	Price [€]
516-498	Ceramic type (step: 10, 5, 2, 1 µm)	1570,00
516-499	Ceramic type (step: 300, 100, 50, 20 µm)	1570,00

Metric	Steel blocks	
No.	Remarks	Price [€]
516-198	Steel type (step: 10, 5, 2, 1 μm)	1030,00
516-199	Steel type (step: 300, 100, 50, 20 µm)	1030,00





mm

Glass Scales

Series 182

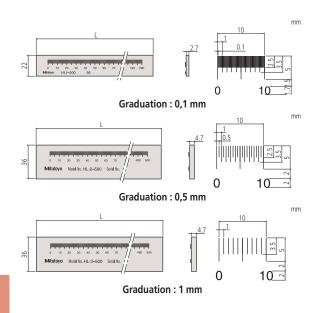
- These high precision glass scales offer you the following benefits:
- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- They are ideal for checking the magnification accuracy of profile projectors and microscopes, as well as the table feed accuracy of measuring equipment.



182-525-10 / 182-523-10 / 182-522-10 / 182-513-10

Metric

No.	Range	Graduation	Thickness of graduation line	L	Mass	Price
NO.	[mm]	[mm]	[µm]	[mm]	[kg]	[€]
182-511-10	50	0,1	20	75	0,23	748,00
182-512-10	100	0,1	20	125	0,24	780,00
182-521-10	100	0,5	50	130	0,27	801,00
182-513-10	150	0,1	20	175	0,35	806,00
182-514-10	200	0,1	20	225	0,36	833,00
182-522-10	200	0,5	50	230	0,32	876,00
182-531-10	250	1	100	280	0,55	965,00
182-523-10	300	0,5	50	330	0,57	1014,00
182-524-10	400	0,5	50	430	0,71	1108,00
182-525-10	500	0,5	50	530	0,86	1177,00
182-532-10	500	1	100	530	0,86	1177,00
182-533-10	750	1	100	780	1,22	1464,00
182-534-10	1000	1	100	1030	1,54	1512,00





Specifications Accuracy

(1,5+2L/1000) μm L = measured length (mm)

Material Thermal expansion coefficient Sodium glass (8±1) x 10⁻⁶/K



Specifications

Accuracy	(0,5+L/1000) µm L = measured length (mm)
Graduation	1 mm
Thickness of graduation line	4 µm
Material	Low expansion glass
Thermal expansion coefficient	(0±0,02) x 10⁻6/K

Low Expansion Glass Scales

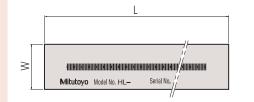
Series 182

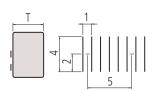
- These high precision glass scales offer you the following benefits:
- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- You can use them as a standard for calibrating graduating scales, with high accuracy.



182-502-60

Metric						
No.	Range [mm]	L [mm]	T [mm]	W [mm]	Mass [kg]	Price [€]
182-501-60	250	280	10	20	0,75	3960,00
182-502-50	500	530	20	30	1,8	7555,00
182-502-60	500	530	20	30	1,8	7782,00
-60 : with JCSS of	ertificate					





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.

l	Metric				
	No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
	170-102-12	0-25	±2 μm	7,5	1854,00

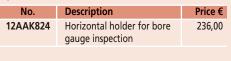




Specifications Graduation Measuring face

0,001 mm Carbide tipped, rotating

Optional accessories





Series 521

This allows the calibration of digital and analogue indicators, lever gauges and measuring probes with a maximum measuring span of 5mm.



 Specifications

 Graduation
 0,0002 mm

 Repeatability
 0,2 μm

 Clamping capacity (stem)
 Ø 4-10 mm





Metric				
No.	Range [mm]	Accuracy	Mass [kg]	Price [€]
521-103	0-1	±0,2 μm	7	4985,00
521-105	0-5	±0,8 μm	7,5	5943,00



Mitutoyo

356

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Specifications	
Resolution [µm]	0,02 μm/0,8 μm
Drive method	Electric motor
Drive speed	Max. 4 mm/s
Accuracy	±(0,2+L/100) μm in vertical position ±(0,3+2L/100) μm in lateral position L = measured length (mm)
Measuring unit	Reflective-type glass linear encoder
Expansion coefficient	(8±1)X10 ⁻⁶ /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

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.



170-321D

Metric

No.	Range	Accuracy	Remarks	Price [€]
170-321D	100 mm	\pm (0,2+L/100) µm in vertical position \pm (0,3+2L/100) µm in lateral position L = measured length (mm)	I-Pak software comfirms EN ISO 463 (2006), DIN 878 (1983), DIN 2270 (1985), DIN 879 (1983), VDI/VDE/DGO 2618. JIS B7503 (2011) a.s.o.	10125,00











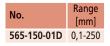


Gauge Block Comparator GBCD-250

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.





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.



926-210

Set of 273 pieces

No.	Accuracy grade	Remarks	Price [€]
926-210	1	0,99-10,01mm, rising by 0,1mm 0mm (size); +0,01mm (oversize) and -0,01mm (undersize)	3389,00
926-212	2	0,99-10,01mm, rising by 0,1mm 0mm (size); +0,01mm (oversize) and -0,01mm (undersize)	2699,00

Set of 91 pieces

	proces		
No.	Accuracy grade	Remarks	Price
NO.	Accuracy grade	Relinding	[€]
926-220	1	1-10mm, rising by 0,1mm	1524,00
926-222	2	1-10mm, rising by 0,1mm	1071,00

Mitutoyo

Specifications

Resolution [µm] Measuring unit Measuring force 0,00001 mm (0,01 µm)

Laser Hologage (upper, lower) 0,7N (upper) 0,2N (lower) N

Specifications

Г

Accuracy	DIN 2269
Finish	Very fine ground, from Ø 3 mm inscribed
Roughness	\leq 0,1 μ m Ra
Hardness	HRC 60-62
Length	up to Ø 6 mm = 50 mm over Ø 6 mm = 70 mm
Delivered	In a wooden box

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Gauge Blocks



Steel Gauge Block Sets Page 360



Steel individual Gauge Blocks Page 368



CERA Gauge Block Sets Page 370



CERA Individual Gauge Blocks Page 373



Special Gauge Blocks Page 374



Accessories for Gauge Blocks Page 376

359



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 have 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

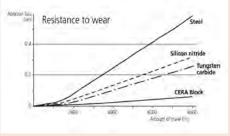
Superior flatness and surface finish

8. Superior Material Characteristics of CERA Block

Property Material	CERA Block (Zr0 ₂)	Steel (Fe)	Carbide (WC-Co)	Silicon nitride (Si,N,)
Hardness (HV)	1350	800	1650	1500
Coefficient of thermal expansion (10 °/K)	9,3±0,5	10,8±0,5	5,5±1,0	2
Flexural strength (MPa)	1270	1960	1960	580
Fracture toughness K1c (MPa•m10)	7	120	12	6,5
Young's modulus x104 (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 - Abrasion Resistant



CERA Blocks - Non magnetic

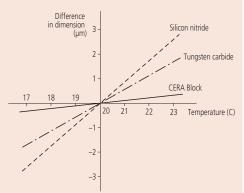
Selecting Gauge Blocks

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.



Differences in the dimension between some materials and steel that are obtained when measuring testpieces with a length of 100 mm at each temperature.

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.

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 Accrediation Cooperation is an international cooperation of laboratory and inspection accrediation bodies. The member bodies signed the ILAC MMutual Recognition Arrangement (MRA) which ensures 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. DAkks, 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.



Steel 47-block set

Specifications Accuracy

EN ISO 3650



Inspection Certificate

Steel 112-block set

Steel 103-block set

Blocks			Price €	Block allocation		
per Set	No.	Grade		Size	Step	Quantity
122	516-597-10	0	4020,00	1,0005	-	1
	516-598-10	1	3400,00	1,001 - 1,009	0,001	9
	516-599-10	2	2885,00	1,01 - 1,49	0,01	49
				1,6 - 1,9	0,1	4
				0,5 - 24,5	0,5	49
				30 - 100	10	8
				25, 75	-	2
112	516-938-10	0	3710,00	1,0005	-	1
	516-939-10	1	3090,00	1,001 - 1,009	0,001	9
	516-940-10	2	2575,00	1,01 - 1,49	0,01	49
				0,5 - 24,5	0,5	49
				25 - 100	25	4
103	516-942-10	0	3193,00	1,005	-	1
	516-943-10	1	2369,00	1,01 - 1,49	0,01	49
	516-944-10	2	2060,00	0,5 - 24,5	0,5	49
				25 - 100	25	4
87	516-946-10	0	2678,00	1,001 - 1,009	0,001	9
	516-947-10	1	1751,00	1,01 - 1,49	0,01	49
	516-948-10	2	1600,00	0,5 - 9,5	0,5	19
				10 - 100	10	10
47	516-958-10	0	1700,00	1,005	-	1
	516-959-10	1	1340,00	1,01 - 1,09	0,01	9
	516-960-10	2	1185,00	1,1 - 1,9	0,1	9
				1 - 24	1	24
	E46 060 40		4534.00	25 - 100	25	4
47	516-962-10	0	1524,00	1,005	-	1
	516-963-10	1	1185,00	1,01 - 1,19	0,01	19
	516-964-10	2	1030,00	1,2 - 1,9	0,1 1	8
				1-9		9
4.6	E16 00E 10	0	1620.00	10 - 100 1,001 - 1,009	10	10 9
46	516-995-10 516-996-10	0	1630,00 1298,00	1,001 - 1,009	0,001	9
	516-996-10	2	1298,00	1,01 - 1,09 1,1 - 1,9	0,01 0,1	9
	510-557-10	2	1100,00	1,1-1,9	1	9
				10 - 100	10	10
22	516-966-10	0	1051,00	1,005	-	10
32	516-967-10	1	762,00	1,005	0,01	9
	516-968-10	2	670,00	1,01 - 1,05	0,01	9
	510-500-10	2	070,00	1,1-1,9	1	9
				10 - 30	10	3
				60	-	1
0	516-115-10	0	1288,00	25 - 200	- 25	8
8	516-116-10	1	1061,00	25-200	25	0
	516-117-10	2	958,00			
	510-117-10	2	90,00			



EN ISO 3650

Specifications

Accuracy

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.



Blocks			Price €	Block allocati	on	
per Set	No.	Grade		Size	Step	Quantity
122	516-596-60	К	8450,00	1,0005	-	1
122	516-597-60	0	4325,00	1,001 - 1,009	0,001	9
	516-598-60	1	3700,00	1,01 - 1,49	0,01	49
	516-599-60	2	3195,00	1,6 - 1,9	0,1	4
				0,5 - 24,5	0,5	49
				30 - 100	10	8
				25, 75	-	2
112	516-937-60	К	7725,00	1,0005	-	1
112	516-938-60	0	4020,00	1,001 - 1,009	0,001	9
	516-939-60	1	3400,00	1,01 - 1,49	0,01	49
	516-940-60	2	2890,00	0,5 - 24,5	0,5	49
				25 - 100	25	4
103	516-941-60	К	7000,00	1,005	-	1
.05	516-942-60	0	3710,00	1,01 - 1,49	0,01	49
	516-943-60	1	3090,00	0,5 - 24,5	0,5	49
	516-944-60	2	2575,00	25 - 100	25	4
87	516-945-60	К	6080,00	1,001 - 1,009	0,001	9
	516-946-60	0	2890,00	1,01 - 1,49	0,01	49
	516-947-60	1	2320,00	0,5 - 9,5	0,5	19
	516-948-60	2	2010,00	10 - 100	10	10
47	516-957-60	K	3300,00	1,005	-	1
	516-958-60	0	1900,00	1,01 - 1,09	0,01	9
	516-959-60	1	1545,00	1,1 - 1,9	0,1	9
	516-960-60	2	1290,00	1 - 24	1	24
				25 - 100	25	4
47	516-961-60	K	3200,00	1,005	-	1
	516-962-60	0	1625,00	1,01 - 1,19	0,01	19
	516-963-60	1	1290,00	1,2 - 1,9	0,1	8
	516-964-60	2	1135,00	1-9	1	9
				10 - 100	10	10
46	516-994-60	K	3245,00	1,001 - 1,009	0,001	9
	516-995-60	0	1840,00	1,01 - 1,09	0,01	9
	516-996-60	1	1500,00	1,1 - 1,9	0,1	9
	516-997-60	2	1298,00	1-9	1	9
				10 - 100	10	10
32	516-965-60	K	2175,00	1,005	-	1
	516-966-60	0	1130,00	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
				60	-	1
8	516-701-60	K	8135,00	125 - 175	25	3
	516-702-60	0	3810,00	200 - 250	50	2
	516-703-60	1	3090,00	300 - 500	100	3
	516-704-60	2	2780,00			
8	516-115-60	0	1391,00	25 - 200	25	8
	516-116-60	1	1164,00			
	516-117-60	2	1061,00			

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.

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 1mmbased gauge blocks.





Steel 88-block set

Steel 33-block set

Blocks			Price €	Block allocation		
per Set	No.	Grade		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		2,005	-	1
	516-511-10	1		2,01 - 2,09	0,01	9
	516-512-10	2	1270,00	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		Standard / grade available and Suffix No. *	Block allocation		
per Set	No.	ISO/DIN/JIS	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): -XO	0,1 - 0,5	0,05	9
-	516-991	(Grade 1): -XO			
	516-992	(Grade 2): -XO			



Specifications Accuracy

EN ISO 3650

MRutovo Milutovo page 1 of 1 Annal Lingth II Gertral Langth II Easter Langth II Easter Langth II Same Langth II Band Lingth I CERTIFICATE OF INSPECTION No. Deriel nch lident. ALT Desperati or less 1.4 almest tate" (1.1 + L / 2.8) almest ar to MUST BD. M21/Diddle-12 9 THE PARTY AND

Inspection Certificates

Specifications Accuracy

EN ISO 3650



Steel 18-block set

Suffix No. (-X) for Selecting Certificate Provided

ISO/DI	c.	
Suffix	Inspection	Calibration Certificate
No.	Certificate	JCSS
1	0	_
6	0	0

Mitutoyo



Inspection

Certificate



Certificate

Carbide Wear Block Set

Series 516 - Carbide Wear Block sets





Specifications

Inspection Certificate





365

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			Price €	Block allocation		
per Set	No.	Grade		Size	Step	Quantity
2	516-807-10	0	237,00	1	-	2
-	516-806-10	1	216,00			
2	516-803-10	0	237,00	2	-	2
-	516-802-10	1	215,00			



Steel Micrometer Inspection Gauge Block Set

Series 516

1000

. et . . .e.

.....

Calibration certificate

Inspection

. certificate

Specification	5
Accuracy	

EN ISO 3650



516-107-10



Micro checker (See separate entry later in this chapter for a detailed description)

With callb	ration certifica				
Blocks	No.	Grade	Calibration/Standard applications	Price €	Block allocation
per Set					
10	516-580-60	0	For Micrometer with 2 mm	685,00	2,2/ 4,8/ 7,8/ 10,4/ 12/ 15,2/ 17,4/ 19,6/
	516-581-60	1	spindle pitch. (QuantuMike)	597,00	22,6/ 25 mm
	516-582-60	2		510,00	
10	516-106-60	0	EN ISO 3611	618,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/
	516-107-60	1	DIN 863 (1999)	546,00	22,8/ 25 mm, optical parallel (thickness =
	516-108-60	2	VDI/VDE/DGQ 2618	474,00	12 mm)
10	516-135-60	0	EN ISO 3611	1288,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/
	516-136-60	1	DIN 863 (1999)	1082,00	22,8/ 25 mm, Micro Checker, optical
	516-137-60	2	VDI/VDE/DGQ 2618	979,00	parallel (thickness = 12 mm)

With inspection certificate

Blocks per Set	No.	Grade	Calibration/Standard applications	Price €	Block allocation
10	516-580-10	0	For Micrometer with 2 mm	600,00	2,2/ 4,8/ 7,8/ 10,4/ 12/ 15,2/ 17,4/ 19,6/
	516-581-10	1	spindle pitch. (QuantuMike)	515,00	22,6/ 25 mm
	516-582-10	2		427,00	
10	516-106-10	0	EN ISO 3611	556,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/
	516-107-10	1	DIN 863 (1999)	484,00	22,8/ 25 mm, optical parallel (thickness =
	516-108-10	2	VDI/VDE/DGQ 2618	412,00	12 mm)
10	516-135-10	0	EN ISO 3611	1185,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/
	516-136-10	1	DIN 863 (1999)	979,00	22,8/ 25 mm, Micro Checker, optical
	516-137-10	2	VDI/VDE/ DGQ 2618	876,00	parallel (thickness = 12 mm)

Steel Caliper Inspection Gauge Block Set

Series 516





516-526



516-124

With inspection certificate

	Blocks	No.	Grade	Mass	Calibration/Standard	Price €	Block allocation					
	per Set				applications							
ĺ	4	516-526-10	1	1,72	EN ISO 13385-1	1060,00	4 blocks : 10, 30, 50, 125 mm, setting ring					
	-	516-527-10	2	1,72		890,00	(Ø4 mm, Ø10 mm), pin gauge (Ø 10 mm),					
							glove					
ĺ	3	516-124-10	1	1,72	DIN 862 (1988)	783,00	3 blocks : 30, 41,3, 131,4 mm, setting ring					
	-	516-125-10	2	1,72	VDI/VDE/DGQ 2618	706,00	(Ø4 mm, Ø25 mm), glove					

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.



Certificate

Inspection

Certificate

50 mm Mitutoyo 993135

Length [mm]	No.	Length [mm]	No.	Length [mm]	No.
0,1	611821	0,53	611894	0,96	611937
0,11	611860	0,54	611895	0,97	611938
0,12	611861	0,55	611896	0,98	611939
0,13	611862	0,56	611897	0,99	611940
0,14	611863	0,57	611898	0,991	611551
0,15	611822	0,58	611899	0,992	611552
0,16	611864	0,59	611900	0,993	611553
0,17	611865	0,6	611901	0,994	611554
0,18	611866	0,61	611902	0,995	611555
0,19	611867	0,62	611903	0,996	611556
0,2	611823	0,63	611904	0,997	611557
0,21	611868	0,64	611905	0,998	611558
0,22	611869	0,65	611906	0,999	611559
0,23	611870	0,66	611907	1	611611
0,24	611871	0,67	611908	1,0005	611520
0,25	611824	0,68	611909	1,001	611521
0,26	611872	0,69	611910	1,002	611522
0,27	611873	0,7	611911	1,003	611523
0,28	611874	0,71	611912	1,004	611524
0,29	611875	0,72	611913	1,005	611525
0,3	611825	0,73	611914	1,006	611526
0,31	611876	0,74	611915	1,007	611527
0,32	611877	0,75	611916	1,008	611528
0,33	611878	0,76	611917	1,009	611529
0,34	611879	0,77	611918	1,01	611561
0,35	611826	0,78	611919	1,02	611562
0,36	611880	0,79	611920	1,03	611563
0,37	611881	0,8	611921	1,04	611564
0,38	611882	0,81	611922	1,05	611565
0,39	611883	0,82	611923	1,06	611566
0,4	611827	0,83	611924	1,07	611567
0,41	611884	0,84	611925	1,08	611568
0,42	611885	0,85	611926	1,09	611569
0,43	611886	0,86	611927	1,1	611570
0,44	611887	0,87	611928	1,11	611571
0,45	611828	0,88	611929	1,12	611572
0,46	611888	0,89	611930	1,13	611573
0,47	611889	0,9	611931	1,14	611574
0,48	611890	0,91	611932	1,15	611575
0,49	611891	0,92	611933	1,16	611576
0,5	611506	0,93	611934	1,17	611577
0,51	611892	0,94	611935	1,18	611578
0,52	611893	0,95	611936	1,19	611579

					MRutoyo	100 100	in the sect near		Certificate	-
Milutov	0		Cer	UTOME IN	aber TOSE10365	-	suier point and a	fe processi derte	and a second second	- Nette
1000		page 1 of 1					nel Lingth II rei lingth II rei lingth II mit Lingth II	-in-in-		
CE	RTIFIC	CATE O	F INS	PECTI	ON		Cantral See	Ba. So.	81.80	Ē
						-	-1.2	21	41	
							44	- 11	41	
Testrone	nt. Caupr B	llock					755		44	
Gen	der 10 - 10	(SME)					44	-	- 21	
date of ingest	im: tätb Ma	0. 2004			A11 - 0.1018	1			11	
Roming) Langth rech	ident. Bo.	Central Deristion	Basimum	Binimph	Nariation	1	44	- 21	-2.4	
Langth rech	05280	-0.4	#1.7	-0.4	1.6		- 21	4	44	
BASIS OF TE BATER USEPECTOR ACTA CONFECTOR ACTA THERMS: EXPAND DEPARTO UNCERTAR Der Getter Genal Gerb?	ST ASHE MA AL: Steel CD: by com OF ON 08.0=0 NTY 4° or 3 and 10 1020 NH 100 NH1	uraise 137×18-6/9	(119.8±0. et) / 2.3) a is	0) × 18-4/C C-5ain (3	i Ingeli Linde			化化 年年 化 的现在分词 年 化 化 化 化 中 化 化 化 化		
		Date 18th	Rep. 2008		and.			-		

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. DAkkS COFRAC, RVA or UKAS Certificate of Calibration.

This calibration result is accepted internationally.

For prices please refer to the online catalogue

For prices please refer to the online cataloque

For prices please refer to the online catalogue

For prices please refer to the online catalogue

Mitutoy



Specifications

ISO/DIN/JIS

Κ

0

0

1

1

2

2

Suffix No.

-016

-021

-026

-031

-036

-041

-046

Accuracy

EN ISO 3650

Grade Inspection Calibration Certificate

JCSS

Ο

0

0

0

Suffix No. (-XXX)

for Selecting Certificate Provided

Certificate

Ο

0

0

Ο

Ο

Ο

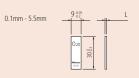
0

Steel Metric Individual Gauge Block

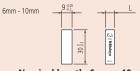
Metric Blocks ≤ 1000 mm

Suffix No. (-XXX) for Selecting Certificate Provided

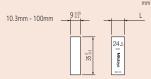
ISO/D	IN/JIS		
Suffix	Grade	Inspection	Calibration Certificate
No.	Grade	Certificate	JCSS
-016	К	0	0
-021	0	0	—
-026	0	0	0
-031	1	0	_
-036	1	0	0
-041	2	0	_
-046	2	0	0



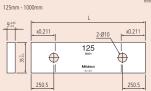
Nominal length: 0.1 mm - 5.5 mm



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 611586 1,25 611586 1,26 611586 1,27 611587 1,28 611588 1,29 611589 1,23 611591 1,33 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,39 611599 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 611606 1,47 611607 1,48 611608 1,49 </th <th></th> <th></th>		
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 611587 1,28 611587 1,29 611589 1,31 611591 1,32 611592 1,33 611593 1,34 611596 1,37 611595 1,36 611596 1,37 611597 1,38 611598 1,39 611598 1,39 611598 1,39 611598 1,39 611598 1,4 611600 1,41 611601 1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,46 611609 1,5 611612 2,000 611609 1,7<		No.
1,21 611581 1,22 611582 1,23 611583 1,24 611584 1,25 611585 1,26 611586 1,27 611587 1,28 611589 1,29 611589 1,23 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 611598 1,37 611597 1,38 611598 1,39 611598 1,39 611599 1,4 611600 1,41 611601 1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,46 611608 1,47 611607 1,48 611608 1,49 611608 1,4		611580
1,22 611582 1,23 611583 1,24 611584 1,25 611585 1,26 611586 1,27 611587 1,28 611588 1,29 611589 1,31 611591 1,32 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,39 611598 1,36 611596 1,37 611597 1,38 611598 1,39 611598 1,39 611598 1,39 611599 1,4 611600 1,41 611601 1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,46 611608 1,47 611607 1,48 611608 1,49 611609 2,0		
1,23 611583 1,24 611584 1,25 611585 1,26 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 611598 1,39 611599 1,4 611600 1,41 611601 1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,46 611605 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004 611694 <td< th=""><th>-</th><th></th></td<>	-	
1,24 611584 1,25 611585 1,26 611586 1,27 611587 1,28 611588 1,29 611589 1,31 611591 1,32 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,37 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 611605 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004 611694 <t< th=""><th></th><th></th></t<>		
1,25 611585 1,26 611586 1,27 611587 1,28 611589 1,29 611589 1,31 611590 1,32 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,37 611597 1,38 611598 1,39 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 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004 611698 <t< th=""><th></th><th></th></t<>		
1,26 611586 1,27 611587 1,28 611588 1,29 611589 1,31 611590 1,32 611591 1,33 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 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 611516 1,7 611519 2 61162 2,000 611690 2,001 611691 2,002 <th></th> <th></th>		
1,27 611587 1,28 611588 1,29 611589 1,31 611591 1,32 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,37 611597 1,38 611598 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 611691 2,002 611692 2,003		
1,29 611589 1,31 611590 1,32 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,37 611599 1,36 611598 1,37 611599 1,38 611599 1,4 611600 1,41 611601 1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,44 611604 1,45 611605 1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004 611698 <t< th=""><th></th><th>611587</th></t<>		611587
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 1,44 611604 1,45 611605 1,44 611604 1,45 611605 1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004<	1,28	611588
1,31 611591 1,32 611592 1,33 611593 1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,37 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 1,44 611604 1,45 611605 1,44 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 611691 2,002 611692 2,003	1,29	611589
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 1,44 611604 1,45 611605 1,44 611604 1,45 611605 1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004 611698 2,005 611698 2,006 611707 2,008 611704	1,3	611590
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 1,43 611605 1,44 611604 1,45 611605 1,44 611606 1,43 611605 1,44 611607 1,45 611605 1,46 611606 1,47 611607 1,48 611508 1,49 611609 1,5 611612 2,0005 611690 2,001 611691 2,002 611692 2,003 611693 2,004 611694 2,005 611695 2,006 611698 2,007 611701 2,02 611701	1,31	611591
1,34 611594 1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,39 611598 1,39 611598 1,4 611600 1,41 611602 1,43 611603 1,44 611604 1,42 611605 1,44 611604 1,45 611605 1,44 611606 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,000 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 611701 2,02 611702 2,	1,32	611592
1,35 611595 1,36 611596 1,37 611597 1,38 611598 1,39 611598 1,39 611598 1,4 611600 1,41 611602 1,43 611603 1,44 611604 1,45 611605 1,44 611606 1,43 611605 1,44 611606 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,000 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 611701 2,02 611702 2,03 611703 2,	1,33	611593
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 1,44 611606 1,43 611605 1,44 611606 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,47 611607 1,48 611608 1,49 611509 1,5 611612 2,0005 611690 2,001 611691 2,002 611692 2,003 611692 2,004 611694 2,005 611695 2,006 611698 2,007 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705	-	611594
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 1,44 611606 1,43 611605 1,44 611606 1,47 611607 1,48 611608 1,47 611607 1,48 611608 1,47 611607 1,48 611608 1,49 611609 1,5 611612 2,0005 611691 2,001 611517 1,8 611518 1,9 611519 2 611612 2,0005 611691 2,002 611692 2,003 611692 2,004 611694 2,005 611695 2,006 611702 2,003 611703 2,004 611704 <		611595
1,38 611598 1,39 611599 1,4 611600 1,41 611602 1,42 611603 1,44 611604 1,45 611605 1,44 611606 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,47 611607 1,48 611608 1,47 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 611698 2,007 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,		611596
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 1,47 611607 1,48 611608 1,47 611609 1,46 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 611698 2,007 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,		
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 1,47 611607 1,48 611608 1,47 611607 1,48 611608 1,49 611609 1,5 611611 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 611698 2,007 611701 2,02 611702 2,03 611703 2,04 611704 2,05 <th></th> <th></th>		
1,41 611601 1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,47 611609 1,46 611608 1,47 611609 1,48 611609 1,49 611609 1,5 611641 1,6 611516 1,7 611517 1,8 611518 1,9 611519 2 611612 2,0005 611691 2,001 611691 2,002 611692 2,003 611693 2,004 611694 2,005 611695 2,006 611698 2,007 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,06 611706 2,07 611707 2	,	
1,42 611602 1,43 611603 1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,46 611608 1,47 611609 1,48 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 611698 2,007 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,06 611708 2,07 611707 2,08 <th></th> <th></th>		
1,43 611603 1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,43 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 611698 2,007 611697 2,008 611698 2,009 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,06 611708 2,07 611708 2,09 611708 2,09 611708 <td< th=""><th>-</th><th></th></td<>	-	
1,44 611604 1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611611 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 611698 2,007 611698 2,009 611701 2,02 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,06 611705 2,07 611707 2,08 611708 2,09 611708 2,09 611709 2,1 611711 2,12 611711 2		
1,45 611605 1,46 611606 1,47 611607 1,48 611608 1,49 611609 1,5 611619 1,5 611611 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 611701 2,02 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 611701 2,1 611711 2,	-	
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 611701 2,02 611701 2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,06 611706 2,07 611707 2,08 611708 2,09 611707 2,08 611708 2,09 611707 2,08 611708 2,09 611709 <td< th=""><th></th><th></th></td<>		
1,47 611607 1,48 611608 1,49 611609 1,5 611641 1,6 611516 1,7 611517 1,8 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 611711 2,12 611712 2,13 611713 2,14 611714 2,15<		
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 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715 <th></th> <th></th>		
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 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 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 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715	-	
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 611708 2,09 611709 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 611708 2,09 611708 2,09 611711 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 611708 2,09 611708 2,09 611711 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 611707 2,08 611708 2,09 611708 2,09 611708 2,09 611711 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
2,00056116902,0016116912,0026116922,0036116932,0046116942,0056116952,0066116962,0076116972,0086116982,0096116992,0116117012,026117022,036117032,046117042,056117052,066117062,076117072,086117082,096117092,116117112,126117122,136117132,146117142,15611715		
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 2,011 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 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 611708 2,09 611709 2,11 611710 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 2,15 611715		
2,005 611695 2,006 611696 2,007 611697 2,008 611698 2,009 611699 2,011 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 2,11 611710 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 2,15 611715		
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 2,11 611710 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 2,11 611710 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
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 2,11 611710 2,12 611712 2,13 611713 2,14 611714 2,15 611715	2,008	611698
2,02 611702 2,03 611703 2,04 611704 2,05 611705 2,06 611706 2,07 611707 2,08 611708 2,09 611709 2,11 611710 2,12 611712 2,13 611713 2,14 611714 2,15 611715		611699
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 2,15 611715	2,01	611701
2,04 611704 2,05 611705 2,06 611706 2,07 611707 2,08 611708 2,09 611709 2,11 611710 2,12 611711 2,13 611713 2,14 611714 2,15 611715	2,02	611702
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 2,15 611715	2,03	611703
2,06 611706 2,07 611707 2,08 611708 2,09 611709 2,11 611710 2,12 611711 2,13 611713 2,14 611714 2,15 611715	2,04	611704
2,07 611707 2,08 611708 2,09 611709 2,1 611710 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715	2,05	611705
2,08 611708 2,09 611709 2,1 611710 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
2,09 611709 2,1 611710 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715	2,07	611707
2,1 611710 2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715		
2,11 611711 2,12 611712 2,13 611713 2,14 611714 2,15 611715	-	
2,12 611712 2,13 611713 2,14 611714 2,15 611715		
2,13 611713 2,14 611714 2,15 611715		
2,146117142,15611715		
2,15 611715		
	2,15 be sold to comr	611715

_

-

_

Length	No.
[mm]	611716
2,16 2,17	611716 611717
2,17	611718
2,18	611719
2,15	611720
2,21	611721
2,21	611722
2,22	611723
2,23	611724
2,25	611725
2,25	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
2,9	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
11,5	611651
12	611622
12,5	611652
12,9	611853
13	611623
13,5	611653
14	611624
14,5	611654
	er to the online catalogue
2	60



Length



Length [mm]	No.
[]	1398320417631
2,47	611747
2,48	611748
2,49	611749
2,5	611642
2,6	611750
2,7	611751
2,8	611752
15	611625
15,5	611655
16	611626
16,5	611656
17 17,5	611627 611657
17,5	611854
17,0	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 45	611857 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
1000 For prices place	611845 se refer to the online catalogue
r or prices piea	se rerer to the online catalogue

Mitutoyo

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

369

For

CERA Gauge Block Set

Series 516 - 1 Base

Blocks

Ordering example: To order an ISO Standard 112-block grade 1 set with JCSS calibration certificate choose 516-339-60.

Standard / grade available and Suffix No. * | Block allocation



Calibration certificate



. certificate

Specifications Accuracy

EN ISO 3650

Suffix No. (-X) for Selecting Certificate Provided

ISO/DIN/JIS							
Suffix		Calibration Certificate					
No.	Certificate	JCSS					
1	0	_					
6	0	0					

Suffix No. 1: Not available for Grade K sets.



CERA 112-block set



CERA 56-block set



CERA 32-block set

Blocks		Standard / grade available and Suffix No. *	Block allocation		
per Set	No.	ISO/DIN/JIS	Size	Step	Quantity
112	516-337	(Grade K): -X0	1,0005	-	1
112	516-338	(Grade 0): -X0	1,001 - 1,009	0,001	9
	516-339	(Grade 1): -X0		0,01	49
			1,01 - 1,49		
	516-340	(Grade 2): -X0	0,5 - 24,5	0,5	49
			25 - 100	25	4
103	516-341	(Grade K): -X0	1,005	-	1
105	516-342	(Grade 0): -X0	1,01 - 1,49	0,01	49
		(Grade 1): -X0	0,5 - 24,5	0,5	49
		(Grade 2): -X0	25 - 100	25	4
88	516-370	(Grade 0): -X0	1,0005	-	1
	516-371	(Grade 1): -X0	1,001 - 1,009	0,001	9
	516-372	(Grade 2): -X0	1,01 - 1,49	0,01	49
			0,5 - 9,5	0,5	19
			10 - 100	10	10
	EAC DAE				
87		(Grade K): -X0	1,001 - 1,009	0,001	9
	516-346	(Grade 0): -X0	1,01 - 1,49	0,01	49
	516-347	(Grade 1): -X0	0,5 - 9,5	0,5	19
	516-348	(Grade 2): -X0	10 - 100	10	10
76		(Grade K): -X0	1,005	-	1
/0	516-350	(Grade 0): -X0	1,01 - 1,49	0,01	49
	516-351	(Grade 1): -X0	0,5 - 9,5	0,5	19
	516-352	(Grade 2): -X0	10 - 40	10	4
			50 - 100	25	3
56	516-353	(Grade K): -X0	0,5	-	1
50	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
	210-220	(Grade 2)NO			
			1 - 24	1	24
			25 - 100	25	4
47	516-357	(Grade K): -X0	1,005	-	1
	516-358	(Grade 0): -X0	1,01 - 1,09	0,01	9
	516-359	(Grade 1): -X0	1,1 - 1,9	0,1	9
	516-360	(Grade 2): -X0	1 - 24	1	24
	510-500				
			25 - 100	25	4
47	516-361	(Grade K): -X0	1,005	-	1
	516-362	(Grade 0): -X0	1,01 - 1,19	0,01	19
	516-363	(Grade 1): -X0	1,2 - 1,9	0,1	8
	516-364	(Grade 2): -X0	1-9	1	9
			10 - 100	10	10
10	516-394	(Grade K): -X0	1,001 - 1,009	0,001	9
46		(Grade 0): -X0			9
	516-395		1,01 - 1,09	0,01	
	516-396	(Grade 1): -X0	1,1 - 1,9	0,1	9
	516-397	(Grade 2): -X0	1 - 9	1	9
			10 - 100	10	10
34	516-178	(Grade K): -X0	1,0005	-	1
34	516-179	(Grade 0): -X0	1,001 - 1,009	0,001	9
	516-180	(Grade 1): -X0	1,01 - 1,09	0,001	9
		(Grade 2): -X0			
	516-181		1,1 - 1,9	0,1	9
			1 - 5	1	5
			10	-	1
32	516-365	(Grade K): -X0	1,005	-	1
	516-366	(Grade 0): -X0	1,01 - 1,09	0,01	9
	516-367	(Grade 1): -X0	1,1 - 1,9	0,1	9
	516-368	(Grade 2): -X0	1-9	1	9
	210-208				
			10 - 30	10	3
			60	-	1
8	516-731	(Grade K): -XO	125 - 175	25	3
	516-732	(Grade 0): -XO	200 - 250	50	2
	516-734	(Grade 2): -XO	300 - 500	100	3
	516-733	(Grade 1): -XO			
	510-755				

Specifications Accuracy

EN ISO 3650

Suffix No. (-X) for Selecting Certificate Provided

ISO/DIN/JIS

100/01		L
Suffix	Inspection	Calibration Certificate
No.	Certificate	JCSS
1	0	
6	0	0

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.



certificate



CERA 18-block set

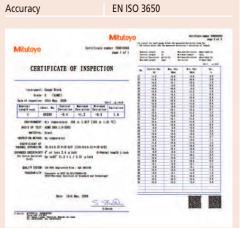
CERA 9-block

Blocks		Standard / grade available and Suffix No. *	Block allocation	on	
per Set	No.	ISO/DIN/JIS	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





Specifications

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.



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.

15

mm

CERA 2-block set

	Blocks			Price €	Block allocation		
	per Set	No.	Grade		Size	Step	Quantity
1	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

Inspection

. certificate

Calibration certificate

Specifications Accuracy

EN ISO 3650



516-391-10



Micro checker 516-607 applicable gauge block sets 516-156, 516-157, 516-158

With calibration certificate						
Blocks	No.	Grade	Calibration/Standard applications	Price €	Block allocation	
per Set						
10	516-390-60	0	Especially for Micrometer with 2	1135,00	2,2/ 4,8/ 7,8/ 10,4/ 12/ 15,2/ 17,4/ 19,6/	
	516-391-60	1	mm spindle pitch (QuantuMike)	1035,00	22,6/ 25 mm	
	516-392-60	2		875,00		
10	516-156-60	0	EN ISO 3611	980,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/	
	516-157-60	1	DIN 863 (1999)	790,00	22,8/ 25 mm, optical parallel (thickness =	
	516-158-60	2	VDI/VDE/DGQ 2618	670,00	12 mm)	
10	516-185-60	0	EN ISO 3611	1750,00		
	516-186-60	1	DIN 863 (1999)	1495,00	22,8/ 25 mm, Micro Checker, optical	
	516-187-60	2	VDI/VDE/DGQ 2618	1235,00	parallel (thickness = 12 mm)	

With inspection certificate

Blocks	No.	Grade	Calibration/Standard applications	Price €	Block allocation
per Set					
10	516-390-10	0	Especially for Micrometer with 2	1050,00	2,2/ 4,8/ 7,8/ 10,4/ 12/ 15,2/ 17,4/ 19,6/
	516-391-10	1	mm spindle pitch. (QuantuMike)	845,00	22,6/ 25 mm
	516-392-10	2		740,00	
10	516-156-10	0	EN ISO 3611	930,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/
	516-157-10	1	DIN 863 (1999)	740,00	22,8/ 25 mm, optical parallel (thickness =
	516-158-10	2	VDI/VDE/DGQ 2618	620,00	12 mm)
10	516-185-10	0	EN ISO 3611	1650,00	2,5/ 5,1/ 7,7/ 10,3/ 12,9/ 15/ 17,6/ 20,2/
	516-186-10	1	DIN 863 (1999)	1390,00	22,8/ 25 mm, Micro Checker, optical
	516-187-10	2	VDI/VDE/DGQ 2618	1135,00	parallel (thickness = 12 mm)

CERA Caliper Inspection Gauge Block Set

Series 516

Blocks

per Set

4

3

No.

516-566-10 1

516-567-10 2

516-150-10 1

516-151-10 2

Grade

Mass

1,72

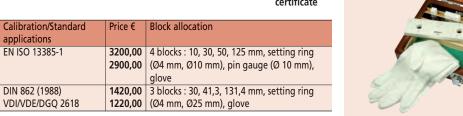
1,72

1,72

1,72



certificate



516-566-10

Specifications

Accuracy

.

EN ISO 3650

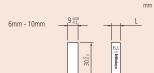
Suffix No. (-XXX) for Selecting Certificate Provided

ISO/DIN/JIS

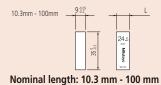
130,0	130/011()313						
Suffix	Grade	Inspection	Calibration Certificate				
No.		Certificate	JCSS				
-016	K	0	0				
-021	0	0	—				
-026	0	0	0				
-031	1	0	—				
-036	1	0	0				
-041	2	0	_				
-046	2	0	0				

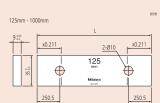


mm



Nominal length: 6 mm - 10 mm





Nominal length: 125 mm - 1000 mm

Metric Blocks

Ordering example: To order a 0,5mm ISO Standard grade 1 block with JCSS calibration certificate, choose 613506-036.



Inspection certificate



Length [mm]	No.	Length [mm]	No.	Length [mm]	No.
0,5	613506	1,3	613590	12,9	613853
0,991	613551	1,31	613591	13	613623
0,992	613552	1,31	613592	13,5	613653
0,993	613553	1,32	613593	14	613624
0,994	613554	1,33	613594	14,5	613654
0,995	613555	1,34	613595	14,5	613625
0,995	613556	1,35	613596	15,5	613655
			613597	15,5	
0,997	613557	1,37			613626
0,998	613558	1,38	613598	16,5	613656
0,999	613559	1,39	613599	17	613627
1	613611	1,4	613600	17,5	613657
1,0005	613520	1,41	613601	17,6	613854
1,001	613521	1,42	613602	18	613628
1,002	613522	1,43	613603	18,5	613658
1,003	613523	1,44	613604	19	613629
1,004	613524	1,45	613605	19,5	613659
1,005	613525	1,46	613606	20	613672
1,006	613526	1,47	613607	20,2	613855
1,007	613527	1,48	613608	20,5	613660
1,008	613528	1,49	613609	21	613631
1,009	613529	1,5	613641	21,5	613661
1,01	613561	1,6	613516	22	613632
1,02	613562	1,7	613517	22,5	613662
1,03	613563	1,8	613518	22,8	613856
1,04	613564	1,9	613519	23	613633
1,05	613565	2	613612	23,5	613663
1,06	613566	2,5	613642	24	613634
1,07	613567	3	613613	25	613635
1,08	613568	3,5	613643	25,25	613754
1,09	613569	4	613614	30	613673
1,1	613570	4,5	613644	35	613755
1,11	613571	5	613615	40	613674
1,12	613572	5,1	613850	41,3	613857
1,12	613573	5,5	613645	45	613756
1,13	613574	6	613616	50	613675
1,14	613575	6,5	613646	60	613676
1,15	613576	7	613617	70	613677
1,10	613577	7,5	613647	75	613801
1,17	613578	7,7	613851	80	613678
1,18	613579	8	613618	90	613679
-	613580	-	613648	100	613681
1,2		8,5			
1,21	613581	9	613619	125	613802
1,22	613582	9,5	613649	131,4	613858
1,23	613583	10	613671	150	613803
1,24	613584	10,3	613852	175	613804
1,25	613585	10,5	613650	200	613682
1,26	613586	11	613621	250	613805
1,27	613587	11,5	613651	300	613683
1,28	613588	12	613622	400	613684
1,29	613589	12,5	613652	500	613685

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



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 x 10-6 /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	2184,00
613802-01B	Grade K JIS/DIN/ISO	125	3008,00
613803-01B	Grade K JIS/DIN/ISO	150	3193,00
613804-01B	Grade K JIS/DIN/ISO	175	3363,00
613682-01B	Grade K JIS/DIN/ISO	200	3533,00
613805-01B	Grade K JIS/DIN/ISO	250	4578,00
613683-01B	Grade K JIS/DIN/ISO	300	5232,00
613684-01B	Grade K JIS/DIN/ISO	400	6371,00
613685-01B	Grade K JIS/DIN/ISO	500	6896.00

Steel			
No.	Accuracy	Length [mm]	Price [€]
611681-01B	Grade K JIS/DIN/ISO	100	1760,00
611802-01B	Grade K JIS/DIN/ISO	125	2270,00
611803-01B	Grade K JIS/DIN/ISO	150	2350,00
611804-01B	Grade K JIS/DIN/ISO	175	2395,00
611682-01B	Grade K JIS/DIN/ISO	200	2475,00
611805-01B	Grade K JIS/DIN/ISO	250	2840,00
611683-01B	Grade K JIS/DIN/ISO	300	2930,00
611684-01B	Grade K JIS/DIN/ISO	400	3290,00
611685-01B	Grade K JIS/DIN/ISO	500	4250,00



Certificate

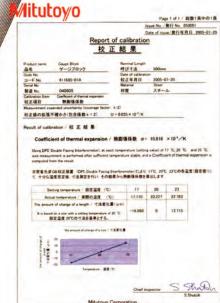
Grade K JIS/DIN/ISO

Specifications

Accuracy

Length

100-500 mm



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 ± 0,02 x 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°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.



No.	Accuracy	Length [mm]	Price [€]
617673-016	Grade K ISO/JIS/DIN	30	3234,00
617675-016	Grade K ISO/JIS/DIN	50	3337,00
617681-016	Grade K ISO/JIS/DIN	100	3698,00
617682-016	Grade K ISO/JIS/DIN	200	5129,00
617683-016	Grade K ISO/JIS/DIN	300	6365,00
617684-016	Grade K ISO/JIS/DIN	400	7086,00
617685-016	Grade K ISO/JIS/DIN	500	8292,00
617840-016	Grade K ISO/JIS/DIN	600	9105,00
617841-016	Grade K ISO/JIS/DIN	700	10094,00
617843-016	Grade K ISO/JIS/DIN	800	11897,00
617844-016	Grade K ISO/JIS/DIN	900	13225,00
617845-016	Grade K ISO/JIS/DIN	1000	14544,00
516-771-60	Grade K ISO/JIS/DIN	Above set	82300,00

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
Thermal conductivity (W/m*K)	3,7	1,7	2,9	54,4	79,5
Specify gravity	2,5	2,55	6	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	1960,00



619031

619032 / 619033

mm

Holder A : 619031 Used for coupling two long gauge blocks.

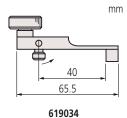


Holder B and C :

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)



Holder D : 619034 Used for attaching to the holder base.

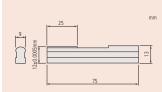




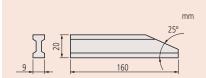
Holder E : 619035 Used for attaching to the holder base together with other gauge blocks up to 125 mm. Used for attaching jaws with one adapter.



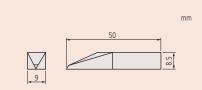
Holder base : 619009



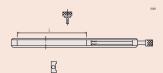
Half-round jaw : 619013



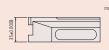




Scriber point : 619019



Holder : 619002 to 619005 Used to clamp plain jaws, a scriber point, etc., to a gauge block stack.



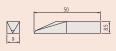
Holder base 35 mm : 619009 Acts as base for a stack of gauge blocks that carry one of the many types of point.



Half round jaw : 619010 to 619014 Used for gauging an outside or inside diameter if used when a pair of jaws in a holder.

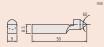
Plain jaw : 619018

Gauges outside and inside dimensions (not inside diameters) when used as a pair of jaws in a holder.



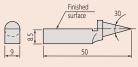
Scriber point : 619019

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.

Gauge Block Accessories

Series 619

1. Set

These accessories are specially designed for long gauge blocks over 100mm which have two coupling holes on the body.



516-601J



516-602J

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 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)	3965,00
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)	2425,00

2. Holder				
No.	L	Price		
	[mm]	[€]		
619002	15-60	157,00		
619003	5-100	162,00		
619004	15-160	178,00		
619005	20-250	190,00		

3. Holde	er base	
No.	Description	Price [€]
619009	35 mm	245.00

4. Half-round jaw

No.	Size	Α	В	С	Н	Price
NO. 512e		[mm]	[mm]	[mm]	[mm]	[€]
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

377

5. Misce	5. Miscellaneous jaws			
No.	Description	Price [€]		
619018	Plain jaw	184,00		
619019	Scriber point	67,00		
619020	Centre point	84,00		
619021	Tram point	289,00		

6. Triangular straight edge

No	Α	Price		
No.	[mm]	[€]		
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 [q]	Price [€]
601645	100 x 25 x 12 mm	110	176,00
601644	150 x 50 x 20 mm	530	438,00

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



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.



<u>Note</u>: 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.

Consumable spares

No.	Description	Price €
601645	Ceraston	176,00
600004	Tweezers	42,00
600005	Blower brush	33,00
600006	Cleaning paper	42,00
600007	Artificial leather mat	40,00
600008	Reagent bottle (100 ml)	8,00
600009D	Gloves	5,00

Quick Guide to Precision Measuring Instruments



Gauge Blocks

Definition of the Meter

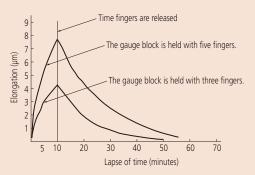
The 17th General Conference of Weights and Measures in 1983 decided on a new definition of the meter unit as the length of the path traveled by light in a vacuum during a time interval of 1/299 792 458 of a second. The gauge block is the practical realization of this unit and as such is used widely throughout 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 benzine for cleaning; common benzine 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.

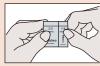


a.Wringing thick gauge blocks





Rotate the gauge blocks while applying slight force to them. You will get a sense of wringing by sliding the blocks.

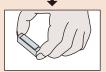


Align the measuring faces with each other.

b.Wringing a thick gauge block to a thin gauge block



Overlap one side of a thin gauge block on one side of a thick gauge block.



Slide the thin gauge block while pressing the entire overlapped area to align the measuring faces with each



Then, wring the other thin gauge block onto the first thin

c.Wringing thin gauge

To prevent thin gauge blocks

thin gauge block onto a thick

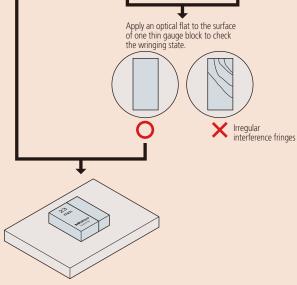
from bending, first wring a

blocks

gauge block.

gauge block.

Finally, remove the thick gauge block from the stack.



Wipe the exposed measuring face(s) and continue building up the stack, in the same manner as above, until complete

Cross the gauge blocks at 90 in the middle of the measuring faces 1



other.

The prices listed are suggested retail prices (valid until 31st May 2015). All products to be sold to commercial customers. Therefore VAT is not included. Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

379

