

# A

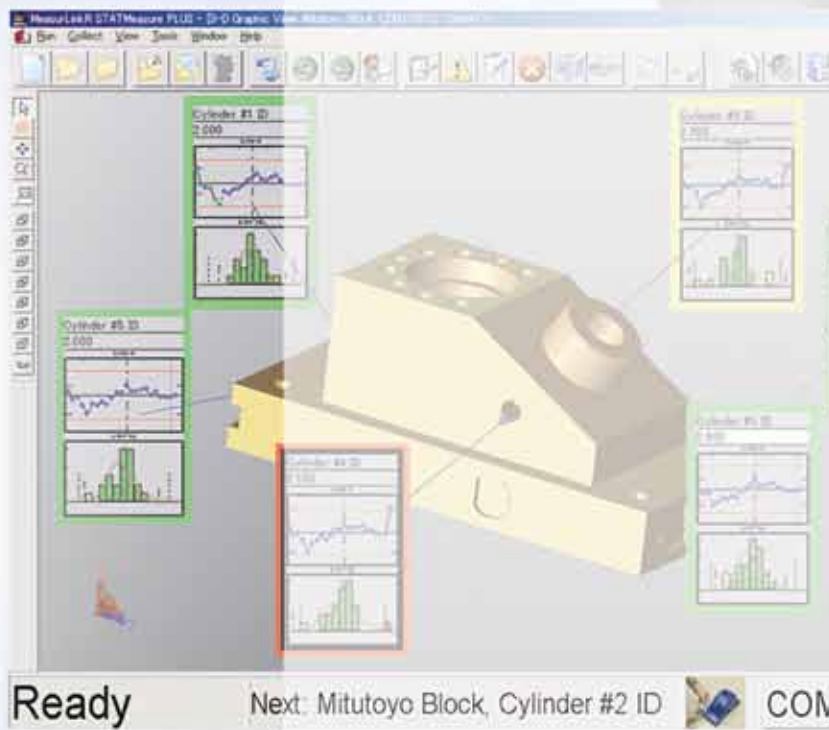
## Small Tool Instruments and Data Management



### Measurement Data Management

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# Integrated Solutions

Quality Data Management with **MeasurLink®**

Most of Mitutoyo's electronic instruments can output data via optional connecting cables or wireless transmitters & receivers in the form of the Digimatic code. This signal is designed to go directly into Mitutoyo data processors such as the DP-1VR. The Digimatic code can also be converted into RS-232C format by any of several available interface units. In this way, digital data can be sent to PCs for data acquisition and advanced statistical analysis.

The MeasurLink® Quality Management Software combines real-time data acquisition, on-line statistical analysis, integrated networking, and quality information sharing into a comprehensive quality data management solution. The MeasurLink® family consists of a number of different software modules that allow users to determine the level of depth they want in a quality management system. Starting with a Real-Time package, users can acquire and analyze data in real-time to maximize production and minimize defects.

As a client/server application, MeasurLink® gives you the performance you need through distributed processing.

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

## Scalable Network

MeasurLink® is capable of linking and managing multiple "islands" of inspection. A common database of part information, statistical data, gage information, processes, etc. information is shared across an entire manufacturing facility.

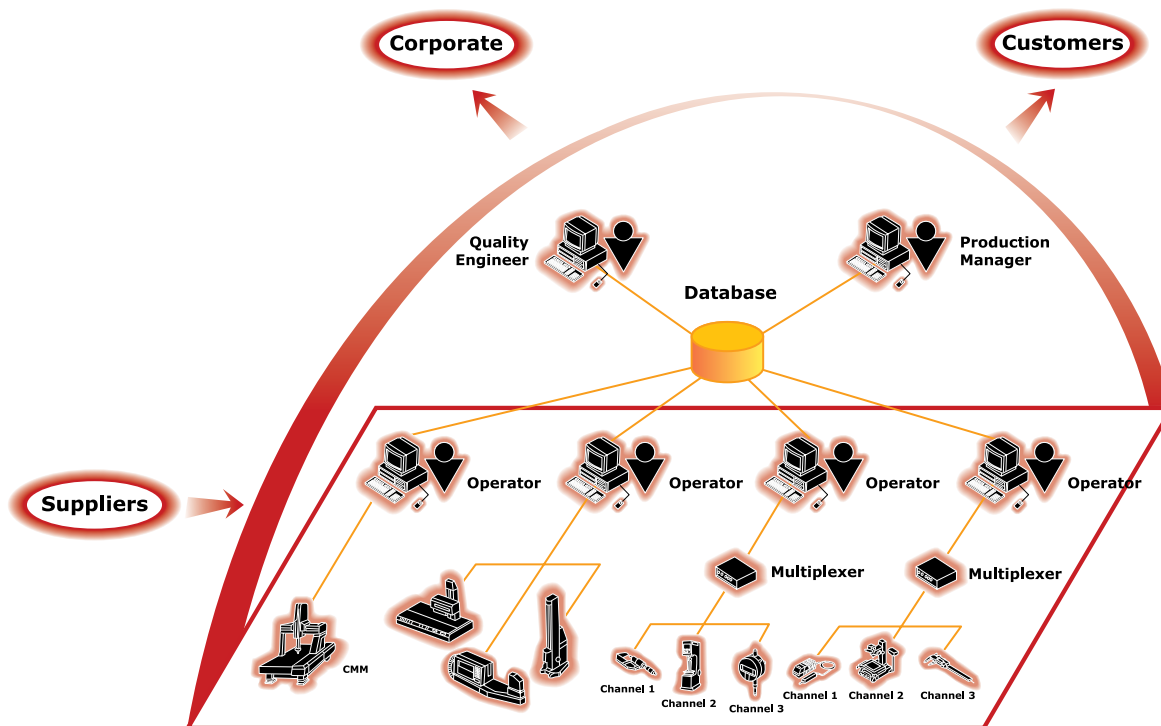
## Relational Database

MeasurLink® is an ODBC compliant application qualified for use with the following database management systems:

- Microsoft® SQL Server / SQL Server Express
- Oracle®
- Sybase® Adaptive Server Anywhere

Please visit [www.measurlink.com](http://www.measurlink.com) for more information

**MeasurLink®**  
Data Management System



The Manufacturing Process with **MeasurLink®**



# MeasurLink®

An Integrated Solution for Quality Data Management

## Versatile. Powerful. Easy-to-Use. That's MeasurLink - A total quality data management solution:

MeasurLink® is an easy-to-use, Windows® - based family of quality data management software applications that will suit your business's quality control needs. SPC Real-Time/SPC Real-Time Plus, SPC Process Manager, SPC Process Analyzer, Gage R&R, and Gage Management combine to form a comprehensive quality management system for your company.

### Easy-to-use SPC

MeasurLink® provides to you the most intuitive interface with complete SPC functionality to help you monitor and manage your manufacturing processes. With MeasurLink®, you can easily manage the quality levels of your parts, identify problem areas and apply corrective action to areas in need of attention.

## SPECIFICATIONS

Order No.	Description
64AAS801D	MeasurLink® SPC Real-Time 6

MeasurLink® SPC Real-Time is a user-friendly, comprehensive SPC data acquisition software



Visual prompting keeps the operator focused on inspection and not on the use of the software. Quality management sets the rules of inspection in the Support Center (i.e. Traceability pick lists, part numbers, feature labels, tolerance information, gage configuration). Flags can be set for serial numbers, subgroup stamps, traceability and out-of-control conditions.

MeasurLink® supports multi-media for visual and audio operator instructions.

**Microsoft®**  
**GOLD CERTIFIED**  
Partner

Networking Infrastructure Solutions  
Information Worker Solutions  
ISV/Software Solutions  
Mobility Solutions

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Note: Upgrade packages are also available.  
Please contact our sales offices for details.

designed to allow immediate measurement data analysis and feedback for variable, attribute and short inspection runs.

MeasurLink® SPC Real-Time enables the QC/Production Manager to easily establish a database of critical part characteristics (including mathematically derived features) in a Feature Library, which includes engineering specifications, revision history, and part pictures.

MeasurLink® SPC Real-Time supports Nelson data tests with e-mail messaging capability for failure notification, process traceability with on-screen traceability filtering, forced assignable cause options with corrective action plans, and random gage input. Collected data is automatically "time stamped". MeasurLink® SPC Real-Time also provides flexible report generation and allows you to create reusable report templates with subgroup, time and traceability filters that will satisfy any customer's report requirements.

MeasurLink® supports the OPC specification as an OPC client /server (OLE for Process Control) MeasurLink® can connect with SCADA and HMI applications. MeasurLink® supports multimedia aids such as video, images, sound, and document attachments.



MeasurLink SPC Real-Time supports both lot based and Just-in-Time manufacturing. Through the use of a unique "Run ID" or identifier companies maintain production traceability. Real-Time supports multiple Inspection Runs to be loaded concurrently. This allows a single computer to support many parts, operations, and operators simultaneously.



# MeasurLink®

An Integrated Solution for Quality Data Management

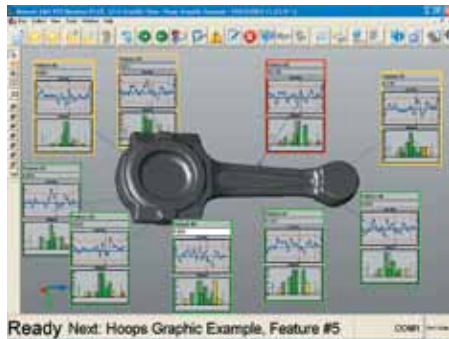
## Real-Time Data

MeasurLink performs as a data acquisition clearinghouse by enabling you to connect and acquire data from virtually any measuring device. It supports the full range of metrology technology, including calipers, micrometers, indicators, CMMs, vision systems and more.

## SPECIFICATIONS

Order No.	Description
64AAS802D	MeasurLink® Real-Time PLUS 6

MeasurLink® SPC Real-Time PLUS is an enhanced version of MeasurLink® SPC Real-Time. It has all of the functionality of our latest SPC data acquisition software. The centerpieces of the MeasurLink® SPC Real-Time PLUS application are



MeasurLink SPC Real-Time PLUS gives the operator a "chart on graphic" display. 2-D and 3-D image files are supported allowing the user to establish perspectives of the part from a CAD file. GD&T Symbology is supported. Each callout border is tolerance color coded.

the "Graphic View" and "3-D Graphic View", which can place text, numeric and graphical "callouts" directly into 2-dimensional and 3-dimensional image files. Intuitive and operator friendly, capable of high volume inspection, MeasurLink® SPC Real-Time PLUS can deliver process capability and part acceptability to inspectors at a glance.

Graphic Views callouts can include the following output:

Part ID, Feature ID, Revision, Current Observation, Cp, Cpk, Max, Min, Defect ratio, Pp, Ppk, Nominal, UTL, LTL, Mean, Average Range, Standard Deviation, Subgroup and Observation numbers, Box-Whisker, Meter chart, Histogram, Indicator bar, Control charts, Run charts, and simple GO/NO-GO display.



The callouts are sizable, positionable, configurable and saveable against whatever graphic image you wish to use. The PLUS application has all of the same basic SPC functionality as the standard Real-Time application.

## SPC Network Monitoring Software for Windows®

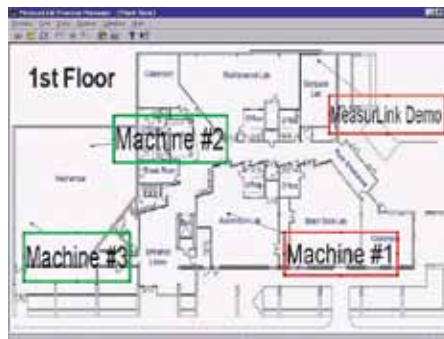
## SPECIFICATIONS

Order No.	Description
64AAS911D	MeasurLink® SPC Process Manager 6

MeasurLink® SPC Process Manager links all shop floor SPC activities onto one screen in a Local Area Network (LAN), providing the QC/Production Manager with a remote overview of shop floor processes in real-time. With SPC Process Manager the QC/Production Manager can respond instantly to what is happening on the production line.

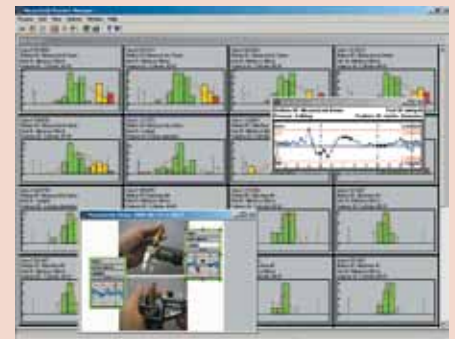
MeasurLink® SPC Process Manager gives the QC/Production Manager the perfect tool to organize and maintain a shop wide quality program at a glance.

Equipped with warning flags and a log file generator, SPC Process Manager keeps you informed with up to the minute process information. Process Manager also supports e-mail and text messaging.



The Plant View gives the production manager the ability to use a floor plan graphic or aerial photograph as a backdrop to callouts that represent inspection areas. The callouts are color coded to indicate problems. Double-clicking on a callout will create a filter of snapshots associated with the inspection station.

Please visit [www.measurlink.com](http://www.measurlink.com) for more information



MeasurLink SPC Process Manager displays snapshot windows of characteristics that are currently being collected in MeasurLink SPC Real-Time and Real-Time PLUS. The data can be sorted by Station, Process, Capability or Timestamp. A number of real-time alarms are available to alert a quality manager to production problems.

Note: Upgrade packages are also available. Please contact our sales offices for details.

# MeasurLink®

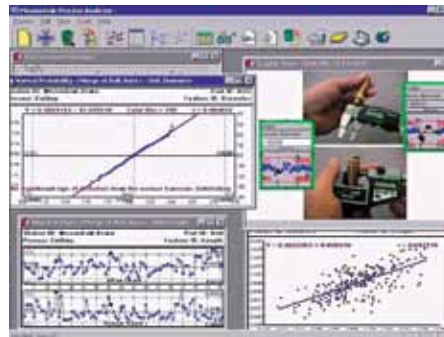
An Integrated Solution for Quality Data Management

## SPC Data Analysis Software for Windows®

### SPECIFICATIONS

Order No.	Description
64AAS921D	MeasurLink® SPC Process Analyzer 6

MeasurLink® SPC Process Analyzer is an invaluable tool for your quality team. It gives you the flexibility to analyze your processes, identify problem areas and take corrective action to improve your product's quality. Inspection runs can be sorted by Inspection Station, Routine or

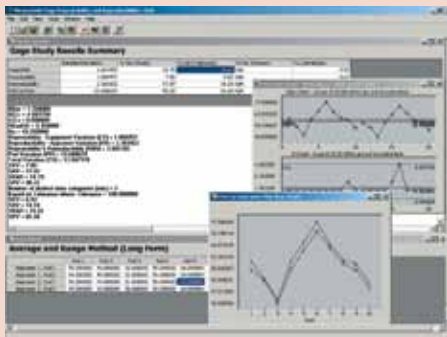


Correlation studies with regression analysis and normality plots are available. A comprehensive spreadsheet display is available that offers the engineer detailed summary reports both within a production run and between multiple runs. This application is ideal for our customers to generate reports for their customers and also to isolate areas for corrective action within their own manufacturing process.

Part, and are displayed with the look and feel of the Windows Explorer. Inspection data can be merged, filtered, grouped, charted and printed in the way you want it. MeasurLink® SPC Process Analyzer gives the QC Engineer a spreadsheet interface option and allows math calculations on inspection data. With the ability to import/export ASCII file data, MeasurLink® SPC Process Analyzer can port to or from other applications with ease. Capability vs. time, capability vs. traceability and "what if" scenarios are all available in Process Analyzer.



Process Analyzer has additional view types to provide more information to the engineer. The multi-variant view super-imposes related characteristics to check for time based correlation. Capability vs. Traceability can be used for machine or operator comparisons. Capability vs. Time can be used for tool wear predictability.



In addition to the standard calculations this software also provides graphical tools for analysis of the measurement system. The Xbar and R chart can show whether there is adequate gage discrimination to record part to part variation in production and if operators are self-consistent. The Part-by-Appraiser plot can show if there is a lack of consistency between operator inspection techniques.

Note: Upgrade packages are also available. Please contact our sales offices for details.

Please visit [www.measurlink.com](http://www.measurlink.com) for more information

## Gage R&R / Measurement Systems Analysis

Measurement systems analysis is used to determine the repeatability and reproducibility, linearity, bias, and stability of inspection systems allowing you to isolate gauging problems.

### SPECIFICATIONS

Order No.	Description
64AAS941D	MeasurLink Gage R&R 6

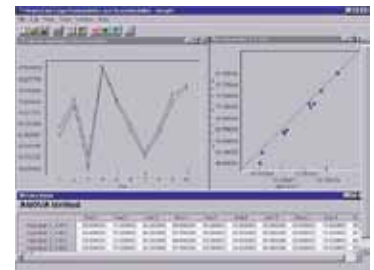
MeasurLink® Gage R&R is a Microsoft® Windows®-based Gage R&R software designed to the AIAG (Automotive Industry Action Group) Measurement System Analysis standard (MSA3) for ISO/ TS16949.

MeasurLink Gage R&R integrates with MeasurLink SPC Real-Time and Real-Time PLUS to provide hands free data entry. In fact, Gage R&R works with virtually any gage or inspection system.

- Supports the following AIAG study methods:
  - 1) Range method.
  - 2) Average and range method.
  - 3) Average and range method including within part variation.
  - 4) Analysis of variance method.
  - 5) Short method for attribute gages.

- 6) Bias study.
  - 7) Linearity study.
  - 8) Stability study.
- Input methods include: keyboard entry, direct gage input, DDE and text import.
  - Builds a gage inventory and records your R&R study efforts.
  - Generates reports that your customers will respect and value.

Provides graphical interpretation of appraiser consistency.



This software supports up to 25 appraisers per study, 25 trials per appraiser and 25 parts per trial. Each study supports a Gage ID, Gage type, Serial Number, Note, etc. A full search engine is available. This product is also integrated with MeasurLink Gage Management for recall and reporting purposes.



# MeasurLink®

An Integrated Solution for Quality Data Management

## Gage Inventory and Calibration Control

Gage Management is essential for monitoring the calibration history of a gage. Periodic adjustments may be required to bring a gage into specification.

## SPECIFICATIONS

Order No.	Description
64AAS007D	MeasurLink® Gage Management 6

MeasurLink® Gage Management is a Microsoft® Windows®-based gage calibration tracking software. It is networkable and shares the same database used by the rest of the MeasurLink® software family. This assists users in developing,

maintaining, organizing, and managing information about their gages. Information such as gage in-service dates, calibration recall dates, gage R&R dates and general gage event history is provided in an intuitive interface with complete reporting abilities. MeasurLink® Gage Management also supports the creation of vendor contact and user lists. It comes equipped with a "smart" calendar that allows you to define working days. Calibration procedure setup is easy and incremental response methods help to achieve optimal calibration frequencies. Customized gage label printing is supported.



MeasurLink Gage Management allows customers to build a complete gage (and fixture) inventory. Calibration procedures are established as a sequence of Standards. These procedures are associated with Gage IDs and are used when performing "in-house" calibration.



Calibration is made simply by supporting digital gages. Attribute gage calibration can be performed using any digital gage. Certificates of calibration can be printed for archiving or for distribution by calibration labs. This application is also integrated with the SPC Real-Time and Real-Time PLUS to electronically notify the operator that a gage is becoming overdue for calibration and even prevent the operator from continued data collection if overdue.

## Measur.NET: Browser-based, internal and external data communication.

MeasurLink® data for Web server "publishing": Integrated with security to publish runs at User ID level with specific Password. Active Server Pages set for Login, Published Run display and Data Viewing. ActiveX control developed for "live" data viewing. Employs SSL (secure sockets layer) certificates for privacy.

- Microsoft® SQL Server
- Measur.NET 2.0 real-time web viewer
- 5 user license 64 AASNET

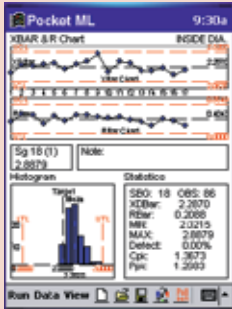


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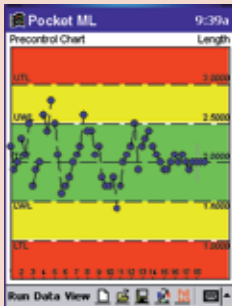
Note: Upgrade packages are also available. Please contact our sales offices for details.

# MeasurLink® Pocket ML

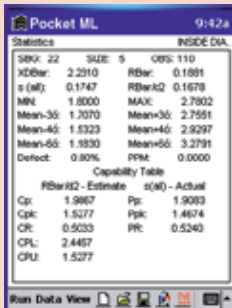
## Untethered Data Acquisition and Monitoring



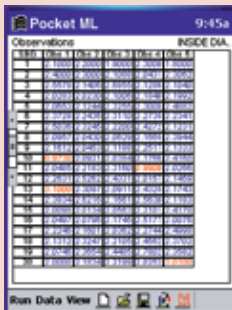
The Pocket ML combined chart is customizable displaying 3 selected charts.



The Pocket ML chart for pre-control provides "Stop Light" colored zones.



The statistics window provides a current view of relevant numerical information.



The observations window displays all captured measurements for a feature.

Pocket ML is a software application designed for mobile data collection, powered by the Microsoft Windows for Pocket PC platform.

MeasurLink® Pocket ML is full function SPC data collection software designed for portable data collection and event logging.

Pocket ML collects measurements from a single gage and supports timed input. Inspection data can be imported into MeasurLink® SPC

Real-Time, MeasurLink® SPC Real-Time PLUS, MeasurLink® Process Analyzer and, as a formatted text file, into Microsoft Excel or Word, via the Pocket PC connection cable.

Connect gages with SPC output to the Pocket ML using a standard Mitutoyo SPC Cable and Mitutoyo USB input tool.

### SPECIFICATIONS

Order No.	Description
54AAD087	Pocket ML software
264-012-10	USB Input Tool



Image shows sample system with user supplied pocket PC, caliper and SPC cable. A CF card with powered USB port and a USB Type A male to USB Type B male adapter required.

### TRADEMARKS

Microsoft Windows is a registered trademark of Microsoft Corporation.

**Microsoft**  
**GOLD CERTIFIED**  
*Partner*

Networking Infrastructure Solutions  
Information Worker Solutions  
ISV/Software Solutions  
Mobility Solutions

Note: Upgrade packages are also available. Please contact our sales offices for details.

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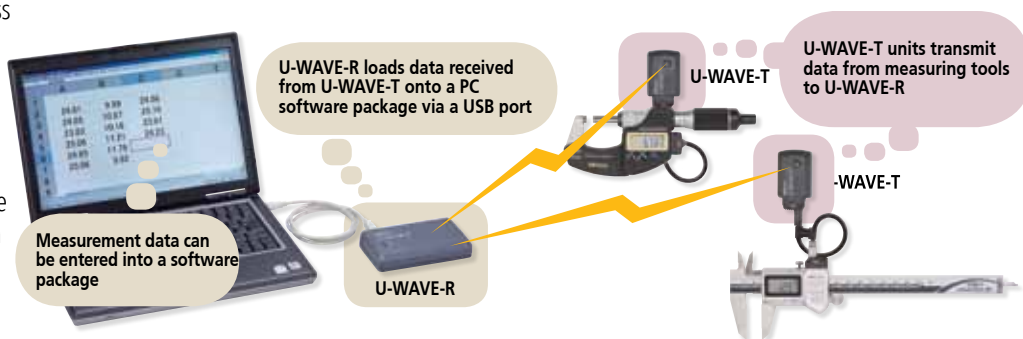
**Mitutoyo**



# U-WAVE

## Measurement Data Wireless Communication System

The **U-WAVE** system enables easy wireless data communication from a measuring tool to a PC using the Digimatic protocol. Measurement efficiency is improved by eliminating the long and cumbersome data cables. The user friendly interface allows data to be loaded into any software product that accepts keyboard input, such as Excel\* or Notepad.



### 1 U-WAVE-R · Registered Design (Japan)

#### Major Specifications of U-WAVE-R

Model	U-WAVE-R
Order No.	02AZD810D*
Power supply	USB bus power system
Number of <b>U-WAVE-R</b> units that can be connected to one PC	Up to 16
Number of <b>U-WAVE-T</b> units that can be connected	Up to 100
External dimensions	5.51" x 3.15" x 1.24" (140 x 80 x 31.6mm)
Mass	.29 lbs (130g)



\*Detailed information on conformity standards of wireless communication specification is given below.

### 2 U-WAVE-T · Registered Design (Japan)

U-WAVE-T sends measurement data to U-WAVE-R.

#### Actual size



Standard accessory: driver

#### Major specifications of U-WAVE-T

Model	U-WAVE-T (IP67 model)	U-WAVE-T (Buzzer)
Order No.	02AZD730D*	02AZD880D*
Protection Rating	IP67	-
Data reception indication	LEDs	LEDs and Buzzer
Power supply	Lithium battery CR2032*1	
Battery life	Approx. 400,000 transmissions	
External dimensions	1.73" x 1.17" x .73" (44 x 29.6 x 18.5 mm)	
Mass	.05 lbs (23g)	

\*Detailed information on conformity standards of wireless communication specification is given below.

## Installation Bracket Kit

Order No. 02AZE200



500 Series Caliper



293 Series Micrometer



543 Series Indicator

## Specifications of wireless communication

Conformity standards	·European conformity standards* EN 50371:2002 EN 300 440-1 V1.3.1 EN 300 440-2 V1.1.2 EN 301 489-01 V1.6.1 EN 301 489-03 V1.4.1	Wireless standards	Conform to IEEE802.15.4
	·U.S.A. conformity standards 47 CFR Part 15.247:(Subpart :C) 47 CFR Part 15,(Subpart :B)	Wireless communication distance	Approx. 60ft (within visible range)
	·Canada conformity standards RSS-210 (Issue 7) RSS-Gen (Issue 2) ICES 003 (Issue 4)	Wireless communication speed	250 kbps
		Transmission output	1 mW (0 dBm) or less
		Modulation method	DS-SS (direct sequence spread spectrum) Resistant to interfering signal or noise.
		Communication frequency	2.4 GHz band (ISM band: universal frequency)
		Used band	15 channels (2.405 to 2.475GHz at intervals of 5MHz) The noise search function can avoid interference with other communication devices.

Note: In accordance with wireless regulations the use of this product is permitted in Japan, Europe (a total of 32 countries including 27 EU members, 4 EFTA members and Turkey), U.S.A. and Canada. This product must not be used in other countries or areas.

\* This product is not compatible with the conventional Mu-WAVE, for which communication specifications are different.

\* Japan conformity standards: ARIB STD-T66

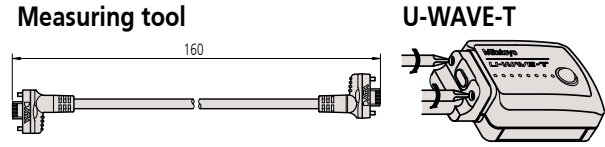
# U-WAVE

## Measurement Data Wireless Communication System

### List of U-WAVE-T Connecting Cables

Select one from cables **A** to **G**, referring to the part number of connecting cable for wired connection in your measuring tool catalog or manual. If you are unsure which cable is appropriate, check the cable connectors, the shapes of terminal on the measuring tool side, or the codes of compatible measuring tool for cables **A** to **G** below. It is not possible to connect to EF and EH counters.

From seven types of cables (**A** to **G**), select one compatible with your measuring tool.



Measuring tool

U-WAVE-T

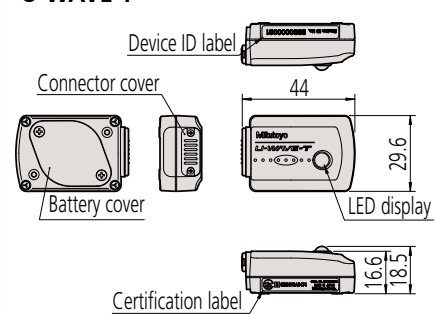
Fasten the connector to **U-WAVE-T** with two screws.

Cable type	<b>A</b> water-proof model with output button	<b>B</b> water-proof model with output button	<b>C</b> With data-out button type	<b>D</b> 10-pin plain type	<b>E</b> 6-pin round	<b>F</b> Plain type straight	<b>G</b> Plain type straight water-proof model
Order No.	<b>02AZD790A</b>	<b>02AZD790B</b>	<b>02AZD790C</b>	<b>02AZD790D</b>	<b>02AZD790E</b>	<b>02AZD790F</b>	<b>02AZD790G</b>
Connector shape on the measuring tool side							
Socket shape on the measuring tool							
Codes of major compatible measuring tools and instruments	[Digimatic Caliper] <b>CD67-S_PM</b> <b>CD-PMX</b> <b>CD-PM/GM</b> <b>CDC-P_PMX</b> <b>CDN-P_PMX</b> <b>CFC-G/GL/GC/GU</b> [Digimatic Caliper] <b>NTD-PMX</b> [Digimatic Depth Gage] <b>VDS-PMX</b> [Digital Scale and DRO Systems] <b>SD-G</b>	[Digimatic Micrometer] <b>MDE-MJ</b> <b>MDC-MJ/MJT</b> [Digimatic Micrometer] The code suffix is -MJ. <b>BLM-M</b> <b>OMV-M</b> <b>OMP-M</b> <b>PDM-M</b> <b>IMP-M</b> <b>VM-M</b> [Digimatic Micrometer Heads] <b>MHN-M/MJ/MJN</b> [Digimatic Holtest] <b>HTD-R</b> [Digimatic Depth Gage] <b>DMC-M</b>	[Digimatic Caliper] <b>CD-CX/-C</b> <b>CD-S_C</b> <b>CDC-CX/C</b> <b>CDN-CX/C</b> [Digimatic Caliper] <b>NTD-CX/C</b> [Digimatic Depth Gage] <b>VDS-DCX</b> [Digital Scale and DRO Systems] <b>SD-D, SDV-D</b>	[Digimatic Indicator] <b>ID-H/F</b> [Linear Height] <b>QMH-S</b> [Linear Gage/Counter] <b>EB,EC-D</b> [μ-checker] Digital μ-checker [Laser Scan Micrometer] <b>LSM-9506</b> [Reference Gage] <b>HDM-C</b> [Coating Thickness Gage] <b>DGE-745/755</b> [Form Measurement] <b>SJ-201/301/401</b>	[Digimatic Micrometer] <b>MDQ-M</b> <b>MDC-M</b> <b>CLM1-QM/DK</b> <b>PDM-QM</b> <b>PMU-DM</b> <b>BD-M</b> [Digimatic Holtest] <b>HTD</b> [Reference Gage] <b>HDM-DM</b> [Hardness Testing Machines] <b>HM-100/200</b> <b>HV-100</b> <b>HR-500</b> <b>HH-411</b>	[Digimatic Caliper] <b>CD, CFC-P/-L/-C/-U</b> [Digimatic Height Gages] <b>HD-AX, HDM-AX</b> <b>HDS-H_C/-C</b> <b>HDM-A</b> <b>HDF-N</b> [Digimatic Indicator] <b>ID-C/_RB/_A/_GB</b> <b>ID-S/U</b> [Digimatic Depth Gage] Digimatic model (ID-C) [Digital Scale and DRO Systems] <b>SD-E, SDV-E</b> <b>SD-F, SDV-F</b> [Portable Hardness Testing Instruments] <b>HH-300</b>	[Digimatic Indicator] <b>ID-N</b> <b>ID-B</b>
Reference Order No. of connecting cable	1m <b>05CZA624</b> 2m <b>05CZA625</b>	05CZA662 05CZA663	959149 959150	936937 965014	937387 965013	905338 905409	21EAA194 21EAA190

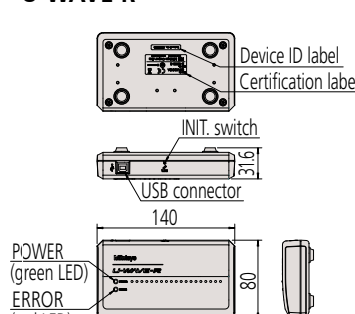
### Name and Dimensions of Each Part

Unit: mm

#### U-WAVE-T



#### U-WAVE-R



**Note on Wireless Communication Environment**  
Although the communication range for **U-WAVE** is approximately 60ft line-of-sight, performance may be affected by obstacles or environmental factors.

### Items that may cause communication errors

Item	Contents
Concrete wall	Communication is not possible into a room completely enclosed.
Metal partition	Communication speed may drop or communication may be interrupted.
Wireless LAN, communication device such as ZigBee Bluetooth, and microwave oven	Communication speed may drop or communication may be interrupted. Maintain the set frequency and installation distance if at all possible.
Medical instrument	Do not use this product near a medical instrument such as a laser knife or electronic scale.

**Cautions** · **Safety Caution:** Do not use this device near medical equipment that might malfunction due to radio interference.  
· **Caution on radio law:** This device is certified as a 2.4 GHz band wide-band low-power data communication system based on the Radio Regulations in Japan, Europe, U.S.A. and Canada. It is prohibited by law to disassemble or modify this device or peel off the certification label from it.

# Input Tools

## SERIES 264 — Digimatic Gage/PC Data Input Device

### FEATURES

- The input tool is an interface enabling you to easily input measurement data from a Mitutoyo measuring instrument with the digimatic output feature to your PC.
- An USB keyboard signal conversion input tool, IT-012U converts measurement data to keyboard signals and directly inputs them to cells in off-the-shelf spreadsheet

software such as Excel. An RS-232C communication input tool, IT-007R is also available to input data through RS-232C communication.

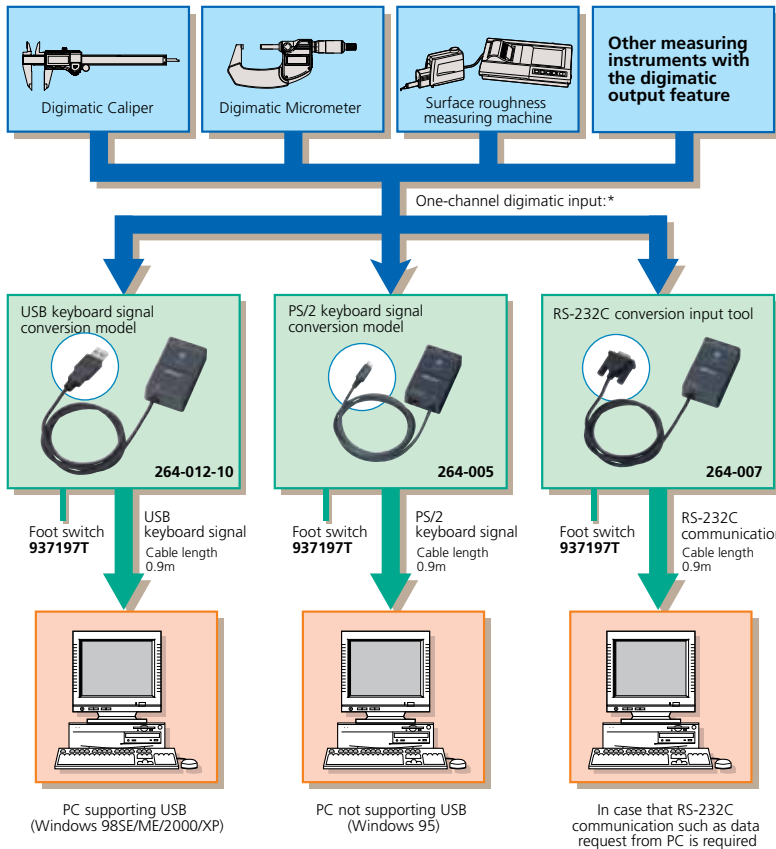
- More accurate measurement is possible using an optional foot switch.

### SPECIFICATIONS

Product Code No.	Input Tool for Keyboard 264-005	Input Tool for RS-232C 264-007	Input Tool for USB 264-012-10
Measuring Tools Required*1	Mitutoyo Digimatic measuring tools with SPC output		
PC Requirement	PC compatible, with PS/2 style keyboard interface*2 (Can be also connected to a laptop computer.) Connects to keyboard port on CPU	PC Compatible, (including laptops) with RS-232C Interface Connects to RS-232C port on CPU (D-sub 9-pin connector)	PC Compatible, (including laptops) with USB 2.0 or 1.1 port
Outside Dimensions HxWxD	2.8" x 1.7" x .9" (72 x 44 x 23.5 mm)		
Mass	2.5oz. (70g)(including cable and connector)	3.2oz. (91g)(including cable and connector)	2.6oz. (74g)

\*1: Connecting cable (optional accessory) is required for a connection to a Digimatic measuring tool.

\*2: Cannot be used for computers that use USB keyboard. When using a IBM Think Pad Series, a commercial keyboard adapter is required. When using AT style keyboard, adapter for conversion is required.



\* When you use an optional gage selector 3, you can connect up to three measuring gages and select an input by switching them. When using 264-012, you can connect multiple input tools at the same time with an off-the-shelf USB hub. Simultaneous input, however, is not supported. For cables used to connect each measuring gage and input tool, refer to page A-14.



264-005



264-012-10



264-007

### Optional Accessories

- 937197T: Foot switch
- 939039: Gage selector



# Multiplexers – MIG-2B, MIG-4A

## SERIES 982 — Digimatic/RS-232C Interface Unit

### FEATURES

- A measurement data transfer device, multiplexer MIG-2B and MIG-4A converts digimatic output measurement data to RS-232C and outputs it to an external device such as PC.
- Up to eight/four measuring instruments with the digimatic output feature can be connected.
- Units can be daisy-chained to meet any size needs.
- MIG-4A includes toggle switch for each input.

### Technical Data

Data output: Via RS-232C interface

### Default Configuration

Data length: 8 bits  
 Start bit: 1 bit  
 Stop bit: 1 bit  
 Parity check: None  
 Baud rate: 4800

### Standard Accessory

526688A: AC Adapter  
 RS232C: Cable (1.5m / 6Fz)

### Optional Accessories

937179T: Foot switch

### MIG-4A



982-548-10A  
Front view



982-548-10A  
Back view

### MIG-2B



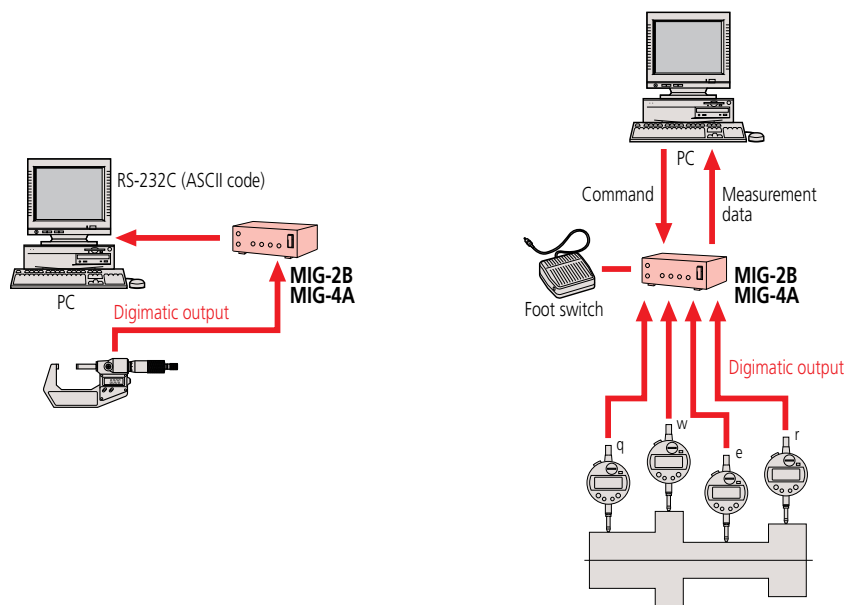
982-547-10A  
Front view



982-547-10A  
Back view

### SPECIFICATIONS

Model No.	MIG-2B	MIG-4A
Order No.	982-547-10A	982-548-10A
Gage Capacity	8	4
Dimension (mm) W x D x H	146 x 150 x 45	146 x 150 x 70
Mass (g)	540	710



# Gage Selector 3

## 3-channel Switching Box for Data Transmission

### FEATURES

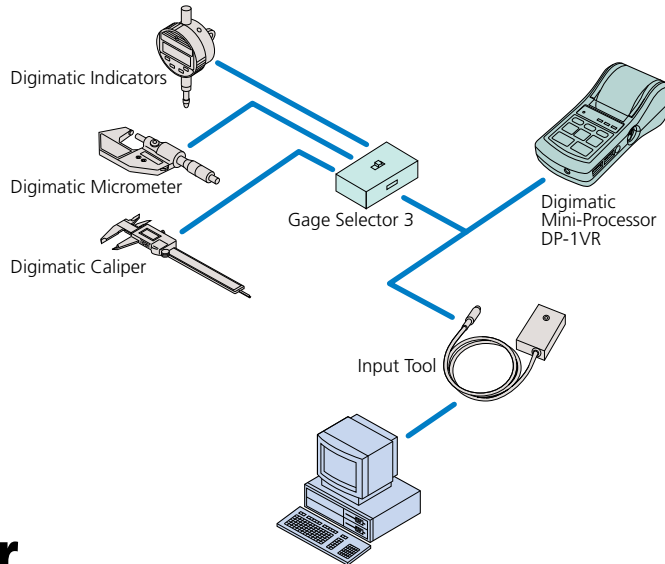
- 3 Digimatic gages can be connected.
- You can specify the gage which outputs the data with the channel switch.

### SPECIFICATIONS

Order No.	Description
939039	Gage Selector 3



### Examples of Connections



### Technical Data

Connection: Up to three gages  
 Signal: Digimatic code format  
 Connection: Bidirectional  
 External dimensions (W x D x H): 100 x 70 x 33mm

# EC Counter

## SERIES 542 — Assembly Type Display Unit

### FEATURES

- Compact panel mounting type and DIN size. It can be easily incorporated into each system.

### SPECIFICATIONS

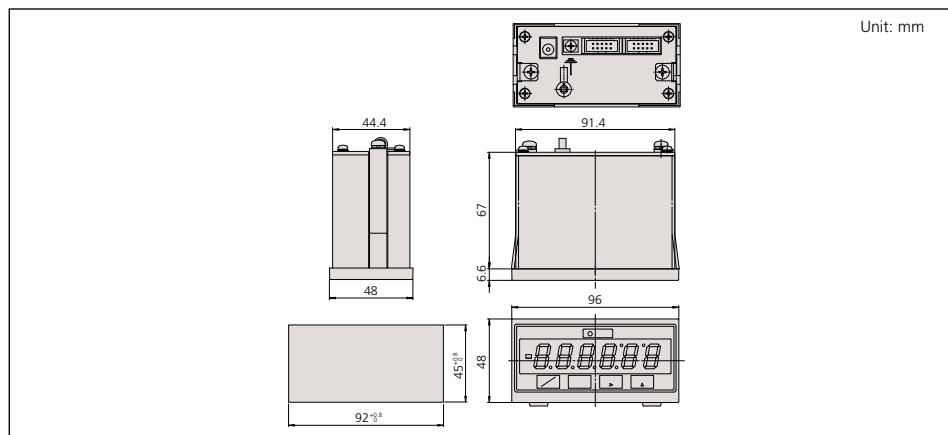
Order No.	Description
542-007A	EC Counter



### Technical Data

Applicable gage: LGD, LGS, All SPC output gages  
 Resolution: .00005"/.0001"/0.001mm,  
 .0005"/.001"/0.01mm  
 No. of gage input: 1  
 Display: 6-digit LED and a negative [-] sign  
 Function: Preset  
 GO/±NG judgment  
 Output (open-collector): 3-step limit signal, Normal signal  
 External control: Preset, Data hold  
 Power supply: Via AC adaptor  
 Dimensions (W x D x H): 96 x 48 x 84.6mm  
 Mass: 50g

### DIMENSIONS





# DP-1VR

## SERIES 264 — Digimatic Mini-Processor

### Technical Data

Printing method: Thermal line printer  
 Printing dot: 384dot (8dot/mm)  
 Printing speed: 6.5mm/s (using AC adapter)  
 Printing paper: 48m  
 Printing line: Approx. 6500 lines for large characters  
 Approx. 12000 lines for normal characters  
 Processing capacity: 9999 data (mode 1/2/3)  
 100000 data (mode 0)  
 Printing data: Measurement data, GO/±NG judgment,  
 No. of data, Max/min value, Range, Average,  
 Standard deviation, No. 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: Output the measuring data (RS232C) or  
 GO/±NG judgment  
 Input timer: 0.25s, 1s, 5s, 30s, 1min, 30min, 60min  
 Power: AC adapter 6V  
 Electric battery: LR6 (alkaline), Ni-Mh (AA size)  
 Battery life: 10 years (clock battery), 10000 lines (1600mA  
 1time/5 sec. using the nickel hydrofluoric  
 battery)  
 Dimensions (W x D x H): 94 x 201 x 75.2mm  
 Mass: 390g

### FEATURES

- This is a palm-sized printer used to print measurement data from the digimatic gage or to perform statistical analysis.
- This printer offers excellent functionality. You can use it not only to print measurement data, perform a variety of statistical analyses, and draw a histogram or D chart but also to perform complicated operations for X-R control chart.

- Equipped with RS-232C output and GO/NG judgment output as standard functions, this processor ensures high reliability as an advanced quality inspection machine.
- The line thermal printer enables fast and quiet printing.



264-504-5A

### SPECIFICATIONS

Order No.	Description
264-504-5A	DP - 1VR

**Mode 0:** Record the measurement data and tolerance judgment.

**Mode 1:** Record the measurement data, statistical analysis and histogram.

**Mode 2:** A "D-chart" can be used to describe measurement data displacement visually. It's also possible to record the measurement data, statistical analysis and histogram at the same time.

**Mode 3:** Automatically record the various calculation results to make a X-R control chart.

Callouts include: Lower limit, Upper limit, Input data, Process capability index, Average, Range, Lower control limit (X control), Upper control limit (X control), Number of division of the histogram, Lower control limit (R control), Upper control limit (R control).

### Optional Accessories

- 09EAA084\*: RS-232C changing cable (1m, 9pin)
- 965516\*: GO/±NG judgment cable
- 937179T: Foot switch
- 09EAA082: (10 rolls)

\*It is impossible to use the both RS-232C cable and GO/±NG judgment cable at the same time.



# SPC Connecting Cables

- These cables are used to output measurement data from the digimatic gage with the output feature to the digimatic mini processor, digimatic display unit, multiplexer or other device.
- Cables of one or two meters are available.
- Note that the shape of connector differs depending on the model.

Input plug to Data Processor			
Order No.		Applicable gages	
Straight type			
905338: 1m (40") 905409: 2m (80") 64AAA016: 3m (120") 64AAA017: 5m (200")		<b>ALL CALIPERS WITHOUT ABSOLUTE ENCODER</b> Height Gage 570-2XX, 192-6XX, 192-67X Indicators 575-XXX, 543-6XX, 543-2XX, 543-4XX Depth Gages 547-21X, 547-25X, 571-2XX Scale Unit 572-XXX Thickness Gages 547-3XX, 547-4XX	
Back type			
905689: 1m (40") 905690: 2m (80")			
Right type			
905691: 1m (40") 905692: 2m (80")			
Left type			
905693: 1m (40") 905694: 2m (80")			
With data out switch type			
959149: 1m (40") 959150: 2m (80") 64AAA074: 3m (120") 64AAA075: 5m (200")		<b>ALL DIGIMATIC CALIPERS WITH ABSOLUTE ENCODER</b> Height Gage 570-2XX Depth Gages 571-2XX Scale Unit 572-XXX	
With data out switch type			
05CZA624: 1m (40") 05CZA625: 2m (80")		Coolant Proof Caliper <b>500-68X, 500-76X, 500-78X.</b> Coolant Proof Digimatic scale units <b>572-61X.</b>	
With data out switch type			
05CZA662: 1m (40") 05CZA663: 2m (80")		<b>Digimatic Micrometer IP65</b>	
6 pins type			
937387: 1m (40") 965013: 2m (80") 64AAA026: 3m (120") 64AAA027: 5m (200")		<b>ALL MICROMETERS (not for IP65 mics)</b> Indicators 543-11X, 543-13X, 543-14X, 543-18X, <b>543-17X</b> Holtest 468-2XX, 468-9XX Micrometer Head 164-162, 164-172, 350-71X, <b>329-71X</b> Borematics 568-XXX Others Mikematic, Quickmike Bench Mike 121-XXX	
10 pins type			
936937: 1m (40") 965014: 2m (80") 64AAA020: 3m (120") 64AAA021: 5m (200")		Indicators 543-5XX MU-Checkers 519-4XX, 519-621A MU-Gages 179-204, 179-205, 179-206 Display 542-022-5A, 542-032-5A, 542-036-5A Display 572-011A, 572-031A Linear Height 518-314A, 518-315A Litematic 318-202A, 318-204A Heightmatic 57X SERIES. Digi Derm 179-7XX Hardness Tester (Micro Hardness Type)	
Digimatic cable extension adapter 02ADF640			
		<b>DIGIMATIC CABLE EXTENSION ADAPTER</b> Need 936937 or 965014 to the Data Processor	



### Micrometers



### Micrometer Heads



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# Coolant Proof Micrometer

**SERIES 293 — with Dust/Water Protection Conforming to IP65 Level**

## FEATURES

- IP65 protection level, enabling use in environments exposed to cutting oil, etc\*.  
\*Anti-corrosion treatment is required after use.
- Measurement data output function is available with a water-resistant connection cable.
- Auto power ON/OFF function.
- Certificate of inspection\* is included. (2" /50mm or less range models)  
\*It is not the type used to obtain calibration certificates.
- With a standard bar except for 0-1"/0-25mm model.
- Supplied in fitted case. Plastic case up to 6"/150mm, Wooden box over 6"/150mm



293-340



293-352



Oil-resistance materials are used in all plastic components.



Measurement data output function is available with a water-resistant connection cable.



Certificate of inspection

## Technical Data

- Accuracy: Refer to the list of specifications.  
 Resolution: .00005"/0.001mm or 0.001mm (up to 4" models)  
 .0001" / 0.001mm (over 4" models)  
 Flatness: .000012"/0.3µm  
 Parallelism: .00004"/1µm for models up to 2"/50mm  
 .00008"/2µm for models up to 4"/100mm  
 .00012"/3µm for models up to 7"/175mm  
 .00016"/4µm for models up to 11"/275mm  
 .0002"/5µm for models over 12"/300mm
- Measuring faces: Carbide tipped  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 1.2 years under normal use  
 (8 months: over 4"/100mm models)  
 Dust/Water protection level: IP65

## Function

- Origin-set, Zero / ABS, Hold, Auto power on/off,  
 Data output (output models),  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

- 05CZA662:** SPC cable with data switch (40"/1m)  
**05CZA663:** SPC cable with data switch (80"/2m)



SPC cable with data switch

## SPECIFICATIONS

**Metric** \_\_\_\_\_ With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	<b>293-230 / 293-240*</b>	±1μm
25 - 50mm	0.001mm	<b>293-231 / 293-241*</b>	±1μm
50 - 75mm	0.001mm	<b>293-232 / 293-242*</b>	±1μm
75 - 100mm	0.001mm	<b>293-233 / 293-243*</b>	±2μm
100 - 125mm	0.001mm	<b>293-250-10</b>	±2μm
125 - 150mm	0.001mm	<b>293-251-10</b>	±2μm
150 - 175mm	0.001mm	<b>293-252-10</b>	±3μm
175 - 200mm	0.001mm	<b>293-253-10</b>	±3μm
200 - 225mm	0.001mm	<b>293-254-10</b>	±3μm
225 - 250mm	0.001mm	<b>293-255-10</b>	±4μm
250 - 275mm	0.001mm	<b>293-256-10</b>	±4μm
275 - 300mm	0.001mm	<b>293-257-10</b>	±4μm

\*without SPC data output

**Metric** \_\_\_\_\_ With ratchet thimble

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	<b>293-234 / 293-244*</b>	±1μm
25 - 50mm	0.001mm	<b>293-235 / 293-245*</b>	±1μm
50 - 75mm	0.001mm	<b>293-236 / 293-246*</b>	±1μm
75 - 100mm	0.001mm	<b>293-237 / 293-247*</b>	±2μm

\*without SPC data output

**Metric** \_\_\_\_\_ With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	<b>293-238 / 293-248*</b>	±1μm

\*without SPC data output

**Metric** \_\_\_\_\_ Micrometer Set

Range	Order No.	Included in set
0-50mm (2pcs. Set)	<b>293-965</b>	293-230, 293-231, 1 standard bar, 1m SPC cable in the plastic case
0-100mm (4pcs. Set)	<b>293-964</b>	293-230, 293-231, 293-232, 293-234, 3 standard bar, 1m SPC cable in the wooden box

**Inch/Metric** \_\_\_\_\_ With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>293-330 / 293-340*</b>	±.00005"
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>293-331 / 293-341*</b>	±.00005"
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	<b>293-332 / 293-342*</b>	±.00005"
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	<b>293-333 / 293-343*</b>	±.0001"
4" - 5" / 101.6 - 127.0mm	.0001" / 0.001mm	<b>293-350-10</b>	±.0001"
5" - 6" / 127.0 - 152.4mm	.0001" / 0.001mm	<b>293-351-10</b>	±.0001"
6" - 7" / 152.4 - 177.8mm	.0001" / 0.001mm	<b>293-352-10</b>	±.00015"
7" - 8" / 177.8 - 203.2mm	.0001" / 0.001mm	<b>293-353-10</b>	±.00015"
8" - 9" / 203.2 - 228.6mm	.0001" / 0.001mm	<b>293-354-10</b>	±.00015"
9" - 10" / 228.6 - 254.0mm	.0001" / 0.001mm	<b>293-355-10</b>	±.0002"
10" - 11" / 254.0 - 279.4mm	.0001" / 0.001mm	<b>293-356-10</b>	±.0002"
11" - 12" / 279.4 - 304.8mm	.0001" / 0.001mm	<b>293-357-10</b>	±.0002"

\*without SPC data output

**Inch/Metric** \_\_\_\_\_ With ratchet thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>293-334 / 293-344*</b>	±.00005"
0 - 1" / 0 - 25.4mm	.0001" / 0.001mm	<b>293-349</b>	±.0001"
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>293-345*</b>	±.00005"
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	<b>293-346*</b>	±.00005"
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	<b>293-347*</b>	±.0001"

\*without SPC data output

**Inch/Metric** \_\_\_\_\_ With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>293-335 / 293-348*</b>	±.00005"
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>293-336</b>	±.00005"

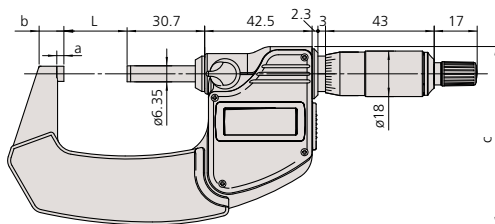
\*without SPC data output

**Inch/Metric** \_\_\_\_\_ Micrometer Set .00005" / 0.001mm graduation model

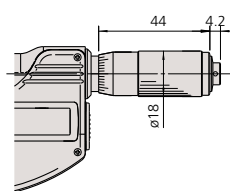
Range	Order No.	Included in set
0 - 3" / 0 - 76.2mm (3 pcs. set)	<b>293-960</b>	293-330, 293-331, 293-332, 2 standard bar in the plastic case
0 - 4" / 0 - 101.6mm (4 pcs. set)	<b>293-961</b>	293-330, 293-331, 293-332, 293-333 3 standard bar in the wooden box

## DIMENSIONS AND MASS

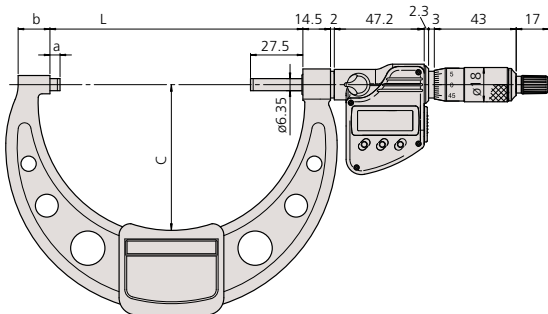
Ratchet stop type (up to 100mm/4")



Ratchet thimble type and friction thimble type



Unit: mm



Ratchet stop type (over 100mm/4")

Range (Metric / Inch)	L	a	b	c	Mass (g)
0 - 25mm / 0-1"	0	2.8	6.2	(59.8)	270
25 - 50mm / 1-2"	25	2.8	7	(70.3)	330
50 - 75mm / 2-3"	50	2.8	9.8	(91.9)	470
75 - 100mm / 3-4"	75	2.8	11.2	(112.9)	625
100 - 125mm / 4-5"	132.8	5.3	16.7	(76.5)	600
125 - 150mm / 5-6"	158.2	5.7	18.8	(91)	740
150 - 175mm / 6-7"	183.6	6.1	19.1	(103.1)	800
175 - 200mm / 7-8"	208.8	6.3	18.2	(115.3)	970
200 - 225mm / 8-9"	234.2	6.7	16.8	(126.8)	1100
225 - 250mm / 9-10"	258	5.5	18	(139.8)	1270
250 - 275mm / 10-11"	284	18	28	(152.3)	1340
275 - 300mm / 11-12"	309	18	28	(166)	1540
300 - 325mm / 12-13"	353	18	28	(187)	2085
325 - 350mm / 13-14"	378	18	28	(199)	2255
350 - 375mm / 14-15"	403	18	28	(212)	2405
375 - 400mm / 15-16"	428	18	28	(224)	2555
400 - 425mm / 16-17"	453	18	28	(236)	2815
425 - 450mm / 17-18"	478	18	28	(248)	3065
450 - 475mm / 18-19"	503	18	28	(261)	3315
475 - 500mm / 19-20"	528	18	28	(273)	3550



# Digimatic Micrometer

**SERIES 293**



293-771

## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0001"/0.001mm or 0.001mm  
 Flatness: .00024" / 0.6µm  
 Parallelism: .0002"/5µm for models up to 15"/375mm  
 .00024"/6µm for models up to 19"/475mm  
 .00028"/7µm for models over 20"/500mm  
 Measuring faces: Carbide tipped  
 Display: LCD  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: Approx. 1.8 years under normal use

## Function

Preset, Zero-setting, Power ON/OFF, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

**937387**: SPC cable (40"/1m)  
**965013**: SPC cable (80"/2m)

## SPECIFICATIONS

**Metric** With ratchet stop

Range	Resolution	Order No.	Accuracy
300 - 325mm	0.001mm	<b>293-571</b>	±6µm
325 - 350mm	0.001mm	<b>293-572</b>	±6µm
350 - 375mm	0.001mm	<b>293-573</b>	±6µm
375 - 400mm	0.001mm	<b>293-574</b>	±7µm
400 - 425mm	0.001mm	<b>293-575</b>	±7µm
425 - 450mm	0.001mm	<b>293-576</b>	±7µm
450 - 475mm	0.001mm	<b>293-577</b>	±8µm
475 - 500mm	0.001mm	<b>293-578</b>	±8µm

**Inch/Metric** With ratchet stop

Range	Resolution	Order No.	Accuracy
12" - 13" / 304.8 - 330.2mm	.0001" / 0.001mm	<b>293-771</b>	±.0003"
13" - 14" / 330.2 - 355.6mm	.0001" / 0.001mm	<b>293-772</b>	±.0003"
14" - 15" / 355.6 - 381.0mm	.0001" / 0.001mm	<b>293-773</b>	±.0003"
15" - 16" / 381.0 - 406.4mm	.0001" / 0.001mm	<b>293-774</b>	±.00035"
16" - 17" / 406.4 - 431.8mm	.0001" / 0.001mm	<b>293-775</b>	±.00035"
17" - 18" / 431.8 - 457.2mm	.0001" / 0.001mm	<b>293-776</b>	±.00035"
18" - 19" / 457.2 - 482.6mm	.0001" / 0.001mm	<b>293-777</b>	±.0004"
19" - 20" / 482.6 - 508.0mm	.0001" / 0.001mm	<b>293-778</b>	±.0004"



# Digimatic Micrometer

**SERIES 293 MDC-Lite**

## FEATURES

- Provided only with a zero set and in / mm (inch / metric models only) keys.
- A ratchet stop or friction thimble for a constant measuring force.
- Measurement readout with large characters on the LCD screen.
- No spindle clamp. No data output
- Supplied in fitted plastic case



293-832



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .00005"/0.001mm or 0.001mm  
 Flatness: .000012" / 0.3µm  
 Parallelism: .00008" / 2µm  
 Measuring faces: Carbide tipped  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 1.2 years under normal use

## Function

Origin-set, Automatic power on/off, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## SPECIFICATIONS

**Metric** With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	<b>293-821</b>	±2µm

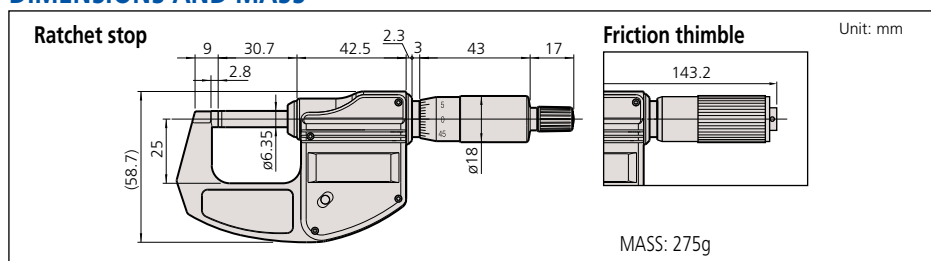
**Inch/Metric** With ratchet stop

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>293-831</b>	±.0001"

**Inch/Metric** With friction thimble

Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>293-832</b>	±.0001"

## DIMENSIONS AND MASS





Certificate of inspection

# QuantuMike

## SERIES 293 — Coolant Proof Micrometer

### FEATURES

- Faster measurement with 2mm per revolution instead of the standard 0.5mm.
- A patented ratchet thimble mechanism helps ensure repeatability.
- A function lock helps prevent error.
- IP-65 protection level.
- Certificate of inspection provided.
- With a standard bar except for 0-25mm/0-1" model.
- Supplied in fitted plastic case.

### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: 0.001mm or .00005"/0.001mm  
 Flatness: 0.3µm/.000012"  
 Parallelism: 1µm/.00004" for models up to 50mm/2"  
 2µm/.00008" for models up to 100mm/4"  
 Measuring faces: Carbide tipped  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 1.2 years under normal use  
 (8 months: over 100mm models)  
 Dust/Water protection level: IP65

### Function

Origin-set, Zero / ABS, Hold, Function locks, Auto power on/off  
 Data output (output models),  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories

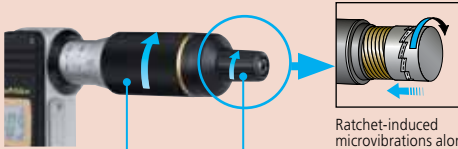
- 05CZA662:** SPC cable with data switch (1m/40")
- 05CZA663:** SPC cable with data switch (2m/80")



SPC cable with data switch

**516-529-26** Inspection Gage Block Set  
 Rectangular Steel Gage Block  
 10 pc. blocks and 1 pc. optical parallel

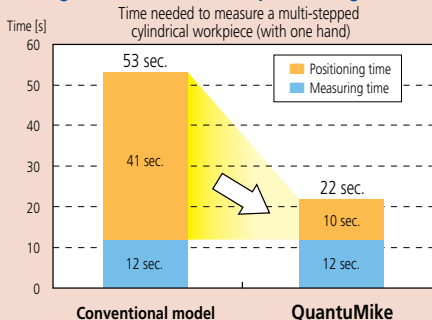
**516-319-26** Inspection Gage Block Set  
 Rectangular Cera Gage Block  
 10 pc. blocks and 1 pc. optical parallel



Ratchet on thimble Ratchet on speeder

Ratchet-induced microvibrations along the spindle help ensure repeatable measurements

### Significant reduction in positioning time



Conventional model QuantuMike



293-180



293-142



### SPECIFICATIONS

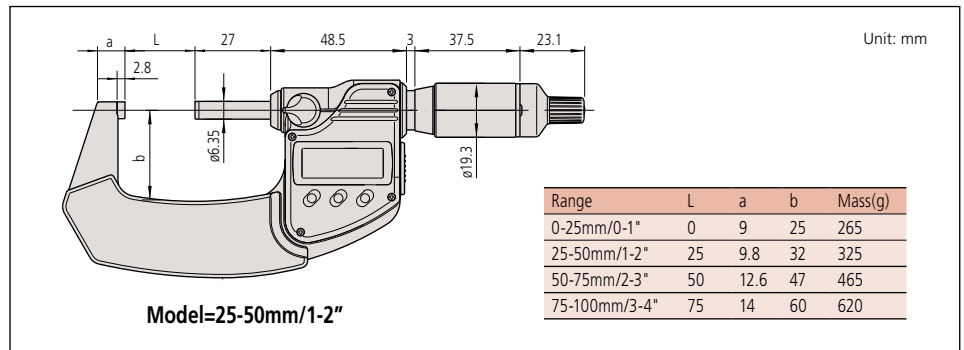
Metric			
Range	Resolution	Order No.	Accuracy
0-25mm	0.001mm	<b>293-140</b>	1µm
0-25mm	0.001mm	<b>293-145*</b>	1µm
25-50mm	0.001mm	<b>293-141</b>	1µm
25-50mm	0.001mm	<b>293-146*</b>	1µm
50-75mm	0.001mm	<b>293-142</b>	2µm
50-75mm	0.001mm	<b>293-147*</b>	2µm
75-100mm	0.001mm	<b>293-143</b>	2µm
75-100mm	0.001mm	<b>293-148*</b>	2µm

\* without SPC data output

Inch/Metric			
Range	Resolution	Order No.	Accuracy
0-1"/0 - 25.4mm	.00005"/0.001mm	<b>293-180</b>	.00005"
0-1"/0 - 25.4mm	.00005"/0.001mm	<b>293-185*</b>	.00005"
1-2"/25.4 - 50.8mm	.00005"/0.001mm	<b>293-181</b>	.00005"
1-2"/25.4 - 50.8mm	.00005"/0.001mm	<b>293-186*</b>	.00005"
2-3"/50.8 - 76.2mm	.00005"/0.001mm	<b>293-182</b>	.0001"
2-3"/50.8 - 76.2mm	.00005"/0.001mm	<b>293-187*</b>	.0001"
3-4"/76.2 - 101.6mm	.00005"/0.001mm	<b>293-183</b>	.0001"
3-4"/76.2 - 101.6mm	.00005"/0.001mm	<b>293-188*</b>	.0001"

\* without SPC data output

### DIMENSIONS AND MASS



# ABSOLUTE Digimatic Micrometers

**SERIES 227 — with Adjustable Measuring Force**

## FEATURES

- Constant and low measuring force mechanism in the thimble.
- Adjustable measuring force\* accommodates various kind of work materials.  
\*0.5-2.5N or 2-10N
- The measurement-value hold function automatically retains the data at a specified measuring force, ensuring accuracy.
- Non-rotating spindle and the new ratchet friction thimble.
- Speedy spindle feed by .4"/rev and 10mm/rev for inch/metric model.
- With absolute linear scale.
- With SPC data output.
- With a standard bar to set the origin point (for models with .6" - 1.2" / 15 - 30mm range).
- Supplied in fitted plastic case.



227-201

## SPECIFICATIONS

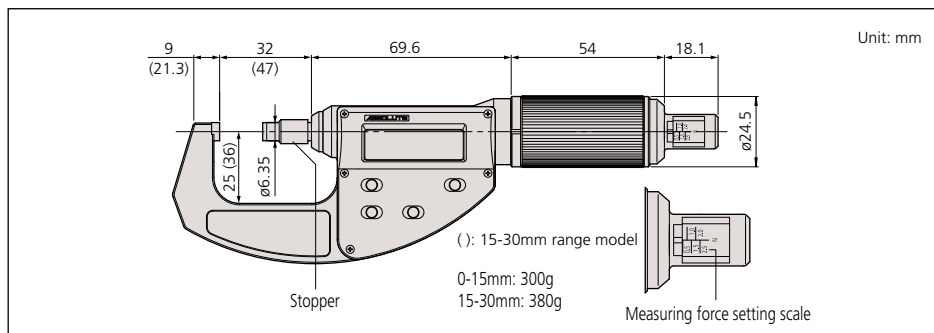
### Metric

Range	Resolution	Order No.	Accuracy	Measuring force
0 - 15mm	0.001mm	227-201	±2μm	0.5N - 2.5N
		227-202	±2μm	2N - 10N
15 - 30mm	0.001mm	227-203	±2μm	0.5N - 2.5N
		227-204	±2μm	2N - 10N

### Inch/Metric

Range	Resolution	Order No.	Accuracy	Measuring force
0 - .6" / 0 - 15mm	.00005" / 0.001mm	227-211	±.0001"	0.5N - 2.5N
		227-212	±.0001"	2N - 10N
.6 - 1.2" / 15 - 30mm	.00005" / 0.001mm	227-213	±.0001"	0.5N - 2.5N
		227-214	±.0001"	2N - 10N

## DIMENSIONS AND MASS



## Technical Data

Accuracy: Refer to the list of specifications.  
Resolution: .00005" / 0.001mm or 0.001mm  
Flatness: .000012" / 0.3μm  
Parallelism: .00008" / 2μm  
Measuring faces: Carbide tipped  
Display: LCD  
Battery: SR44 (1 pc.), **938882**  
Battery life: Approx. 3 years under normal use  
(1 year for .6 - 1.2" / 15-30mm range model)

## Function

Origin, Hold / Data, ON/OFF, Zero / ABS,  
inch/mm conversion (on inch/metric models only)  
Alarm: Low voltage, Counting value composition error

## Optional Accessories

**937387:** SPC cable (40" / 1m)  
**965013:** SPC cable (80" / 2m)



SPC

IP54

**ABSOLUTE**  
Absolute System Patented by MITUTOYO

**Technical Data**

Accuracy: Refer to the list of specifications.  
 Resolution: 0.001mm or .00005"/0.001mm  
 Flatness: 0.3µm / .000012"  
 Parallelism: 2µm / .00008" for models up to 80mm / 3.2"  
 3µm / .00012" for models up to 105mm / 4.2"  
 Measuring faces: Carbide tipped  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3 years under normal use  
 (1 year for models over 30mm / 1.2")  
 Dust/Water protection level: IP54

# Quickmike

## SERIES 293 — IP-54 ABSOLUTE Digimatic Micrometers

The Quickmike provides a speedy spindle feed of 10mm / .4" per thimble rotation as compared to the conventional micrometer with 0.5mm / .025" per rotation. Its wide 30mm / 1.2" measuring range allows various workpieces with different shapes to be measured quickly.

**FEATURES**

- Non-rotating spindle and the new ratchet friction thimble.
- Speedy spindle feed by 10mm/rev and .4"/rev for inch/metric models.
- With absolute linear scale.
- IP54 dust/water protection (when not connected with data output cable).
- With SPC data output.
- With a standard bar to set the origin point (for models with a range over 30mm / 1.2").
- Supplied in fitted plastic case.



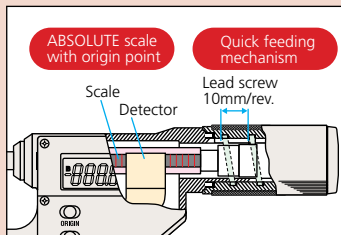
**SPECIFICATIONS**

Metric			
Range	Resolution	Order No.	Accuracy
0 - 30mm	0.001mm	<b>293-666</b>	±2µm
25 - 55mm	0.001mm	<b>293-667</b>	±2µm
50 - 80mm	0.001mm	<b>293-668</b>	±3µm
75 - 105mm	0.001mm	<b>293-669</b>	±3µm

Inch/Metric			
Range	Resolution	Order No.	Accuracy
0 - 1.2" / 0 - 30.48mm	.00005" / 0.001mm	<b>293-676</b>	±.0001"
1" - 2.2" / 25.4 - 55.88mm	.00005" / 0.001mm	<b>293-677</b>	±.0001"
2" - 3.2" / 50.8 - 81.28mm	.00005" / 0.001mm	<b>293-678</b>	±.00015"
3" - 4.2" / 76.2 - 106.68mm	.00005" / 0.001mm	<b>293-679</b>	±.00015"

**Function**

Origin, Hold / Data, ON/OFF, Zero / ABS, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error



**DIMENSIONS AND MASS**

Range	L	a	b	c	Mass
0 - 30mm / 0 - 1.2"	34.8	2.8	6.2	25	275
25 - 55mm / 1 - 2.2"	59.8	2.8	8.5	36	355
50 - 80mm / 2 - 3.2"	84.8	2.8	10.3	47	525
75 - 105mm / 3 - 4.2"	109.8	2.8	10.7	60	625

**Optional Accessories**

**937387:** SPC cable (1m / 40")  
**965013:** SPC cable (2m / 80")

Mitutoyo

# Outside Micrometers

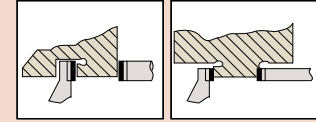
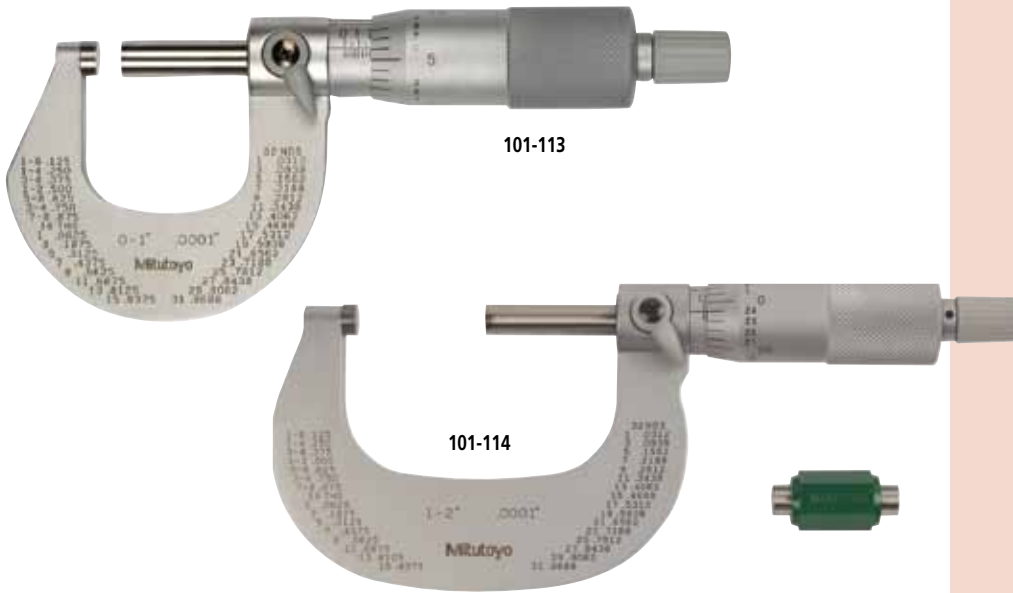
## SERIES 101

### FEATURES

- Satin-chrome-finished frame, tapered (on the anvil side) for hard-to-reach places.
- With a standard bar except for 0 - 1" models.
- Supplied in fitted plastic case.

### Technical Data

Graduation: .0001"  
 Flatness: .000024"  
 Parallelism: .00008" for models up to 3"  
 .00012" for models over 3"  
 Measuring faces: Carbide tipped



### SPECIFICATIONS

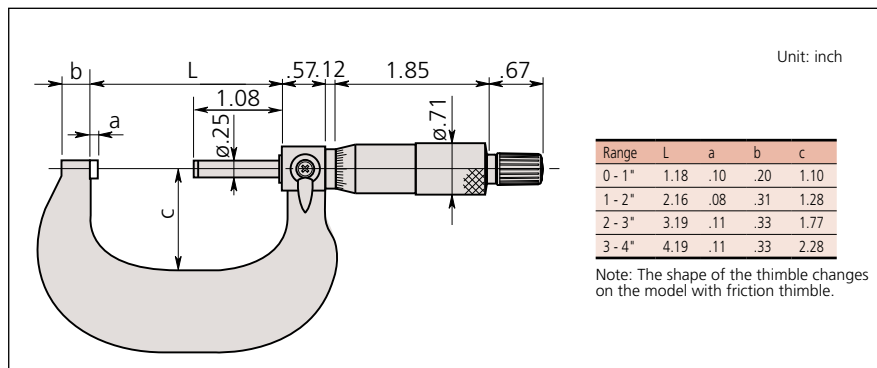
Inch		With friction thimble		
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	<b>101-117*</b>	±.0001"	180
1 - 2"	.0001"	<b>101-118*</b>	±.0001"	245

\*.0001" reading is obtained with vernier.

Inch		With ratchet stop		
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	<b>101-113*</b>	±.0001"	180
1 - 2"	.0001"	<b>101-114*</b>	±.0001"	245
2 - 3"	.0001"	<b>101-119*</b>	±.0001"	410
3 - 4"	.0001"	<b>101-120*</b>	±.00015"	550

\*.0001" reading is obtained with vernier.

### DIMENSIONS





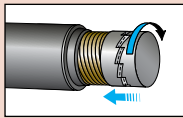


# Ratchet Thimble Micrometer

**SERIES 101, 102 — New smoother action Ratchet Thimble**

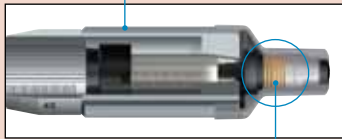
## Technical Data

Graduation: 0.01mm, 0.001mm, .001" or .0001"  
 Flatness: 0.6µm / .000024"  
 Parallelism: 2µm / .00008"  
 Measuring faces: Carbide tipped  
 Measuring force: 5-10N



Rotating the thimble/speeder sleeve when the workpiece is between the anvil and spindle causes the ratchet mechanism to tap the spindle and apply a constant measuring force to the workpiece.

Thimble sleeve      Speeder sleeve

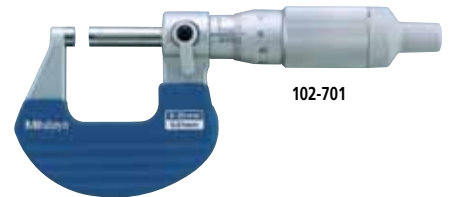
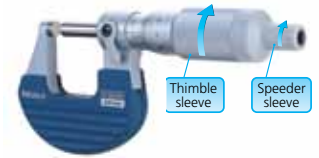


Ratchet mechanism



## FEATURES

- Ratchet function works both from the thimble and the speeder, allowing easy one-handed operation.
- Clearly audible ratchet operation for reassurance that measurement is being performed at constant, preset force.
- Provided with a Certificate of Inspection.
- With a standard bar except for 0 - 25mm and 0 - 1" models.
- Supplied in fitted plastic case.



102-701



102-702

## SPECIFICATIONS

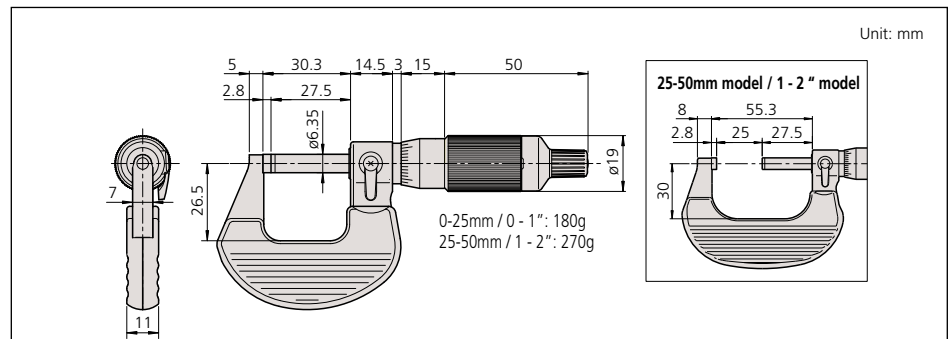
Metric			
Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	<b>102-701</b>	±2µm
0 - 25mm	0.001mm	<b>102-707*</b>	±2µm
25 - 50mm	0.01mm	<b>102-702</b>	±2µm
25 - 50mm	0.001mm	<b>102-708*</b>	±2µm

\*.001mm reading is obtained with vernier.

Inch			
Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	<b>101-711</b>	±.0001"
	.0001"	<b>101-717*</b>	±.0001"
	.0001"	<b>102-717*</b>	±.0001"
1 - 2"	.0001"	<b>102-718*</b>	±.0001"

\*.0001" reading is obtained with vernier.

## DIMENSIONS AND MASS



# Outside Micrometers

## SERIES 102

### FEATURES

- Heat-insulated frame, tapered (on the anvil side) for hard-to-reach places.
- With a standard bar except for 0 - 25mm model.
- A ratchet stop or ratchet thimble for a constant measuring force.
- Supplied in a fitted plastic case.



102-301



### Technical Data

Graduation: 0.01mm  
 Flatness: 0.3μm  
 Parallelism: 1μm for 25mm model  
 3μm for models up to 100mm  
 Measuring faces: Carbide tipped

### Ratchet stop type



### SPECIFICATIONS

**Metric** With ratchet stop

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	<b>102-301</b>	±2μm
25 - 50mm	0.01mm	<b>102-302</b>	±2μm
50 - 75mm	0.01mm	<b>102-303</b>	±2μm
75 - 100mm	0.01mm	<b>102-304</b>	±3μm

\*0.001mm reading is obtained with vernier.

**Metric** Micrometer set 0.01mm Graduation model

Range	Order No.	Included in set
0 - 100mm (4 pcs/set)	<b>102-911-01</b>	<ul style="list-style-type: none"> <li>• <b>102-701*</b></li> <li>• <b>102-302</b></li> <li>• <b>102-303</b></li> <li>• <b>102-304</b></li> <li>• 3 micrometer standards</li> </ul>

\*Ratchet thimble micrometer.

### DIMENSIONS AND MASS

Unit: mm

Range	L	a	b	c	d	Mass (g)
0 - 25mm	30.3	2.8	5	26	6.35	180
25 - 50mm	55.3	2.8	8	32	6.35	270
50 - 75mm	80.3	2.8	9	45	6.35	375
75 - 100mm	105.3	2.8	10	58	6.35	490

Note: The shape of the thimble changes on the model with ratchet thimble.



# Outside Micrometers

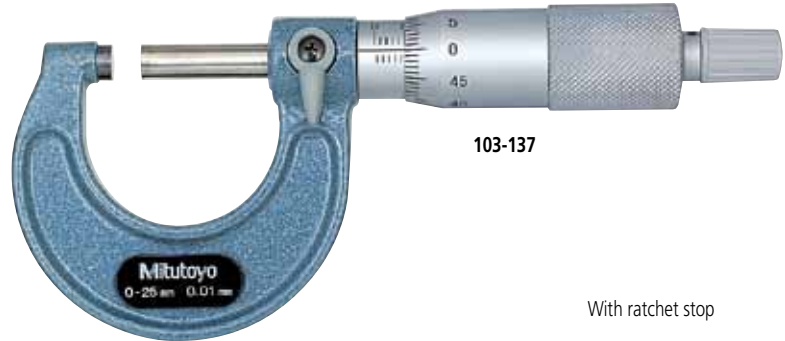
## SERIES 103

### FEATURES

- Hammertone, baked-enamel-finished frame.
- Ratchet Stop or Friction Thimble for exact repetitive readings.
- With a standard bar except for 0-25mm model.

### Technical Data

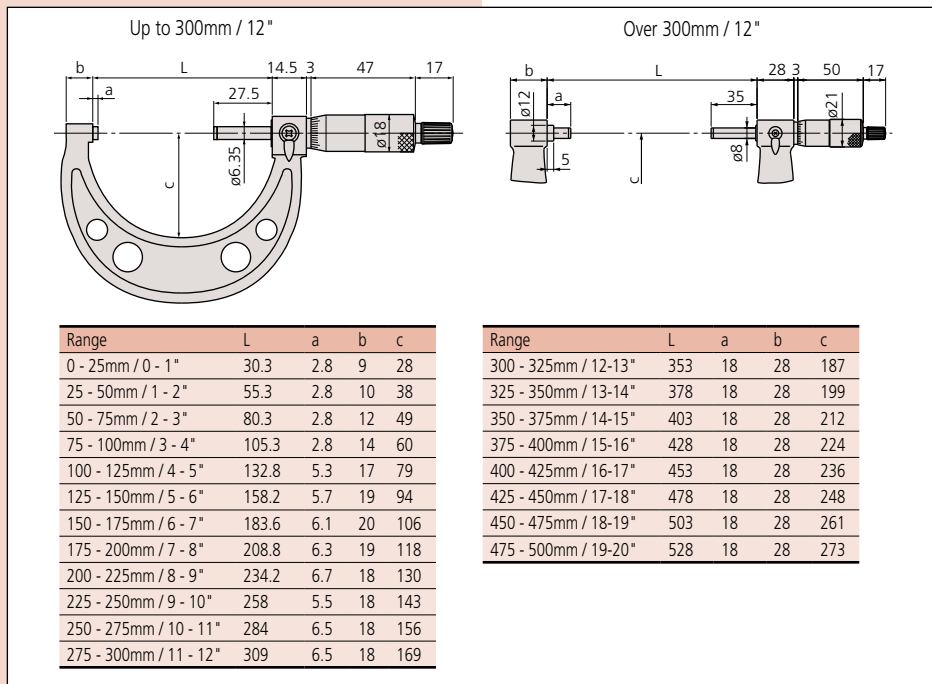
Graduation: 0.01mm, 0.001mm  
 Flatness: 0.6 μm for models up to 300mm"  
 1μ for models over 300mm  
 Parallelism: (2+R/100)μm, R=max, range (mm)  
 Measuring faces: Carbide tipped



103-137

With ratchet stop

### DIMENSIONS AND MASS



### SPECIFICATIONS

Metric			
Range	Order No.	Accuracy	Mass (g)
0 - 25mm	103-137	±2μm	175
	103-129*	±2μm	175
25 - 50mm	103-138	±2μm	215
	103-130*	±2μm	215
50 - 75mm	103-139-10	±2μm	315
75 - 100mm	103-140-10	±3μm	375
100 - 125mm	103-141-10	±3μm	515
125 - 150mm	103-142-10	±3μm	665
150 - 175mm	103-143-10	±4μm	720
175 - 200mm	103-144-10	±4μm	920
200 - 225mm	103-145-10	±4μm	1080
225 - 250mm	103-146-10	±5μm	1255
250 - 275mm	103-147-10	±5μm	1405
275 - 300mm	103-148-10	±5μm	1565
300 - 325mm	103-149	±6μm	1985
325 - 350mm	103-150	±6μm	2155
350 - 375mm	103-151	±6μm	2305
375 - 400mm	103-152	±7μm	2455
400 - 425mm	103-153	±7μm	2715
425 - 450mm	103-154	±7μm	2965
450 - 475mm	103-155	±8μm	3215
475 - 500mm	103-156	±8μm	3450

(Models with a range up to 1000mm are available.)

\*0.001mm reading is obtained with vernier.

### Metric Micrometer set

Range	Order No.	Included in set	Mass (g)
0 - 75mm (3 mikes/set)	103-927-10	103-137, 103-138, 103-139-10, 2 micrometer standards	750
0 - 150mm (6 mikes/set)	103-913-31	102-701*, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 micrometer standards	2260
150 - 300mm (6 mikes/set)	103-915-10	103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 6 micrometer standards	7695
0 - 300mm (12 mikes/set)	103-914-31	All micrometers of 103-913-31 and 103-915-10 in one set, 11 micrometer standards	9300

\*Ratchet thimble micrometer

# Outside Micrometers

## SERIES 103— Inch Models

### FEATURES

- Hammer-tone, baked-enamel-finished frame.
- Ratchet Stop or Friction Thimble for exact repetitive readings.
- With a standard bar except for 0-1" model.



### Technical Data (Inch Model)

Accuracy: Refer to the list of specifications.  
 Graduation: .001" or .0001"  
 Flatness: .000024" for models up to 12"  
 .00004" for models over 12"  
 Parallelism: [.00008 + .00004 (L/4)]" L= max range (inch)  
 Measuring faces: Carbide tipped



### SPECIFICATIONS

**Inch** \_\_\_\_\_ With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	<b>103-177</b>	±.0001"	175
		<b>103-259</b>	±.0001"	175
1 - 2"	.001"	<b>103-178</b>	±.0001"	215
2 - 3"	.001"	<b>103-179</b>	±.0001"	315
3 - 4"	.001"	<b>103-180</b>	±.00015"	375
4 - 5"	.001"	<b>103-181</b>	±.00015"	515
5 - 6"	.001"	<b>103-182</b>	±.00015"	665
6 - 7"	.001"	<b>103-183</b>	±.0002"	720
7 - 8"	.001"	<b>103-184</b>	±.0002"	920
8 - 9"	.001"	<b>103-185</b>	±.0002"	1080
9 - 10"	.001"	<b>103-186</b>	±.00025"	1255
10 - 11"	.001"	<b>103-187</b>	±.00025"	1405
11 - 12"	.001"	<b>103-188</b>	±.00025"	1565
12 - 13"	.001"	<b>103-189</b>	±.0003"	1985
13 - 14"	.001"	<b>103-190</b>	±.0003"	2155
14 - 15"	.001"	<b>103-191</b>	±.0003"	2305
15 - 16"	.001"	<b>103-192</b>	±.00035"	2455
16 - 17"	.001"	<b>103-193</b>	±.00035"	2715
17 - 18"	.001"	<b>103-194</b>	±.00035"	2965
18 - 19"	.001"	<b>103-195</b>	±.0004"	3215
19 - 20"	.001"	<b>103-196</b>	±.0004"	3450
20 - 21"	.001"	<b>103-197</b>	±.0004"	4060
21 - 22"	.001"	<b>103-198</b>	±.00045"	4080
22 - 23"	.001"	<b>103-199</b>	±.00045"	4500
23 - 24"	.001"	<b>103-200</b>	±.00045"	4525
24 - 25"	.001"	<b>103-201</b>	±.0005	4915
25 - 26"	.001"	<b>103-202</b>	±.0005"	4930
26 - 27"	.001"	<b>103-203</b>	±.0005"	5200
27 - 28"	.001"	<b>103-204</b>	±.00055"	5215
28 - 29"	.001"	<b>103-205</b>	±.00055"	5835
29 - 30"	.001"	<b>103-206</b>	±.00055"	5860
30 - 31"	.001"	<b>103-207</b>	±.0006"	6385
31 - 32"	.001"	<b>103-208</b>	±.0006"	6410
32 - 33"	.001"	<b>103-209</b>	±.0006"	6925
33 - 34"	.001"	<b>103-210</b>	±.00065"	6940
34 - 35"	.001"	<b>103-211</b>	±.00065"	7565
35 - 36"	.001"	<b>103-212</b>	±.00065"	7590
36 - 37"	.001"	<b>103-213</b>	±.0007"	8215
37 - 38"	.001"	<b>103-214</b>	±.0007"	8240
38 - 39"	.001"	<b>103-215</b>	±.0007"	8860
39 - 40"	.001"	<b>103-216</b>	±.00075"	8880

**Inch** \_\_\_\_\_ With friction thimble

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	<b>103-127</b>	±.0001"	175
	.0001"	<b>103-135</b>	±.0001"	175
1 - 2"	.001"	<b>103-128</b>	±.0001"	215
	.0001"	<b>103-136</b>	±.0001"	215

**Inch** \_\_\_\_\_ With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	<b>103-260*</b>	±.0001"	175
1 - 2"	.0001"	<b>103-262*</b>	±.0001"	215
1 - 2"	.0001"	<b>103-132*</b>	±.0001"	215
2 - 3"	.0001"	<b>103-217*</b>	±.0001"	315
3 - 4"	.0001"	<b>103-218*</b>	±.00015"	375
4 - 5"	.0001"	<b>103-219*</b>	±.00015"	515
5 - 6"	.0001"	<b>103-220*</b>	±.00015"	665
6 - 7"	.0001"	<b>103-221*</b>	±.0002"	720
7 - 8"	.0001"	<b>103-222*</b>	±.0002"	920
8 - 9"	.0001"	<b>103-223*</b>	±.0002"	1080
9 - 10"	.0001"	<b>103-224*</b>	±.00025"	1255
10 - 11"	.0001"	<b>103-225*</b>	±.00025"	1405
11 - 12"	.0001"	<b>103-226*</b>	±.00025"	1565

\*.0001" Reading is obtained with vernier

**Inch** \_\_\_\_\_ No ratchet stop, no spindle lock, no standard bar

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	<b>103-113*</b>	±.0001"	170
1 - 2"	.0001"	<b>103-114*</b>	±.0001"	200
2 - 3"	.0001"	<b>103-115*</b>	±.0001"	290
3 - 4"	.0001"	<b>103-116*</b>	±.00015"	345
4 - 5"	.0001"	<b>103-117*</b>	±.00015"	470
5 - 6"	.0001"	<b>103-118*</b>	±.00015"	610

\*.0001" Reading is obtained with vernier.



# Outside Micrometers

## SERIES 103 — Inch model set



103-905-01

### Inch Micrometer Set .001" Graduation Model

Range	Order No.	Included in set	Mass (g)
0 - 3" (3pcs./set)	<b>103-929</b>	103-177, 103-178, 103-179, 2 Micrometer Standards	750
0 - 4" (4pcs./set)	<b>103-930</b>	103-177, 103-178, 103-179, 103-180, 3 Micrometer Standards	1600
0 - 6" (6pcs./set)	<b>103-904-01</b>	101-711, 101-106, 103-179, 103-180, 103-181, 103-182, 5 Micrometer Standards	2200
0 - 12" (12pcs./set)	<b>103-905-01</b>	101-711, 101-106, 103-179, 103-180, 103-181, 103-182, 103-183, 103-184, 103-185, 103-186, 11 Micrometer Standards	9000
6 - 12" (6pcs./set)	<b>103-906</b>	103-183, 103-184, 103-185, 103-186, 103-187, 103-188, 6 Micrometer Standards	7695



103-904-01

### Inch Micrometer Set .0001" Graduation Model

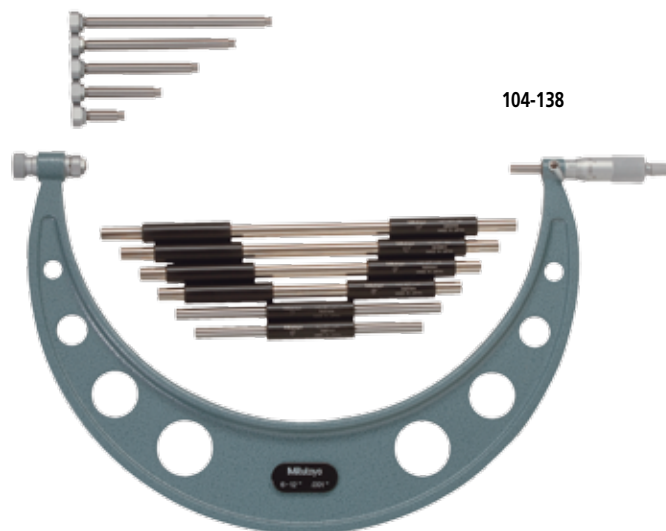
Range	Order No.	Included in set	Mass (g)
0 - 3" (3pcs./set)	<b>103-922</b>	103-135, 103-136, 103-217, 2pcs. Micrometer Standards	705
0 - 3" (3pcs./set)	<b>103-932</b>	103-113, 103-114, 103-115, 2pcs. Micrometer Standards	660
0 - 4" (4pcs./set)	<b>103-931</b>	103-135, 103-136, 103-217, 103-218, 3pcs. Micrometer Standards	1600
0 - 6" (6pcs./set)	<b>103-907-01</b>	102-717, 103-136, 103-217, 103-218, 103-219, 103-220, 5 Micrometer Standards	2200
0 - 6" (6pcs./set)	<b>103-933</b>	103-113, 103-114, 103-115, 103-116, 103-117, 103-118, 5 Micrometer Standards	2085
0 - 12" (12pcs./set)	<b>103-908-01</b>	102-717, 103-136, 103-217, 103-218, 103-219, 103-220, 103-221, 103-222, 103-223, 103-224, 103-225, 103-226, 11pcs. Micrometer Standards	9000
6 - 12" (6pcs./set)	<b>103-909</b>	103-221, 103-222, 103-223, 103-224, 103-225, 103-226, 6pcs. Micrometer Standards	6945

# Outside Micrometers

**SERIES 340, 104 — with Interchangeable Anvils, Inch model**

## FEATURES

- IP65 water/dust protection (Series 340\*).  
\*Models with a range up to 12" / 300mm.
- Wide measuring range with interchangeable anvils.
- With a Ratchet Stop for constant force.
- Supplied with zero-setting standards bar for each range.
- With SPC output (Series 340).
- Supplied in fitted wooden case.



## SPECIFICATIONS

**Inch/Metric** Digital model

Range	Resolution	Order No.	Mass (kg)	Remarks
0-6" / 0-152.4mm	.00005" / 0.001mm	<b>340-351-10</b>	0.96	with 6 anvils & 5 standards
6-12" / 152.4 - 304.8mm	.0001" / 0.001mm	<b>340-352-10</b>	1.88	with 6 anvils & 6 standards
12-18" / 304.8 - 457.2mm	.0001" / 0.001mm	<b>340-713</b>	4.75	with 6 anvils & 6 standards
18-24" / 457.2 - 609.6mm	.0001" / 0.001mm	<b>340-714</b>	6.62	with 6 anvils & 6 standards
24-30" / 609.6 - 762.0mm	.0001" / 0.001mm	<b>340-715</b>	10.06	with 6 anvils & 6 standards
30-36" / 762.0 - 914.4mm	.0001" / 0.001mm	<b>340-716</b>	11.98	with 6 anvils & 6 standards

**Inch**

Range	Graduation	Order No.	Mass(kg)	Remarks
0-2"	.0001"	<b>104-165*</b>	0.32	with 1" anvil & 1 standard
0-6"	.001"	<b>104-137</b>	1.35	with 6 anvils & 5 standards
6-12"	.001"	<b>104-138</b>	2.65	with 6 anvils & 6 standards
12-16"	.001"	<b>104-152</b>	3.31	with 4 anvils & 4 standards
12-18"	.001"	<b>104-201</b>	4.69	with 6 anvils & 6 standards
16-20"	.001"	<b>104-153</b>	4.81	with 4 anvils & 4 standards
18-24"	.001"	<b>104-202</b>	6.51	with 6 anvils & 6 standards
20-24"	.001"	<b>104-154</b>	6.35	with 4 anvils & 4 standards
24-28"	.001"	<b>104-155</b>	7.72	with 4 anvils & 4 standards
24-30"	.001"	<b>104-203</b>	9.95	with 6 anvils & 6 standards
28-32"	.001"	<b>104-156</b>	9.08	with 4 anvils & 4 standards
30-36"	.001"	<b>104-204</b>	11.87	with 6 anvils & 6 standards
32-36"	.001"	<b>104-157</b>	10.41	with 4 anvils & 4 standards
36-40"	.001"	<b>104-158</b>	11.78	with 4 anvils & 4 standards
36-42"	.001"	<b>104-205</b>	13.68	with 6 anvils & 6 standards

\*.0001" reading is obtained with vernier.



## Technical Data

Accuracy:  $\pm[.00016" + .00004 (L/3)]$  L = Max Range (Inch)  
 Resolution\*: .0001"/0.001mm  
**(340-351-10): .00005"/0.001mm)**  
 Graduation\*\*\*: .001" (**104-165**: is .0001")  
 Flatness: .000024" for models up to 12"  
 .00004" for models over 12"  
 Parallelism: .00008" for models up to 3"  
 .00012" for models up to 6"  
 $\pm[.00008" + .00004 (L/4)]$  L= Max range (inch)  
 Measuring faces: Carbide tipped (spindle only)  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65 (up to 12" / 300mm)  
 \*Digital models \*\*Analog models

## Function of Digital Model

Zero / ABS, Data hold, Preset, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error  
 Function Lock\*\*\*  
 2 Presets\*\*\*  
 \*\*\* 4 - 12" / 100 - 300mm Models

## Optional Accessories for Digital Model

**05CZA662:** SPC cable with data switch (40" / 1m)  
**05CZA663:** SPC cable with data switch (80" / 2m)



# Outside Micrometers

**SERIES 340, 104 — with Interchangeable Anvils, Metric Model**

## Technical Data

Accuracy:  $\pm(4+R/75)\mu\text{m}$ , R=max. range (mm)  
 Resolution\*: 0.001mm  
 Graduation\*\*\*: 0.01mm  
 Flatness: 0.6 $\mu\text{m}$  for models up to 300mm  
 1 $\mu\text{m}$  for models over 300mm  
 Parallelism: 2 $\mu\text{m}$  for models up to 75mm  
 3 $\mu\text{m}$  for models up to 150mm  
 (2+R/100) $\mu\text{m}$  for models over 150mm, R=max. range (mm)  
 Measuring faces: Carbide tipped (spindle only)  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65 (up to 300mm)  
 \*Digital models \*\*Analog models

## Function of Digital Model

Zero / ABS, Data hold, Preset, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error  
 Function Lock\*\*\*  
 2 Presets\*\*\*  
 \*\*\*4 - 12" / 100 - 300mm Models

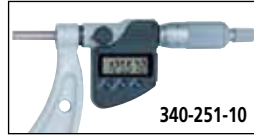
## Optional Accessories for Digital Model

**05CZA662**: SPC cable with data switch (40" / 1m)  
**05CZA663**: SPC cable with data switch (80" / 2m)

## FEATURES

- IP65 water/dust protection (Series 340\*).  
 \*Models with a range up to 300mm.
- Wide measuring range with interchangeable anvils.
- With a Ratchet Stop for constant force.
- Supplied with zero-setting standards bar for each range.
- With SPC output (Series 340).
- Supplied in fitted wooden case.

## Digital model



## SPECIFICATIONS

**Metric** Digital model

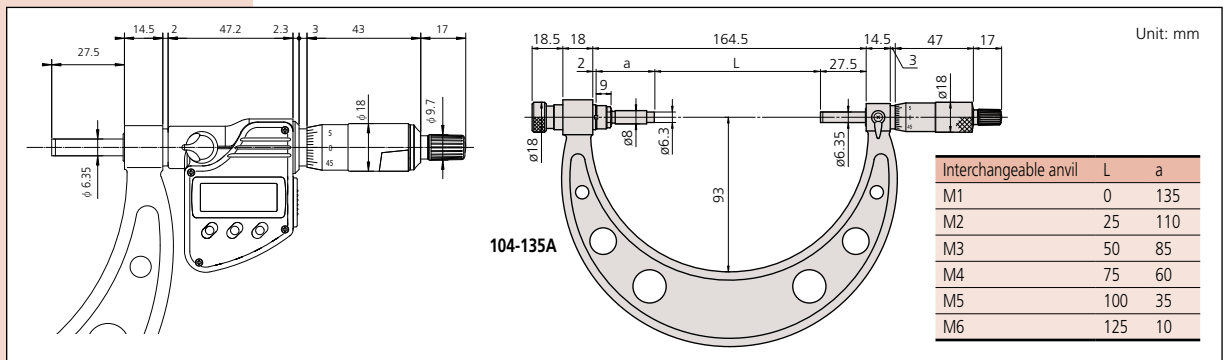
Range	Resolution	Order No.	Mass (kg)	Remarks
0 - 150mm	0.001mm	<b>340-251-10</b>	0.96	with 6 anvils & 5 standards
150 - 300mm	0.001mm	<b>340-252-10</b>	1.88	with 6 anvils & 6 standards
300 - 400mm	0.001mm	<b>340-513</b>	3.31	with 4 anvils & 4 standards
400 - 500mm	0.001mm	<b>340-514</b>	4.81	with 4 anvils & 4 standards
500 - 600mm	0.001mm	<b>340-515</b>	6.35	with 4 anvils & 4 standards
600 - 700mm	0.001mm	<b>340-516</b>	7.72	with 4 anvils & 4 standards
700 - 800mm	0.001mm	<b>340-517</b>	9.08	with 4 anvils & 4 standards
800 - 900mm	0.001mm	<b>340-518</b>	10.41	with 4 anvils & 4 standards
900 - 1000mm	0.001mm	<b>340-519</b>	11.78	with 4 anvils & 4 standards

**Metric**

Range	Graduation	Order No.	Mass (kg)	Remarks
0 - 50mm	0.01mm	<b>104-171*</b>	0.32	with 2 anvils & 1 standards
0 - 100mm	0.01mm	<b>104-139A</b>	0.79	with 4 anvils & 3 standards
0 - 150mm	0.01mm	<b>104-135A</b>	1.35	with 6 anvils & 5 standards
50 - 150mm	0.01mm	<b>104-161A</b>	1.35	with 4 anvils & 4 standards
100 - 200mm	0.01mm	<b>104-140A</b>	1.38	with 4 anvils & 4 standards
150 - 300mm	0.01mm	<b>104-136A</b>	2.65	with 6 anvils & 6 standards
200 - 300mm	0.01mm	<b>104-141A</b>	2.22	with 4 anvils & 4 standards
300 - 400mm	0.01mm	<b>104-142A</b>	3.31	with 4 anvils & 4 standards
400 - 500mm	0.01mm	<b>104-143A</b>	4.81	with 4 anvils & 4 standards
500 - 600mm	0.01mm	<b>104-144A</b>	6.35	with 4 anvils & 4 standards
600 - 700mm	0.01mm	<b>104-145A</b>	7.72	with 4 anvils & 4 standards
700 - 800mm	0.01mm	<b>104-146A</b>	9.08	with 4 anvils & 4 standards
800 - 900mm	0.01mm	<b>104-147A</b>	10.41	with 4 anvils & 4 standards
900 - 1000mm	0.01mm	<b>104-148A</b>	11.78	with 4 anvils & 4 standards

\*The frame is in a heat insulated cover

## DIMENSIONS

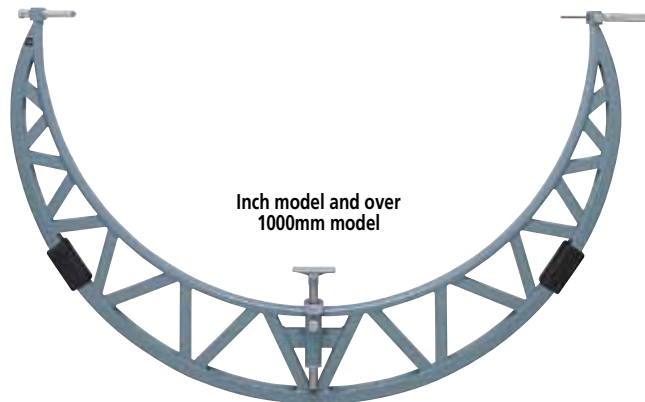
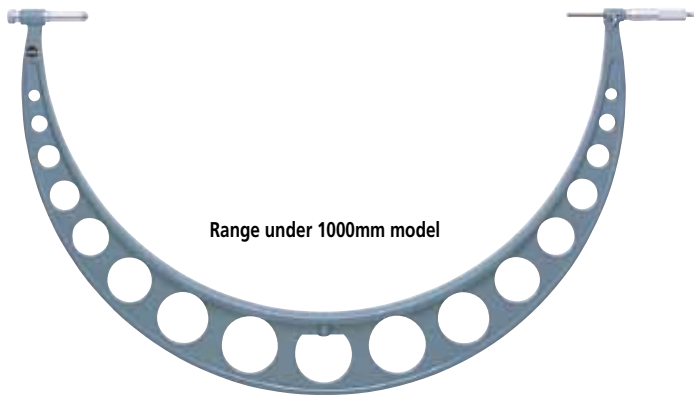


# Outside Micrometers

## SERIES 105 — with Extension Anvil Collars

### FEATURES

- Wide measuring range with extension anvil collars.
- 50mm spindle stroke.
- With Ratchet Stop for constant force.
- Supplied with zero-setting standards bar for each range.
- Square and round pipes are combined for light weight and rigid frame (for models over 1000mm range).
- Workpiece stopper (for models over 1000mm range).
- Supplied in a fitted wooden case.



### SPECIFICATIONS

#### Metric

Range	Order No.	Extension collars	Mass (kg)
500 - 600mm	105-103	50mm	5.53
600 - 700mm	105-104	50mm	6.35
700 - 800mm	105-105	50mm	7.17
800 - 900mm	105-106	50mm	7.99
900 - 1000mm	105-107	50mm	8.81
1000 - 1100mm	105-408	50mm	6.37
1100 - 1200mm	105-409	50mm	7.08
1000 - 1200mm	105-418	50mm, 100mm	13.77
1200 - 1300mm	105-410	50mm	7.79
1300 - 1400mm	105-411	50mm	8.50
1200 - 1400mm	105-419	50mm, 100mm	15.77
1400 - 1500mm	105-412	50mm	9.21
1500 - 1600mm	105-413	50mm	10.17
1400 - 1600mm	105-420	50mm, 100mm	17.91
1600 - 1700mm	105-414	50mm	11.13
1700 - 1800mm	105-415	50mm	12.09
1600 - 1800mm	105-421	50mm, 100mm	20.80
1800 - 1900mm	105-416	50mm	13.05
1900 - 2000mm	105-417	50mm	14.01
1800 - 2000mm	105-422	50mm, 100mm	22.76

#### Inch

Range	Order No.	Extension collars	Mass (kg)
40 - 44"	105-428	2"	10.0
44 - 48"	105-429	2"	10.9
48 - 52"	105-430	2"	11.4
52 - 56"	105-431	2"	11.9
56 - 60"	105-432	2"	12.6
60 - 64"	105-433	2"	13.2
64 - 68"	105-434	2"	14.1
68 - 72"	105-435	2"	14.9
72 - 76"	105-436	2"	15.8
76 - 80"	105-437	2"	16.7

### Technical Data

Accuracy:  $\pm(6+R/75)\mu\text{m}$ , R=max. range (mm)  
 Graduation: .001" / 0.01mm  
 Flatness: .000052" / 1.3 $\mu\text{m}$   
 Parallelism: [.00016" + .00004 (L/4)"] L=max. range (inch)  
 (2+R/100) $\mu\text{m}$ , R=max. range (mm)  
 Measuring faces: Carbide tipped

### Extension anvil collar



# Outside Micrometers

## SERIES 406 — Non-Rotating Spindle Type

### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .00005"/0.001mm or 0.001mm  
 Flatness: 0.3µm / .000012"  
 Parallelism: .00012" / 3µm for models up to 3" / 75mm\*  
 .000016" / 4µm for models over 3" / 75mm\*  
 .000063" / 1.6µm for models up to 2" / 50mm\*\*  
 2µm for models over 50mm\*\*  
 Measuring faces: Carbide tipped  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use

### Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA662**: SPC cable with data switch (40" / 1m)  
**05CZA663**: SPC cable with data switch (80" / 2m)

### FEATURES

- With a standard bar except for 0 - 1" / 0 - 25mm model.
- With SPC output.
- Supplied in a fitted plastic case.



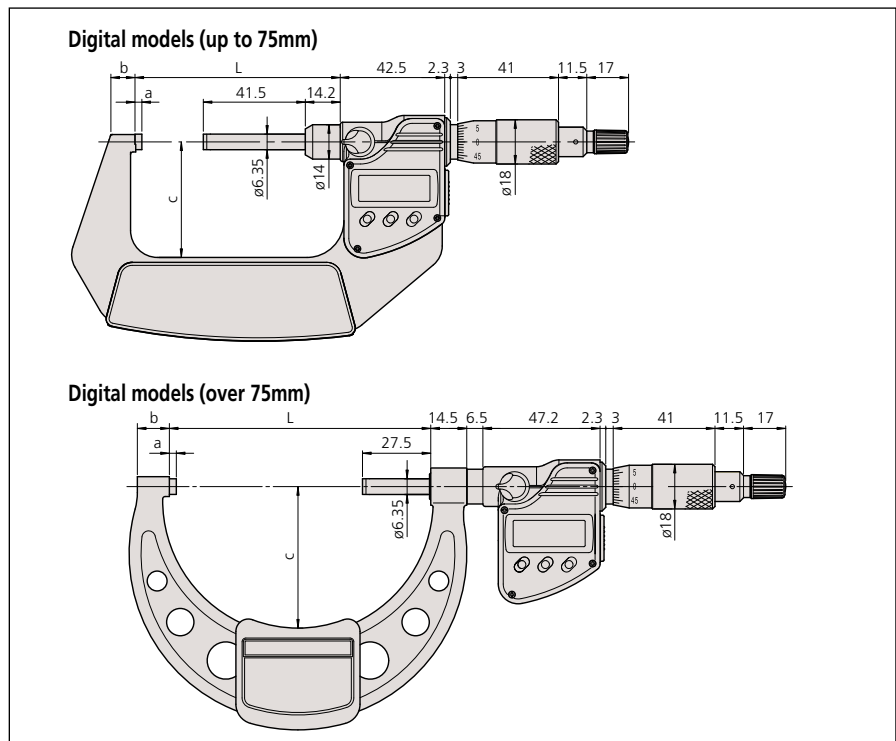
406-350

### SPECIFICATIONS

Metric		Digital model with ratchet stop	
Range	Resolution	Order No.	Accuracy
0 - 25mm	0.001mm	<b>406-250</b>	±3µm
25 - 50mm	0.001mm	<b>406-251</b>	±3µm
50 - 75mm	0.001mm	<b>406-252</b>	±3µm
75 - 100mm	0.001mm	<b>406-253</b>	±4µm

Inch/Metric		Digital model with ratchet stop	
Range	Resolution	Order No.	Accuracy
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>406-350</b>	±.00015"
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>406-351</b>	±.00015"
2 - 3" / 50.8 - 72.6mm	.00005" / 0.001mm	<b>406-352</b>	±.00015"
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	<b>406-353</b>	±.0002"

### DIMENSIONS AND MASS



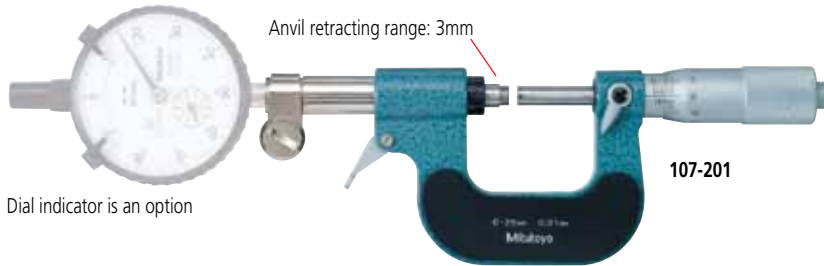


# Outside Micrometers

## SERIES 107

### FEATURES

- Uses dial indicator for direct GO/NG-GO judgment for mass-produced parts.
- Anvil retracting trigger for quick measurement.
- With a standard bar except for 0 - 25mm models.
- Supplied in fitted plastic case.



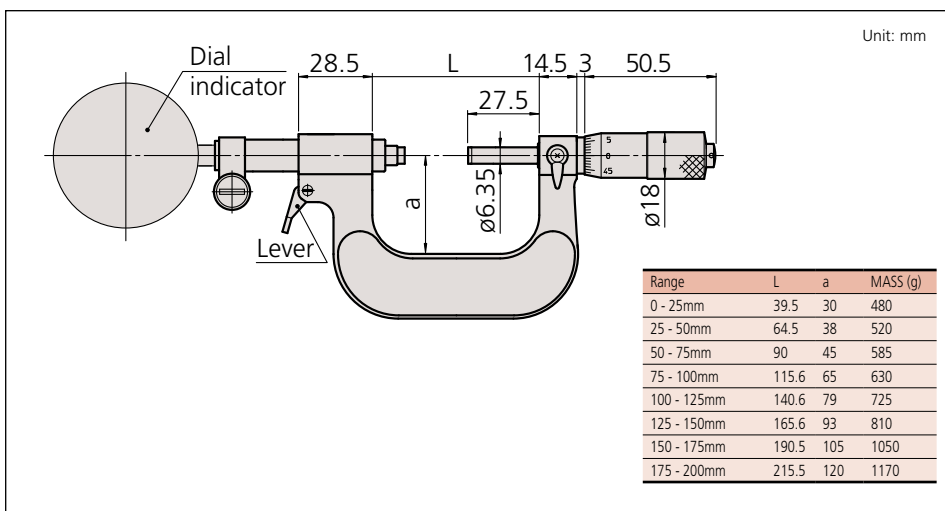
Dial indicator is an option

### SPECIFICATIONS

#### Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	<b>107-201</b>	±2μm
25 - 50mm	0.01mm	<b>107-202</b>	±2μm
50 - 75mm	0.01mm	<b>107-203</b>	±2μm
75 - 100mm	0.01mm	<b>107-204</b>	±3μm
100 - 125mm	0.01mm	<b>107-205</b>	±3μm
125 - 150mm	0.01mm	<b>107-206</b>	±3μm
150 - 175mm	0.01mm	<b>107-207</b>	±4μm
175 - 200mm	0.01mm	<b>107-208</b>	±4μm

### DIMENSIONS AND MASS



### Technical Data

Graduation: 0.01mm (thimble)  
 Flatness: 0.6μm  
 Parallelism: (2+R/100)μm, R=max. range (mm)  
 Measuring faces: Carbide tipped



# Spline Micrometers

## SERIES 331, 111

### Technical Data

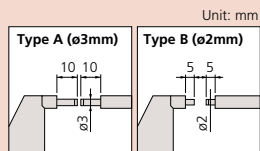
Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005" / 0.001mm or 0.001mm  
 Graduation\*\*: .0001" or 0.01mm, .001"  
 Flatness: .000012" / 0.3µm  
 Parallelism: (2+R/100)µm, R=max. range (mm)  
 [.00008" + .00004" (L/4")]  
 L = max. range (inch)  
 Measuring faces: Carbide tipped  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero-setting, Data hold, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA662**: SPC cable with data switch (40" / 1m)  
**05CZA663**: SPC cable with data switch (80" / 2m)



### FEATURES

- IP65 water/dust protection (Series 331).
- The anvil and spindle have a small diameter for measuring splined shafts, slots, and keyways.
- With Ratchet Stop for constant force.
- With SPC output (Series 331).
- With a standard bar except 0-1" and 0-25mm model.
- Supplied in fitted plastic case.



331-351



111-115

### SPECIFICATIONS

Metric		Digital model			
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	<b>331-251</b>	±2µm	Type A	330
		<b>331-261</b>	±2µm	Type B	330
25 - 50mm	0.001mm	<b>331-252</b>	±2µm	Type A	470
		<b>331-262</b>	±2µm	Type B	470
50 - 75mm	0.001mm	<b>331-253</b>	±2µm	Type A	625
		<b>331-263</b>	±2µm	Type B	625
75 - 100mm	0.001mm	<b>331-254</b>	±3µm	Type A	565
		<b>331-264</b>	±3µm	Type B	565

Inch/Metric		Digital model			
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>331-351</b>	±.0001"	Type A	330
		<b>331-361</b>	±.0001"	Type B	330
1 - 2" / 25.4-50.8mm	.00005" / 0.001mm	<b>331-352</b>	±.0001"	Type A	470
		<b>331-362</b>	±.0001"	Type B	470
2 - 3" / 50.8-76.2mm	.00005" / 0.001mm	<b>331-353</b>	±.0001"	Type A	625
		<b>331-363</b>	±.0001"	Type B	625
3 - 4" / 76.2-101.6mm	.00005" / 0.001mm	<b>331-354</b>	±.00015"	Type A	565
		<b>331-364</b>	±.00015"	Type B	565

Metric					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	<b>111-115</b>	±3µm	Type A	205
		<b>111-215</b>	±3µm	Type B	205
25 - 50mm	0.01mm	<b>111-116</b>	±3µm	Type A	305
50 - 75mm	0.01mm	<b>111-117</b>	±3µm	Type A	370
75 - 100mm	0.01mm	<b>111-118</b>	±4µm	Type A	500
100 - 125mm	0.01mm	<b>111-119</b>	±4µm	Type A	655
125 - 150mm	0.01mm	<b>111-120</b>	±4µm	Type A	710
150 - 175mm	0.01mm	<b>111-121</b>	±5µm	Type A	900
175 - 200mm	0.01mm	<b>111-122</b>	±5µm	Type A	1040

Inch					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	<b>111-166*</b>	±.00015"	Type A	205

\*.0001" reading is obtained with vernier.

### DIMENSIONS

**Models up to 75mm**

**Digital model**

**Models over 75mm**

**Digital model**

Range	L	a	b	c
0 - 25mm	58.2 (55.3)	17.5 (17.8)	7.3 (10)	32 (38)
25 - 50mm	83.2 (80.3)	17.5 (17.8)	10.1 (12)	47 (49)
50 - 75mm	108.2 (105.3)	20.3 (17.8)	11.5 (14)	60 (60)
75 - 100mm	132.8 (132.8)	20.3 (20.3)	16.7 (17)	76.5 (79)

Unit: mm

# Point Micrometers

SERIES 342, 142, 112

## FEATURES

- IP65 water/dust protection (Series 342).
- Pointed spindle and anvil for measuring the web thickness of drills, small grooves, keyways, and other hard-to-reach dimensions.
- 15 degree and 30 degree measuring points are available.
- The measuring points have approximately 0.3mm / .012" radius.
- With Ratchet Stop for constant force.
- With SPC output (Series 342).
- With digit counter (Series 142).
- With a standard bar except 0 - 1" and 0 - 25mm model.
- Supplied in fitted plastic case.



## SPECIFICATIONS

Metric		Digital model (with carbide tip)				
Range	Resolution	Order No.	Accuracy	Point	Mass (g)	
0 - 25mm	0.001mm	342-251	±2µm	15°	330	
		342-261	±2µm	30°	330	
25 - 50mm	0.001mm	342-252	±2µm	15°	470	
		342-262	±2µm	30°	470	
50 - 75mm	0.001mm	342-253	±2µm	15°	625	
		342-263	±2µm	30°	625	
75 - 100mm	0.001mm	342-254	±3µm	15°	565	
		342-264	±3µm	30°	565	

Inch/Metric		Digital model (with carbide tip)				
Range	Resolution	Order No.	Accuracy	Point	Mass (g)	
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	342-351	±.0001"	15°	330	
		342-361	±.0001"	30°	330	
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	342-352	±.0001"	15°	470	
		342-362	±.0001"	30°	470	
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	342-353	±.0001"	15°	625	
		342-363	±.0001"	30°	625	
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	342-354	±.00015"	15°	565	
		342-364	±.00015"	30°	565	

Metric		Mechanical Counter Model				
Range	Graduation	Order No.	Accuracy	Point	Mass (g)	
0 - 25mm	0.01mm	142-153*	±3µm	15°	260	
		142-201*	±3µm	30°	260	

Inch		Mechanical Counter Model				
Range	Graduation	Order No.	Accuracy	Point	Mass (g)	
0 - 1"	.001"	142-177*	±.00015"	15°	260	
		142-225*	±.00015"	30°	260	

\*The points don't have carbide steel tips.

\*The points don't have carbide steel tips.

Metric						
Range	Graduation	Order No.	Accuracy	Point	Mass (g)	
0 - 25mm	0.01mm	112-165	±3µm	15°	205	
		112-153*	±3µm	15°	205	
		112-213	±3µm	30°	205	
		112-201*	±3µm	30°	205	
25 - 50mm	0.01mm	112-166	±3µm	15°	305	
		112-154*	±3µm	15°	305	
		112-214	±3µm	30°	305	
		112-202*	±3µm	30°	305	
50 - 75mm	0.01mm	112-167	±3µm	15°	370	
		112-155*	±3µm	15°	370	
		112-215	±3µm	30°	370	
		112-203*	±3µm	30°	370	
75 - 100mm	0.01mm	112-168	±4µm	15°	500	
		112-156*	±4µm	15°	500	
		112-216	±4µm	30°	500	
		112-204*	±4µm	30°	500	

Inch						
Range	Graduation	Order No.	Accuracy	Point	Mass (g)	
0 - 1"	.001"	112-189	±.00015"	15°	205	
		112-177*	±.00015"	15°	205	
		112-237	±.00015"	30°	205	
		112-225*	±.00015"	30°	205	
1 - 2"	.001"	112-190	±.00015"	15°	305	
		112-178*	±.00015"	15°	305	
		112-238	±.00015"	30°	305	
		112-226*	±.00015"	30°	305	
2 - 3"	.001"	112-191	±.00015"	15°	370	

\*The points don't have carbide steel tips.

\*The points don't have carbide steel tips.



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005" / 0.001mm or 0.001mm  
 Graduation\*\*: .001" or 0.01mm  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), 938882  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

## Function of Digital Model

Origin-set, Zero / ABS, Data hold,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

- 05CZA662: SPC cable with data switch (40" / 1m)
- 05CZA663: SPC cable with data switch (80" / 2m)



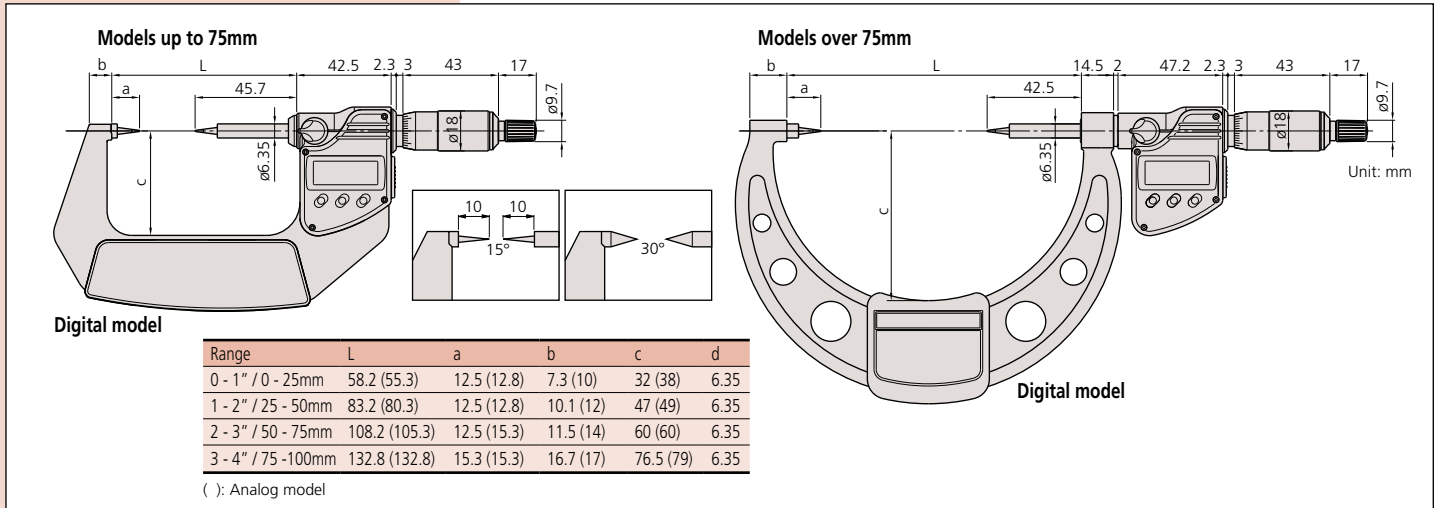
Tip angle: 15° (R0.3mm)



Tip angle: 30° (R0.3mm)



## DIMENSIONS



### Technical Data

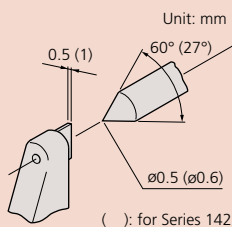
Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005" / 0.001mm or 0.001mm  
 Graduation\*\*: 0.01mm  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 (3 years: Quickmike type)  
 Dust/Water protection level\*: IP65 / IP54  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero / ABS (342-271 342-371), Data hold, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (40" / 1m)
- 05CZA663**: SPC cable with data switch (80" / 2m)
- 937387**: SPC cable for Quickmike type (40" / 1m)
- 965013**: SPC cable for Quickmike type (80" / 2m)

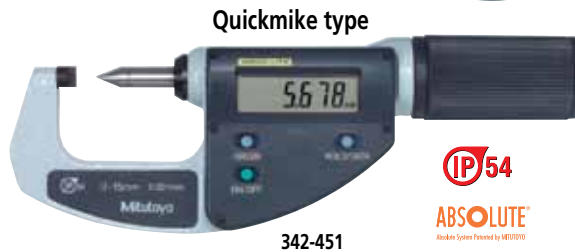


# Crimp Height Micrometers

## SERIES 342, 142, 112 — Point Spindle and Blade Anvil

### FEATURES

- IP54/65 water/dust protection (Series 342).
- Measures the height of crimp contacts.
- With Ratchet Stop for constant force.
- With SPC output (Series 342).
- With digit counter (Series 142).
- Supplied in fitted plastic case.



### SPECIFICATIONS

Metric	Digital model				
Range	Resolution	Order No.	Accuracy	Mass (g)	
0 - 20mm	0.001mm	<b>342-271</b>	±3µm	270	

Metric	Quickmike type				
Range	Resolution	Order No.	Accuracy	Mass (g)	
0 - 15mm	0.001mm	<b>342-451</b>	±3µm	275	

Metric	Mechanical counter model				
Range	Graduation	Order No.	Accuracy	Mass (g)	
0 - 25mm	0.01mm	<b>142-402</b>	±3µm	200	
0 - 25mm	0.001mm	<b>142-403*</b>	±3µm	200	

\* 0.001mm reading is obtained with vernier.

Inch/Metric	Digital model				
Range	Resolution	Order No.	Accuracy	Mass (g)	
0 - 0.8" / 0 - 20mm	.00005" / 0.001mm	<b>342-371</b>	±.00015"	270	

Metric					
Range	Graduation	Order No.	Accuracy	Mass (g)	
0 - 25mm	0.01mm	<b>112-401</b>	±3µm	165	

# V-Anvil Micrometers

## SERIES 314, 114 — 3 Flutes and 5 Flutes

### FEATURES

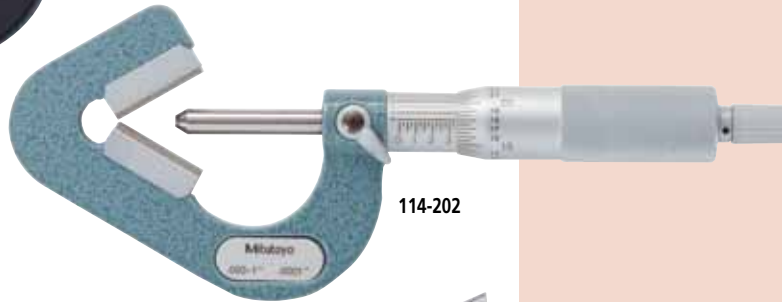
- Measures the outside diameter of cutting tools (such as taps, reamers, end mills) with an odd number of flutes.
- With Ratchet Stop for constant force.
- Supplied with setting standard.
- V-anvils with a centerline groove are available. They are useful for measuring pitch diameters of taps which have a small diameter by using single-wire method.
- With SPC output (Series 314).
- Supplied in fitted plastic case.



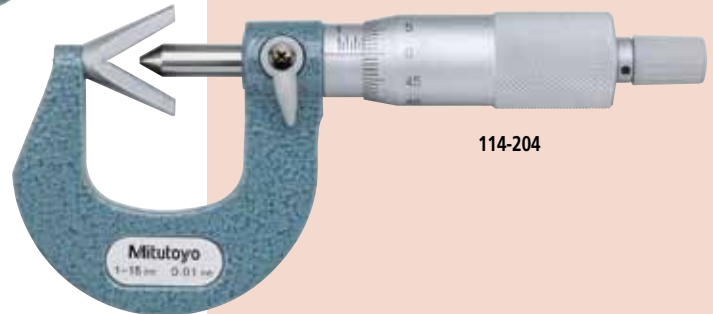
314-351-10



114-121



114-202



114-204

### SPECIFICATIONS

**Metric** Digital model for 3 flutes cutting head

Range	Resolution	Order No.	Accuracy	Remarks	Setting Standard	Mass (g)
1 - 15mm	0.001mm	314-251-10	±4μm	w/Groove	ø5mm	275
		314-261-10	±4μm	—	ø5mm	275
10 - 25mm	0.001mm	314-252-10	±4μm	w/Groove	ø10mm	410
		314-262-10	±4μm	—	ø10mm	410
25 - 40mm	0.001mm	314-253-10	±5μm	—	ø25mm	465

**Inch/Metric** Digital model for 3 flutes cutting head

Range	Resolution	Order No.	Accuracy	Remarks	Setting Standard	Mass (g)
.05 - .6" / 1.27 - 15.24mm	.00005" / 0.001mm	314-351-10	±.0002"	w/Groove	ø.2"	275
		314-361-10	±.0002"	—	ø.2"	275
.4" - 1" / 10.16 - 25.4mm	.00005" / 0.001mm	314-352-10	±.0002"	w/Groove	ø.4"	410
		314-362-10	±.0002"	—	ø.4"	410
1" - 1.6" / 25.4 - 40.64mm	.00005" / 0.001mm	314-353-10	±.00025"	—	ø 1"	465



### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005" / 0.001mm or 0.001mm  
 Graduation\*: .001" or .0001", 0.01mm  
 Flatness (spindle/anvil):  
 Analog model: .000024" / 0.6μm, .00005" / 1.3μm  
 Digital Model: .000012" / 0.3μm, .00004" / 1μm  
 Spindle face: Carbide tipped  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), 938882  
 Battery life\*: Approx. 1.2 years under normal use  
 \*Digital models \*\*Analog models

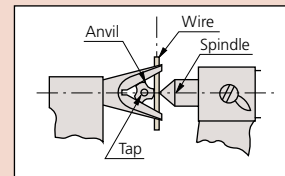
### Function of Digital Model

Zero / ABS, Data hold, Data output, Preset, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error  
 Function lock  
 2 Presets

### Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)  
 05CZA663: SPC cable with data switch (80" / 2m)

### Pitch Diameter Measurement of Tap by Single-wire Method Inch/Metric





## SPECIFICATIONS

**Metric** For 3 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Remarks	Mass (g)
1 - 15mm	0.01mm	<b>114-101</b>	±4μm	ø5mm	w/Groove	120
		<b>114-161</b>	±4μm	ø5mm	—	120
10 - 25mm	0.01mm	<b>114-102</b>	±4μm	ø10mm	w/Groove	280
		<b>114-162</b>	±4μm	ø10mm	—	280
2.3 - 25mm	0.01mm	<b>114-204*</b>	±4μm	ø5mm	—	290
25 - 40mm	0.01mm	<b>114-103</b>	±5μm	ø25mm	—	400
40 - 55mm	0.01mm	<b>114-104</b>	±6μm	ø40mm	—	465
55 - 70mm	0.01mm	<b>114-105</b>	±6μm	ø55mm	—	675
70 - 85mm	0.01mm	<b>114-106</b>	±7μm	ø70mm	—	910

\*Carbide-tipped anvil

**Metric** For 5 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Remarks	Mass (g)
5 - 25mm	0.01mm	<b>114-121</b>	±4μm	ø5mm	w/Groove	255
		<b>114-165</b>	±4μm	ø5mm	—	255
2.3 - 25mm	0.01mm	<b>114-137*</b>	±4μm	ø5mm	—	220
25 - 45mm	0.01mm	<b>114-122</b>	±5μm	ø25mm	—	400
45 - 65mm	0.01mm	<b>114-123</b>	±6μm	ø55mm	—	540
65 - 85mm	0.01mm	<b>114-124</b>	±7μm	ø70mm	—	760

\*Carbide-tipped anvil

**Inch** For 3 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Mass (g)
.05 - .6"	.001"	<b>114-163</b>	±.0002"	ø.2"	120
.09 - 1"	.0001"	<b>114-202*</b>	±.0002"	ø.2"	280
1 - 1.6"	.001"	<b>114-113</b>	±.00025"	ø1"	400
1.6 - 2.2"	.001"	<b>114-114</b>	±.0003"	ø1.6"	465

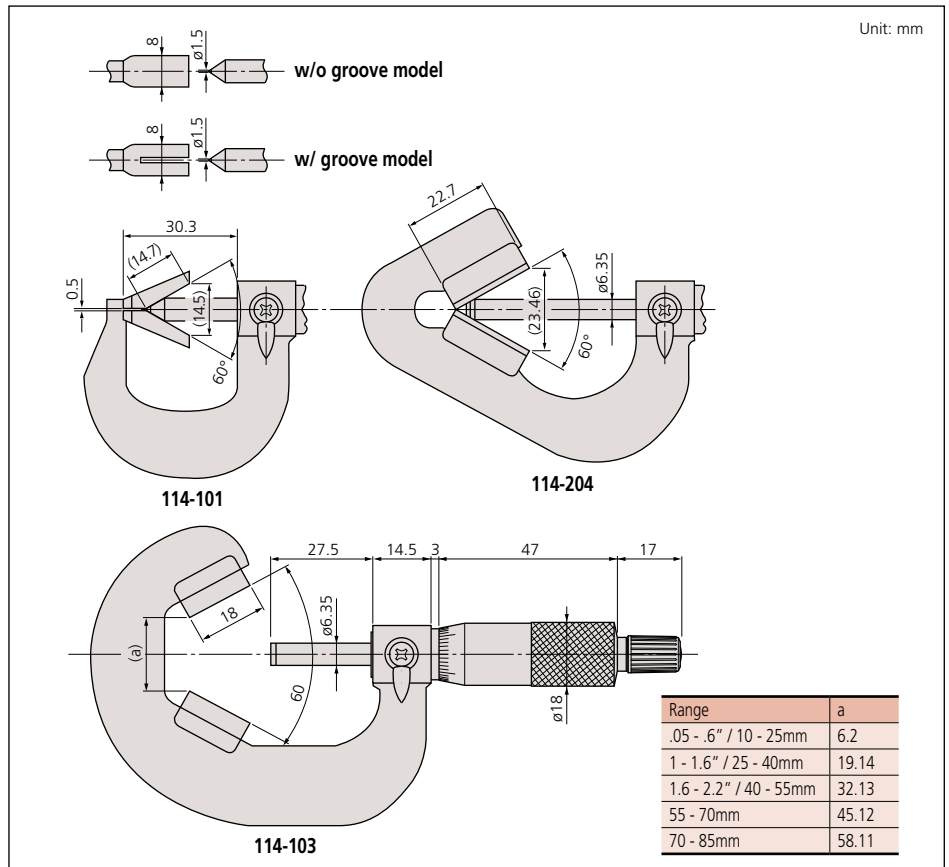
\*Carbide-tipped anvil and .0001" reading is obtained with vernier

**Inch** For 5 flutes cutting head

Range	Graduation	Order No.	Accuracy	Setting Standard	Mass (g)
.09 - 1"	.0001"	<b>114-135*</b>	±.0002"	ø.2"	255
1 - 1.8"	.001"	<b>114-129</b>	±.00025"	ø1"	400

\*Carbide-tipped anvil and .0001" reading is obtained with vernier

## DIMENSIONS



# Limit Micrometers

## SERIES 113

### FEATURES

- Can be used as a GO/±NG gage by setting the upper and lower limits.
- Provided with a standard bar for 25mm - 50mm model.
- Supplied in fitted plastic case.



113-102



### Technical Data

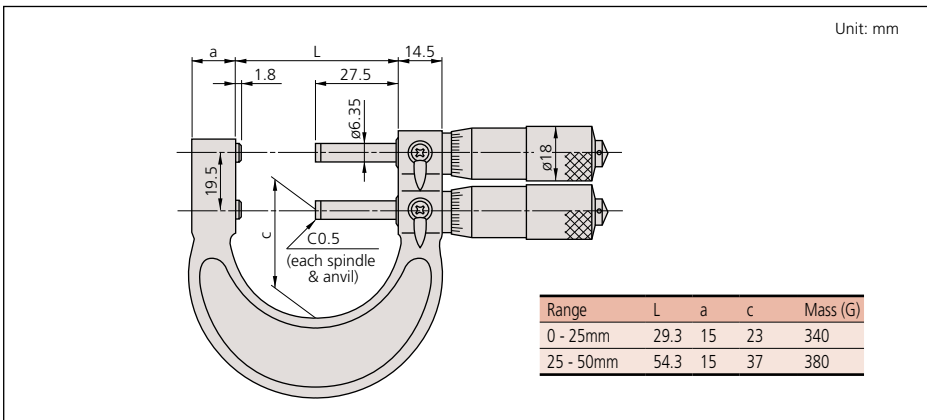
Graduation: 0.01mm  
 Flatness: 0.6μm  
 Parallelism: (3+R/100)μm, R=max. range (mm)  
 Measuring faces: Carbide tipped

### SPECIFICATIONS

Metric

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	113-102	±3μm
25 - 50mm	0.01mm	113-103	±3μm

### DIMENSIONS AND MASS



# Pana Micrometers

## SERIES 116 — Interchangeable Anvil Type

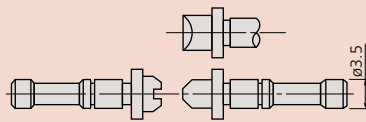
### Technical Data

Graduation: .001" or 0.01mm  
Spindle feed error: .00012" / 3µm

### Optional Accessories

Interchangeable V-anvil and conical spindle tip set:  
For Metric/Unified screw

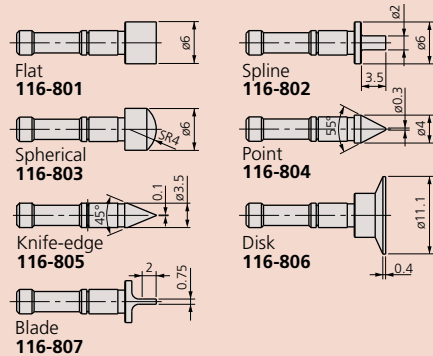
Order No.	Assortment of anvils and tips
<b>116-830</b>	0.4 - 0.5mm/64 - 48TPI ( <b>116-831</b> ) 0.6 - 0.9mm/44 - 28TPI ( <b>116-832</b> ) 1 - 1.75mm/24 - 14TPI ( <b>116-833</b> ) 2 - 3mm/13 - 9TPI ( <b>116-834</b> ) 3.5 - 5mm/8 - 5TPI ( <b>116-835</b> ) 5.5 - 7mm/4.5 - 3.5TPI ( <b>116-836</b> )



**116-830**

Interchangeable anvils set

Order No.	Assortment of anvils
<b>116-800</b>	Flat anvils ( <b>116-801</b> ) Spline anvils ( <b>116-802</b> ) Spherical anvils ( <b>116-803</b> ) Point anvils ( <b>116-804</b> ) Knife-edge anvils ( <b>116-805</b> ) Disk anvils ( <b>116-806</b> ) Blade anvils ( <b>116-807</b> )

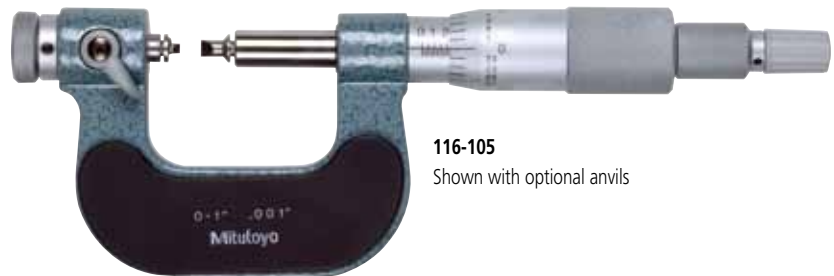


### FEATURES

- Non-rotating spindle with optional seven interchangeable anvils (flat, spline, spherical, point, knife-edge, disk, and blade) for a wide range of applications.
- Interchangeable anvils (pair) are optional.
- With a standard bar except 0-1" and 0 - 25 mm model.
- V-anvils and conical spindle tips (matching pair) for screw thread measurement are also available.
- With Ratchet Stop for constant force.



**116-101**



**116-105**

Shown with optional anvils

### SPECIFICATIONS

Metric			
Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	<b>116-101</b>	±4µm
25 - 50mm	0.01mm	<b>116-102</b>	±4µm

Inch			
Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	<b>116-105</b>	±.0002"
1" - 2"	.001"	<b>116-106</b>	±.0002"

# Spherical Face Micrometers

SERIES 395, 295, 115

## FEATURES

- IP65 water/dust protection (Series 395).
- Designed to measure the wall thickness of various tubing.
- With Ratchet Stop for constant force.
- With SPC output (Series 395).
- With digit counter (Series 295).
- With a standard bar except 0 - 1" and 0 - 25mm model.
- Supplied in fitted plastic case.



115-153



395-371

## SPECIFICATIONS

Metric Digital model with spherical anvil					
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	395-251 <sup>S-F</sup>	±2µm	D: 15mm	270
		395-271 <sup>S-S</sup>	±2µm	D: 15mm	270
25 - 50mm	0.001mm	395-252 <sup>S-F</sup>	±2µm	D: 15mm	330
		395-272 <sup>S-S</sup>	±2µm	D: 15mm	330
50 - 75mm	0.001mm	395-253 <sup>S-F</sup>	±2µm	D: 19mm	470
		395-273 <sup>S-S</sup>	±2µm	D: 19mm	470
75 - 100mm	0.001mm	395-254 <sup>S-F</sup>	±3µm	D: 20mm	625
		395-274 <sup>S-S</sup>	±3µm	D: 20mm	625

S-F: Spherical anvil and flat spindle  
S-S: Spherical anvil and spherical spindle

Metric Mechanical counter model with spherical anvil					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	295-115 <sup>S-F</sup>	±3µm	D: 10mm	220
		295-215 <sup>S-S</sup>	±3µm	D: 10mm	220

S-F: Spherical anvil and flat spindle  
S-S: Spherical anvil and spherical spindle

Metric With spherical anvil					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	115-115 <sup>S-F</sup>	±3µm	D: 10mm	180
		115-215 <sup>S-S</sup>	±3µm	D: 10mm	180
25 - 50mm	0.01mm	115-116 <sup>S-F</sup>	±3µm	D: 11mm	240
		115-216 <sup>S-S</sup>	±3µm	D: 11mm	240
50 - 75mm	0.01mm	115-117 <sup>S-F</sup>	±3µm	D: 17mm	315
		115-217 <sup>S-S</sup>	±3µm	D: 17mm	315
75 - 100mm	0.01mm	115-118 <sup>S-F</sup>	±4µm	D: 18mm	375
		115-218 <sup>S-S</sup>	±4µm	D: 18mm	375

S-F: Spherical anvil and flat spindle  
S-S: Spherical anvil and spherical spindle

Inch/Metric Digital model with spherical anvil					
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	395-351 <sup>S-F</sup>	±.0001"	D: .59"	270
		395-371 <sup>S-S</sup>	±.0001"	D: .59"	270
1" - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	395-352 <sup>S-F</sup>	±.0001"	D: .59"	330
		395-372 <sup>S-S</sup>	±.0001"	D: .59"	330
2" - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	395-353 <sup>S-F</sup>	±.0001"	D: .75"	470
		395-373 <sup>S-S</sup>	±.0001"	D: .75"	470
3" - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	395-354 <sup>S-F</sup>	±.00015"	D: .79"	625
		395-374 <sup>S-S</sup>	±.00015"	D: .79"	625

S-F: Spherical anvil and flat spindle  
S-S: Spherical anvil and spherical spindle

Inch Mechanical counter model with spherical anvil					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	295-153 <sup>S-F*</sup>	±.00015"	D: .40"	220
		295-253 <sup>S-S*</sup>	±.00015"	D: .40"	220

S-F: Spherical anvil and flat spindle  
S-S: Spherical anvil and spherical spindle  
\*.0001" reading is obtained with vernier.

Inch With spherical anvil					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	115-153 <sup>S-F*</sup>	±.00015"	D: .40"	180
0 - 1"	.0001"	115-253 <sup>S-S*</sup>	±.00015"	D: .40"	180
1 - 2"	.001"	115-242 <sup>S-S</sup>	±.00015"	D: .44"	240
2 - 3"	.001"	115-243 <sup>S-S</sup>	±.00015"	D: .67"	315

S-F: Spherical anvil and flat spindle  
S-S: Spherical anvil and spherical spindle  
\*.0001" reading is obtained with vernier.



## Technical Data

Accuracy: Refer to the list of specifications.  
Flatness: .000024" / 0.6µm  
Display\*: LCD  
Battery\*: SR44 (1 pc.), 938882  
Battery life\*: Approx. 1.2 years under normal use  
Dust/Water protection level\*: IP65  
\*Digital models \*\*Analog models

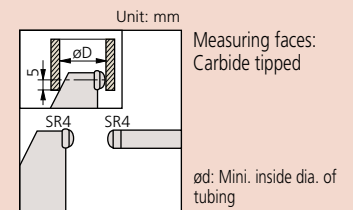
## Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

05CZA662: SPC cable with data switch (40" / 1m)  
05CZA663: SPC cable with data switch (80" / 2m)

Spherical anvil-spindle type



# Tube Micrometers

**SERIES 395, 295, 115— Spherical and Cylindrical Anvils**

## Technical Data

Accuracy: Refer to the list of specifications.  
 Flatness: .000024" / 0.6µm  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

## Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

**05CZA662**: SPC cable with data switch (40" / 1m)  
**05CZA663**: SPC cable with data switch (80" / 2m)

## FEATURES

- IP65 water/dust protection (Series 395).
- Designed to measure the wall thickness of various tubing.
- The Tube Micrometers have two combinations of measuring faces (carbide-tipped): spherical-flat type, and spherical-spherical type.
- With Ratchet Stop for constant force.
- With SPC output (Series 395).
- With digit counter (Series 295).
- With a standard bar except 0 - 1" and 0 - 25mm model.
- Supplied in fitted plastic case.

### Pin Anvil Type



395-261



Type A



Type B



Type C



Type D

### Metric Digital model with cylindrical anvil

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	395-261	±3µm	Type A	270
		395-262	±3µm	Type B	270
		395-263	±3µm	Type C	310
		395-264	±3µm	Type D	310

### Inch/Metric Digital model with cylindrical anvil

Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	395-362	±.00015"	Type B	270
		395-363	±.00015"	Type C	310
		395-364	±.00015"	Type D	310

### Metric Mechanical counter model

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	295-302	±3µm	Type A	210

### Inch Mechanical counter model

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	295-313	±.00015"	Type C	210
		295-314	±.00015"	Type D	210

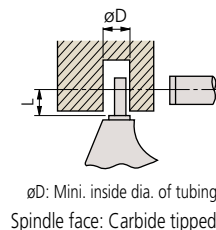
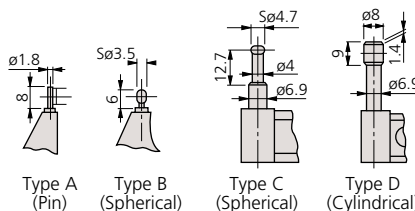
### Metric With cylindrical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	115-302	±3µm	Type A	180
		115-308	±3µm	Type B	180
		115-315	±3µm	Type C	180
		115-316	±3µm	Type D	180
25 - 50mm	0.01mm	115-303	±3µm	Type A	240
		115-309	±3µm	Type B	240

### Inch With cylindrical anvil

Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.001"	115-305	±.00015"	Type A	180
	.0001"	115-313*	±.00015"	Type C	180
	.0001"	115-314*	±.00015"	Type D	180

\*.0001" reading is obtained with vernier.



Anvil	D	L
Type A	2	4
Type B	3.6	4
Type C	4.8	12
Type D	8.2	22

øD: Mini. inside dia. of tubing  
 Spindle face: Carbide tipped



# "Uni-Mike"

## SERIES 317, 117 — Interchangeable Anvil Type

### FEATURES

- IP65 water/dust protection (Series 317).
- Measures tubing thickness, shoulder-edge distance, rivet head height, etc. with interchangeable anvils (flat anvil, rod anvil, V-anvil).
- Supplied with Flat Anvil (**201216**) and Rod Anvil: .118"/ø3mm dia. rod anvil (**201217**) for 0-1"/0-25mm models, .197"/ø5mm (**201379**) for 1-2" / 25-50mm model.
- With special Disk Anvils. The Uni-Mike is used as a height micrometer. The disks have a lapped, mirror surface.
- With a standard bar except 0-1" and 0-25mm model.
- Supplied in fitted plastic case.



317-351



117-107

### SPECIFICATIONS

**Metric** Digital model with ratchet stop

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	<b>317-251</b>	±4μm	335
25 - 50mm	0.001mm	<b>317-252</b>	±4μm	360

Excluding quantizing error

**Metric** With ratchet stop

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	<b>117-101</b>	±4μm	255
25 - 50mm	0.01mm	<b>117-102</b>	±4μm	320

**Inch/Metric** Digital model with friction thimble

Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>317-351</b>	±.0002"	340
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>317-352</b>	±.0002"	365

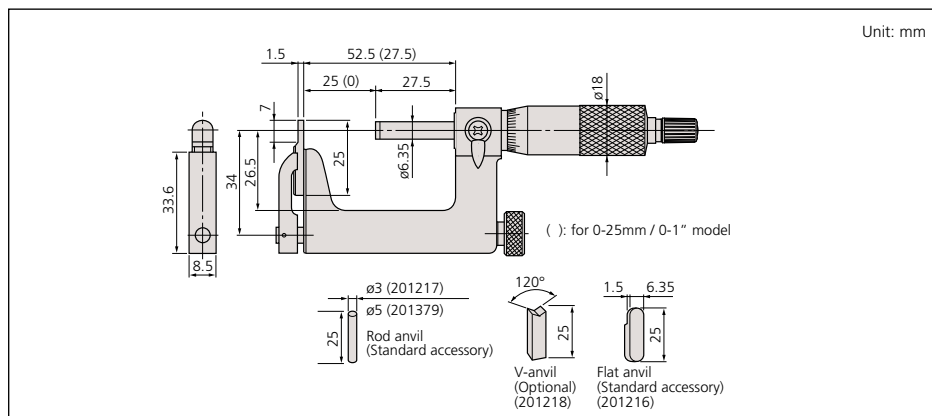
Excluding quantizing error

**Inch** With friction thimble

Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.0001"	<b>117-107*</b>	±.0002"	255
1 - 2"	.0001"	<b>117-108*</b>	±.0002"	320

\*.0001" reading is obtained with vernier

### DIMENSIONS



### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005"/0.001mm or 0.001mm  
 Graduation\*\*: .0001" or 0.01mm  
 Spindle face: Carbide tipped  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories

- 05CZA662**: SPC cable with data switch (40" / 1m)\*
- 05CZA663**: SPC cable with data switch (80" / 2m)\*
- 201218**: V-anvil
- 950758**: Disc. anvil for 1" / 25m models
- 950759**: Disc. anvil for 2" / 50m models

\*Only for digital models

### Applications



Using flat anvil (201216)



With the disc. anvil (950758) Shown above, the Uni-Mike is used as a height micrometer

# Sheet Metal Micrometers

**SERIES 389, 119, 118**

## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005"/0.001mm or 0.001mm  
 Graduation\*\*: 0.01mm, .001" or .0001"  
 Flatness: .000024" / 0.6µm for models with 6" / 150mm throat  
 .00004" / 1µm for models with 12" / 300mm throat  
 Parallelism: .00012" / 3µm  
 Measuring faces: Carbide tipped  
 Display\*: LCD  
 Battery\*: SR44 [1 pc. (2 pcs.: **389-513** and **389-713**), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 (1.8 years: **389-513** and **389-713**)  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

## Function of Digital Model

Origin-set, Zero-setting, Data hold, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

**05CZA662**: SPC cable with data switch (40" / 1m)  
**05CZA663**: SPC cable with data switch (80" / 2m)  
**937387**: SPC cable for **389-513/389-713** (40" / 1m)  
**965013**: SPC cable for **389-513/389-713** (80" / 2m)

### Anvil-Spindle Combinations



Standard, Flat-Flat



Spherical-Flat (S-F)



Spherical-Spherical (S-S)

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

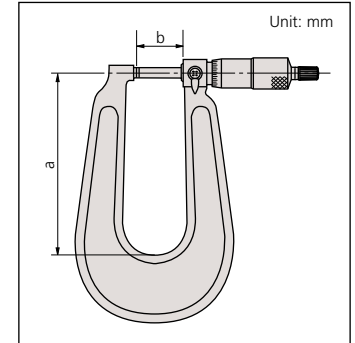


## FEATURES

- Measures thickness of sheet metal, paper, plastic, and rubber parts.
- With Ratchet Stop for constant force.
- With a standard bar except for 0 - 1" / 0 - 25mm model.
- IP65 water/dust protection (Series 389\*).
- \*Except for **389-513** / **389-713**.
- Supplied in fitted plastic case.



## DIMENSIONS



## SPECIFICATIONS

Metric	Digital model				
Range	Resolution	Order No.	Accuracy	a/b	
0 - 25mm	0.001mm	<b>389-251</b>	±4µm	160/27.5mm	
0 - 25mm	0.001mm	<b>389-261</b> <sup>S-F</sup>	±4µm	160/27.5mm	
0 - 25mm	0.001mm	<b>389-271</b> <sup>S-S</sup>	±4µm	160/27.5mm	
0 - 25mm	0.001mm	<b>389-513</b>	±5µm	330/35mm	
25 - 50mm	0.001mm	<b>389-252</b>	±4µm	165/27.5mm	
25 - 50mm	0.001mm	<b>389-262</b> <sup>S-F</sup>	±4µm	165/27.5mm	
25 - 50mm	0.001mm	<b>389-272</b> <sup>S-S</sup>	±4µm	165/27.5mm	

S-F: Spherical anvil and flat spindle  
 S-S: Spherical anvil and spherical spindle

Metric	Dial reading model				
Range	Graduation	Order No.	Accuracy	a/b	
0 - 25mm	0.01mm	<b>118-101</b>	±4µm	110/27.5mm	
0 - 25mm	0.01mm	<b>118-102</b>	±4µm	160/27.5mm	
0 - 25mm	0.01mm	<b>118-114</b> <sup>S-F</sup>	±4µm	160/27.5mm	
0 - 25mm	0.01mm	<b>118-118</b> <sup>S-S</sup>	±4µm	160/27.5mm	
0 - 25mm	0.01mm	<b>118-103</b>	±5µm	330/35mm	
25 - 50mm	0.01mm	<b>118-110</b>	±4µm	165/27.5mm	

S-F: Spherical anvil and flat spindle  
 S-S: Spherical anvil and spherical spindle

Metric	Dial reading model				
Range	Graduation	Order No.	Accuracy	Throat	
0 - 25mm	0.01mm	<b>119-202</b> <sup>S-F</sup>	±4µm	50mm	

S-F: Spherical anvil and flat spindle



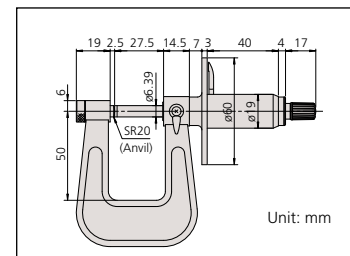
Inch/Metric	Digital model				
Range	Resolution	Order No.	Accuracy	a/b	
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>389-351</b>	±.0002"	6.3"/1.08"	
		<b>389-361</b> <sup>S-F</sup>	±.0002"	6.3"/1.08"	
		<b>389-371</b> <sup>S-S</sup>	±.0002"	6.3"/1.08"	
		<b>389-713</b>	±.00025"	13"/1.38"	
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>389-352</b>	±.0002"	6.5"/1.08"	
		<b>389-362</b> <sup>S-F</sup>	±.0002"	6.5"/1.08"	
		<b>389-372</b> <sup>S-S</sup>	±.0002"	6.5"/1.08"	

S-F: Spherical anvil and flat spindle  
 S-S: Spherical anvil and spherical spindle

Inch	Dial reading model				
Range	Graduation	Order No.	Accuracy	a/b	
0 - 1"	.0001"	<b>118-129</b>	±.0002"	6.3"/1.08"	
		<b>118-116</b> <sup>S-F</sup>	±.0002"	6.3"/1.08"	
		<b>118-120</b> <sup>S-S</sup>	±.0002"	6.3"/1.08"	
	.001"	<b>118-107</b>	±.00025"	13"/1.38"	
1" - 2"	.001"	<b>118-112</b>	±.0002"	6.5"/1.08"	

S-F: Spherical anvil and flat spindle  
 S-S: Spherical anvil and spherical spindle  
 \*.0001" reading is obtained with vernier.

## DIMENSIONS AND MASS



# Blade Micrometers

## SERIES 422,122 — Non-Rotating Spindle Type

### FEATURES

- The anvil and the spindle have a blade for measuring the groove diameter of shafts, keyways, and other hard-to-reach areas.
- With Ratchet Stop for constant force.
- Speedy spindle feed of .4"/10mm /rev. (Quickmike type).
- With a standard bar except 0 - 1" and 0 - 25mm model.
- Supplied in fitted plastic case.

#### Quickmike type



422-421



422-330



122-125



**ABSOLUTE**  
Made in Spain. Patented by METFORM

### Technical Data

Accuracy: Refer to the list of specifications.  
Resolution\*: .00005"/0.001mm or 0.001mm  
Graduation\*\*: .0001" or 0.01mm  
Parallelism: .00012" / 3µm for models up to 3" / 75mm  
(3+R/100)µm for models over 75mm,  
R=max. range (mm) .00016" for 4" models  
Display\*: LCD  
Battery\*: SR44 (1 pc.), **938882**  
Battery life\*: Approx. 1.2 years under normal use  
\*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

- 05CZA662**: SPC cable with data switch (1m / 40")
- 05CZA663**: SPC cable with data switch (2m / 80")
- 937387**: SPC cable for Quickmike type (1m / 40")
- 965013**: SPC cable for Quickmike type (2m / 80")

### SPECIFICATIONS

Metric Digital model					
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.001mm	422-230	±3µm	Type A	365
		422-260	±3µm	Type B	365
		422-270	±3µm	Type C	365
		422-271	±3µm	Type D	365
25 - 50mm	0.001mm	422-231	±3µm	Type A	565
		422-261	±3µm	Type B	565
50 - 75mm	0.001mm	422-232	±3µm	Type A	465
75 - 100mm	0.001mm	422-233	±4µm	Type A	580

Metric Quickmike type				
Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 30mm	0.001mm	422-411	±3µm	350
25 - 55mm	0.001mm	422-412	±3µm	490

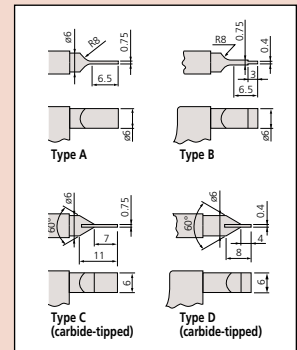
Metric					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 25mm	0.01mm	122-101	±3µm	Type A	260
		122-111	±3µm	Type B	260
		122-161	±3µm	Type C	275
		122-141	±3µm	Type D	275
25 - 50mm	0.01mm	122-102	±3µm	Type A	300
		122-112	±3µm	Type B	300
		122-162	±3µm	Type C	315
		122-142	±3µm	Type D	315
50 - 75mm	0.01mm	122-103	±3µm	Type A	360
75 - 100mm	0.01mm	122-104	±4µm	Type A	525
100 - 125mm	0.01mm	122-105	±4µm	Type A	670
125 - 150mm	0.01mm	122-106	±4µm	Type A	775
150 - 175mm	0.01mm	122-107	±5µm	Type A	950
175 - 200mm	0.01mm	122-108	±5µm	Type A	1140

Inch/Metric Digital model					
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	422-330	±.00015"	Type A	365
		422-360	±.00015"	Type B	365
		422-370	±.00015"	Type C	365
		422-371	±.00015"	Type D	365
		422-331	±.00015"	Type A	565
1 - 2" / 25.4 - 50.8mm	0.001mm	422-361	±.00015"	Type B	565
		422-332	±.00015"	Type A	465
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	422-333	±.0002"	Type A	580
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	422-333	±.0002"	Type A	580

Inch/Metric Quickmike type					
Range	Resolution	Order No.	Accuracy	Remarks	Mass (g)
0 - 1.2" / 0 - 30.48mm	.00005" / 0.001mm	422-421	±.00015"	Type A	350
1 - 2.2" / 25.4 - 55.88mm	.00005" / 0.001mm	422-422	±.00015"	Type A	490

Inch					
Range	Graduation	Order No.	Accuracy	Remarks	Mass (g)
0 - 1"	.0001"	122-125	±.00015"	Type A	260
		122-135	±.00015"	Type B	260
		122-151	±.00015"	Type D	275
1 - 2"	.0001"	122-126	±.00015"	Type A	300
		122-136	±.00015"	Type B	300
2 - 3"	.0001"	122-127	±.00015"	Type A	360
3 - 4"	.0001"	122-128	±.0002"	Type A	525

### TYPE AND DIMENSIONS



# Disk Micrometers

## SERIES 323, 223, 123 - Rotating Spindle

### FEATURES

- Diameter of measuring disk: .787" / 20mm
- .028" / 0.7mm (1mm: models over 100mm) edge thickness to enter narrow recesses.
- With Ratchet Stop for constant force.
- With a standard bar except for 0 - 1" / 0 - 25mm model.
- With SPC output (Series 323).
- The Series 223 is provided with a mechanical digit counter for quick reading of measurements.
- Supplied in fitted plastic case. (Over 100mm models supplied wooden cases)

### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005"/0.001mm or 0.001mm  
 Graduation\*\*\*: .001" or 0.01mm  
 Flatness: .00004" / 1µm for models up to .00004" / 100mm  
 .000063" / 1.6µm for models over 4" / 100mm  
 Parallelism: .00016" / 4µm for models up to 2" / 50mm  
 .00024" for models up to 4"  
 (4+R/50)µm for models up to 100mm  
 (5+R/75)µm for models over 100mm, R=max. range (mm)  
 Measurable module: 0.5-6 (0.7-11: models over 100mm)  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA662:** SPC cable with data switch (40" / 1m)  
**05CZA663:** SPC cable with data switch (80" / 2m)



123-125



123-103



323-350



223-125

### SPECIFICATIONS

Metric		Digital model			
Range	Resolution	Order No.	Accuracy	Mass (g)	
0 - 25mm	0.001mm	<b>323-250</b>	±4µm	290	
25 - 50mm	0.001mm	<b>323-251</b>	±4µm	355	
50 - 75mm	0.001mm	<b>323-252</b>	±6µm	555	
75 - 100mm	0.001mm	<b>323-253</b>	±6µm	610	

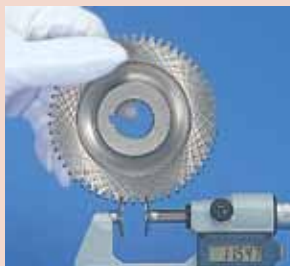
Inch/Metric		Digital model			
Range	Resolution	Order No.	Accuracy	Mass (g)	
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>323-350</b>	±.0002"	290	
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>323-351</b>	±.0002"	355	
2 - 3" / 50 - 76.2mm	.00005" / 0.001mm	<b>323-352</b>	±.0003"	555	
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	<b>323-353</b>	±.0003"	610	

Metric		Mechanical counter model			
Range	Graduation	Order No.	Accuracy	Mass (g)	
0 - 25mm	0.01mm	<b>223-101</b>	±4µm	260	
25 - 50mm	0.01mm	<b>223-102</b>	±4µm	290	

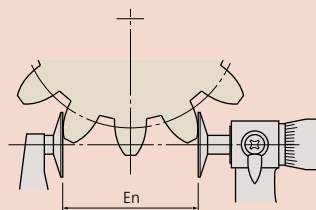
Inch		Mechanical counter model			
Range	Graduation	Order No.	Accuracy	Mass (g)	
0 - 1"	.001"	<b>223-125</b>	±.0002"	260	

Metric					
Range	Graduation	Order No.	Accuracy	Mass (g)	
0 - 25mm	0.01mm	<b>123-101</b>	±4µm	200	
		<b>123-113*</b>	±4µm	230	
25 - 50mm	0.01mm	<b>123-102</b>	±4µm	250	
		<b>123-114*</b>	±4µm	270	
		<b>123-103</b>	±6µm	300	
50 - 75mm	0.01mm	<b>123-115*</b>	±6µm	320	
		<b>123-104</b>	±6µm	375	
75 - 100mm	0.01mm	<b>123-116*</b>	±6µm	390	
		<b>123-105</b>	±7µm	520	
125 - 150mm	0.01mm	<b>123-106</b>	±7µm	570	
150 - 175mm	0.01mm	<b>123-107</b>	±8µm	730	
175 - 200mm	0.01mm	<b>123-108</b>	±8µm	890	
200 - 225mm	0.01mm	<b>123-109</b>	±8µm	1000	
225 - 250mm	0.01mm	<b>123-110</b>	±9µm	1200	
250 - 275mm	0.01mm	<b>123-111</b>	±9µm	1410	
275 - 300mm	0.01mm	<b>123-112</b>	±9µm	1680	

Inch					
Range	Graduation	Order No.	Accuracy	Mass (g)	
0 - 1"	.001"	<b>123-125</b>	±.0002"	200	
1 - 2"	.001"	<b>123-126</b>	±.0002"	250	
2 - 3"	.001"	<b>123-127</b>	±.0003"	300	
3 - 4"	.001"	<b>123-128</b>	±.0003"	375	



### Root tangent length of gear (En)



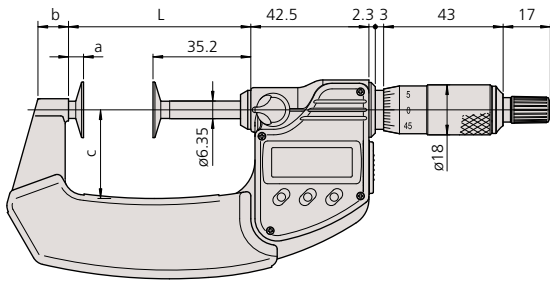
Note: Root tangent length measurement is not available for some types of gears.

\*The measuring disks have carbide tips.  
 Note: The disk diameter of models over 100mm is 30mm.

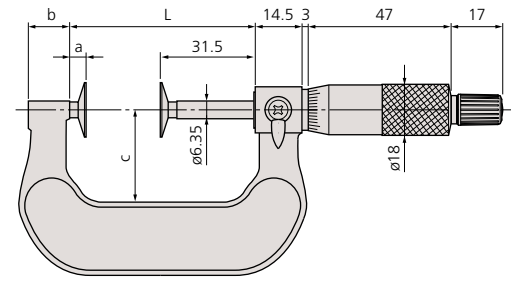
## DIMENSIONS

Unit: mm

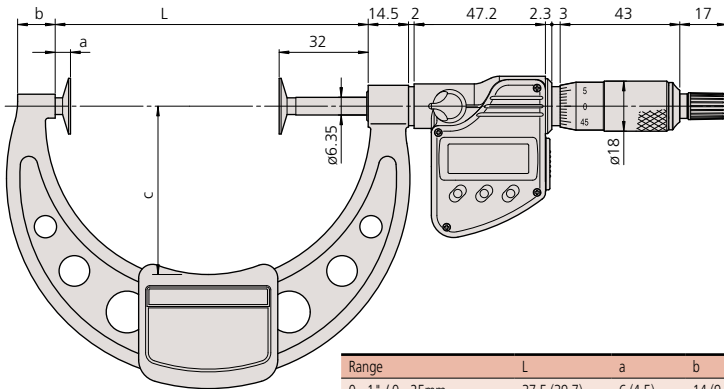
Digital models up to 75mm



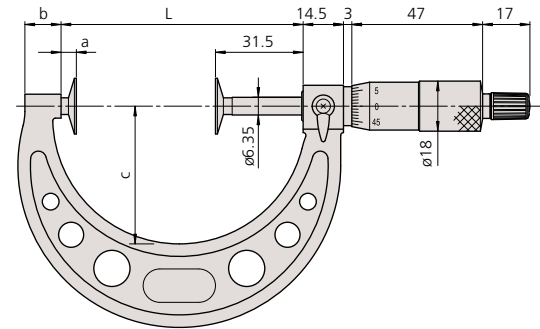
Analog models up to 50mm



Digital models up to 75mm

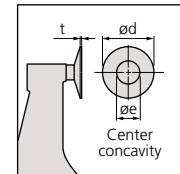


Analog over 50mm



Range	L	a	b	c	ød	øe	t
0 - 1" / 0 - 25mm	37.5 (39.7)	6 (4.5)	14 (9.2)	25 (25.4)	20	8/9.8*	0.7
1 - 2" / 25 - 50mm	62.5 (65.6)	6 (5.4)	14 (11)	32 (31.9)	20	8/9.8*	0.7
2 - 3" / 50 - 75mm	87 (90.7)	5.5 (5.5)	11 (12.2)	49 (50)	20	8/9.8*	0.7
3 - 4" / 75 - 100mm	112 (112.5)	5.5 (5.5)	11 (13.5)	63 (60.5)	20	8/9.8*	0.7
4 - 5" / 100 - 125mm	137.5	6	12	79	30	12	1
5 - 6" / 125 - 150mm	162.5	6	15	94	30	12	1
6 - 7" / 150 - 175mm	187.5	6	16	106	30	12	1
7 - 8" / 175 - 200mm	212.5	6	15	118	30	12	1
8 - 9" / 200 - 225mm	237.5	6	14	130	30	12	1
9 - 10" / 225 - 250mm	262.5	6	14	143	30	12	1
10 - 11" / 250 - 275mm	287.5	6	15	156	30	12	1
11 - 12" / 275 - 300mm	312.5	6	15	169	30	12	1

Data in ( ) applies to those with carbide tipped disks.



# Paper Thickness Micrometers

**SERIES 169 — Non-Rotating Spindle Type Designed for Paper Thickness Measurement**

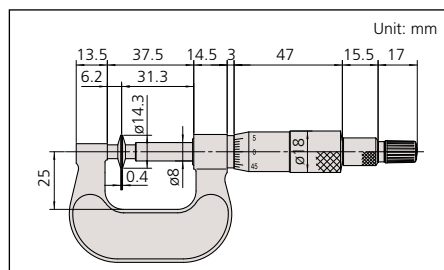
## FEATURES

- Non-rotating spindle.
- With Ratchet Stop for constant force.
- Supplied in fitted plastic case.



169-101

## DIMENSIONS



## SPECIFICATIONS

Metric				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	169-101	±4µm	230g

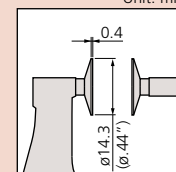
Inch				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	169-103	±.0002"	230g

## Technical Data

Graduation: .001" or 0.01mm  
 Flatness: .00004" / 1µm  
 Parallelism: .00012" / 3µm  
 Measuring Force: 8.02 ±0.8N  
 53.9KPa ±4.9 KPa



Unit: mm



( ) : Inch model





### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .00005"/0.001mm or 0.001mm  
 Graduation\*\*: .001" or 0.01mm  
 Flatness: .00004" / 1µm  
 Parallelism: 4µm / .00016" for models up to 2" / 50mm  
 6µm / .00024" for models over 2" / 50mm

Measurable module: 0.5-6

Display\*: LCD

Battery\*: SR44 (1 pc.), **938882**

Battery life\*: Approx. 1.2 years under normal use  
 (1 year: Quickmike type, 3 years: Quickmike type with fine-loading)

Series 227: Refer to page B-6 for more information.

\*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero / ABS, Data hold, Data output, inch/mm conversion (on inch/metric models only)

Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA662**: SPC cable with data switch (40" / 1m)

**05CZA663**: SPC cable with data switch (80" / 2m)

**937387**: SPC cable for Quickmike type (40" / 1m)

**965013**: SPC cable for Quickmike type (80" / 2m)

# Disk Micrometers

## SERIES 369, 227, 169 — Non-Rotating Spindle Type

### FEATURES

- The Disk Micrometer is designed to easily measure root tangent length of spur gears and helical gears.
- Non-rotating spindle eliminates torque on workpiece.
- With standard bar except 0 - .6" / 0 - 15mm, 0 - 1" / 0 - 25mm, 0 - 1.2" / 0 - 30mm models.
- Speedy spindle feed of 10mm/rev. (Quickmike type).
- Diameter of measuring disk: .787" / 20mm
- With Ratchet Stop for constant force.
- With SPC output (Series 369).
- Supplied in fitted plastic case



369-350



Quickmike type

369-421

### Quickmike type with adjustable measuring force



227-221



169-201

### SPECIFICATIONS

Metric		Digital model		
Range	Resolution	Order No.	Accuracy	
0 - 25mm	0.001mm	<b>369-250</b>	±4µm	
25 - 50mm	0.001mm	<b>369-251</b>	±4µm	
50 - 75mm	0.001mm	<b>369-252</b>	±6µm	
75 - 100mm	0.001mm	<b>369-253</b>	±6µm	

Metric		Quickmike type		
Range	Resolution	Order No.	Accuracy	
0 - 30mm	0.001mm	<b>369-411</b>	±4µm	
25 - 55mm	0.001mm	<b>369-412</b>	±4µm	

Metric		Quickmike type with adjustable measuring force			
Range	Resolution	Order No.	Accuracy	Measuring force	
0 - 15mm	0.001mm	<b>227-221</b>	±4µm	0.5N - 2.5N	
		<b>227-222</b>	±4µm	2N - 10N	

Metric				
Range	Graduation	Order No.	Accuracy	
0 - 25mm	0.01mm	<b>169-201</b>	±4µm	
25 - 50mm	0.01mm	<b>169-202</b>	±4µm	
50 - 75mm	0.01mm	<b>169-205</b>	±6µm	
75 - 100mm	0.01mm	<b>169-207</b>	±6µm	

Inch/Metric		Digital model		
Range	Resolution	Order No.	Accuracy	
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>369-350</b>	±.0002"	
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>369-351</b>	±.0002"	
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	<b>369-352</b>	±.0003"	
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	<b>369-353</b>	±.0003"	

Inch/Metric		Quickmike type		
Range	Resolution	Order No.	Accuracy	
0 - 1.2" / 0 - 30.48mm	.00005" / 0.001mm	<b>369-421</b>	±.0002"	
1 - 2.2" / 25.4 - 55.88mm	.00005" / 0.001mm	<b>369-422</b>	±.0002"	

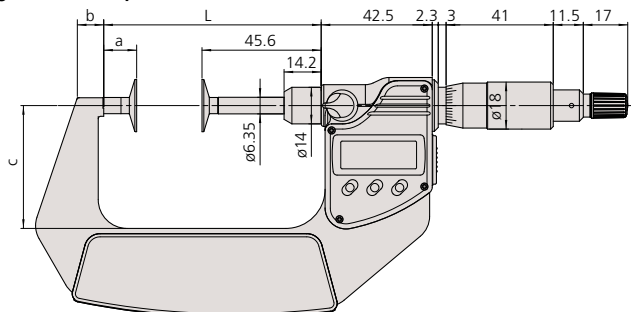
Inch/Metric		Quickmike type with adjustable measuring force			
Range	Resolution	Order No.	Accuracy	Measuring force	
0 - .6" / 10 - 15mm	.00005" / 0.001mm	<b>227-231</b>	±.0002"	0.5N - 2.5N	
		<b>227-232</b>	±.0002"	2N - 10N	

Inch				
Range	Graduation	Order No.	Accuracy	
0 - 1"	.001"	<b>169-203</b>	±.0002"	
1 - 2"	.001"	<b>169-204</b>	±.0002"	
2 - 3"	.001"	<b>169-206</b>	±.0003"	
3 - 4"	.001"	<b>169-208</b>	±.0003"	

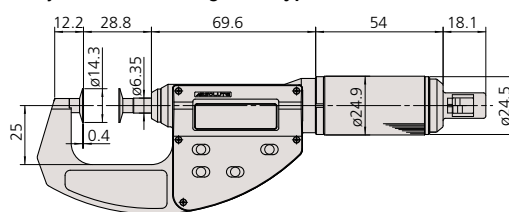
# DIMENSIONS AND MASS

Unit: mm

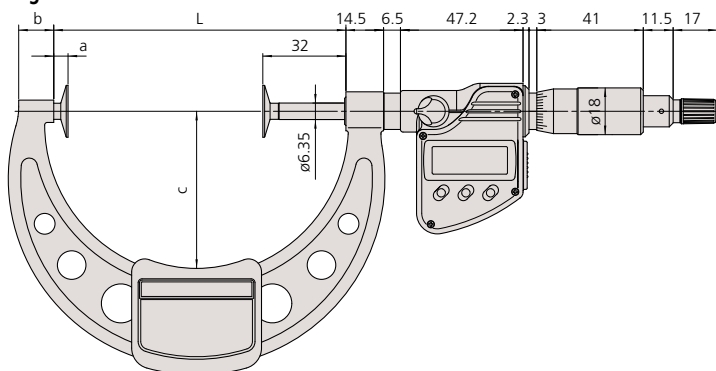
**Digital models up to 75mm**



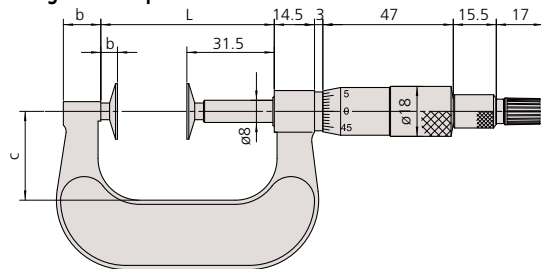
**Adjustable measuring force type**



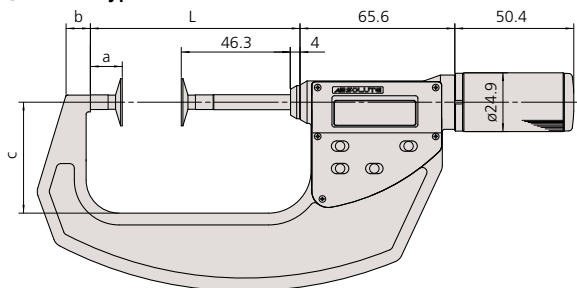
**Digital models over 75mm**



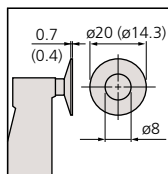
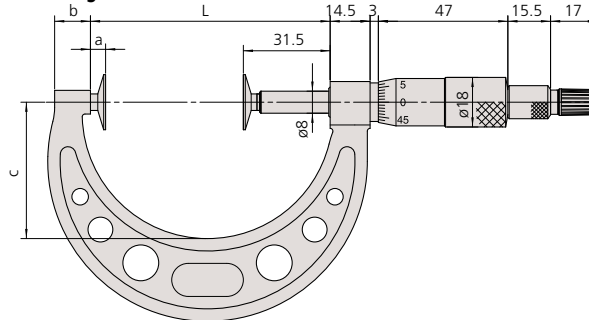
**Analog models up to 50mm**



**Quickmike type**



**Analog models over 50mm**



( ) : Adjustable measuring force type

**Digital model**

Range	L	a	b	c	Mass (g)
0 - 25mm / 0 - 1"	58.5	12.9	7	32	340
25 - 50mm / 1 - 2"	83.5	12.9	9.8	47	480
50 - 75mm / 2 - 3"	108.5	12.9	11.2	60	635
75 - 100mm / 3 - 4"	112.5	5.5	13.5	60.5	475
0 - 30mm* / 0 - 1.2"	63.8	13.5	8.5	36	360
25 - 55mm* / 1 - 2.2"	88.8	13.5	10.3	47	490

\*Quickmike type

**Analog model**

Range	L	a	b	c	Mass (g)
0 - 25mm / 0 - 1"	37.5	6	13.5	25	230
25 - 50mm / 1 - 2"	62.5	6	13.5	32	280
50 - 75mm / 2 - 3"	87	5.5	13	49.5	315
75 - 100mm / 3 - 4"	112	5.5	13	63.5	400

# Gear Tooth Micrometers

**SERIES 324, 124 — Interchangeable Ball Anvil-Spindle Tip Type**

## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: 0.001mm or .00005"/0.001mm  
 Graduation\*\*\*: 0.01mm  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

## Function of Digital Model

Zero / ABS, Data hold, Data output, Preset, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error  
 Function Lock  
 2 Presets

## Optional Accessories

**05CZA662**: SPC cable with data switch (1m / 40")\*  
**05CZA663**: SPC cable with data switch (2m / 80")\*  
 \*Only for digital models



## FEATURES

- IP65 water/dust protection (Series 324).
- Measures over-pin diameter of gears with precision steel (carbide) ball-tipped measuring faces.
- With a standard bar except 0 - 25mm and 0 - 1" model
- Interchangeable ball anvil-spindle tips for various gear modules (0.5 - 5.25) are optional.
- With Ratchet Stop for constant force.
- With SPC output (Series 324).
- Supplied in fitted plastic case (0 - 150mm / 4" model 008 150mm model are wooden case).



**324-351-10**

Shown with optional ball anvils



**124-173**

Shown with optional ball anvils

## SPECIFICATIONS

Metric		Digital model		
Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	<b>324-251-10</b>	±4μm	400
25 - 50mm	0.001mm	<b>324-252-10</b>	±4μm	490
50 - 75mm	0.001mm	<b>324-253-10</b>	±4μm	530
75 - 100mm	0.001mm	<b>324-254-10</b>	±5μm	600

Inch/Metric		Digital model		
Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1" / 0 - 25mm	.00005"/0.001mm	<b>324-351-10</b>	±.0002"	400
1 - 2" / 25 - 50mm	.00005"/0.001mm	<b>324-352-10</b>	±.0002"	490
2 - 3" / 50 - 75mm	.00005"/0.001mm	<b>324-353-10</b>	±.0002"	530
3 - 4" / 75 - 100mm	.00005"/0.001mm	<b>324-354-10</b>	±.00025"	600

## Metric

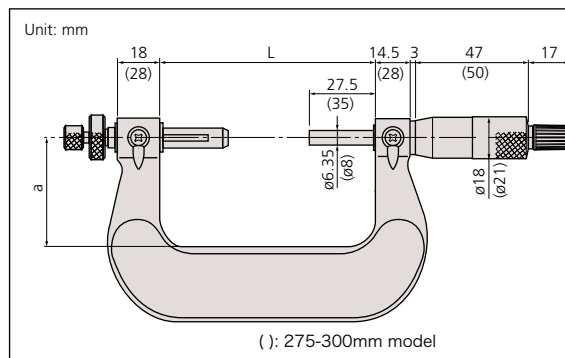
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	<b>124-173</b>	±4μm	295
25 - 50mm	0.01mm	<b>124-174</b>	±4μm	400
50 - 75mm	0.01mm	<b>124-175</b>	±4μm	460
75 - 100mm	0.01mm	<b>124-176</b>	±5μm	540
100 - 125mm	0.01mm	<b>124-177</b>	±5μm	640
125 - 150mm	0.01mm	<b>124-178</b>	±5μm	760
150 - 175mm	0.01mm	<b>124-179</b>	±6μm	900
175 - 200mm	0.01mm	<b>124-180</b>	±6μm	1060
200 - 225mm	0.01mm	<b>124-181</b>	±6μm	1230
225 - 250mm	0.01mm	<b>124-182</b>	±7μm	1430
250 - 275mm	0.01mm	<b>124-183</b>	±7μm	1620
275 - 300mm	0.01mm	<b>124-195</b>	±7μm	2070

## Interchangeable ball anvil-spindle tip set:

Diameter of ball anvil	Order No.	Gear module	Diametral pitch
0.8mm	<b>124-801*</b>	0.5 - 0.55	50
1mm	<b>124-802*</b>	0.6 - 0.65	45
1.191mm (3/64")	<b>124-803*</b>	0.7 - 0.8	35 - 30
1.5mm	<b>124-821*</b>	0.9 - 1	28 - 26
1.588mm (1/16")	<b>124-804*</b>	0.9 - 1	28 - 26
2mm	<b>124-805*</b>	1.25	22
2.381mm (3/32")	<b>124-806</b>	1.5	17
2.5mm	<b>124-822</b>	1.5	17
3mm	<b>124-807</b>	1.75	15
3.175mm (1/8")	<b>124-808</b>	—	14
3.5mm	<b>124-823</b>	2	13
3.969mm (5/32")	<b>124-809</b>	2	13
4mm	<b>124-810</b>	2.25	11
4.5mm	<b>124-824</b>	2.5	10
4.763mm (3/16")	<b>124-811</b>	2.5	10
5mm	<b>124-812</b>	2.75	9
5.556mm (7/32")	<b>124-813</b>	3.0 - 3.25	8
6mm	<b>124-814</b>	3.5	7
6.35mm (1/4")	<b>124-815</b>	3.75	7
7mm	<b>124-816</b>	4.0	6.5
7.144mm (9/32")	<b>124-817</b>	4.25	6
7.938mm (5/16")	<b>124-818</b>	4.5	5.5
8mm	<b>124-819</b>	4.75	5.5
8.731mm (11/32")	<b>124-820</b>	5.0 - 5.25	5

\*Carbide-tipped type

## DIMENSIONS AND MASS



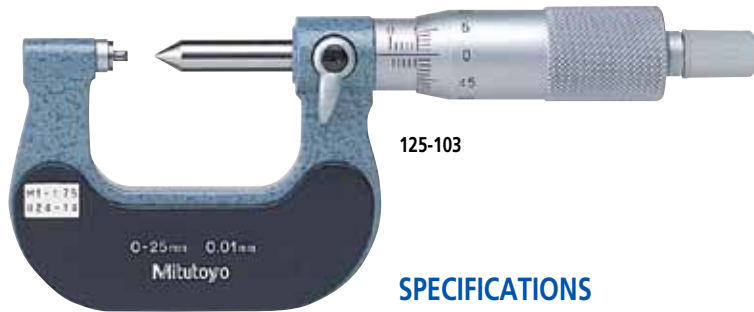
Range	L	a	Mass (g)
0 - 25mm	64.5	32	295
25 - 50mm	90	45	400
50 - 75mm	115.6	65	460
75 - 100mm	140.6	79	540
100 - 125mm	165.6	93	640
125 - 150mm	190.5	105	760
150 - 175mm	215.5	120	900
175 - 200mm	240.5	130	1060
200 - 225mm	265.5	147	1230
225 - 250mm	290.5	165	1430
250 - 275mm	315.5	171	1620
275 - 300mm	353	187	2070

# Screw Thread Micrometers

## SERIES 125

### FEATURES

- Provided with a 60 degree V-anvil and conical spindle for easily measuring pitch diameters of metric or unified screw threads.
- With Ratchet Stop for constant force.
- With a standard bar for zero point adjustment except 0 - 25mm model.
- Supplied in fitted plastic case.



125-103

### SPECIFICATIONS

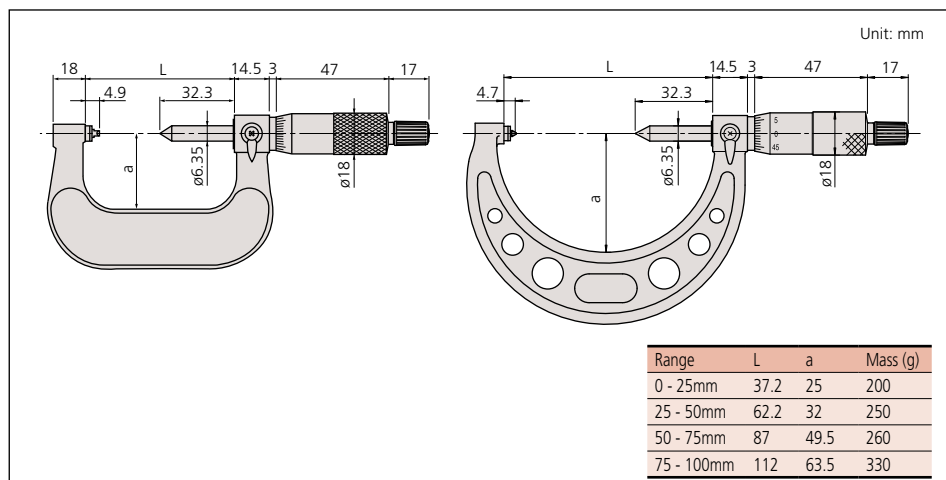
Metric			
Range	Graduation	Order No.	Screw to be measured (Metric/Unified)
0 - 25mm	0.01mm	125-101	0.4 - 0.5mm/64 - 48TPI
		125-102	0.6 - 0.9mm/44 - 28TPI
		125-103	1 - 1.75mm/24 - 14TPI
		125-104	2 - 3mm/13 - 9TPI
		125-105	3.5 - 5mm/8 - 5TPI
25 - 50mm	0.01mm	125-106	0.4 - 0.5mm/64 - 48TPI
		125-107	0.6 - 0.9mm/44 - 28TPI
		125-108	1 - 1.75mm/24 - 14TPI
		125-109	2 - 3mm/13 - 9TPI
		125-110	3.5 - 5mm/8 - 5TPI
50 - 75mm	0.01mm	125-111	0.6 - 0.9mm/44 - 28TPI
		125-112	1 - 1.75mm/24 - 14TPI
		125-113	2 - 3mm/13 - 9TPI
		125-114	3.5 - 5mm/8 - 5TPI
		125-115	5.5 - 7mm/4.5 - 3.5TPI
75 - 100mm	0.01mm	125-116	0.6 - 0.9mm/44 - 28TPI
		125-117	1 - 1.75mm/24 - 14TPI
		125-118	2 - 3mm/13 - 9TPI
		125-119	3.5 - 5mm/8 - 5TPI
		125-120	5.5 - 7mm/4.5 - 3.5TPI

### Technical Data

Accuracy:  $\pm(2+R/75)\mu\text{m}$ , R=max. range (mm)  
 Graduation: 0.01mm  
 Spindle feed error: 3 $\mu\text{m}$



### DIMENSIONS AND MASS



# Screw Thread Micrometers

**SERIES 326, 126 — Interchangeable Anvil-Spindle Tip Type**

## Technical Data

Resolution\*: 0.001mm or .00005"/0.001mm  
 Graduation\*\*: 0.01mm or .001"  
 Spindle feed error: 3µm / .00012"  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 1.2 years under normal use  
 Dust/Water protection level\*: IP65  
 \*Digital models \*\*Analog models

## Function of Digital Model

Zero / ABS, Data hold, Data output, 2 Presets, Function Lock.  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

**05CZA662**: SPC cable with data switch (1m / 40")\*  
**05CZA663**: SPC cable with data switch (2m / 80")\*  
 \*Only for digital models  
 (See page B-51.): Standard for screw thread micrometer

## FEATURES

- IP65 water/dust protection (Series 326).
- 60 degree or 55 degree V-anvil and conical spindle (interchangeable) are optional, which are made of high-grade steel, hardened and precision ground.
- With Ratchet Stop for constant force.
- With SPC output (Series 326).
- With a standard bar except 0 - 25mm and 0 - 1" model.
- Supplied in fitted plastic case.



**126-125**  
Shown with optional anvils

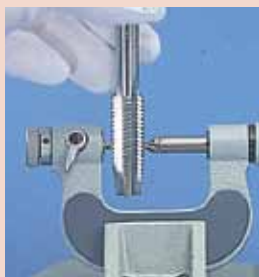


**326-351-10**

## SPECIFICATIONS

Metric		Digital model		
Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 25mm	0.001mm	<b>326-251-10</b>	±4µm	350
25 - 50mm	0.001mm	<b>326-252-10</b>	±4µm	380
50 - 75mm	0.001mm	<b>326-253-10</b>	±4µm	470
75 - 100mm	0.001mm	<b>326-254-10</b>	±5µm	510

Inch/Metric		Digital model		
Range	Resolution	Order No.	Accuracy	Mass (g)
0 - 1" / 0 - 25.4mm	.00005" / 0.001mm	<b>326-351-10</b>	±.0002"	350
1 - 2" / 25.4 - 50.8mm	.00005" / 0.001mm	<b>326-352-10</b>	±.0002"	380
2 - 3" / 50.8 - 76.2mm	.00005" / 0.001mm	<b>326-353-10</b>	±.0002"	470
3 - 4" / 76.2 - 101.6mm	.00005" / 0.001mm	<b>326-354-10</b>	±.00025"	510



Anvil-spindle tip set:  
For Metric/Unified screws (60° threads)

Order No.	Included in set
<b>126-800</b>	0.4 - 0.5mm/64 - 48TPI ( <b>126-801</b> ) 0.6 - 0.9mm/44 - 28TPI ( <b>126-802</b> ) 1 - 1.75mm/24 - 14TPI ( <b>126-803</b> ) 2 - 3mm/13 - 9TPI ( <b>126-804</b> ) 3.5 - 5mm/8 - 5TPI ( <b>126-805</b> ) 5.5 - 7mm/4.5 - 3.5TPI ( <b>126-806</b> )

For Whitworth screws (55° threads)

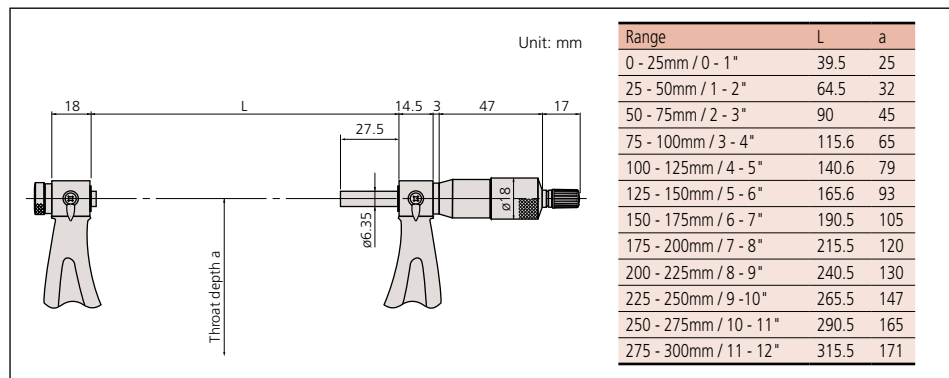
Order No.	Assortment of anvil-spindle tips
<b>126-810</b>	60 - 48TPI ( <b>126-811</b> ) 48 - 40TPI ( <b>126-812</b> ) 40 - 32TPI ( <b>126-813</b> ) 32 - 24TPI ( <b>126-814</b> ) 24 - 18TPI ( <b>126-815</b> ) 18 - 14TPI ( <b>126-816</b> ) 14 - 10TPI ( <b>126-817</b> ) 10 - 7TPI ( <b>126-818</b> ) 7 - 4.5TPI ( <b>126-819</b> ) 4.5 - 3.5TPI ( <b>126-820</b> )

Metric				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 25mm	0.01mm	<b>126-125</b>	±4µm	240
25 - 50mm	0.01mm	<b>126-126</b>	±4µm	290
50 - 75mm	0.01mm	<b>126-127</b>	±4µm	390
75 - 100mm	0.01mm	<b>126-128</b>	±5µm	450
100 - 125mm	0.01mm	<b>126-129</b>	±5µm	530
125 - 150mm	0.01mm	<b>126-130</b>	±5µm	620
150 - 175mm	0.01mm	<b>126-131</b>	±6µm	730
175 - 200mm	0.01mm	<b>126-132</b>	±6µm	860
200 - 225mm	0.01mm	<b>126-133</b>	±6µm	1,030
225 - 250mm	0.01mm	<b>126-134</b>	±7µm	1,200
250 - 275mm	0.01mm	<b>126-135</b>	±7µm	1,370
275 - 300mm	0.01mm	<b>126-136</b>	±7µm	1,540

Inch				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	<b>126-137</b>	±.0002"	240
1 - 2"	.001"	<b>126-138</b>	±.0002"	290
2 - 3"	.001"	<b>126-139</b>	±.0002"	390
3 - 4"	.001"	<b>126-140</b>	±.00025"	450
4 - 5"	.001"	<b>126-141</b>	±.00025"	530
5 - 6"	.001"	<b>126-142</b>	±.00025"	620

Inch With anvil set (126 - 800)				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 1"	.001"	<b>126-901</b>	±.0002"	240
1 - 2"	.001"	<b>126-902</b>	±.0002"	290
2 - 3"	.001"	<b>126-903</b>	±.0002"	390
3 - 4"	.001"	<b>126-904</b>	±.00025"	450
4 - 5"	.001"	<b>126-905</b>	±.00025"	530
5 - 6"	.001"	<b>126-906</b>	±.00025"	620

## DIMENSIONS



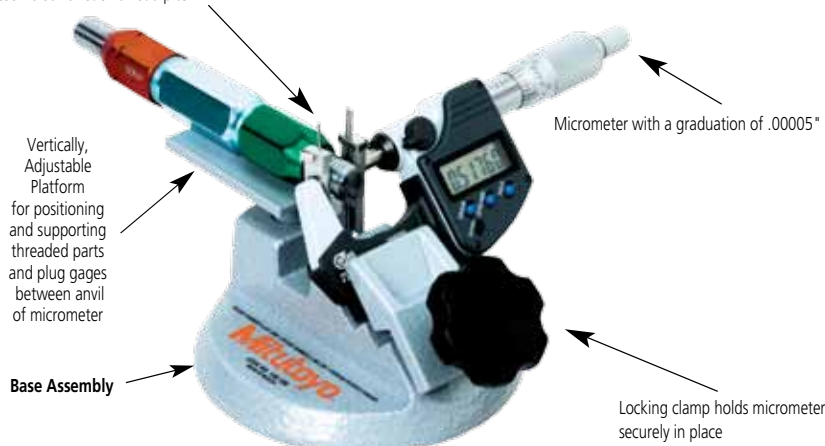


# 3-Wire Thread Measuring System

## FEATURES

- Fast and accurate method of thread measuring available for use with Micrometer

Wire holders and 3 thread measuring wires assembled for each thread pitch



## INCH STANDARD HOLDERS AND WIRES SETS

Order No.	Threads Per Inch	Thread Measuring Wire Diameter
64AAA201	120	.00481
64AAA202	100	.00577
64AAA203	95	.00601
64AAA204	90	.00642
64AAA205	80	.00722
64AAA206	72	.00802
64AAA207	64	.00902
64AAA208	56	.01031
64AAA209	50	.01155
64AAA210	48	.01203
64AAA211	44	.01312
64AAA212	40	.01443
64AAA213	36	.01604
64AAA214	32	.01804
64AAA215	30	.01925
64AAA216	28	.02062
64AAA217	27	.02138
64AAA218	26	.02221
64AAA219	24	.02406
64AAA220	22	.02624
64AAA221	20	.02887
64AAA222	18	.03208
64AAA223	16	.03608
64AAA224	14	.04124
64AAA225	13	.04441
64AAA226	12	.04811
64AAA227	11.5	.05020
64AAA228	11	.05249
64AAA229	10	.05774
64AAA230	9	.06415
64AAA231	8	.07217
64AAA232	7.5	.07698
64AAA233	7	.08248
64AAA234	6	.09623
64AAA235	5.5	.10497
64AAA236	5	.11547

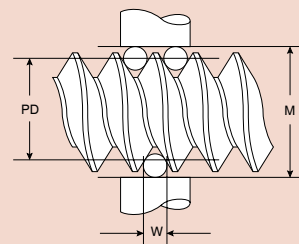
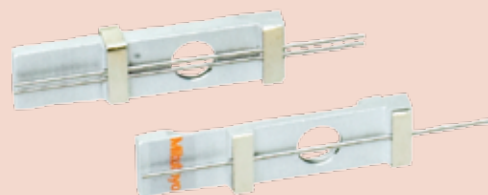
Compatible with Micrometers with 0.25" Anvils & Spindles

**Stand Assembly**  
Order No. 156-106

## METRIC HOLDERS AND WIRES SETS

Order No.	Pitch	mm Diameter	Inch Diameter
64AAA251	.2mm	.1155	.00455
64AAA252	.225mm	.1299	.00511
64AAA253	.25mm	.1443	.00568
64AAA254	.30mm	.1732	.00682
64AAA255	.35mm	.2021	.00796
64AAA256	.40mm	.2309	.00909
64AAA257	.45mm	.2598	.01023
64AAA258	.50mm	.2887	.01137
64AAA259	.55mm	.3175	.01250
64AAA260	.60mm	.3464	.01364
64AAA261	.70mm	.4041	.01591
64AAA262	.75mm	.4330	.01705
64AAA263	.80mm	.4619	.01818
64AAA264	.85mm	.4907	.01932
64AAA265	.90mm	.5196	.02046
64AAA266	1.00mm	.5774	.02273
64AAA267	1.25mm	.7217	.02841
64AAA268	1.50mm	.8660	.03410
64AAA269	1.75mm	1.0104	.03978
64AAA270	2.00mm	1.1547	.04546
64AAA271	2.50mm	1.4434	.05683
64AAA272	3.00mm	1.7321	.06819
64AAA273	3.50mm	2.0207	.07956
64AAA274	4.00mm	2.3094	.09092

## Individual Holder and Wire Set



P.D. = Pitch Diameter  
M = Measurement over wires  
W = Wire diameter  
C = Constant  
C = .86603 x Pitch (inches) -3W  
P.D. = M-C  
W = .57735 x P

## Applications

- Measure set of thread plug gages and working thread plug gages
- Monitor the wear on working thread plug gages
- Monitor and control pitch diameter variation during thread fabrication
- Reduce measurement time to a fraction of the time normally taken using the traditional three wire method
- Use in conjunction with "Go" and "No Go" thread ring gages to control thread size to the most demanding specifications
- Determine out of roundness and taper that may exist in threaded parts
- Applications for preplating and post plating thread measurement

## Tolerance of Wires:

- Diameter +/- .000010"
- Roundness +/- .000010"
- Surface finish 2 micro inches AA, lapped.
- Hardness HRC 59-64
- Certification of accuracy included.
- Traceable to NIST.
- Meets or exceeds all ANSI and ISO specs.

# Can Seam Micrometers

## SERIES 147

### FEATURES

- Measures the width, height, and depth of can seams.
- Three types of micrometers are available for: steel cans, aluminum cans, and sprayer cans.
- Supplied in fitted carton.

### Technical Data

Accuracy:  $\pm 0.0012'' / \pm 3\mu\text{m}$   
 Graduation:  $.001'' / 0.01\text{mm}$

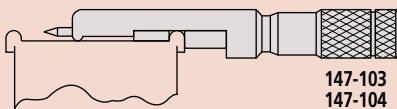


147-103

### SPECIFICATIONS

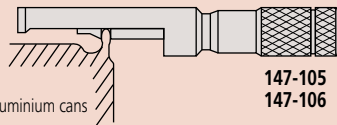
Metric			
Range	Graduation	Order No.	Remarks
0 - 13mm	0.01mm	147-103	for steel cans
		147-105	for aluminum cans
		147-202	for sprayer cans

Inch			
Range	Graduation	Order No.	Remarks
0 - .5"	.001"	147-104	for steel cans
		147-106	for aluminum cans
		147-201	for sprayer cans



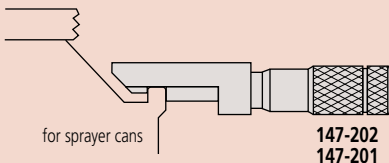
for cans  
(for depth measurements up to 5mm)

147-103  
147-104



for aluminium cans

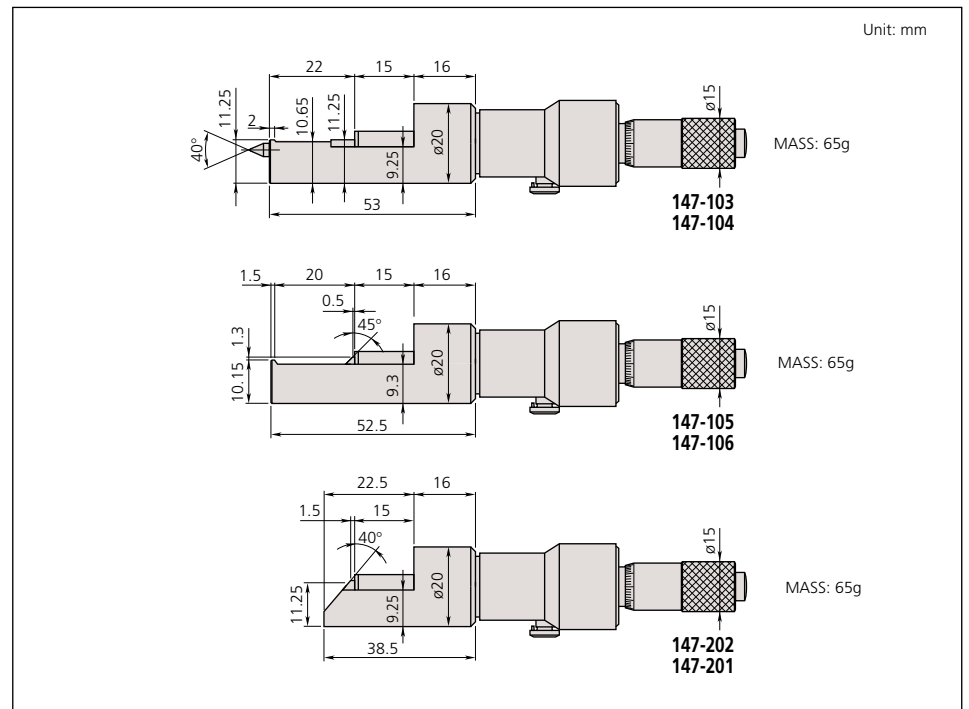
147-105  
147-106



for sprayer cans

147-202  
147-201

### DIMENSIONS AND MASS



# Hub Micrometers

## SERIES 147

### FEATURES

- Measures hub thickness and shoulders inside a bore.
- With Ratchet Stop for constant force.
- With a standard bar except for 0 - 1" / 0 - 25mm model.
- Supplied in fitted plastic case.



147-301



147-351

### SPECIFICATIONS

Metric			
Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	147-301	±2µm
25 - 50mm	0.01mm	147-302	±2µm
50 - 75mm	0.01mm	147-303	±2µm
75 - 100mm	0.01mm	147-304	±3µm

Inch			
Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	147-351	±.0001"
1 - 2"	.001"	147-352	±.0001"
2 - 3"	.001"	147-353	±.0001"
3 - 4"	.001"	147-354	±.00015"

# Wire Micrometers

## SERIES 147

### FEATURES

- Designed for measuring wire thickness.
- Also used to measure the diameter of a small ball.
- Supplied in fitted plastic case.



147-402



147-401

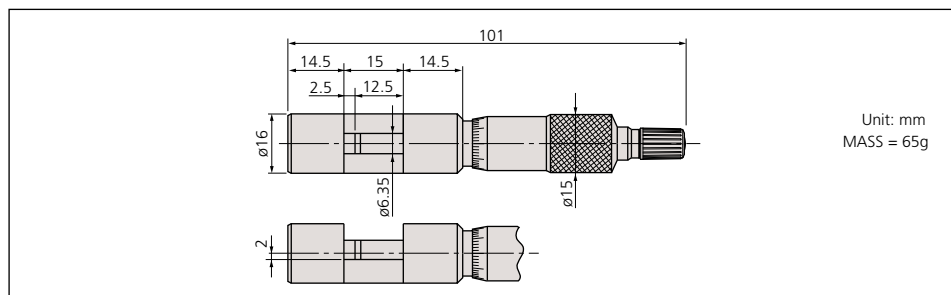
### SPECIFICATIONS

Metric				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - 10mm	0.01mm	147-401	±3µm	65

Inch				
Range	Graduation	Order No.	Accuracy	Mass (g)
0 - .4"	.0001"	147-402*	±.00015"	65

\* .0001" reading is obtained with vernier

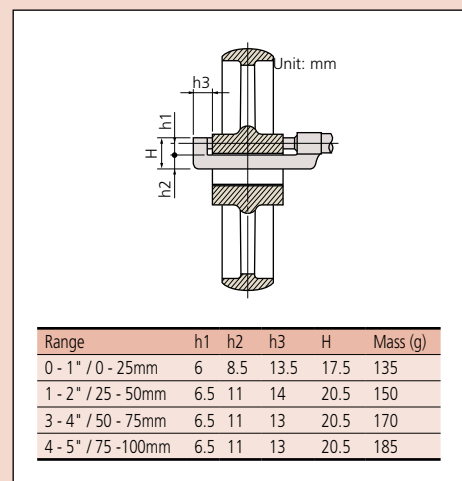
### DIMENSIONS AND MASS



Unit: mm  
MASS = 65g

### Technical Data

Accuracy: Refer to the list of specifications.  
 Graduation: 0.01mm / .001"  
 Flatness: 0.6µm / .000024"  
 Parallelism: (2+R/100)µm, R=max. range (mm)  
 [.00008" + .00004" (L/4)]", L = Max. range (inch).  
 Measuring faces: Carbide tipped



### Technical Data

Graduation: .0001" or 0.01mm  
 Flatness: .000024" / 0.6µm  
 Parallelism: .00005" / 1.3µm  
 Measuring faces: Carbide tipped



# Digit Outside Micrometers

## SERIES 193

### Technical Data

Counter reading: 0.01mm or .001"  
 Graduation: 0.01mm, 0.001mm, .001" or .0001"  
 Flatness: 0.6μm / .000024"  
 Parallelism: (2+R/100)μm, R=max. range (mm)  
 [.00008" + .00004" (L/4)]", L= max. range (inch)  
 Measuring faces: Carbide tipped



193-916

### FEATURES

- Mechanical digit counter with 0.01mm or .001" reading for quick and error-free reading.
- With a standard bar except for 0-25mm / 0 -1" model.
- Supplied in fitted plastic case.



193-211

### SPECIFICATIONS

**Metric** \_\_\_\_\_ With ratchet stop

Range	Graduation	Order No.	Accuracy
0 - 25mm	0.01mm	<b>193-101</b>	±2μm
	0.001mm	<b>193-111*</b>	±2μm
25 - 50mm	0.01mm	<b>193-102</b>	±2μm
	0.001mm	<b>193-112*</b>	±2μm
50 - 75mm	0.01mm	<b>193-103</b>	±2μm
	0.001mm	<b>193-113*</b>	±2μm
75 - 100mm	0.01mm	<b>193-104</b>	±3μm
	0.001mm	<b>193-114*</b>	±3μm

\*0.001mm reading is obtained with vernier.

**Metric** \_\_\_\_\_ Micrometer sets

Range	Order No.	Included in set
0 - 75mm (3 pcs./set)	<b>193-901</b>	• <b>193-101, 193-102, 193-103</b> • 2 micrometer standards
0 - 75mm (3 pcs./set)	<b>193-915</b>	• <b>193-111, 193-112, 193-113,</b> • 2 micrometer standards
0 - 100mm (4 pcs./set)	<b>193-902</b>	• <b>193-101, 193-102, 193-103,</b> <b>193-104</b> • 3 micrometer standards
0 - 100mm (4 pcs./set)	<b>193-916</b>	• <b>193-111, 193-112, 193-113,</b> <b>193-114</b> • 3 micrometer standards

**Inch** \_\_\_\_\_ With ratchet stop

Range	Graduation	Order No.	Accuracy
2 - 3"	.0001"	<b>193-213*</b>	±.0001"
3 - 4"	.0001"	<b>193-214*</b>	±.00015"

\*.0001" reading is obtained with vernier.

**Inch** \_\_\_\_\_ With friction thimble

Range	Graduation	Order No.	Accuracy
0 - 1"	.001"	<b>193-201</b>	±.0001"
	.0001"	<b>193-211*</b>	±.0001"
1 - 2"	.0001"	<b>193-212*</b>	±.0001"

\*.0001" reading is obtained with vernier.

**Inch** \_\_\_\_\_ Micrometer sets

Range	Order No.	Included in set
0 - 3" (3 pcs./set)	<b>193-923</b>	• <b>193-211, 193-212, 193-213</b> • 2 micrometer standards

### DIMENSIONS AND MASS

**Models up to 100mm / 4"**

Unit: mm

Range	L	a	b	c	Mass (g)
0 - 25mm / 0 - 1"	30	2.5	5	26	224
25 - 50mm / 1 - 2"	55	2.5	8	32	275
50 - 75mm / 2 - 3"	80	2.5	9	45	379
75 - 100mm / 3 - 4"	105	2.5	9	57	489

Note: The shape of the thimble changes on the model with Friction Thimble.

## FEATURES

- Retractable anvil with indicator for three-wire measurements of pitch diameter of precision screws and parallelism measurements.
- With a standard bar except for 0 - 25mm / 0 - 1" model.
- IP protection level: 54
- Supplied in fitted plastic case.



510-131

## SPECIFICATIONS

Metric			
Range	Graduation	Order No.	Indicating range
0 - 25mm	0.001mm	510-121*/510-141	±0.060mm
25 - 50mm	0.001mm	510-122	±0.060mm
50 - 75mm	0.001mm	510-123	±0.060mm
75 - 100mm	0.001mm	510-124	±0.060mm

\*Retractable anvil button on the right side.

Inch			
Range	Graduation	Order No.	Indicating range
0 - 1"	.00005"	510-131* / 510-151	±.0023"
1 - 2"	.00005"	510-132	±.0023"
2 - 3"	.00005"	510-133	±.0023"
3 - 4"	.00005"	510-134	±.0023"

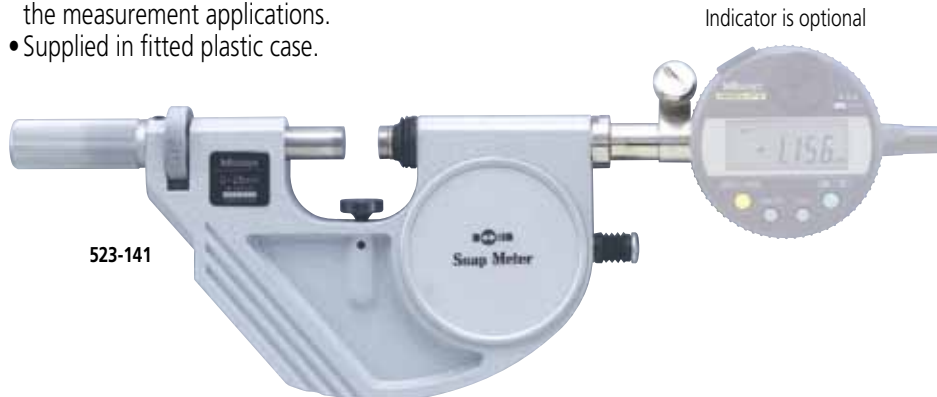
\*Retractable anvil button on the right side.

# Snap Meters

## SERIES 523

## FEATURES

- Various types of indicators, LVDT's and Linear Gages can be selected according to the measurement applications.
- Supplied in fitted plastic case.



523-141

Indicator is optional

## SPECIFICATIONS

Metric			Gage stem dia 8mm
Range	Order No.	Anvil movement	
0 - 25mm	523-141	2mm	
25 - 50mm	523-142	2mm	
50 - 75mm	523-143	2mm	
75 - 100mm	523-144	2mm	

Inch			Gage stem dia 3/8"
Range	Order No.	Anvil movement	
0 - 1"	523-151	.078"	
1 - 2"	523-152	.078"	
2 - 3"	523-153	.078"	
3 - 4"	523-154	.078"	

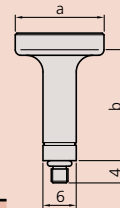
## Technical Data

Spindle feed error: 3µm / .00012"  
 Dial indication accuracy: 1µm / .00004"  
 Dispersion of indication: 0.4µm / .00002"  
 Graduation: 0.001mm or .0001"  
 Dial reading: 0.001mm or .00005"  
 Flatness: 0.3µm / .000012"  
 Parallelism: 0.6µm / .000024" for models up to 50mm / 2"  
 1µm / .00004" for models over 50mm / 2"  
 Measuring force: 5 - 10N (500 - 1000gf)  
 Measuring faces: Carbide tipped



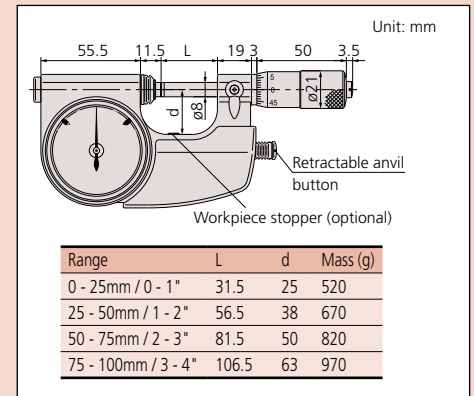
## Optional Accessories

- 04AZA124: ø16mm / ø.63" workpiece stopper (not available for 25mm / 1" model)
- 04AZA125: ø14mm / ø.55" workpiece stopper
- 04AZA126: ø14mm / ø.55" workpiece stopper



Unit: mm		
	a	b
04AZA124	16	23
04AZA125	14	20.5
04AZA126	14	15

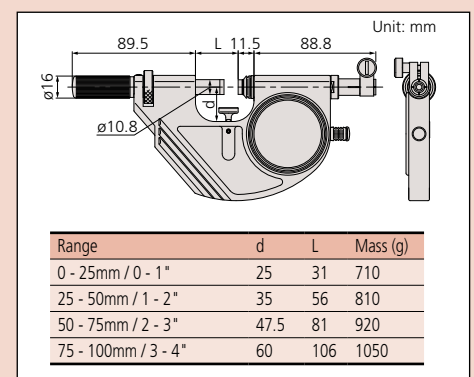
## DIMENSIONS AND MASS



## Technical Data

Flatness: 0.3µm / .000012"  
 Parallelism: 0.6µm / .000024" for models up to 50mm / 2"  
 1µm / .00004" for models over 50mm / 2"  
 Measuring force: 5 - 10N (500 - 1000gf)  
 Measuring faces: Carbide tipped

## DIMENSIONS AND MASS

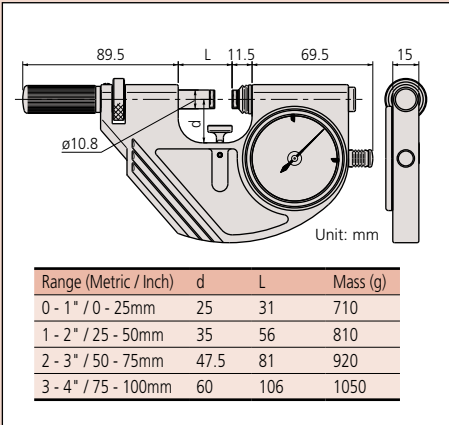




### Technical Data

Dial indication accuracy: .00005" / 1µm  
 Indication repeatability: .00002" / 0.4µm  
 Dial reading: .00005" or 0.001mm  
 Flatness: .000012" / 0.3µm  
 Parallelism: .000024" / 0.6µm for models up to 2" / 50mm  
 .00004" / 1µm for models over 2" / 50mm  
 Measuring force: 5 - 10N (500 - 1000gf)  
 Measuring faces: Carbide tipped

### DIMENSIONS AND MASS



### Technical Data

Accuracy: ±2.5µm for up to ±50µm range  
 ±5µm for ±50µm to ±150µm range  
 (including dispersion of indication)  
 Dial reading: 0.005mm  
 Flatness: 0.3µm  
 Parallelism: 1.3µm for models up to 150mm  
 1.6µm for models over 150mm  
 Measuring force: 5 - 15N (500 - 1500gf)  
 Measuring faces: Carbide tipped

# Dial Snap Meters

## SERIES 523

### FEATURES

- Direct GO/NO-GO judgment for mass-produced parts.
- Spindle diameter: .425" / 10.8mm
- IP protection level: 54
- Supplied in fitted plastic case.



523-131

### SPECIFICATIONS

Metric			
Range	Graduation	Order No.	Indicating range
0 - 25mm	0.001mm	523-121	±0.060mm
25 - 50mm	0.001mm	523-122	±0.060mm
50 - 75mm	0.001mm	523-123	±0.060mm
75 - 100mm	0.001mm	523-124	±0.060mm

Inch			
Range	Graduation	Order No.	Indicating range
0 - 1"	.00005"	523-131	±.0023"
1 - 2"	.00005"	523-132	±.0023"
2 - 3"	.00005"	523-133	±.0023"
3 - 4"	.00005"	523-134	±.0023"

# Dial Snap Meters

## SERIES 523

### FEATURES

- Direct GO/NO-GO judgment for mass-produced parts.
- Spindle diameter: 10.8mm
- Supplied in fitted plastic case (100-150mm models), wooden box (150-200mm models)



523-105

### SPECIFICATIONS

Metric			
Range	Order No.	Indicating range	Mass (g)
100 - 125mm	523-105	±0.15mm	880
125 - 150mm	523-106	±0.15mm	980
150 - 175mm	523-113	±0.15mm	1,420
175 - 200mm	523-114	±0.15mm	1,610



## FEATURES

- Flanged spindle for measuring width, depth, and location of grooves inside/outside bores, and tubes.
- Provided with two types of graduations for inside and outside measurements.
- Non-rotating spindle type has two-directional ratchet stop. (Measuring force: 0.7 - 1.2N)



## SPECIFICATIONS

Metric Rotating spindle type					
Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 25mm	1.6 - 26.5mm	0.01mm	146-121	ø6.35mm	135
			146-122	ø12.7mm	185
25 - 50mm	26.5 - 51.5mm	0.01mm	146-123	ø12.7mm	175
50 - 75mm	51.5 - 76.5mm	0.01mm	146-124	ø12.7mm	165
75 - 100mm	76.5 - 101.5mm	0.01mm	146-125	ø12.7mm	160

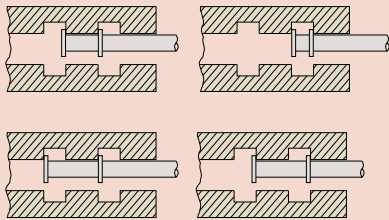
Metric Non-rotating spindle type					
Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 25mm	1.6 - 26.5mm	0.01mm	146-221	ø6.35mm	135
			146-222	ø12.7mm	185
25 - 50mm	26.5 - 51.5mm	0.01mm	146-223	ø12.7mm	175
50 - 75mm	51.5 - 76.5mm	0.01mm	146-224	ø12.7mm	165
75 - 100mm	76.5 - 101.5mm	0.01mm	146-225	ø12.7mm	160

Inch Rotating spindle type					
Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 1"	.055" - 1.05"	.001"	146-131	ø.25"	135
			146-132	ø.5"	185
1" - 2"	1.05" - 2.05"	.001"	146-133	ø.5"	175
2" - 3"	2.05" - 3.05"	.001"	146-134	ø.5"	165
3" - 4"	3.05" - 4.05"	.001"	146-135	ø.5"	160

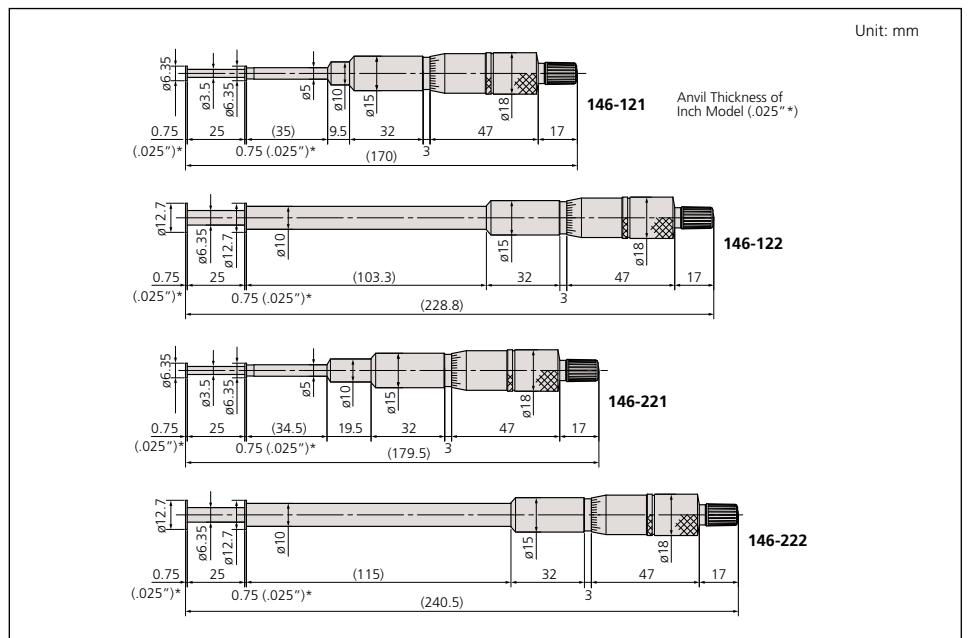
Inch Non-rotating spindle type					
Range Outside	Range Inside	Graduation	Order No.	Flange	Mass (g)
0 - 1"	.055" - 1.05"	.001"	146-231	ø.25"	135
			146-232	ø.5"	185
1" - 2"	1.05" - 2.05"	.001"	146-233	ø.5"	175
2" - 3"	2.05" - 3.05"	.001"	146-234	ø.5"	165
3" - 4"	3.05" - 4.05"	.001"	146-235	ø.5"	160

## Technical Data

Accuracy:  $\pm .0004" / \pm 10\mu\text{m}$   
 Parallelism:  $.0004" / 10\mu\text{m}$



## DIMENSIONS



# Small Hole Gage Set

**SERIES 154**

## FEATURES

- Used with an outside micrometer for measuring inside diameter of bores.
- 4 sizes of gages are supplied in a fitted pouch.
- Extra long for gaging deep and shallow holes, slots, and similar workpieces.
- Gaging surface is fully hardened to insure long tool life.



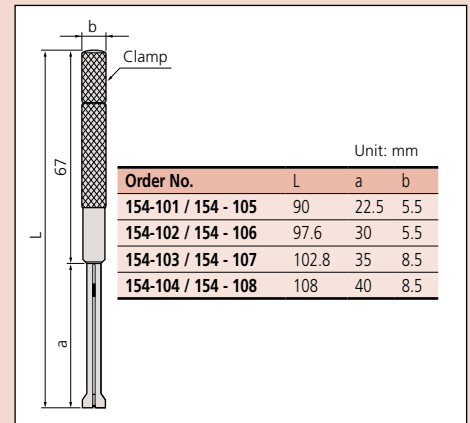
154-901

## SPECIFICATIONS

Metric		
Total range	Set Order No.	Assortment of gages
ø3 - 13mm (4-gage set)	154-902	ø3 - 5mm gage (154-101)
		ø5 - 7.5mm gage (154-102)
		ø7.5 - 10mm gage (154-103)
		ø10 - 13mm gage (154-104)

Inch		
Total range	Set Order No.	Assortment of gages
.125" - .5" DIA. (4-gage set)	154-901	.125" - .2" DIA. gage (154-105)
		.2" - .3" DIA. gage (154-106)
		.3" - .4" DIA. gage (154-107)
		.4" - .5" DIA. gage (154-108)

## DIMENSIONS



# Telescoping Gage Set

**SERIES 155**

## FEATURES

- Spring-loaded plunger expands within the bore (or groove), allowing determination of the internal diameter (or groove width).
- With a knurled clamp.
- Supplied in a fitted pouch.



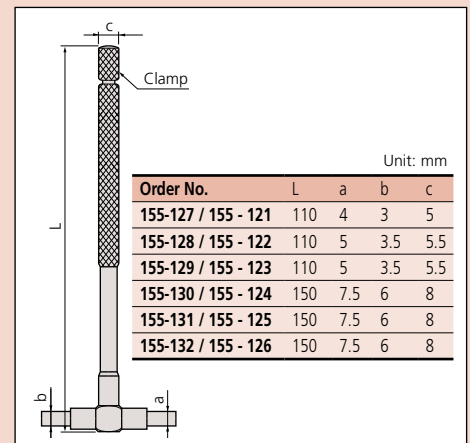
155-903

## SPECIFICATIONS

Metric		
Total range	Set Order No.	Included in set
8 - 150mm (6-gage set)	155-905	8 - 12.7mm gage (155-127)
		12.7 - 19mm gage (155-128)
		19 - 32mm gage (155-129)
		32 - 54mm gage (155-130)
		54 - 90mm gage (155-131)
90 - 150mm gage (155-132)		

Inch		
Total range	Set Order No.	Included in set
.313 - 6" (6-gage set)	155-903	.313" - .5" gage (155-121)
		.5" - .75" gage (155-122)
		.75" - 1.25" gage (155-123)
		1.25" - 2.125" gage (155-124)
		2.125" - 3.5" gage (155-125)
3.5" - 6" gage (155-126)		
.50 - 6" (5-gage set)	155-904	155-122, 155-123, 155-124, 155-125, 155-126
.315 - 2.125" (4-gage set)	155-907	155-121, 155-122, 155-123, 155-124

## DIMENSIONS



# Micrometer Stands

## SERIES 156

These stands are designed to allow bench-top use with hand micrometers or other gages.



156-105-10



156-106



156-101-10

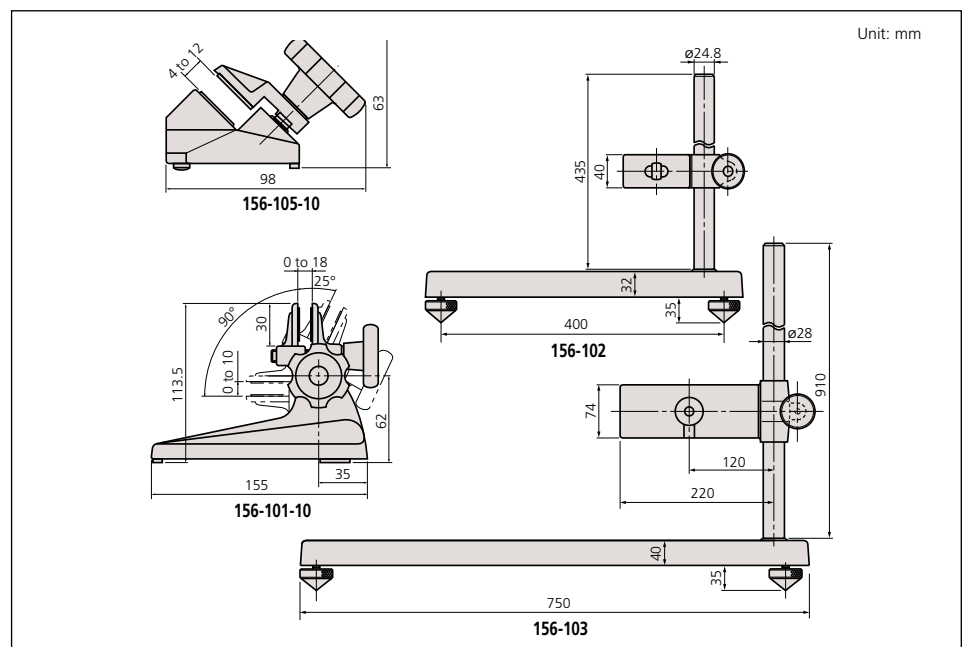


156-102

### SPECIFICATIONS

Micrometer ranges	Order No.	Remarks
0-1" / 0-25mm, 1-2" / 25-50mm	156-105-10	Fixed angle type
Up to 4" / 100mm	156-101-10	Adjustable angle type
5-12" / 125-300mm	156-102	Vertical type
12-40" / 300-1000mm	156-103	Vertical type
0-1" / 0-25mm 1-2" / 25-50mm	156-106	Fixed angle with platform

### DIMENSIONS





# Color Ratchet & Color Speeder

## Color ratchet



### SPECIFICATIONS

Order No.	Color
985056	Black
985061	Red
985081	Blue
985071	Yellow
985076	Green
985066	Brown
04GZA241*	Gray
04GZA239	Gray

\*for Series 293 digital model

## Color speeder for Ratchet Thimble Micrometer



### SPECIFICATIONS

Order No.	Color
04GAA899	Black
04GAA900	Red
04GAA901	Yellow
04GAA902	Green
04GAA903	Blue
04AAB208	Gray

# Spindle Attachment Tip



101468 (.200" Dia.)  
101469 (.250" Dia.)

208062\*  
208098

208063\*  
208099

208064\*  
208100

208065\*  
208101

208066\*  
208102

### DIMENSIONS

Order No.	Dimension
208098 208062*	
208099 208063*	
208100 208064*	

Order No.	Dimension
208101 208065*	
208102 208066*	

\* For metric micrometer

### Technical Data

Tip length: For metric 10mm ±5µm  
For inch .5" ±.0002"



To measure odd workpieces, several convenient anvil attachments are prepared by MITUTOYO. Among them the most often used one is the ball attachment.

The ball attachments are hardened steel balls with .200" and .250" diameters which are placed on the .250" and .315" diameter anvils, respectively, by rubber caps. With these attachments, regular micrometers can measure cylindrical wall thickness, but, .200" or .250" must be subtracted from the readings.

Other attachments shown here are .500" in length. The added amount must be subtracted from the reading.

# Micrometer Oil

207000 (30ml)



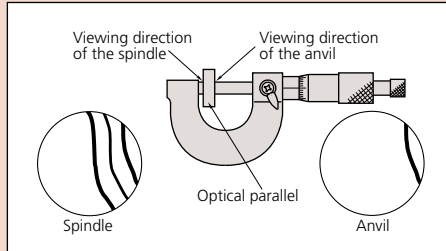
## Technical Data

Flatness: .000004" / 0.1µm  
 Parallelism: .000008" / 0.2µm  
 Diameter: 1.18" / 30mm

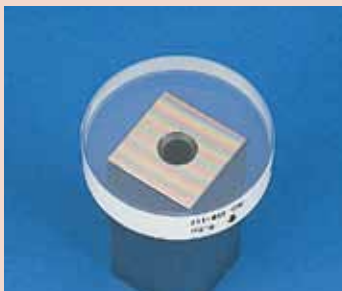
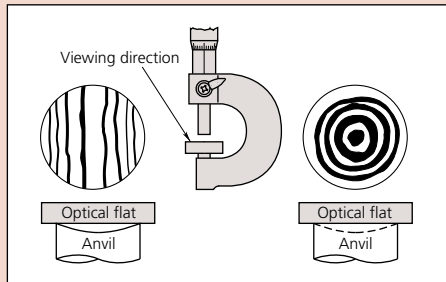
### Parallelism Check between Measuring Faces by Means of Interference Fringe Produced by an Optical Parallel

The parallelism between the measuring faces can be determined as follows; place the optical parallel to the anvil and observe the number of interference fringes produced on the spindle side under the measuring force of the micrometers.

The parallelism is about 1µm ( $0.32\mu\text{m} \times 3 = 0.96\mu\text{m}$ ). Fringe on the anvil side must not be more than one.



### Flatness Check of Measuring Faces Using Interference Fringe Pattern Produced by an Optical Flat



# Optical Parallels

## SERIES 157

### FEATURES

- Designed to inspect parallelism and flatness of measuring faces of micrometers.
- Each set consists of 4 thicknesses.
- Supplied in fitted wooden case.



### SPECIFICATIONS

Metric		
Range of micrometer to be checked	Order No.	Assortment of parallels (Thickness of parallel)
0-25mm	<b>157-903</b>	12.00mm (157-101) 12.12mm (157-102) 12.25mm (157-103) 12.37mm (157-104)
25-50mm	<b>157-904</b>	25.00mm (157-105) 25.12mm (157-106) 25.25mm (157-107) 25.37mm (157-108)

Inch		
Range of micrometer to be checked	Order No.	Assortment of parallels (Thickness of parallel)
0-1"	<b>157-901</b>	.5000" (157-109) .5062" (157-110) .5125" (157-111) .5187" (157-112)
1-2"	<b>157-902</b>	1.0000" (157-113) 1.0062" (157-114) 1.0125" (157-115) 1.0187" (157-116)

# Optical Flats

## SERIES 158

### FEATURES

- Used for inspecting the flatness of micrometer's or gage block's measuring faces with high accuracy.
- Supplied in fitted wooden case.



### SPECIFICATIONS

Metric		
Flatness	Order No.	Diameter/Thickness
0.2µm	<b>158-117</b>	45mm/12mm
	<b>158-119</b>	60mm/15mm
0.1µm	<b>158-118</b>	45mm/12mm
	<b>158-120</b>	60mm/15mm

Inch		
Flatness	Order No.	Diameter/Thickness
.000004"	<b>158-122</b>	1.8"/.5"
	<b>158-124</b>	2.4"/.6"

# Micrometer Standards

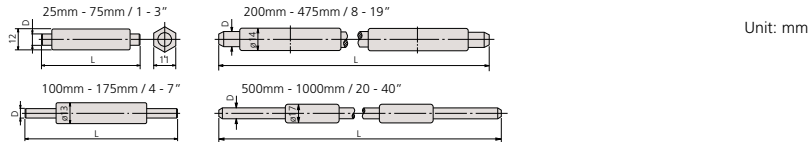
## SERIES 167

### FEATURES

- Used for the zero point setting of outside micrometers.
- Flat and lapped measuring faces.
- Heat insulating handle to prevent expansion due to body temperature.
- Supplied in fitted carton up to 500mm / 20" and wooden case for over 525mm / 21", length.



### DIMENSION



### SPECIFICATIONS

Metric			
Length (L)	Order No.	Diameter (D)	Accuracy
25mm	167-101	6.35mm	±1.5µm
50mm	167-102	6.35mm	±2.0µm
75mm	167-103	6.35mm	±2.5µm
100mm	167-104	7.9mm	±3µm
125mm	167-105	7.9mm	±3.5µm
150mm	167-106	7.9mm	±4µm
175mm	167-107	7.9mm	±4.5µm
200mm	167-108	9.4mm	±5.0µm
225mm	167-109	9.4mm	±5.5µm
250mm	167-110	9.4mm	±6.0µm
275mm	167-111	9.4mm	±6.5µm
300mm	167-112	9.4mm	±7µm
325mm	167-113	9.4mm	±7.5µm
350mm	167-114	9.4mm	±8µm
375mm	167-115	9.4mm	±8.5µm
400mm	167-116	9.4mm	±9µm
425mm	167-117	9.4mm	±9.5µm
450mm	167-118	9.4mm	±1.0µm
475mm	167-119	9.4mm	±10.5µm
500mm	167-120	11.9mm	±11µm
525mm	167-121	11.9mm	±11.5µm
550mm	167-122	11.9mm	±12µm
575mm	167-123	11.9mm	±12.5µm
600mm	167-124	11.9mm	±13µm
625mm	167-125	11.9mm	±13.5µm
650mm	167-126	11.9mm	±14µm
675mm	167-127	11.9mm	±14.5µm
700mm	167-128	11.9mm	±15µm
725mm	167-129	11.9mm	±15.5µm
750mm	167-130	11.9mm	±16µm
775mm	167-131	11.9mm	±16.5µm
800mm	167-132	11.9mm	±17µm
825mm	167-133	11.9mm	±17.5µm
850mm	167-134	11.9mm	±18µm
875mm	167-135	11.9mm	±18.5µm
900mm	167-136	11.9mm	±19µm
925mm	167-137	11.9mm	±19.5µm
950mm	167-138	11.9mm	±20µm
975mm	167-139	11.9mm	±20.5µm
1000mm	167-140	11.9mm	±21µm

Inch			
Length (L)	Order No.	Diameter (D)	Accuracy
1"	167-141	.25"	±.000005"
2"	167-142	.25"	±.0001"
3"	167-143	.25"	±.0001"
4"	167-144	.31"	±.0001"
5"	167-145	.31"	±.00015"
6"	167-146	.31"	±.00015"
7"	167-147	.31"	±.00015"
8"	167-148	.37"	±.00015"
9"	167-149	.37"	±.0002"
10"	167-150	.37"	±.0002"
11"	167-151	.37"	±.0002"
12"	167-152	.37"	±.00025"
13"	167-153	.37"	±.00025"
14"	167-154	.37"	±.00025"
15"	167-155	.37"	±.00025"
16"	167-156	.37"	±.00025"
17"	167-157	.37"	±.00025"
18"	167-158	.37"	±.00025"
19"	167-159	.37"	±.0003"
20"	167-160	.47"	±.0003"
21"	167-161	.47"	±.0003"
22"	167-162	.47"	±.0003"
23"	167-163	.47"	±.0003"
24"	167-164	.47"	±.0003"
25"	167-165	.47"	±.00035"
26"	167-166	.47"	±.00035"
27"	167-167	.47"	±.00035"
28"	167-168	.47"	±.00035"
29"	167-169	.47"	±.00035"
30"	167-170	.47"	±.00035"
31"	167-171	.47"	±.00035"
32"	167-172	.47"	±.00035"
33"	167-173	.47"	±.00035"
34"	167-174	.47"	±.00035"
35"	167-175	.47"	±.00035"
36"	167-176	.47"	±.00035"
37"	167-177	.47"	±.0004"
38"	167-178	.47"	±.0004"
39"	167-179	.47"	±.0004"
40"	167-180	.47"	±.0004"

### Technical Data

Flatness: 0.3µm / .000012"  
Parallelism: 2µm / .00008"



Inch			
Length (L)	Order No.	Diameter (D)	Accuracy
41"	167-405	.47"	.0004"
42"	167-406	.47"	.0004"
43"	167-407	.47"	.0004"
44"	167-408	.47"	.0004"
45"	167-409	.47"	.0004"
46"	167-410	.47"	.0004"
47"	167-411	.47"	.0004"
48"	167-412	.47"	.0004"
49"	167-413	.47"	.0004"
50"	167-414	.47"	.0004"
51"	167-415	.47"	.0004"
52"	167-416	.47"	.0004"
53"	167-417	.47"	.0004"
54"	167-418	.47"	.0004"
55"	167-419	.47"	.0004"
56"	167-420	.47"	.0004"
57"	167-421	.47"	.0004"
58"	167-422	.47"	.0004"
59"	167-423	.47"	.0004"
60"	167-424	.47"	.0004"
61"	167-425	.47"	.0004"
62"	167-426	.47"	.0004"
63"	167-427	.47"	.0004"
64"	167-428	.47"	.0004"
65"	167-429	.47"	.0004"
66"	167-430	.47"	.0004"
67"	167-431	.47"	.0004"
68"	167-432	.47"	.0004"
69"	167-433	.47"	.0004"
70"	167-434	.47"	.0004"
71"	167-435	.47"	.0004"
72"	167-436	.47"	.0004"
73"	167-437	.47"	.0004"
74"	167-438	.47"	.0004"
75"	167-439	.47"	.0004"
76"	167-440	.47"	.0004"
77"	167-441	.47"	.0004"
78"	167-442	.47"	.0004"
79"	167-443	.47"	.0004"

### Micrometer Standards Set

Inch		
Order No.	Size	Remarks
167-912*	1"-5"	5 pcs. Set (167-141, 142, 143, 144, 145)
167-913*	1"-11"	11 pcs. Set (167-141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151)
Metric		
Order No.	Size	Remarks
167-902*	25-125mm	5 pcs. Set (167-101, 102, 103, 104, 105)
167-903*	25-275mm	11 pcs. Set (167-101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111)

\*Supplied with fitted carrying case

# Standards for Screw Thread Micrometers

## SERIES 167 — 60 degree and 55 degree

### Technical Data

Thread angle: 55° or 60°  
Angle Accuracy: ±2°

### FEATURES

- Specially designed for the zero point setting of screw thread micrometers.
- Supplied in fitted carton.



167-264 (60°)



167-262 (60°)

### SPECIFICATIONS

#### Metric

Length	Order No.	Thread angle	Accuracy
25mm	167-261	60°	±4μm
	167-272	55°	±4μm
50mm	167-262	60°	±5μm
	167-273	55°	±5μm
75mm	167-263	60°	±6μm
	167-274	55°	±6μm
100mm	167-264	60°	±7μm
	167-275	55°	±7μm
125mm	167-265	60°	±8μm
	167-276		±8μm
150mm	167-266	60°	±9μm
	167-277		±9μm
175mm	167-267	60°	±10μm
	167-278		±10μm
200mm	167-268	60°	±11μm
	167-279		±11μm
225mm	167-269	60°	±12μm
	167-280		±12μm
250mm	167-270	60°	±13μm
	167-281		±13μm
275mm	167-271	60°	±14μm
	167-282		±14μm

#### Inch

Length	Order No.	Thread angle	Accuracy
1"	167-294	60°	±.00015"
	167-283	55°	±.00015"
2"	167-295	60°	±.0002"
	167-284	55°	±.0002"
3"	167-296	60°	±.00025"
	167-285	55°	±.00025"
4"	167-297	60°	±.0003"
	167-286	55°	±.0003"
5"	167-298	60°	±.00035"
	167-287	55°	±.00035"
6"	167-299	60°	±.0004"
	167-288	55°	±.0004"

# Standards for V-Anvil Micrometers

## SERIES 167

### FEATURES

- Specially designed for the zero point setting of V-anvil micrometers.
- Supplied in fitted carton.



167-329

### SPECIFICATIONS

#### Metric

Diameter	Order No.	Type	Accuracy
5mm	167-327	Plug	±2μm
10mm	167-328	Plug	±2μm
25mm	167-329	Plug	±2μm
40mm	167-330	Ring	±3μm
55mm	167-331	Ring	±3μm
70mm	167-332	Ring	±3μm
85mm	167-333	Ring	±3μm

#### Inch

Diameter	Order No.	Type	Accuracy
.2"	167-337	Plug	±.0001"
.4"	167-338	Plug	±.0001"
1"	167-339	Plug	±.0001"
1.6"	167-340	Ring	±.00015"
2.2"	167-341	Ring	±.00015"
2.8"	167-342	Ring	±.00015"
3.4"	167-343	Ring	±.00015"

# Tool Kits

The Digimatic Tool Kits include Mitutoyo's highly popular 0–1" / 0–25mm Digimatic Micrometer (choose ratchet or friction type) and 0–6" / 0–150mm Digimatic Caliper with Absolute Encoder. The case is made of handsome, solid mahogany and has space for gage batteries. The micrometer spanner is a supplied accessory.



950-939-9



950-940-9



950-921



950-922

Order No. 950-939-9 (Digimatic Tool Kit)	
Item No.	Description
293-340	Digimatic Micrometer (Ratchet Stop Type) (Range: 0 - 1" / 0 - 25.4mm, LCD Resolution: .00005" / 0.001mm)
500-196-20	Digimatic Caliper with Absolute Encoder (Range: 0 - 6" / 0 - 150mm, LCD Resolution: .0005" / 0.001mm)
64PPP932	Mahogany Case

Order No. 950-940-9 (Digimatic Tool Kit)	
Item No.	Description
293-348	Digimatic Micrometer (Friction Thimble Type) (Range: 0 - 1" / 0 - 25.4mm, LCD Resolution: .00005" / 0.001mm)
500-196-20	Digimatic Caliper with Absolute Encoder (Range: 0 - 6" / 0 - 150mm, LCD Resolution: .0005" / 0.001mm)
64PPP932	Mahogany Case

Order No. 950-921 (Tool Kit Lite)	
Item No.	Description
182-112	6" Black Steel Rule (16R)
700-113-10	0 - 6" / 0 - 150mm MyCal Lite (Resolution: .001" / 0.1mm)
293-831	0 - 1" / 0 - 25.4mm MDC Lite (Ratchet Thimble) (Resolution: .00005" / 0.001mm)
64PPP932	Mahogany Case

Order No. 950-922 (Tool Kit Lite)	
Item No.	Description
182-112	6" Black Steel Rule (16R)
700-113-10	0 - 6" / 0 - 150mm MyCal Lite (Resolution: .001" / 0.1mm)
293-832	0 - 1" / 0 - 25.4mm MDC Lite (Friction Thimble) (Resolution: .00005" / 0.001mm)
64PPP932	Mahogany Case



# Tool Kits

This Tool Kit contains the three most often used measuring instruments in a convenient case.

Order No. 950-902 (Inch Tool Kit)	
Item No.	Description
103-127	Outside Micrometer (Friction Thimble Type) (Range: 0–1", Graduation: .001")
505-717	Dial Caliper (Range: 0–6", Dial Graduation: .001")
182-201	6" Full-Flexible Rule (4R)
050516	Mahogany Case



950-902

Order No. 950-903 (Inch Tool Kit)	
Item No.	Description
103-135	Outside Micrometer (Friction Thimble Type) (Range: 0–1", Graduation: .0001")
505-675	Dial Caliper (Range: 0–6", Dial Graduation: .001")
182-204	6" Full-Flexible Rule (3R)
050516	Mahogany Case



950-903

Order No. 950-920 (Inch Tool Kit)	
Item No.	Description
182-112	6" Black Steel Rule (16R)
103-105	Micrometer (Ratchet Thimble) (Range 0-1", Graduation .001")
505-717	Dial Caliper (Range: 0–6", Dial Graduation: .001")
050516	Mahogany Case



950-920

Order No. 950-923 (New Technology Tool Kit)	
Item No.	Description
182-112	6" Black Steel Rule (16R)
293-676	0-1.2"/0-30mm IP-54 rated Quickmike (Resolution .00005"/0.001mm)
500-464	0-6"/0-150mm Solar Caliper (Resolution .0005"/0.01mm)
64PPP931	Mahogany Case



950-923

# Tool Kits



## 950-907

The very basic measuring instruments recommended for vocational students and machinist apprentices are supplied in this kit.



## 950-908

This kit goes one step further for the student machinist. It augments the basic kit with a combination set and a depth attachment for the dial caliper. The furnished, fitted, mahogany carrying-case helps keep the high quality MITUTOYO Tools in good condition.



## 950-909

For operations where depth measurements are a primary concern, this kit is ideal for measuring depths to 6", in addition to providing the tools for regular precision measurements.



## 950-910

Most every routine inspection assignment can be completed with the eight high-quality MITUTOYO Precision Measuring Instruments provided in this deluxe kit.

Order No. 950-907 (Inch Tool Kit)	
Item No.	Description
103-135	Outside Micrometer (Friction Thimble Type) (Range: 0-1", Graduation: .0001")
182-202	6" Full-Flexible Rule (16R)
513-518T	Test Indicator Set (Range: .04", Graduation: .001")
505-675	675 Dial Caliper (Range: 0-6", Dial Graduation: .001")
050501	Mahogany Case

Order No. 950-908 (Inch Tool Kit)	
Item No.	Description
103-135	Outside Micrometer (Friction Thimble Type) (Range: 0-1", Graduation: .0001")
180-905	12" Combination Set (4R)
182-202	Full-Flexible Rule (16R)
513-518T	Test Indicator Set (Range: .04", Graduation: .001")
505-675	Dial Caliper (Range: 0-6", Dial Graduation: .001")
050083	Depth Attachment
050502	Mahogany Case

Order No. 950-909 (Inch Tool Kit)	
Item No.	Description
101-117	Outside Micrometer (Friction Thimble Type) (Range: 0-1", Graduation: .0001")
129-132	Depth Micrometer (with 6 pcs Rods) (Range: 0-6", Graduation: .001")
182-202	Full-Flexible Rule (16R)
505-675	Dial Caliper (Range: 0-6", Graduation: .001")
050503	Mahogany Case

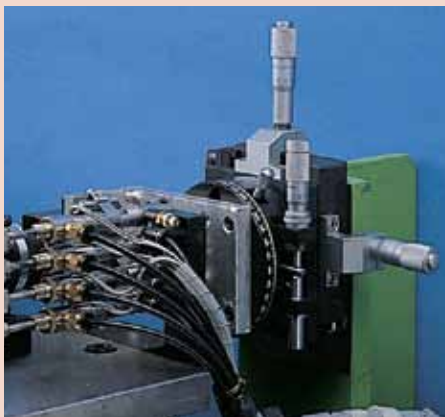
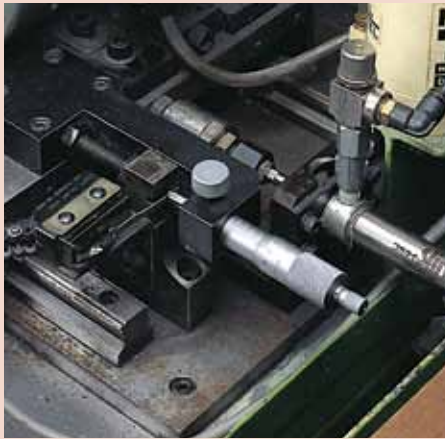
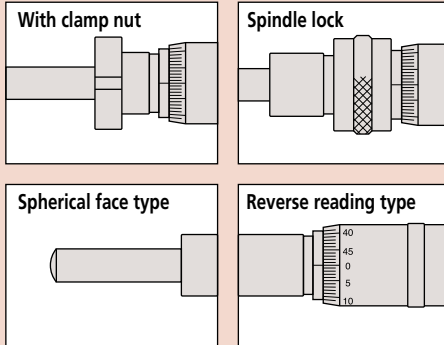
Order No. 950-910 (Inch Tool Kit)	
Item No.	Description
103-922	Outside Micrometer Set (3 pcs) (Range: 0-3", Graduation: .0001")
141-208	Inside Micrometer (with 6 pcs Rods)
180-905	Combination Set (4R)
182-202	Full-Flexible Rule (16R)
513-518T	Test Indicator Set (Range: .04", Graduation: .001")
505-675	Dial Caliper (Range: 0-6", Dial Graduation: .001")
2416S	Dial Indicator (Range: 1.0", Graduation: .001")
7010S	Magnetic Stand
050504	Mahogany Case

# Micrometer Head Selection Guide

The table below provides an outline of Mitutoyo micrometer heads for each series so you can locate the pages to refer to select the micrometer head most appropriate to your specific application. When selecting consider the following points:

- Dimensions
- Graduation/resolution and accuracy
- With or without spindle lock
- With or without clamping nut
- Normal or reverse reading
- With or without Ratchet Stop

## Variety of Specifications



## SELECTION TABLE

Range	Series	Remarks	Page
0 - 1mm	110	Differential screw translator (extra-fine feeding) type	B-69
0 - 2.5mm	110	Differential screw translator (extra-fine feeding) type	B-69
0 - 5mm	148	Ultra small type	B-60
0 - 6.5mm	148	Fine spindle feeding of 0.1mm/rev.	B-58
	148	Fine spindle feeding of 0.25mm/rev.	B-59
	148	Small type	B-60
	148	Large thimble diameter for easy reading	B-61
0 - 10mm	152	Fine feeding type	B-68
0 - 13mm	148	Common type in small size	B-62
	148	Spindle feeding of 0.25mm/rev.	B-59
	148	Zero-adjustable thimble type	B-63
	148	Large thimble diameter for easy reading	B-61
	110	Differential screw translator (extra-fine feeding) type	B-69
0 - 15mm	149	with carbide-tipped spindle type	B-64
	153	Non-rotating spindle type	B-67
	152	Quick spindle feeding of 1mm/rev.	B-68
0 - 25mm	164	Digital type	B-72
	350	Compact digital type	B-57
	150	Common type in middle size	B-65
	153	Non-rotating spindle type	B-67
	153	Fine graduation type	B-71
	151	Heavy duty type (ø8mm spindle)	B-66
	152	Quick spindle feeding of 1mm/rev.	B-68
	152	Fine feeding type	B-68
	152	for XY-stage	B-70
	164	High resolution and high accuracy type	B-72
	250	with digit counter type	B-73
0 - 50mm	164	Digital type	B-56
	151	Heavy duty type (ø8mm spindle)	B-66
	152	Quick spindle feeding of 1mm/rev.	B-68
	152	Fine feeding type	B-68
	197	Non-rotating spindle and large thimble	B-71

# Digimatic Micrometer Heads

## SERIES 164

### FEATURES

- The Digimatic Micrometer Heads...
- The display can be rotated up to 330° for easy reading in any position.

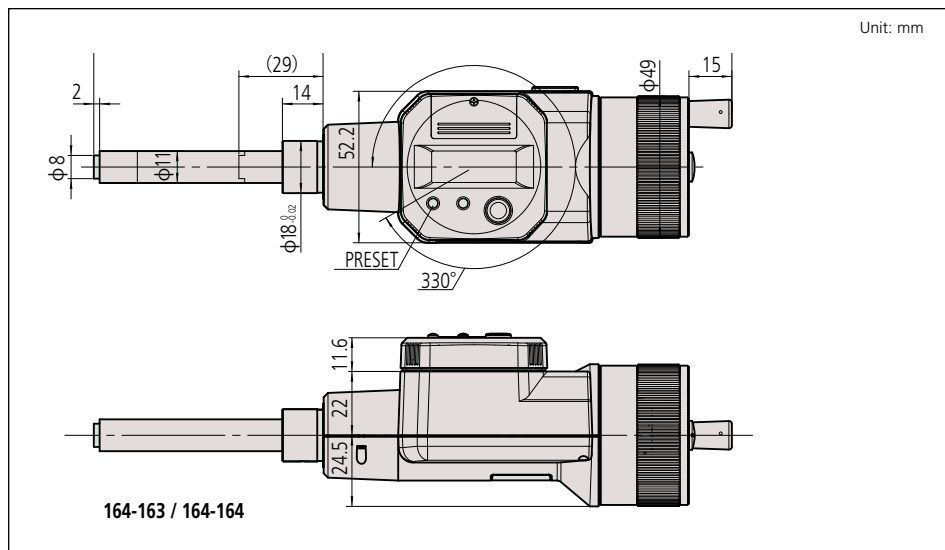


164-164

### SPECIFICATIONS

Metric				Inch/Metric			
Range	Order No.	Accuracy	Mass (g)	Range	Order No.	Accuracy	Mass (g)
0 - 50mm	164-163	±3µm	490	0 - 2" / 0 - 50.8mm	164-164	±.00015"	490

### DIMENSIONS



### Technical Data

Accuracy: Refer to the list of specifications.

Resolution: 0.001mm or .00005"/0.001mm  
 Display: LCD  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: 1.8 years:

### Function

Zero-setting, Data hold, Data output, Preset,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories

**959149:** SPC cable (1m / 40")  
**959150:** SPC cable (2m / 80")

# Digimatic Micrometer Heads

## SERIES 350

### FEATURES

- The Digimatic Micrometer Heads...



350-251-10



350-281-10



Measuring force: 5 - 10N

### Non-rotating device

350-261-10, 350-361-10

The non-rotating device provides no radial torsion on the workpiece surface so that workpiece wear and deformation are minimized.



### Technical Data

Accuracy\* ±2µm Metric model  
±.0001" Inch / Metric model

Resolution: 0.001mm or .00005"/0.001mm

Display: LCD

Battery: SR44 (1 pc) **938882**

Battery life: Approx. 3 years under normal use

Dust/Water protection level: IP65

350-281-10, 350-282-10, 350-283-10, 350-284-10, 350-261-10  
350-381-10, 350-382-10, 350-383-10, 350-384-10, 350-361-10

### Function

Preset, inch/mm conversion (on inch/metric models only)

Alarm: Low voltage, Counting value composition error

Function Lock

2 Presets

### Optional Accessories

**05CZA662:** SPC cable with data switch (1m / 40")

**05CZA663:** SPC cable with data switch (2m / 80")

**64PPP035:** Stem Bushing (.375" ID/.709" OD)

### SPECIFICATIONS

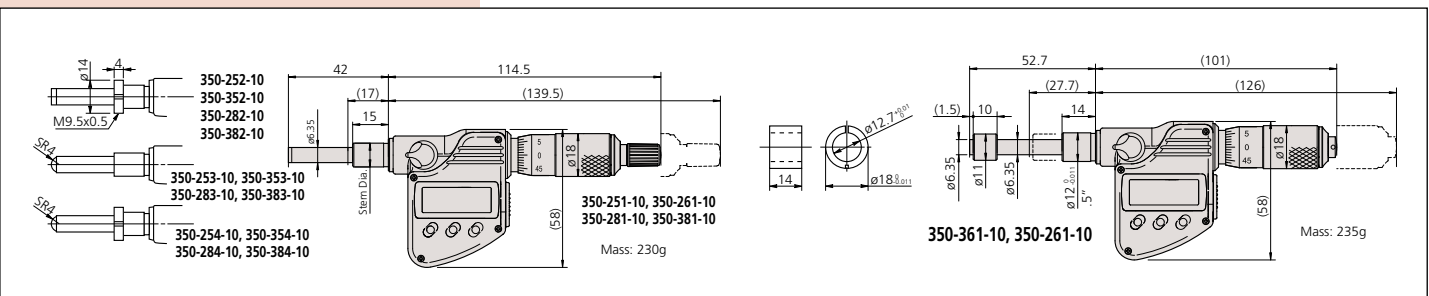
Metric					
Range	Order No.	Stem	Spindle face	Stem dia.	Remarks
0 - 25mm	<b>350-251-10</b>	Plain	Flat (carbide tip)	10mm	
0 - 25mm	<b>350-252-10</b>	w/ clamp nut	Flat (carbide tip)	10mm	
0 - 25mm	<b>350-253-10</b>	Plain	Spherical (SR4)	10mm	
0 - 25mm	<b>350-254-10</b>	w/ clamp nut	Spherical (SR4)	10mm	
0 - 25mm	<b>350-281-10</b>	Plain	Flat (carbide tip)	12mm	IP65
0 - 25mm	<b>350-282-10</b>	w/ clamp nut	Flat (carbide tip)	12mm	IP65
0 - 25mm	<b>350-283-10</b>	Plain	Spherical (SR4)	12mm	IP65
0 - 25mm	<b>350-284-10</b>	w/ clamp nut	Spherical (SR4)	12mm	IP65
0 - 25mm	<b>350-261-10*</b>	Plain	Flat	12mm	IP65

\*with non-rotating device and 18mm stem bushing.

Inch/Metric					
Range	Order No.	Stem	Spindle face	Stem dia.	Remarks
0 - 1" / 0 - 25.4mm	<b>350-351-10</b>	Plain	Flat (carbide tip)	.375"	
0 - 1" / 0 - 25.4mm	<b>350-352-10</b>	w/ clamp nut	Flat (carbide tip)	.375"	
0 - 1" / 0 - 25.4mm	<b>350-353-10</b>	Plain	Spherical (SR4)	.375"	
0 - 1" / 0 - 25.4mm	<b>350-354-10</b>	w/ clamp nut	Spherical (SR4)	.375"	
0 - 1" / 0 - 25.4mm	<b>350-381-10</b>	Plain	Flat (carbide tip)	.5"	IP65
0 - 1" / 0 - 25.4mm	<b>350-382-10</b>	w/ clamp nut	Flat (carbide tip)	.5"	IP65
0 - 1" / 0 - 25.4mm	<b>350-383-10</b>	Plain	Spherical (SR4)	.5"	IP65
0 - 1" / 0 - 25.4mm	<b>350-384-10</b>	w/ clamp nut	Spherical (SR4)	.5"	IP65
0 - 1" / 0 - 25.4mm	<b>350-361-10*</b>	Plain	Flat	.5"	IP65

\*with non-rotating device and 18mm stem bushing.

### DIMENSIONS AND MASS





# Micrometer Heads

## SERIES 148 — Fine Spindle Feeding of 0.1mm/rev

### FEATURES

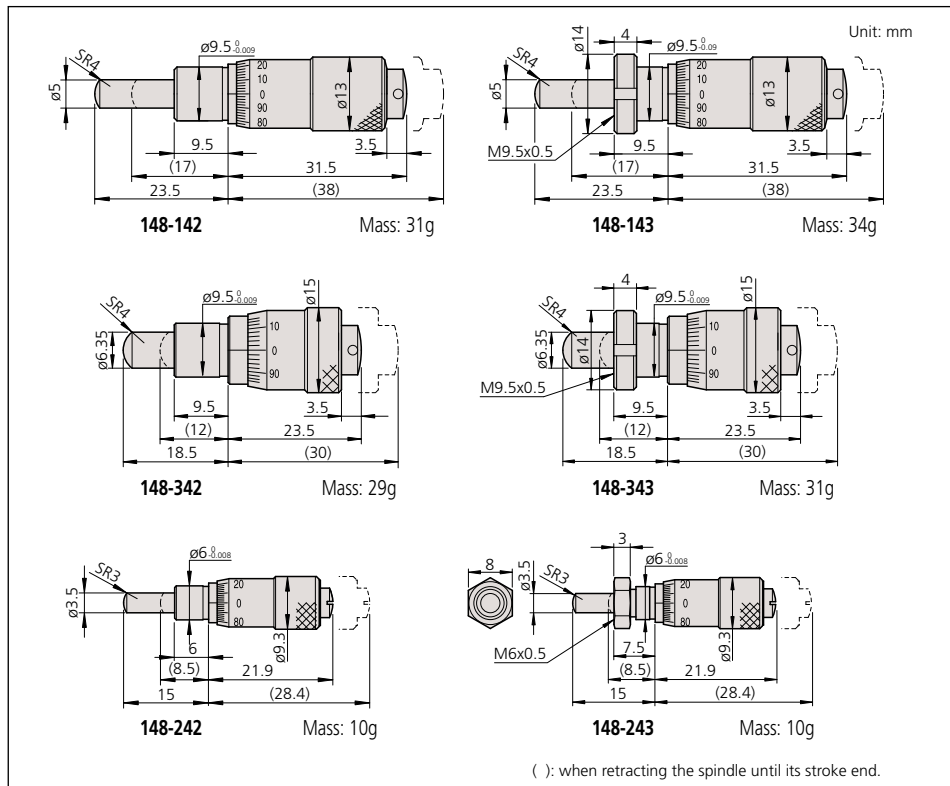
- Fine spindle feeding of just 0.1mm/rev for extra-fine adjustment and positioning.
- External dimensions are compatible with conventional 0.5mm pitch heads.



### SPECIFICATIONS

Metric						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 6.5mm	148-142	±2μm	9.5mm	Plain	Spherical (SR4)	—
0 - 6.5mm	148-143	±2μm	9.5mm	w/clamp nut	Spherical (SR4)	—
0 - 6.5mm	148-342	±2μm	9.5mm	Plain	Spherical (SR4)	Thicker & shorter thimble
0 - 6.5mm	148-343	±2μm	9.5mm	w/clamp nut	Spherical (SR4)	Thicker & shorter thimble
0 - 6.5mm	148-242	±5μm	6mm	Plain	Spherical (SR3)	Small thimble diameter
0 - 6.5mm	148-243	±5μm	6mm	w/clamp nut	Spherical (SR3)	Small thimble diameter

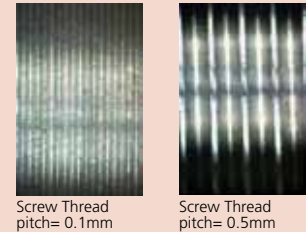
### DIMENSIONS AND MASS



### Technical Data

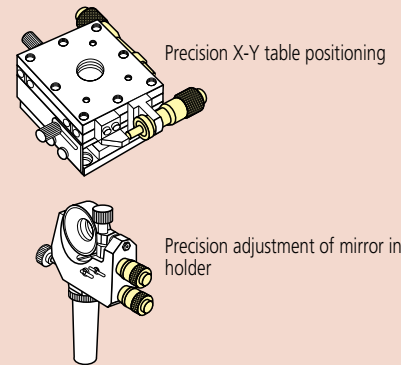
Graduations: 0.002mm  
 Spindle pitch: 0.1mm  
 Spindle face: Spherical of SKS3 (more than HRC60), lapped surface  
 Scale surface: Hard-chrome plating  
 Fixture thickness for clamp nut: 6mm (148-243: 4mm)

### Spindle pitch

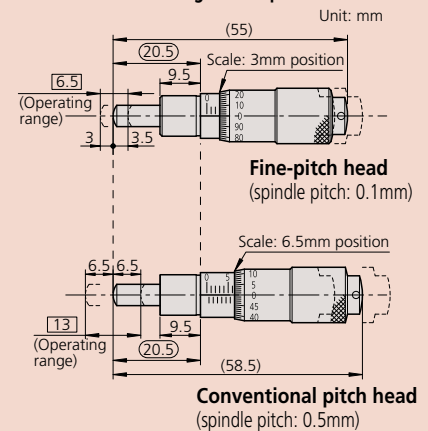


### Applications

Semiconductor wafer positioning machinery and optical component alignment units, etc.



Comparison of mounting dimensions between a standard fine-pitch head and a standard conventional pitch head at the mid-range travel position



While the fine-pitch micrometer head has a measuring range of 6.5mm, the conventional head has a larger range of 13mm. When replacing a conventional head, the fine-pitch type can use the common range in the middle of the spindle travel. The standard and compact types of fine-pitch head are completely interchangeable.

# Micrometer Heads

**SERIES 148 — Fine Spindle Feeding of 0.25 mm / rev**

## Technical Data

Graduations: 0.01mm  
 Spindle pitch: 0.25mm  
 Spindle face: Spherical of SKS3 (more than HRC60), lapped surface  
 Scale surface: Hard-chrome plating  
 Fixture thickness for clamp nut: 6mm

## FEATURES

- Fine spindle feeding of just 0.25mm/rev for fine adjustment and positioning.



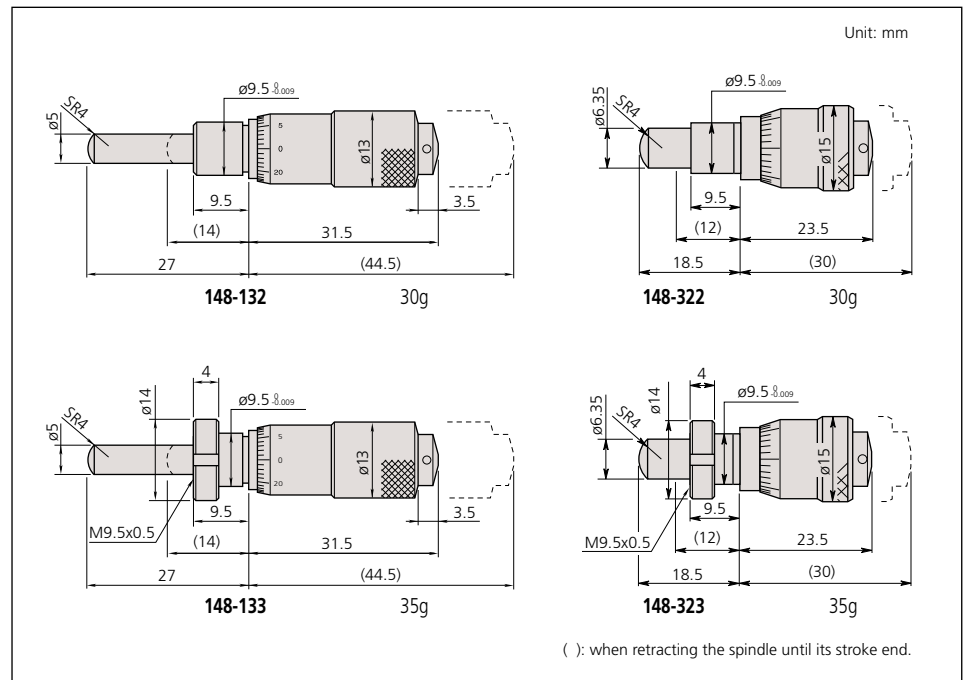
148-132

## SPECIFICATIONS

**Metric**

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face
0 - 13mm	<b>148-132</b>	2mm	9.5mm	Plain	Spherical (SR4)
0 - 13mm	<b>148-133</b>	2mm	9.5mm	w/clamp nut	Spherical (SR4)
0 - 6.5mm	<b>148-322</b>	2mm	9.5mm	Plain	Spherical (SR4)
0 - 6.5mm	<b>148-323</b>	2mm	9.5mm	w/ clamp nut	Spherical (SR4)

## DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 148 — Ultra-Small/Small Type

### FEATURES

- Miniature micrometer heads for ease of incorporating into machines.



### Technical Data

Graduations: 0.02mm (148-215, 148-216), 0.01mm or .001"  
 Spindle pitch: 0.5mm  
 Spindle face: Flat or spherical of SKS3 (more than HRC60), lapped surface  
 Scale surface: Hard-chrome plating  
 Fixture thickness for clamp nut: 3mm (148-216, 148-218), 4mm

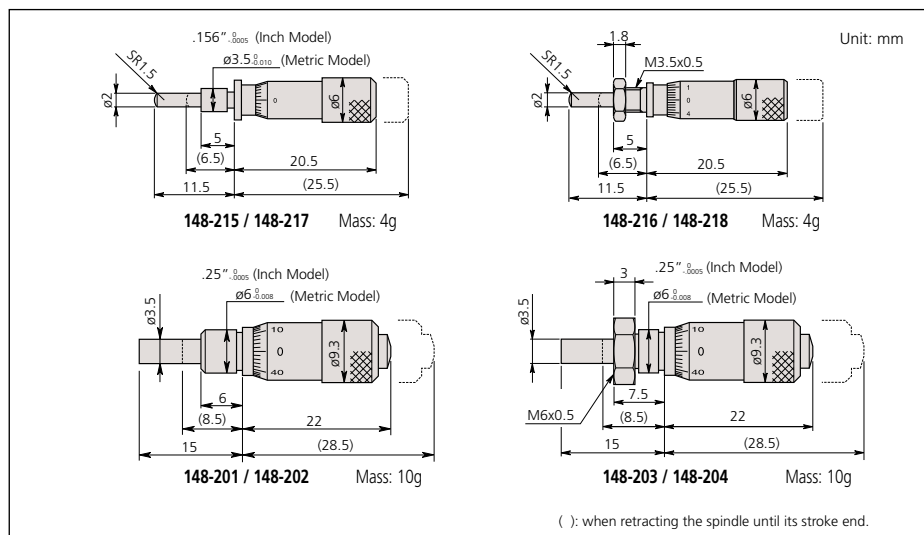
### SPECIFICATIONS

Metric						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 5mm	148-215	±5μm	3.5mm	Plain	Spherical (SR1.5)	—
0 - 5mm	148-216	±5μm	3.5mm	w/clamp nut	Spherical (SR1.5)	—
0 - 6.5mm	148-201	±5μm	6mm	Plain	Flat	—
0 - 6.5mm	148-203	±5μm	6mm	w/clamp nut	Flat	—
0 - 6.5mm	148-205	±5μm	6mm	Plain	Spherical (SR3)	—
0 - 6.5mm	148-207	±5μm	6mm	w/clamp nut	Spherical (SR3)	—
6.5 - 0 mm	148-209	±5μm	6mm	Plain	Flat	Reverse reading
6.5 - 0 mm	148-211	±5μm	6mm	w/ clamp nut	Flat	Reverse reading

Inch						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .2"	148-217	±5μm	.156"	Plain	Spherical (SR1.5)	—
0 - .2"	148-218	±5μm	.156"	w/clamp nut	Spherical (SR1.5)	—
0 - .25"	148-202	±5μm	.25"	Plain	Flat	—
0 - .25"	148-204	±5μm	.25"	w/clamp nut	Flat	—
0 - .25"	148-206	±5μm	.25"	Plain	Spherical (SR3)	—
0 - .25"	148-208	±5μm	.25"	w/clamp nut	Spherical (SR3)	—
.25 - 0"	148-210	±5μm	.25"	Plain	Flat	Reverse reading
.25 - 0"	148-212	±5μm	.25"	w/ clamp nut	Flat	Reverse reading



### DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 148 — Large Thimble Diameter for Easy Reading

### FEATURES

- Easy reading due to the large thimble diameter. (Three types of thimble diameters can be selected.)

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Thimble Dia.
0 - 6.5mm	<b>148-301</b>	±2μm	9.5mm	Plain	Flat	15mm
0 - 6.5mm	<b>148-302</b>	±2μm	9.5mm	w/clamp nut	Flat	15mm
0 - 6.5mm	<b>148-303</b>	±2μm	9.5mm	Plain	Flat	20mm
0 - 6.5mm	<b>148-304</b>	±2μm	9.5mm	w/clamp nut	Flat	20mm
0 - 6.5mm	<b>148-305</b>	±2μm	9.5mm	Plain	Flat	29mm
0 - 6.5mm	<b>148-306</b>	±2μm	9.5mm	w/clamp nut	Flat	29mm
0 - 13mm	<b>148-307</b>	±2μm	9.5mm	Plain	Flat	15mm
0 - 13mm	<b>148-308</b>	±2μm	9.5mm	w/clamp nut	Flat	15mm
0 - 13mm	<b>148-309</b>	±2μm	9.5mm	Plain	Flat	20mm
0 - 13mm	<b>148-310</b>	±2μm	9.5mm	w/clamp nut	Flat	20mm
0 - 13mm	<b>148-311</b>	±2μm	9.5mm	Plain	Flat	29mm
0 - 13mm	<b>148-312</b>	±2μm	9.5mm	w/ clamp nut	Flat	29mm

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Thimble Dia.
0 - .25"	<b>148-351</b>	±.0001"	.375"	Plain	Flat	.59"
0 - .25"	<b>148-352</b>	±.0001"	.375"	w/clamp nut	Flat	.59"
0 - .25"	<b>148-353</b>	±.0001"	.375"	Plain	Flat	.79"
0 - .25"	<b>148-354</b>	±.0001"	.375"	w/clamp nut	Flat	.79"
0 - .25"	<b>148-355</b>	±.0001"	.375"	Plain	Flat	1.14"
0 - .25"	<b>148-356</b>	±.0001"	.375"	w/clamp nut	Flat	1.14"
0 - .5"	<b>148-357</b>	±.0001"	.375"	Plain	Flat	.59"
0 - .5"	<b>148-358</b>	±.0001"	.375"	w/clamp nut	Flat	.59"
0 - .5"	<b>148-359</b>	±.0001"	.375"	Plain	Flat	.79"
0 - .5"	<b>148-360</b>	±.0001"	.375"	w/clamp nut	Flat	.79"
0 - .5"	<b>148-361</b>	±.0001"	.375"	Plain	Flat	1.14"
0 - .5"	<b>148-362</b>	±.0001"	.375"	w/ clamp nut	Flat	1.14"



148-301



148-303

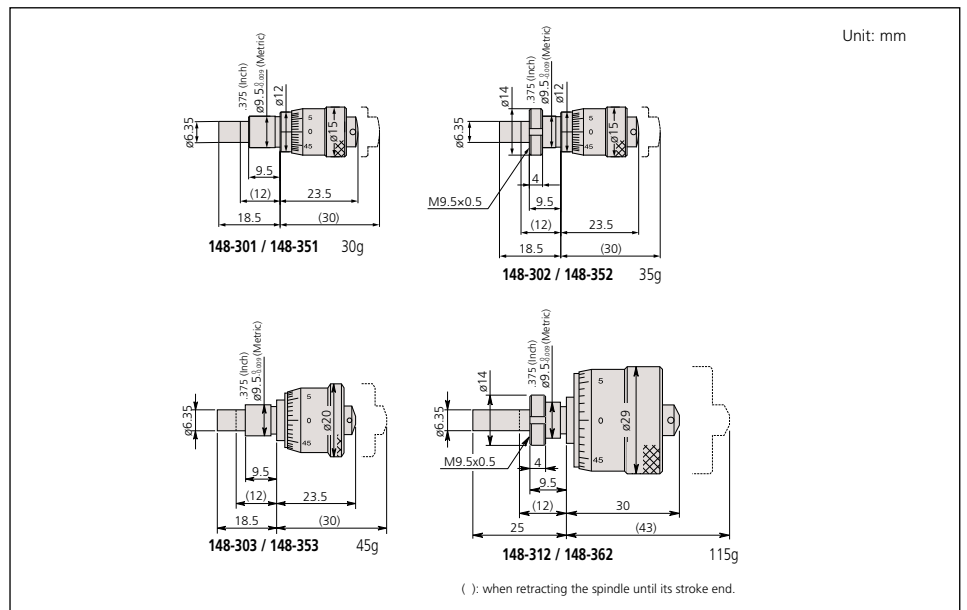


148-305

### Technical Data

Graduations: 0.01mm or .001"  
 Spindle pitch: 0.5mm or .025"  
 Spindle face: Flat of SKS3 (more than HRC60),  
 lapped surface  
 Scale surface: Hard-chrome plating  
 Fixture thickness for clamp nut: 6mm

### DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 148 — Common Type in Small Size

### SPECIFICATIONS

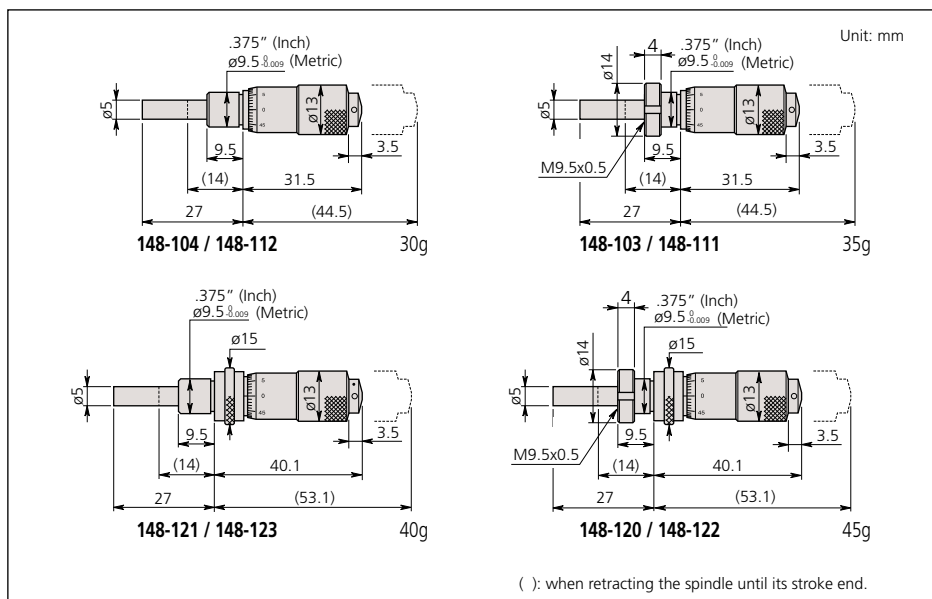
Metric						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 13mm	148-104	±2μm	9.5mm	Plain	Flat	—
0 - 13mm	148-103	±2μm	9.5mm	w/clamp nut	Flat	—
0 - 13mm	148-121	±2μm	9.5mm	Plain*	Flat	—
0 - 13mm	148-120	±2μm	9.5mm	w/clamp nut*	Flat	—
0 - 13mm	148-801	±2μm	9.5mm	Plain	Spherical (SR4)	—
0 - 13mm	148-802	±2μm	9.5mm	w/clamp nut	Spherical (SR4)	—
0 - 13mm	148-803	±2μm	9.5mm	Plain*	Spherical (SR4)	—
0 - 13mm	148-804	±2μm	9.5mm	w/clamp nut*	Spherical (SR4)	—
13mm - 0	148-821	±2μm	9.5mm	Plain	Flat	Reverse reading
13mm - 0	148-822	±2μm	9.5mm	w/clamp nut	Flat	Reverse reading
13mm - 0	148-823	±2μm	9.5mm	Plain*	Flat	Reverse reading
13mm - 0	148-824	±2μm	9.5mm	w/ clamp nut*	Flat	Reverse reading

\*with spindle lock

Inch						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	148-112	±.0001"	.375"	Plain	Flat	—
0 - .5"	148-111	±.0001"	.375"	w/clamp nut	Flat	—
0 - .5"	148-123	±.0001"	.375"	Plain*	Flat	—
0 - .5"	148-122	±.0001"	.375"	w/clamp nut*	Flat	—
0 - .5"	148-811	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - .5"	148-812	±.0001"	.375"	w/clamp nut	Spherical (SR4)	—
0 - .5"	148-813	±.0001"	.375"	Plain*	Spherical (SR4)	—
0 - .5"	148-814	±.0001"	.375"	w/clamp nut*	Spherical (SR4)	—
.5" - 0	148-831	±.0001"	.375"	Plain	Flat	Reverse reading
.5" - 0	148-832	±.0001"	.375"	w/clamp nut	Flat	Reverse reading
.5" - 0	148-833	±.0001"	.375"	Plain*	Flat	Reverse reading
.5" - 0	148-834	±.0001"	.375"	w/ clamp nut*	Flat	Reverse reading

\*with spindle lock

### DIMENSIONS AND MASS



148-103



148-104



148-121



148-120

### Technical Data

Graduations: 0.01mm or .001"

Spindle pitch: 0.5mm

Spindle face: Flat or spherical of SKS3 (more than HR60), lapped surface

Scale surface: Hard-chrome plating

Fixture thickness for clamp nut: 6mm



# Micrometer Heads

## SERIES 148 — Common Type in Small Size with Zero-Adjustable Thimble

### FEATURES

- The thimble can be set to zero at any position by loosening the setscrew

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 13mm	<b>148-503</b>	±2μm	9.5mm	Plain	Flat	—
0 - 13mm	<b>148-513</b>	±2μm	9.5mm	Plain	Flat	Stainless steel throughout
0 - 13mm	<b>148-508</b>	±2μm	9.5mm	w/clamp nut	Flat	—
0 - 13mm	<b>148-506</b>	±2μm	9.5mm	Plain*	Flat	—
0 - 13mm	<b>148-504</b>	±2μm	9.5mm	w/clamp nut*	Flat	—
0 - 13mm	<b>148-853</b>	±2μm	9.5mm	Plain	Spherical (SR4)	—
0 - 13mm	<b>148-854</b>	±2μm	9.5mm	w/clamp nut*	Spherical (SR4)	—
13mm - 0	<b>148-863</b>	±2μm	9.5mm	Plain	Flat	Reverse reading
13mm - 0	<b>148-864</b>	±2μm	9.5mm	w/ clamp nut*	Flat	Reverse reading

\*with spindle lock

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	<b>148-501</b>	±.0001"	.375"	Plain	Flat	—
0 - .5"	<b>148-511</b>	±.0001"	.375"	Plain	Flat	Stainless steel throughout
0 - .5"	<b>148-507</b>	±.0001"	.375"	w/clamp nut	Flat	—
0 - .5"	<b>148-505</b>	±.0001"	.375"	Plain*	Flat	—
0 - .5"	<b>148-502</b>	±.0001"	.375"	w/clamp nut*	Flat	—
0 - .5"	<b>148-851</b>	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - .5"	<b>148-852</b>	±.0001"	.375"	w/clamp nut*	Spherical (SR4)	—
.5" - 0	<b>148-861</b>	±.0001"	.375"	Plain	Flat	Reverse reading
.5" - 0	<b>148-862</b>	±.0001"	.375"	w/ clamp nut*	Flat	Reverse reading

\*with spindle lock



148-503



148-504

### Technical Data

Graduations: 0.01mm or .001"

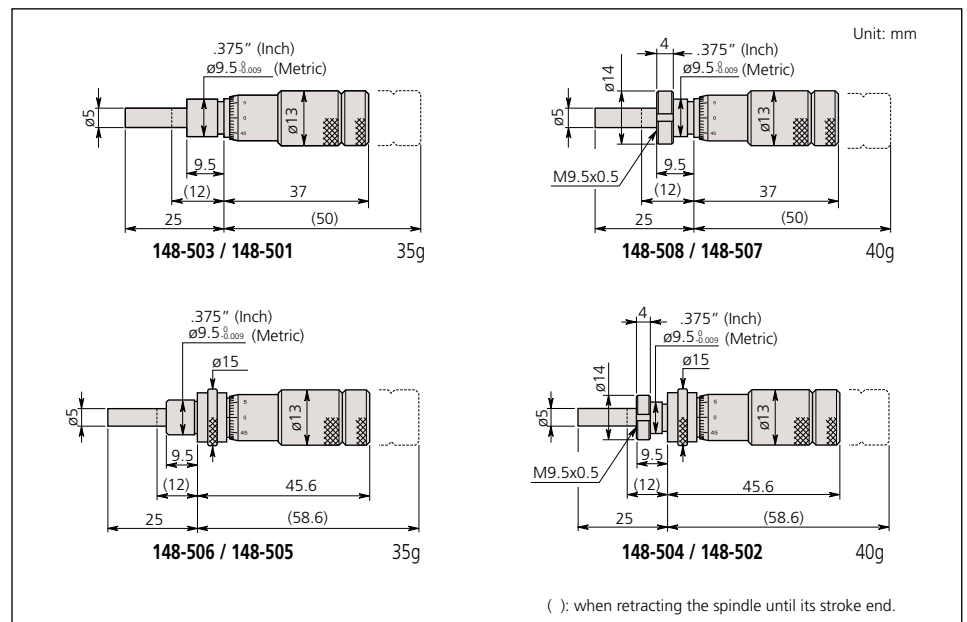
Spindle pitch: 0.5mm

Spindle face: Flat or spherical of SKS3 (more than HRC60), lapped surface

Scale surface: Hard-chrome plating

Fixture thickness for clamp nut: 6mm

### DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 149 — Common Type in Small Size with Carbide-Tipped Spindle

### FEATURES

- Carbide tipped measuring face.

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 15mm	<b>149-132</b>	±2µm	9.5mm	Plain	Flat (carbide tip)	—
0 - 15mm	<b>149-131</b>	±2µm	9.5mm	w/clamp nut	Flat (carbide tip)	—
0 - 15mm	<b>149-183</b>	±2µm	9.5mm	Plain*	Flat (carbide tip)	With spindle lock
0 - 15mm	<b>149-184</b>	±2µm	9.5mm	w/clamp nut*	Flat (carbide tip)	With spindle lock
0 - 15mm	<b>149-801</b>	±2µm	9.5mm	Plain	Spherical (SR4)	—
0 - 15mm	<b>149-802</b>	±2µm	9.5mm	w/clamp nut	Spherical (SR4)	—
15mm - 0	<b>149-821</b>	±2µm	9.5mm	Plain	Flat (carbide tip)	Reverse reading
15mm - 0	<b>149-822</b>	±2µm	9.5mm	w/ clamp nut	Flat (carbide tip)	Reverse reading

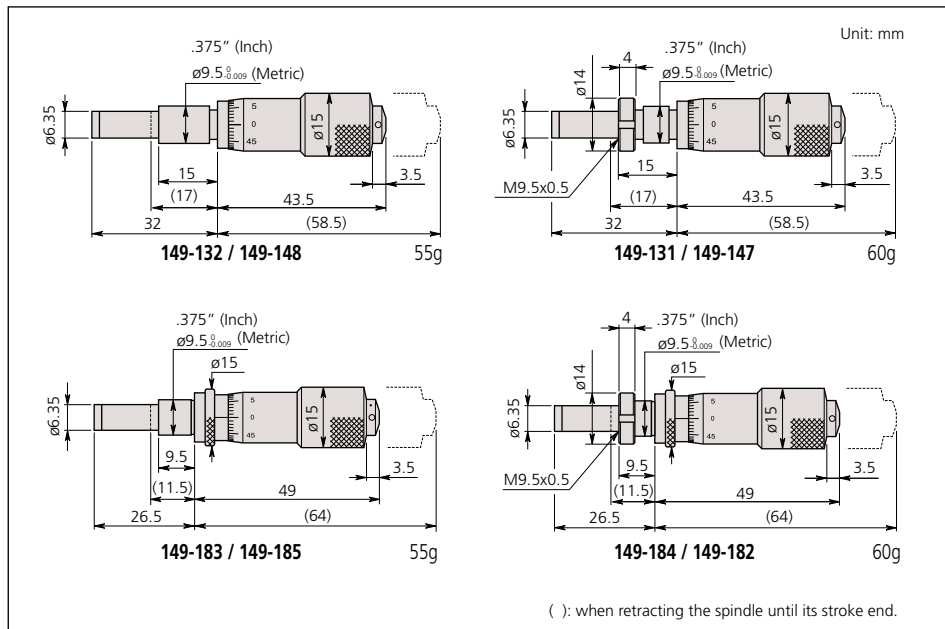
\*with spindle lock.

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	<b>149-148</b>	±.0001"	.375"	Plain	Flat (carbide tip)	—
0 - .5"	<b>149-147</b>	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	—
0 - .5"	<b>149-185</b>	±.0001"	.375"	Plain*	Flat (carbide tip)	With spindle lock
0 - .5"	<b>149-182</b>	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	With spindle lock
0 - .5"	<b>149-811</b>	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - .5"	<b>149-812</b>	±.0001"	.375"	w/clamp nut	Spherical (SR4)	—
.5" - 0	<b>149-831</b>	±.0001"	.375"	Plain	Flat (carbide tip)	Reverse reading
.5" - 0	<b>149-832</b>	±.0001"	.375"	w/ clamp nut	Flat (carbide tip)	Reverse reading

\*with spindle lock.

### DIMENSIONS AND MASS



### Technical Data

Graduations: 0.01mm or .001"

Spindle pitch: 0.5mm

Spindle face: Flat with carbide tip (more than HRA90) or spherical, lapped surface

Scale surface: Hard-chrome plating

Fixture thickness for clamp nut: 6mm

(149-131, 149-147: 11.5mm)

# Micrometer Heads

## SERIES 150 — Common Type in Middle Size

### FEATURES

- Ratchet stop for constant force.
- Long spindle type is available for a variety of applications.
- Carbide tipped measuring face.

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	<b>150-192</b>	±2μm	10mm	Plain	Flat (carbide tip)	—
0 - 25mm	<b>150-191</b>	±2μm	10mm	w/clamp nut	Flat (carbide tip)	—
0 - 25mm	<b>150-209</b>	±2μm	10mm	Plain*	Flat (carbide tip)	—
0 - 25mm	<b>150-210</b>	±2μm	10mm	w/clamp nut*	Flat (carbide tip)	—
0 - 25mm	<b>150-801</b>	±2μm	10mm	Plain	Spherical (SR4)	—
0 - 25mm	<b>150-802</b>	±2μm	10mm	w/clamp nut	Spherical (SR4)	—
0 - 25mm	<b>150-821</b>	±2μm	10mm	Plain	Flat (carbide tip)	Reverse reading
0 - 25mm	<b>150-822</b>	±2μm	10mm	w/clamp nut	Flat (carbide tip)	Reverse reading
0 - 25mm	<b>150-190</b>	±2μm	10mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	<b>150-189</b>	±2μm	10mm	w/clamp nut	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	<b>150-196</b>	±2μm	10mm	Plain*	Flat (carbide tip)	w/ vernier (.0001mm)
0 - 25mm	<b>150-195</b>	±2μm	10mm	w/clamp nut*	Flat (carbide tip)	w/ vernier (.0001mm)
0 - 25mm	<b>150-211</b>	±2μm	10mm	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	<b>150-212</b>	±2μm	10mm	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	<b>150-219</b>	±2μm	10mm	Plain	Flat	Long spindle
0 - 25mm	<b>150-220</b>	±2μm	10mm	w/ clamp nut	Flat	Long spindle

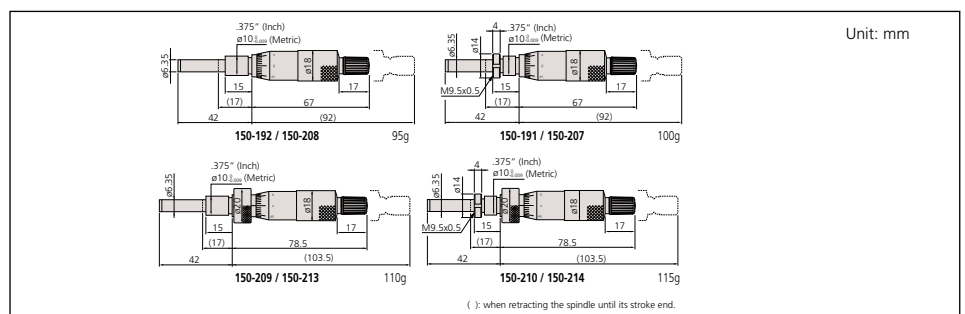
\*with spindle lock

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	<b>150-208</b>	±.0001"	.375"	Plain	Flat (carbide tip)	—
0 - 1"	<b>150-198</b>	±.0001"	.375"	Plain	Flat (carbide tip)	w/o ratchet stop
0 - 1"	<b>150-207</b>	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	—
0 - 1"	<b>150-197</b>	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	w/o ratchet stop
0 - 1"	<b>150-213</b>	±.0001"	.375"	Plain*	Flat (carbide tip)	—
0 - 1"	<b>150-214</b>	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	—
0 - 1"	<b>150-811</b>	±.0001"	.375"	Plain	Spherical (SR4)	—
0 - 1"	<b>150-812</b>	±.0001"	.375"	w/clamp nut	Spherical (SR4)	—
0 - 1"	<b>150-831</b>	±.0001"	.375"	Plain	Flat (carbide tip)	Reverse reading
0 - 1"	<b>150-832</b>	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	Reverse reading
0 - 1"	<b>150-206</b>	±.0001"	.375"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	<b>150-205</b>	±.0001"	.375"	w/clamp nut	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	<b>150-215</b>	±.0001"	.375"	Plain*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	<b>150-216</b>	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	<b>150-217</b>	±.0001"	.375"	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 1"	<b>150-218</b>	±.0001"	.375"	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 1"	<b>150-221</b>	±.0001"	.375"	Plain	Flat	Long spindle
0 - 1"	<b>150-222</b>	±.0001"	.375"	w/ clamp nut	Flat	Long spindle

\*with spindle lock

### DIMENSIONS AND MASS



150-801



150-191

### Technical Data

Graduations: 0.01mm, 0.001mm, .001" or .0001"

Spindle pitch: 0.5mm

Spindle face: Flat with carbide tip\* (more than HRA90) or spherical, lapped surface

\*Long spindle type: SKS3 (more than HRC60)

Scale surface: Hard-chrome plating

Fixture thickness for clamp nut: 11.5mm

# Micrometer Heads

## SERIES 151 — Common Type in Middle Size with 8mm Diameter Spindle

### FEATURES

- 8mm diameter spindle for heavy duty use.
- Ratchet stop for constant force.
- Carbide tipped measuring face.

### SPECIFICATIONS

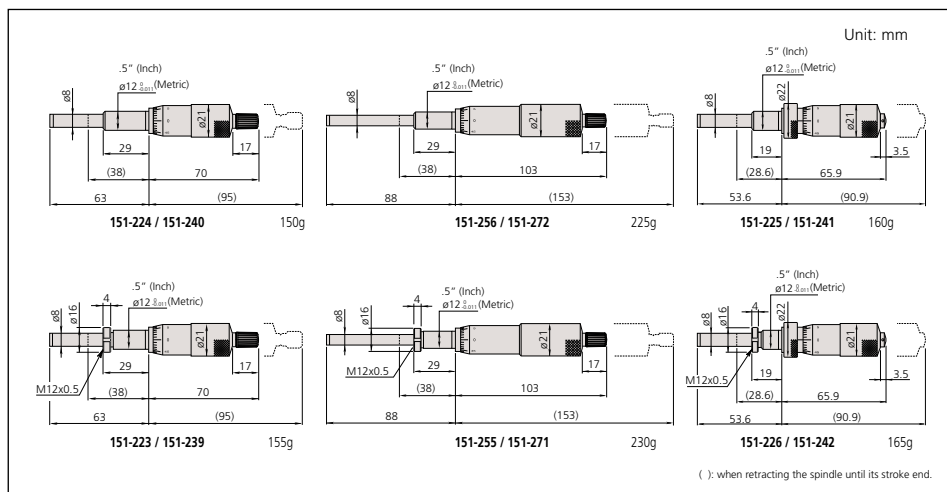
Metric						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	151-224	±2μm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	151-223	±2μm	12mm	w/clamp nut	Flat (carbide tip)	—
0 - 25mm	151-214	±2μm	12mm	Plain*	Flat (carbide tip)	—
0 - 25mm	151-213	±2μm	12mm	w/clamp nut*	Flat (carbide tip)	—
0 - 25mm	151-222	±2μm	12mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	151-221	±2μm	12mm	w/clamp nut	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	151-212	±2μm	12mm	Plain*	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	151-211	±2μm	12mm	w/clamp nut*	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	151-227	±2μm	12mm	Plain	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	151-228	±2μm	12mm	w/clamp nut	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	151-225	±2μm	12mm	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 25mm	151-226	±2μm	12mm	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 50mm	151-256	±4μm	12mm	Plain	Flat (carbide tip)	—
0 - 50mm	151-255	±4μm	12mm	w/clamp nut	Flat (carbide tip)	—
0 - 50mm	151-260	±4μm	12mm	Plain	Flat (carbide tip)	w/o ratchet stop
0 - 50mm	151-259	±4μm	12mm	w/ clamp nut	Flat (carbide tip)	w/o ratchet stop

\*with spindle lock

Inch						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	151-240	±.0001"	.5"	Plain	Flat (carbide tip)	—
0 - 1"	151-239	±.0001"	.5"	w/clamp nut	Flat (carbide tip)	—
0 - 1"	151-238	±.0001"	.5"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	151-237	±.0001"	.5"	w/clamp nut	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	151-243**	±.0001"	.5"	Plain*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	151-244**	±.0001"	.5"	w/clamp nut*	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	151-241	±.0001"	.5"	Plain*	Flat (carbide tip)	w/o ratchet stop
0 - 1"	151-242	±.0001"	.5"	w/clamp nut*	Flat (carbide tip)	w/o ratchet stop
0 - 2"	151-272	±.0002"	.5"	Plain	Flat (carbide tip)	—
0 - 2"	151-271	±.0002"	.5"	w/clamp nut	Flat (carbide tip)	—

\*with spindle lock \*\*with ratchet stop

### DIMENSIONS AND MASS



### Technical Data

Graduations: 0.01mm, 0.001mm, .001" or .0001"  
 Spindle pitch: 0.5mm  
 Spindle face: Flat with carbide tip (more than HRA90), lapped surface  
 Scale surface: Hard-chrome plating  
 Fixture thickness for clamp nut: 25.5mm

# Micrometer Heads

## SERIES 153 — Non-Rotating Spindle Type

### FEATURES

- Carbide tipped measuring face.
- Non-rotating spindle.

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 15mm	<b>153-101</b>	±3μm	9.5mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	<b>153-201*</b>	±3μm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	<b>153-202*</b>	±3μm	12mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)
0 - 25mm	<b>153-203</b>	±3μm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	<b>153-204</b>	±3μm	12mm	Plain	Flat (carbide tip)	w/ vernier (0.001mm)

\*with ratchet stop

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - .5"	<b>153-108</b>	±.00015"	.375"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	<b>153-205*</b>	±.00015"	.5"	Plain	Flat (carbide tip)	—
0 - 1"	<b>153-206*</b>	±.00015"	.5"	Plain	Flat (carbide tip)	w/ vernier (.0001")
0 - 1"	<b>153-207</b>	±.00015"	.5"	Plain	Flat (carbide tip)	—
0 - 1"	<b>153-208</b>	±.00015"	.5"	Plain	Flat (carbide tip)	w/ vernier (.0001")

\*with ratchet stop



### Technical Data

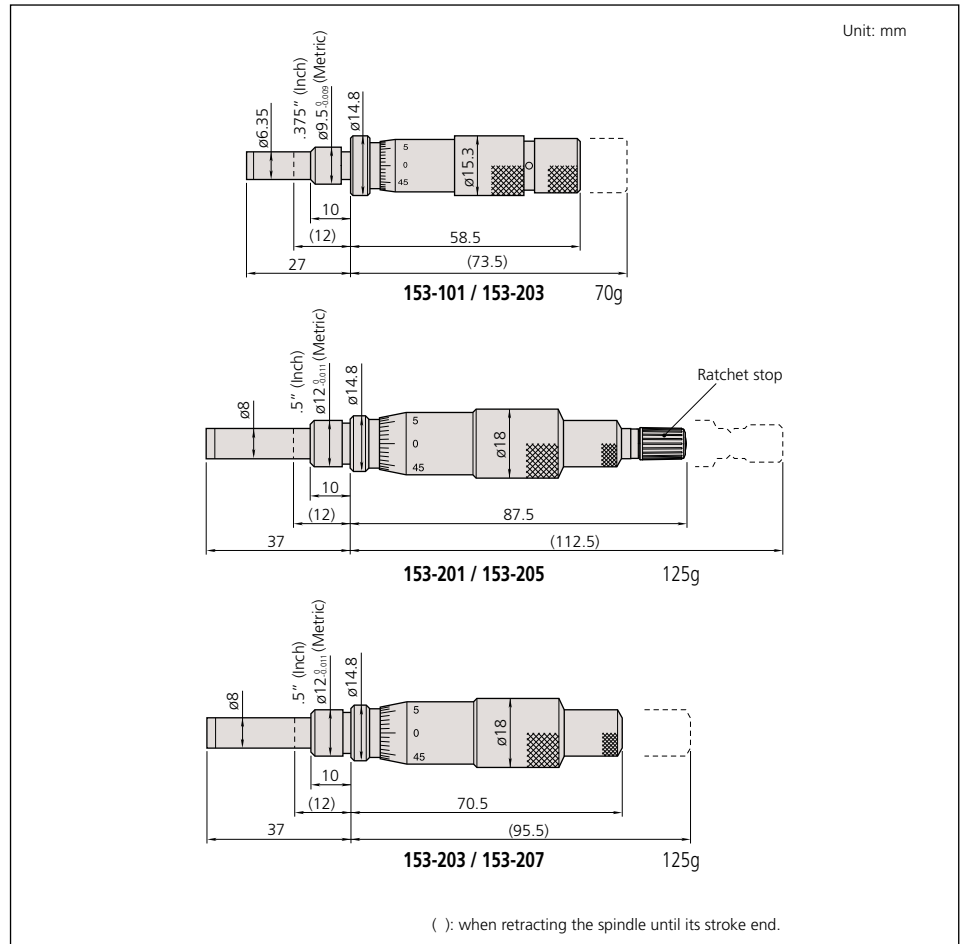
Graduations: 0.01mm, 0.001mm, .001" or .0001"

Spindle pitch: 0.5mm

Spindle face: Flat with carbide tip (more than HRA90), lapped surface

Scale surface: Hard-chrome plating

### DIMENSIONS AND MASS





# Micrometer Heads

## SERIES 152 — Quick Spindle Feeding of 1mm/rev.

### FEATURES

- Quick spindle feeding of 1mm/rev.
- Carbide tipped measuring face.



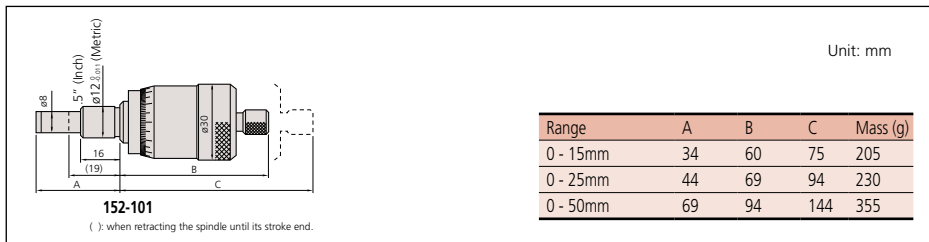
152-102

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 15mm	152-101	±2μm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	152-102	±2μm	12mm	Plain	Flat (carbide tip)	—
0 - 50mm	152-103	±4μm	12mm	Plain	Flat (carbide tip)	—

### DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 152 — Large Thimble Type for Fine Feeding

### FEATURES

- The large diameter thimble for fine adjustment and positioning.
- Carbide tipped measuring face.

### SPECIFICATIONS

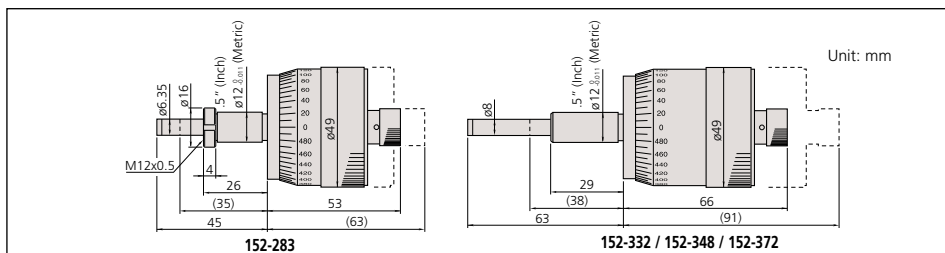
#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 10mm	152-283	±2μm	12mm	w/clamp nut	Flat (carbide tip)	—
0 - 25mm	152-332	±2μm	12mm	Plain	Flat (carbide tip)	—
0 - 25mm	152-348	±2μm	12mm	Plain	Flat (carbide tip)	Bidirectional graduation
0 - 50mm	152-380	±4μm	12mm	Plain	Flat (carbide tip)	Bidirectional graduation

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	152-372	±.0001"	.5"	Plain	Flat (carbide tip)	Bidirectional graduation
0 - 2"	152-388	±.0002"	.5"	Plain	Flat (carbide tip)	Bidirectional graduation

### DIMENSIONS AND MASS



### Technical Data

Graduations: 0.01mm

Spindle pitch: 1mm

Spindle face: Flat with carbide tip (more than HRA90), lapped surface

Scale surface: Hard-chrome plating



152-283

### Technical Data

Graduations: 0.002mm or .0001"

Spindle pitch: 1mm

Spindle face: Flat with carbide tip (more than HRA90), lapped surface

Scale surface: White anodized aluminum

Fixture thickness for clamp nut: 22.5mm

# Micrometer Heads

## SERIES 110 — Differential Screw Translator (Extra-Fine Feeding) Type

### FEATURES

- Differential movements of spindle threads and units allow fine spindle feeding (0.05mm/rev\*), resulting in high resolution measurements.

\*110-502, 110-504: 0.025mm/rev / .001"/rev (fine feeding)

- Carbide tipped measuring face.
- Non-rotating spindle.

### SPECIFICATIONS

#### Metric

Range	Order No.	Graduation	Accuracy*	Stem dia.	Stem	Spindle face
0 - 1mm	<b>110-105</b>	0.001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 1mm	<b>110-106</b>	0.0001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 1mm	<b>110-107</b>	0.001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 1mm	<b>110-108</b>	0.0001mm	±3 / ±1.5µm	12mm	w/clamp nut	Flat (carbide tip)
0 - 2.5mm	<b>110-101</b>	0.001mm	±3 / ±1.5µm	12mm	w/clamp nut	Spherical (SR8)
0 - 2.5mm	<b>110-102</b>	0.0001mm	±3 / ±1.5µm	12mm	w/clamp nut	Spherical (SR8)
0 - 13mm	<b>110-502*</b>	0.0005mm 0.01mm	±3 / ±1.5µm	9.5mm	w/clamp nut	Spherical (SR3)

\* Narrow range: 0.2mm

#### Inch

Range	Order No.	Graduation	Accuracy*	Stem dia.	Stem	Spindle face
0 - .02"	<b>110-115</b>	.00005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .02"	<b>110-116</b>	.000005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .02"	<b>110-117</b>	.00005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .02"	<b>110-118</b>	.000005"	±.00015" / ±.00006"	.5"	w/clamp nut	Flat (carbide tip)
0 - .05"	<b>110-111</b>	.00005"	±.0002" / ±.00006"	.5"	w/clamp nut	Spherical (SR8)
0 - .05"	<b>110-112</b>	.000005"	±.0002" / ±.00006"	.5"	w/clamp nut	Spherical (SR8)
0 - .5"	<b>110-504*</b>	.00002" .001"	±.00015" / ±.00006"	.375"	w/clamp nut	Spherical (SR3)

\* Narrow range: .006"

### Technical Data

Graduations: 0.001mm, 0.0005mm, 0.0001mm, .00005" or .00002", .000005"

Spindle pitch: 0.05mm or 0.025mm

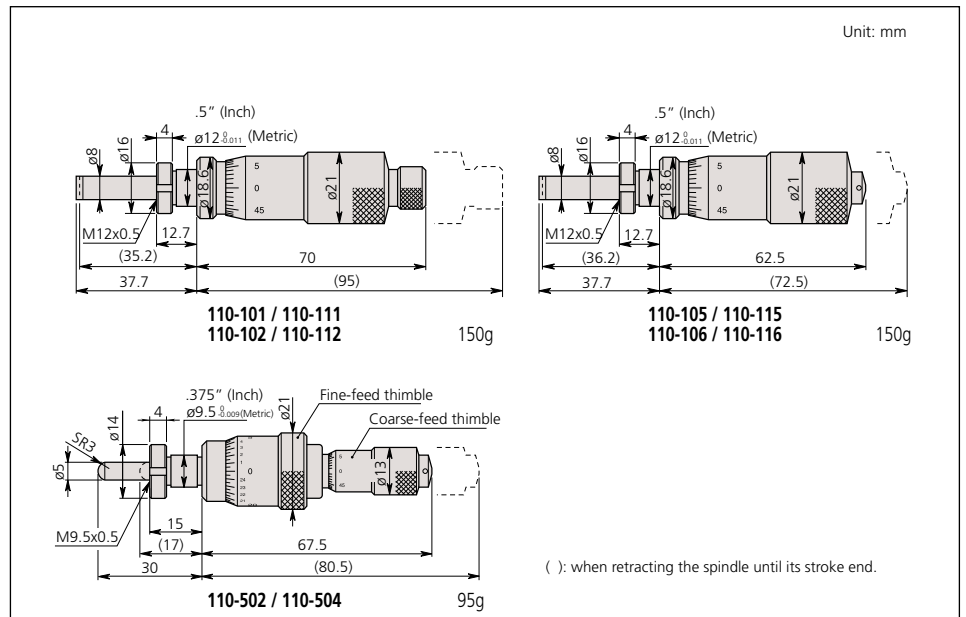
Spindle face: Flat with carbide tip (more than HRA90) or spherical, lapped surface

Scale surface: Hard-chrome plating

Fixture thickness for clamp nut: 9.5mm (11.5mm\*)

\*110-502, 110-504

### DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 152 — for XY-Stage

### FEATURES

#### 152-390, 152-389, 152-391, 152-392

- Non-rotating device is attached to the spindle tip.
- Floating thimble allows easy zero setting at any spindle position.
- Bidirectional graduation for easy reading in both directions.

#### 152-401, 152-402, 152-403, 152-404

- Adjustable spindle can be moved with the thimble held at any position, allowing easy zero-setting.

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	<b>152-392</b>	$\pm 2\mu\text{m}$	18mm	Plain	Flat (hardened) with non-rotating device	for X-axis, Bidirectional grad.
0 - 25mm	<b>152-389</b>	$\pm 2\mu\text{m}$	18mm	Plain		for Y-axis, Bidirectional grad.
0 - 25mm	<b>152-402*</b>	$\pm 2\mu\text{m}$	18mm	Plain	Spherical with carbide tip (SR10)	for X-axis, with vernier
0 - 25mm	<b>152-401*</b>	$\pm 2\mu\text{m}$	18mm	Plain		for Y-axis, with vernier

\*0.001mm reading is obtained with vernier

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	<b>152-392</b>	$\pm .0001"$	.709"	Plain	Flat (hardened) with non-rotating device	for X-axis, Bidirectional grad.
0 - 1"	<b>152-391</b>	$\pm .0001"$	.709"	Plain		for Y-axis, Bidirectional grad.
0 - 1"	<b>152-404*</b>	$\pm .0001"$	.709"	Plain	Spherical with carbide tip (SR10)	for X-axis, with vernier
0 - 1"	<b>152-403*</b>	$\pm .0001"$	.709"	Plain		for Y-axis, with vernier

\*.0001" reading is obtained with vernier



152-390

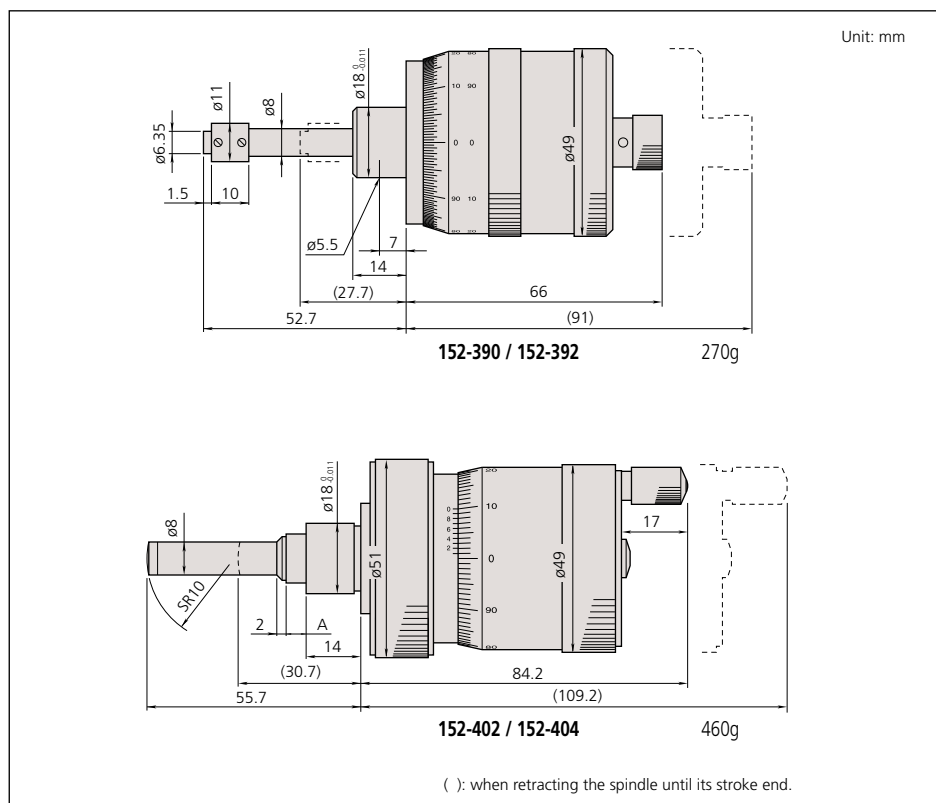
### Technical Data

Graduations: 0.005mm, 0.001mm\* or .0001"\*  
\*vernier reading

Spindle pitch: 1mm

Spindle face: Flat (hardened) or spherical with carbide tip (more than HRA90), lapped surface  
Scale surface: White anodized aluminum

### DIMENSIONS AND MASS



# Micrometer Heads

## SERIES 197 — Non-Rotating Spindle and Large Thimble



197-101

### Technical Data

Graduations: 0.005mm or .0002"  
 Spindle pitch: 1mm  
 Spindle face: Flat with carbide tip (more than HRA90), lapped surface  
 Scale surface: White anodized aluminum

### FEATURES

- Large thimble micrometer head with non-rotating spindle.
- Floating thimble allows easy zero setting at any spindle position.
- Bidirectional graduation for easy reading in both directions.
- Dual-spindle mechanism for quick feeding of 1mm/rev.
- Carbide tipped measuring face.

### SPECIFICATIONS

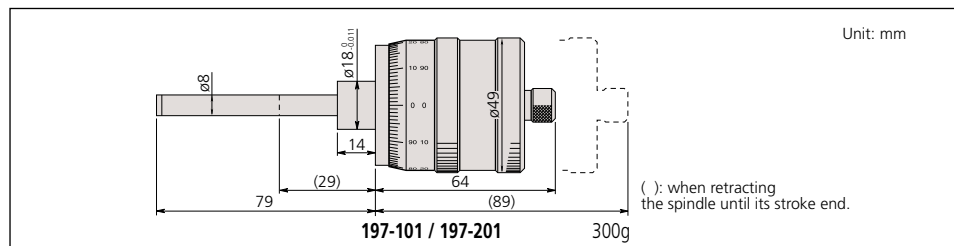
#### Metric

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 50mm	197-101	±5µm	18mm	Plain	Flat (carbide tip)	Bidirectional graduation

#### Inch

Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 2"	197-201	±.0002"	.709"	Plain	Flat (carbide tip)	Bidirectional graduation

### DIMENSION AND MASS



153-301

### Technical Data

Graduations: 0.0005mm or .00001"  
 Spindle pitch: 0.5mm  
 Spindle face: Flat with carbide tip (more than HRA90), lapped surface  
 Scale surface: White anodized aluminum

# Micrometer Heads

## SERIES 153 — Fine Graduation and High Accuracy

### FEATURES

- Fine graduation and high resolution model.
- Large thimble micrometer head with non-rotating spindle.
- Bidirectional graduation for easy reading in both directions.
- Carbide tipped measuring face.

### SPECIFICATIONS

#### Metric

Range	Order No.	Accuracy*	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	153-301	±1 / ±0.5µm	18mm	Plain	Flat (carbide tip)	Bidirectional graduation

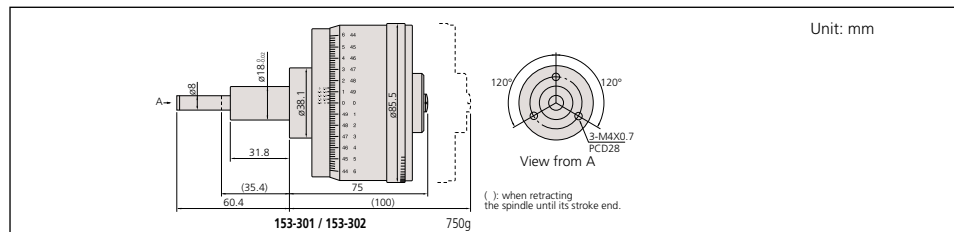
\*Wide range / narrow range

#### Inch

Range	Order No.	Accuracy*	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	153-302	±.00004" / ±.00002"	.709"	Plain	Flat (carbide tip)	Bidirectional graduation

\*Wide range / narrow range

### DIMENSIONS AND MASS



# Digital Micrometer Heads

## SERIES 164 — High Resolution and High Accuracy

### FEATURES

- Connecting with an external display unit, the Electronic Micrometer Head provides the most efficient means of obtaining precision measurement on XY-stages and similar applications.
- External display units (KA Counter) are optional.



164-141



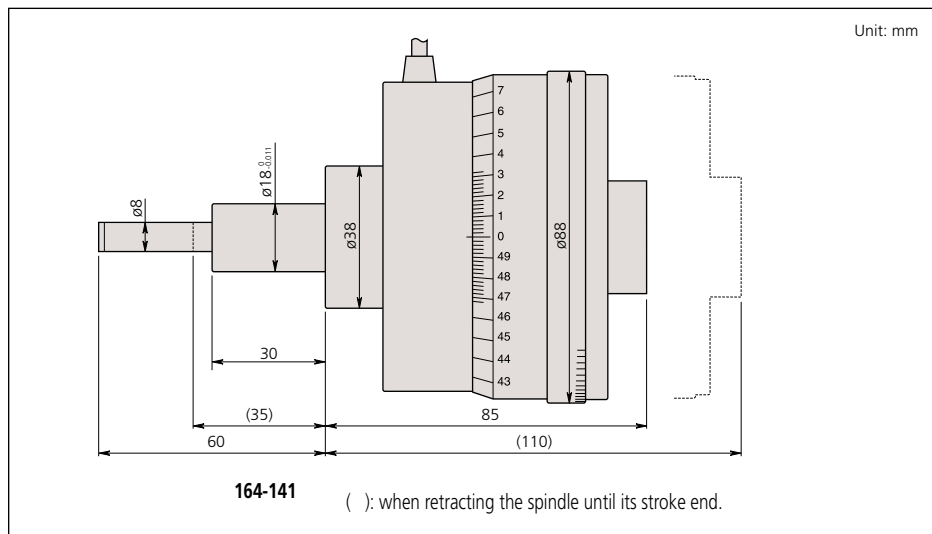
174-173A

### SPECIFICATIONS

Metric						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	164-141	$\pm 0.001\text{mm} / \pm 0.0005\text{mm}^*$	38mm	Plain	Flat (carbide tip)	High accuracy model

\*Wide range / narrow range

### DIMENSIONS AND MASS

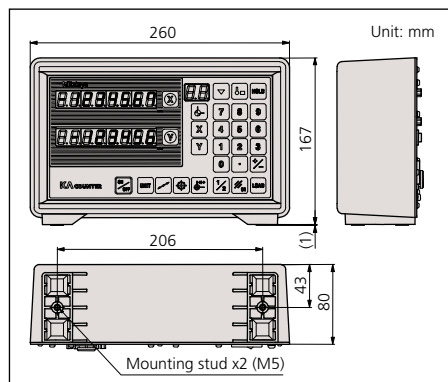


### SPECIFICATIONS: KA counter

Order No.	174-173A
Resolution	0.001mm, 0.005mm, .0001", .0005" (selectable)
Mass	1.1kg

09AAA207: Adapter (must purchase)

### DIMENSIONS



### Technical Data

Accuracy:  $\pm 2\mu\text{m}$

Stem diameter: 18mm

Resolution: 0.0001mm

When using the external KA counter (must purchase adapter: **09AAA207**)



# Micrometer Heads

## SERIES 250 — with Digit Counter

### FEATURES

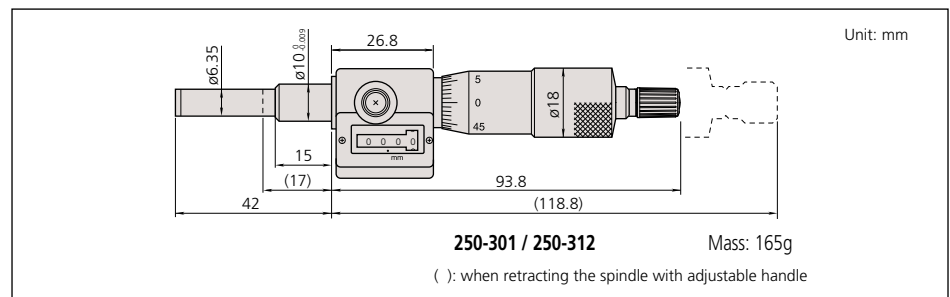
- Digit counter for easy reading of spindle movement.
- Carbide tipped measuring face.
- Ratchet Stop for constant force.

### SPECIFICATIONS

Metric						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 25mm	250-301	±2µm	10mm	Plain	Flat (carbide tip)	—

Inch						
Range	Order No.	Accuracy	Stem dia.	Stem	Spindle face	Remarks
0 - 1"	250-312	±.0001"	.375"	Plain	Flat (carbide tip)	w / vernier (.0001")

### DIMENSIONS AND MASS



### Technical Data

Graduations: 0.01mm or .0001"  
 Spindle pitch: 0.5mm  
 Spindle face: Flat with carbide tip (more than HRA90), lapped surface  
 Scale surface: Hard-chrome plating

# Micro Jack

## SERIES 7

### FEATURES

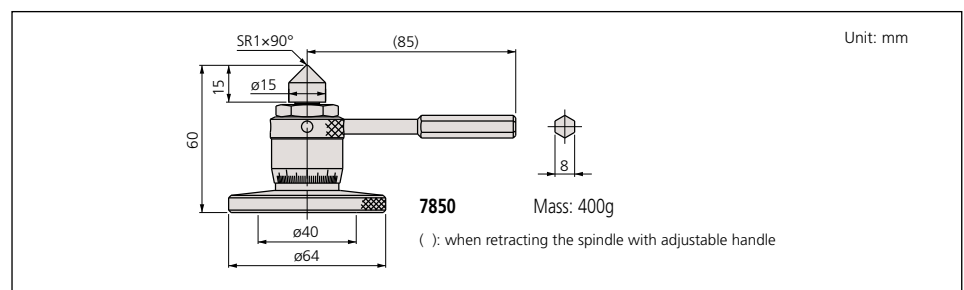
- Used for accurate leveling of machines, surface plates, and other precision instruments.
- Easy adjustment under heavy load.



### SPECIFICATIONS

Metric				
Range	Order No.	Graduation	Max. Load	Remarks
60 - 75mm	7850	0.01mm	400kg	adjustable handle

### DIMENSIONS AND MASS



### Technical Data

Graduations: 0.01mm



# Precision Lead Screw

## FEATURES

- Mitutoyo manufactures simple and less expensive precision lead screws for precise positioning mechanisms and fine feed mechanisms, in addition to the conventional micrometer heads.
- Mitutoyo also manufactures screws with special specifications, such as 0.25 mm pitch, as well as those with the standard 0.5 mm feed pitch and with dimensions and forms that meet customer's requirements.

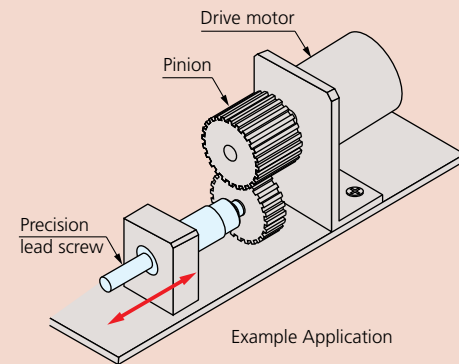


## SPECIFICATIONS

Order No.	04AZA160	04AZA161	04AZA162	04AZA163	04AZA164	04AZA165
Model	AS-6.5	BS-6.5	AS-13	BS-13	AS-25	BS-25
Stroke	6.5		13		25	
Feeding pitch	0.5					
Feeding accuracy	±5μm			±2μm		
Stem diameter	ø6 <sup>-0.008</sup>		ø9.5 <sup>-0.009</sup>		ø10 <sup>-0.009</sup>	
Tip diameter	ø3.5		ø5		ø6.35	
Tail diameter	ø3 <sup>-0.01</sup>		ø5 <sup>-0.012</sup>		ø6 <sup>-0.015</sup>	
Screw nominal diameter	M4.5 x 0.5		0		M7.35 x 0.5	
Sleeve diameter	ø7		ø10.5		ø12	
Measuring face	Hardening				With Carbide tip	
Mass (g)	10	11	27	30	61	64
Others	•AS type: Flat spindle tip without nut •BS type: Spherical spindle tip with nut					

## Technical Data

- Durability: 100,000 cycles are guaranteed (use condition: 4 kg load; 2 kg for AS-6.5 and BS-6.5)
- Main applications
  - Precision feed stages
  - Fine adjustment of optical elements (mirrors, prisms)
  - Fiber optic centering devices
  - Various assembly and adjustment jigs



## DIMENSIONS

Unit: mm

**Type A: Straight type**

**Type B: Stem with nut**

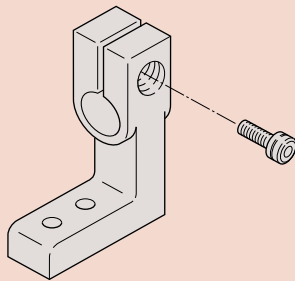
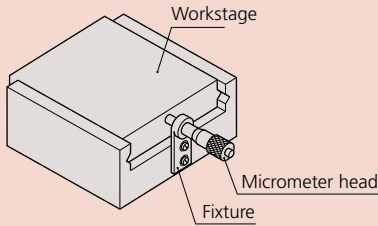
Order No.	L	L1	L2	L3	L4	L5
04AZA160	39	15	14.5	9	6	—
04AZA161	39	15	14.5	7.5	6	3
04AZA162	57.5	25	21.5	15.5	8	—
04AZA163	57.5	25	21.5	15.5	8	4
04AZA164	98.5	42	39.5	27	10	—
04AZA165	98.5	42	39.5	27	10	4

# Fixtures for Micrometer Heads

## FEATURES

• The act of fabricating brackets to mount micrometer heads for each particular application can be laborious and costly. Mitutoyo offers various types of fixtures for micrometer heads to meet a wide range of applications. These fixtures are made of nickel-plated cast iron.

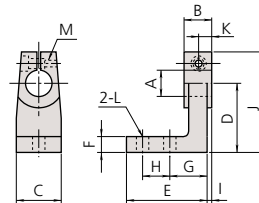
• There are two types of fixtures for micrometer heads with or without clamping nut on the stem.



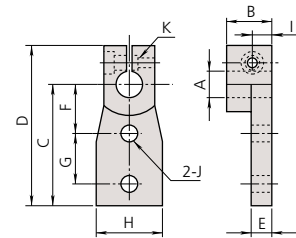
**Note:** Supplied with a socket head screw (M3x0.5x12mm) for the fixtures to be used with a micrometer head without clamp nut (plain stem type micrometer head).

## DIMENSIONS: Fixtures for plain stem type micrometer heads

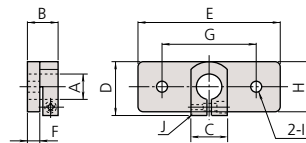
Unit: mm



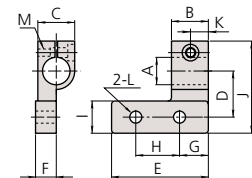
Order No.	303560	303569	303579
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	14.5	19.5	19.5
D	20	30	30
E	23	35	35
F	5	7	7
G	11	16	16
H	8	12	12
I	1.5	3.25	3.25
J	32.5	42.5	42.5
K	4.5	7.25	7.25
L	ø3.4	ø4.5	ø4.5
M	M3x0.5	M3x0.5	M3x0.5



Order No.	303564	303573	303583
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	30	40	40
D	42.5	52.5	52.5
E	4	6	6
F	15	18	18
G	10	15	15
H	15	20	20
I	4.5	7.25	7.25
J	ø3.4	ø4.5	ø4.5
K	M3x0.5	M3x0.5	M3x0.5



Order No.	303562	303571	303581
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	15	15	15
D	20	22.5	22.5
E	40	60	60
F	3	5	5
G	30	40	40
H	15	20	20
I	ø3.4	ø4.5	ø4.5
J	M3x0.5	M3x0.5	M3x0.5

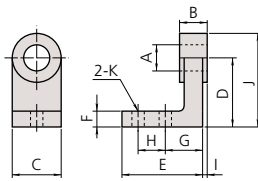


Order No.	303566	303575	303585
A	ø9.5	ø9.5	ø10
B	9	14.5	14.5
C	15	15	15
D	15	20	20
E	25	40	40
F	8.5	8.5	8.5
G	7.5	10	10
H	10	20	20
I	10	15	15
J	32.5	40	40
K	4.5	7.25	7.25
L	ø3.4	ø4.5	ø4.5
M	M3x0.5	M3x0.5	M3x0.5

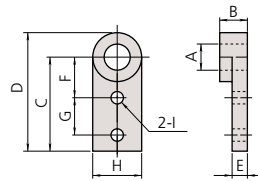


### DIMENSIONS: Fixtures for micrometer heads with clamp nut

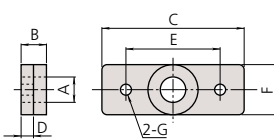
Unit: mm



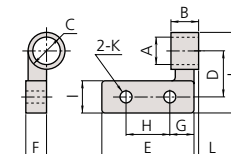
Order No.	303559	303568	303578
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	14.5	19.5	19.5
D	20	30	30
E	24	35	35
F	5	7	7
G	11	16	16
H	8	12	12
I	0.5	1.75	1.75
J	27.5	40	40
K	ø3.4	ø4.5	ø4.5



Order No.	303563	303572	303582
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	30	40	40
D	37.5	50	50
E	4.5	6.5	6.5
F	15	18	18
G	10	15	15
H	15	20	20
I	ø3.4	ø4.5	ø4.5



Order No.	303561	303570	303580
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	40	60	60
D	3.5	5.5	5.5
E	30	40	40
F	15	20	20
G	ø3.4	ø4.5	ø4.5



Order No.	303565	303574	303584
A	ø9.5	ø9.5	ø10
B	6	11.5	11.5
C	ø15	ø15	ø15
D	15	20	20
E	25	40	40
F	8.5	8.5	8.5
G	7.5	10	10
H	10	20	20
I	10	15	15
J	27.5	35	35
K	ø3.4	ø4.5	ø4.5
L	0.75	1.25	1.25



**Holtest ABSOLUTE Borematic**



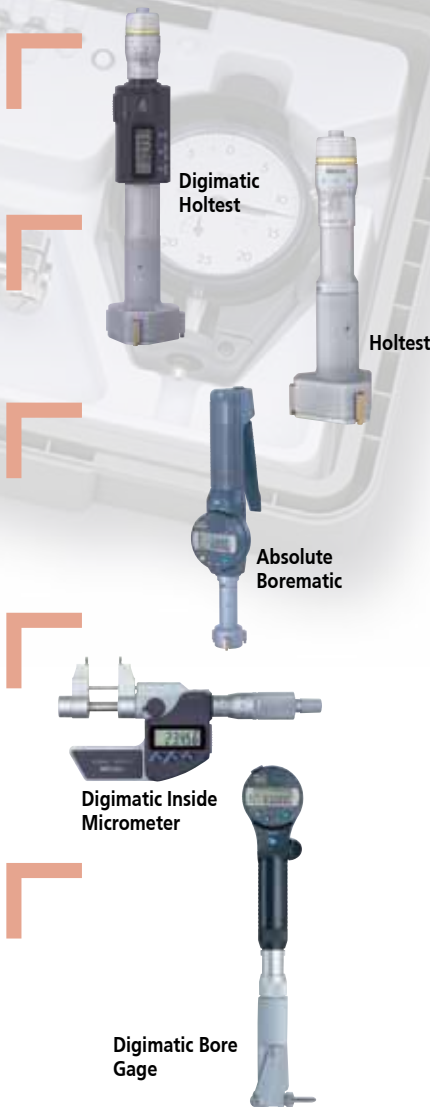
**Inside Micrometers**



**Bore Gages**

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**Digimatic Holtest**

**Holtest**

**Absolute Borematic**

**Digimatic Inside Micrometer**

**Digimatic Bore Gage**



# Digimatic Holtest

## SERIES 468 — Three-Point Internal Micrometers

### FEATURES

- TiN-coated measuring contact points provide excellent durability and impact resistance and allow the instrument to measure to the bottom of a blind hole (up to 100mm / 4" models).
- Large LCD readout.
- Functions available: Presetting, Zero/ABS, Auto power On/Off, Data hold, Data output, Error alarm, Battery replacement alarm.
- With Ratchet Stop for constant force.
- Can measure deep holes by attaching an Extension rod (optional).
- Setting rings for origin point setting are optional.
- Supplied in fitted plastic case up to 100mm / 4" . Over 100mm / 4" supplied in wooden case.



468-261



468-263



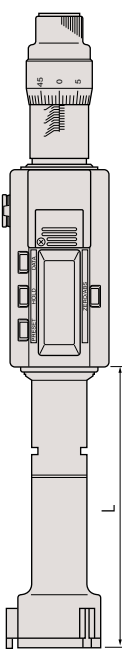
468-274



TiN coated contact points  
(\*-10" suffix models only)

### DIMENSIONS AND MASS

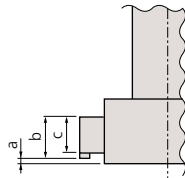
Unit: mm



Range	L	Mass (g)
6 - 8mm / .275 - .35"	45	400
8 - 10mm / .35 - .425"	45	400
10 - 12mm / .425 - .5"	45	400
12 - 16mm / .5 - .65"	76	430
16 - 20mm / .65 - .8"	76	430
20 - 25mm / .8 - 1"	91	500
25 - 30mm / 1 - 1.2"	103	510
30 - 40mm / 1.2 - 1.6"	103	510
40 - 50mm / 1.6 - 2"	102	530
50 - 63mm / 2 - 2.5"	105	650
62 - 75mm / 2.5 - 3.0"	105	660
75 - 88mm / 3.0 - 3.5"	105	990
87 - 100mm / 3.5 - 4.0"	105	1000
100 - 125mm / 4 - 5"	151	970
125 - 150mm / 5 - 6"	151	1060
150 - 175mm / 6 - 7"	151	1150
175 - 200mm / 7 - 8"	151	1240
200 - 225mm / 8 - 9"	151	1330
225 - 250mm / 9 - 10"	151	1420
250 - 275mm / 10 - 11"	151	1510
275 - 300mm / 11 - 12"	151	1600

#### Measuring a Blind Hole

The measuring contact points held in the jaws permit measuring the diameter of a blind hole to the bottom.  
(up to 100mm / 4" models)



Range	a	b	c
6 - 12mm / .275 - .5"	2	—	2.5
12 - 20mm / .5 - .8"	0.3	5.6	3.5
20 - 30mm / .8 - 1.2"	0.3	8.3	5.2
30 - 50mm / 1.2 - 2"	0.3	13	10
50 - 100mm / 2 - 4"	0.3	17	14
100 - 300mm / 4 - 12"	12.4	21	13.8



### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: 0.001mm or .00005"/0.001mm  
 (over 4 - 5" models: .0001"/0.001mm)  
 Contact point: TiN coating  
 Measuring method: Three-point method  
 Display: LCD  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: Approx. 8 months under normal use

### Function

Zero/ABS, Auto Power On/Off, Data hold, Data output,  
 Preset, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories

- 05CZA662:** SPC cable (1m / 40")
- 05CZA663:** SPC cable (2m / 80")
- 04AZB157:** Mounting plate for stand
- 156-101:** Stand
- 952322:** Extension rod 100mm / 3.94"  
For range 6-12mm / .275 - .5" models
- 952621:** Extension rod 150mm / 5.9"  
For range 12-20mm / .5" - .8" models
- 952622:** Extension rod 150mm / 5.9"  
For range 20-50mm / .8" - 2" models
- 952623:** Extension rod 150mm / 5.9"  
For range 50-300mm / 2" - 12" models



## SPECIFICATIONS

**Metric** Individual

Range	Order No.	Accuracy
6 - 8mm	<b>468-161</b>	±2µm
8 - 10mm	<b>468-162</b>	±2µm
10 - 12mm	<b>468-163</b>	±2µm
12 - 16mm	<b>468-164</b>	±2µm
16 - 20mm	<b>468-165</b>	±2µm
20 - 25mm	<b>468-166</b>	±3µm
25 - 30mm	<b>468-167</b>	±3µm
30 - 40mm	<b>468-168</b>	±3µm
40 - 50mm	<b>468-169</b>	±3µm
50 - 63mm	<b>468-170</b>	±3µm
62 - 75mm	<b>468-171</b>	±3µm
75 - 88mm	<b>468-172</b>	±3µm
87 - 100mm	<b>468-173</b>	±3µm
100 - 125mm	<b>468-174</b>	±5µm
125 - 150mm	<b>468-175</b>	±5µm
150 - 175mm	<b>468-176</b>	±5µm
175 - 200mm	<b>468-177</b>	±5µm
200 - 225mm	<b>468-178</b>	±5µm
225 - 250mm	<b>468-179</b>	±5µm
250 - 275mm	<b>468-180</b>	±5µm
275 - 300mm	<b>468-181</b>	±5µm

**Inch/Metric** Individual  with TiN coated contact points

Range	Order No.	Accuracy
.275 - .35" / 6.925 - 8.89mm	<b>468-261</b>	±.0001"
.35 - .425" / 8.89 - 10.795mm	<b>468-262</b>	±.0001"
.425 - .5" / 10.795 - 12.7mm	<b>468-263</b>	±.0001"
.5 - .65" / 12.7 - 16.51mm	<b>468-264</b>	±.0001"
.65 - .8" / 16.51 - 20.32mm	<b>468-265</b>	±.0001"
.8 - 1" / 20.32 - 25.4mm	<b>468-266</b>	±.00015"
1 - 1.2" / 25.4 - 30.48mm	<b>468-267</b>	±.00015"
1.2 - 1.6" / 30.48 - 40.64mm	<b>468-268</b>	±.00015"
1.6 - 2" / 40.64 - 50.8mm	<b>468-269</b>	±.00015"
2 - 2.5" / 50.8 - 63.5mm	<b>468-270</b>	±.00015"
2.5 - 3" / 63.5 - 76.2mm	<b>468-271</b>	±.00015"
3 - 3.5" / 76.2 - 88.9mm	<b>468-272</b>	±.00015"
3.5 - 4" / 88.9 - 101.6mm	<b>468-273</b>	±.00015"
4 - 5" / 101.6 - 127mm	<b>468-274</b>	±.00025"
5 - 6" / 127 - 152.4mm	<b>468-275</b>	±.00025"
6 - 7" / 152.4 - 177.8mm	<b>468-276</b>	±.00025"
7 - 8" / 177.8 - 203.2mm	<b>468-277</b>	±.00025"
8 - 9" / 203.2 - 228.6mm	<b>468-278</b>	±.00025"
9 - 10" / 228.6 - 254mm	<b>468-279</b>	±.00025"
10 - 11" / 254 - 279.4mm	<b>468-280</b>	±.00025"
11 - 12" / 279.4 - 304.8mm	<b>468-281</b>	±.00025"



468-986

### Complete Unit Set

Each set includes complete gages (display units and measuring heads for each size).

**Metric**

with TiN coated contact points

Range	Order No.	Individual range	Setting rings included	Remarks
6 - 12mm	<b>468-981</b>	6-8, 8-10, 10-12mm	ø8mm, ø10mm	—
12 - 25mm	<b>468-982</b>	12-16, 16-20, 20-25mm	ø16mm, ø20mm	—
25 - 50mm	<b>468-983</b>	25-30, 30-40, 40-50mm	ø30mm, ø40mm	—
50 - 75mm	<b>468-984</b>	50-63, 62-75mm	ø62mm	—
75 - 100mm	<b>468-985</b>	75-88, 87-100mm	ø87mm	—

**Inch/Metric**

with TiN coated contact points

Range	Order No.	Individual range	Setting rings included	Remarks
.275 - .5" / 6.925 - 12.7mm	<b>468-986</b>	.275-.35", .35-.425", .425-.5"	.35" DIA., .425" DIA.	—
.5 - 1" / 12.7 - 25.4mm	<b>468-987</b>	.5-.65", .65-.8", .8-1"	.65" DIA., .8" DIA.	—
1 - 2" / 25.4 - 50.8mm	<b>468-988</b>	1-1.2", 1.2-1.6", 1.6-2"	1.2" DIA., 1.6" DIA.	—
2 - 3" / 50.8 - 76.2mm	<b>468-989</b>	2-2.5", 2.5-3"	2.5" DIA.	—
3 - 4" / 76.2 - 101.6mm	<b>468-990</b>	3-3.5", 3.5-4"	3.5" DIA.	—



468-978

### Interchangeable Head Set

Each set includes one display unit with interchangeable measuring heads of the sizes specified.

**Metric**

with TiN coated contact points

Range	Order No.	Individual range	Setting rings included	Remarks
6 - 12mm	<b>468-971</b>	6-8, 8-10, 10-12mm	ø8mm, ø10mm	with extension rod
12 - 20mm	<b>468-972</b>	12-16, 16-20mm	ø16mm.	with extension rod
20 - 50mm	<b>468-973</b>	20-25, 25-30, 30-40, 40-50mm	ø25mm, ø40mm	with extension rod
50 - 100mm	<b>468-974</b>	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	with extension rod
100 - 200mm	<b>468-975</b>	100-125, 125-150, 150-175, 175-200mm	ø125mm, ø175mm	with extension rod

**Inch/Metric**

with TiN coated contact points

Range	Order No.	Individual range	Setting rings included	Remarks
.275 - .5" / 6.925 - 12.7mm	<b>468-976</b>	.275-.35", .35-.425", .425-.5"	.35" DIA., .425" DIA.	with extension rod
.5 - .8" / 12.7 - 20.32mm	<b>468-977</b>	.5-.65", .65-.8"	.65" DIA.	with extension rod
.8 - 2" / 20.32 - 50.8mm	<b>468-978</b>	.8-1", 1-1.2", 1.2-1.6", 1.6-2"	1" DIA., 1.6" DIA.	with extension rod
2 - 4" / 50.8 - 101.6mm	<b>468-979</b>	2-2.5", 2.5-3", 3-3.5", 3.5-4"	2.5" DIA., 3.5" DIA.	with extension rod
4 - 8" / 101.6 - 203.2mm	<b>468-980</b>	4-5", 5-6", 6-7", 7-8"	5" DIA., 7" DIA.	with extension rod

# Holtest

## SERIES 368 — Three-Point/Two-Point Internal Micrometers

These Holtests are versatile, self-centering three-point internal micrometers for the accurate and efficient direct-measurement of internal diameters. Three anvils, evenly spaced at 120° apart, contact the internal wall surfaces and find true alignment with the axis of the bore for accurate ID measurement.



368-268

368-174

### FEATURES

- TiN-coated measuring contact points (over 6mm / .275" range models) provide excellent durability and impact resistance and allow the instrument to measure to the bottom of a blind hole (up to 100mm / 4" models).
- Highly durable because of carbide-tipped contact points (anvils up to 12mm / .5" models).
- Can measure deep holes using an Extension rod (optional) which is available on models over 6mm (.275") measuring range.
- With Ratchet Stop for constant force.
- Setting Rings for zero point adjustment are optional.
- Supplied in fitted plastic case up to 100mm / 4". Over 100mm / 4" supplied in wooden case.



368-001

Two-point contact type

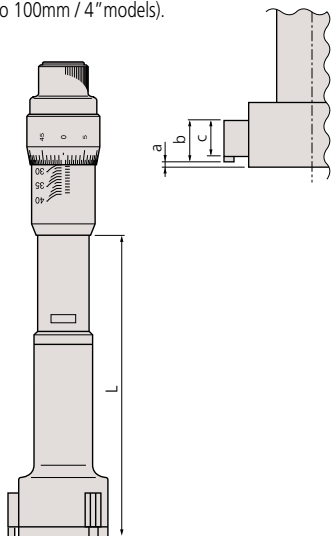


TiN coated contact points (excluding models up to 12mm/.5")

### DIMENSIONS

#### Measuring a Blind Hole

The measuring contact points held in the jaws permit measuring the diameter of a blind hole right down to the bottom (up to 100mm / 4" models).



Unit: mm

Range	L	Mass (g)	Range	L	Mass (g)
2 - 2.5mm / .08 - .1"	12	88	40 - 50mm / 1.6 - 2"	102	330
2.5 - 3mm / .1 - .12"	12	88	50 - 63mm / 2 - 2.5"	105	440
3 - 4mm / .12 - .16"	22	91	62 - 75mm / 2.5 - 3"	105	450
4 - 5mm / .16 - .2"	22	91	75 - 88mm / 3 - 3.5"	105	490
5 - 6mm / .2 - .24"	22	91	87 - 100mm / 3.5 - 4"	105	500
6 - 8mm / .275 - .35"	59	57	100 - 125mm / 4 - 5"	161	1050
8 - 10mm / .35 - .425"	59	58	125 - 150mm / 5 - 6"	161	1120
10 - 12mm / .425 - .5"	59	59	150 - 175mm / 6 - 7"	161	1190
12 - 16mm / .5 - .65"	82	140	175 - 200mm / 7 - 8"	161	1260
16 - 20mm / .65 - .8"	82	145	200 - 225mm / 8 - 9"	161	1420
20 - 25mm / .8 - 1"	94	250	225 - 250mm / 9 - 10"	161	1580
25 - 30mm / 1 - 1.2"	94	270	250 - 275mm / 10 - 11"	161	1600
30 - 40mm / 1.2 - 1.6"	102	290	275 - 300mm / 11 - 12"	161	1690

Range	a	b	c
2 - 6mm / .08 - .275"	—	—	2
6 - 12mm / .275 - .5"	2	—	2.5
12 - 20mm / .5 - .8"	0.3	5.6	3.5
20 - 30mm / .8 - 1.2"	0.3	8.3	5.2
30 - 50mm / 1.2 - 2"	0.3	13	10
50 - 100mm / 2 - 4"	0.3	17	14
100 - 300mm / 4 - 12"	12.4	21	13.8



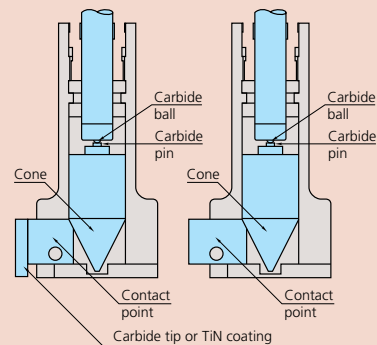
### Technical Data

Graduation: 0.001mm, 0.005mm\*, .0001" or .0002"\*  
(\*over 12mm or .5" models)

Range	Measuring method	Contact-point material
2 - 3mm / .08 - .12"	Two-point method	Hardened steel (HRC60.5 or more)
3 - 6mm / .12 - .28"	Two-point method	Hardened steel (HRC60.5 or more)
6 - 12mm / .28 - .5"	Three-point method	Carbide
over 12mm / over .5"	Three-point method	TiN coating (1700-2000Hv)

### Optional Accessories

- 952322:** Extension rod 100mm / 3.94"  
For range 6-12mm / .275-.5" models
- 952621:** Extension rod 150mm / 5.9"  
For range 12-20mm / .5" - .8" models
- 952622:** Extension rod 150mm / 5.9"  
For range 20-50mm / .8" - 2" models
- 952623:** Extension rod 150mm / 5.9"  
For range 50-300mm / 2"-12" models



Using the optional extension rod



## SPECIFICATIONS

Metric Individual <input type="checkbox"/>		
Range	Order No.	Accuracy
2 - 2.5mm	<b>368-001</b>	±2μm
2.5 - 3mm	<b>368-002</b>	±2μm
3 - 4mm	<b>368-003</b>	±2μm
4 - 5mm	<b>368-004</b>	±2μm
5 - 6mm	<b>368-005</b>	±2μm
6 - 8mm	<b>368-161</b>	±2μm
8 - 10mm	<b>368-162</b>	±2μm
10 - 12mm	<b>368-163</b>	±2μm
12 - 16mm	<b>368-164</b>	±2μm
16 - 20mm	<b>368-165</b>	±2μm
20 - 25mm	<b>368-166</b>	±3μm
25 - 30mm	<b>368-167</b>	±3μm
30 - 40mm	<b>368-168</b>	±3μm
40 - 50mm	<b>368-169</b>	±3μm
50 - 63mm	<b>368-170</b>	±3μm
62 - 75mm	<b>368-171</b>	±3μm
75 - 88mm	<b>368-172</b>	±3μm
87 - 100mm	<b>368-173</b>	±3μm
100 - 125mm	<b>368-174</b>	±5μm
125 - 150mm	<b>368-175</b>	±5μm
150 - 175mm	<b>368-176</b>	±5μm
175 - 200mm	<b>368-177</b>	±5μm
200 - 225mm	<b>368-178</b>	±5μm
225 - 250mm	<b>368-179</b>	±5μm
250 - 275mm	<b>368-180</b>	±5μm
275 - 300mm	<b>368-181</b>	±5μm

Inch Individual <input type="checkbox"/> with TiN coated contact points		
Range	Order No.	Accuracy
.08 - .1"	<b>368-021</b>	±.0001"
.1 - .12"	<b>368-022</b>	±.0001"
.12 - .16"	<b>368-023</b>	±.0001"
.16 - .2"	<b>368-024</b>	±.0001"
.2 - .24"	<b>368-025</b>	±.0001"
.24 - .28"	<b>368-026</b>	±.0001"
.275 - .35"	<b>368-261</b>	±.0001"
.35 - .425"	<b>368-262</b>	±.0001"
.425 - .5"	<b>368-263</b>	±.0001"
.5 - .65"	<b>368-264</b>	±.0001"
.65 - .8"	<b>368-265</b>	±.0001"
.8 - 1"	<b>368-266</b>	±.00015"
1 - 1.2"	<b>368-267</b>	±.00015"
1.2 - 1.6"	<b>368-268</b>	±.00015"
1.6 - 2"	<b>368-269</b>	±.00015"
2 - 2.5"	<b>368-270</b>	±.00015"
2.5 - 3"	<b>368-271</b>	±.00015"
3 - 3.5"	<b>368-272</b>	±.00015"
3.5 - 4"	<b>368-273</b>	±.00015"
4 - 5"	<b>368-274</b>	±.00025"
5 - 6"	<b>368-275</b>	±.00025"
6 - 7"	<b>368-276</b>	±.00025"
7 - 8"	<b>368-277</b>	±.00025"
8 - 9"	<b>368-278</b>	±.00025"
9 - 10"	<b>368-279</b>	±.00025"
10 - 11"	<b>368-280</b>	±.00025"
11 - 12"	<b>368-281</b>	±.00025"

### Complete Unit Set

Each set includes complete gages (micrometer head units and measuring heads for each size).

Metric Individual <input type="checkbox"/> with TiN coated contact points				
Range	Order No.	Individual range	Setting rings included	Remarks
2 - 3mm	<b>368-906</b>	2-2.5, 2.5-3mm	ø2.5mm	—
3 - 6mm	<b>368-907</b>	3-4, 4-5, 5-6mm	ø4mm, ø5mm	—
6 - 12mm	<b>368-911</b>	6-8, 8-10, 10-12mm	ø8mm, ø10mm	with extension rod
12 - 20mm	<b>368-912</b>	12-16, 16-20mm	ø16mm	with extension rod
20 - 50mm	<b>368-913</b>	20-25, 25-30, 30-40, 40-50mm	ø25mm, ø40mm	with extension rod
50 - 100mm	<b>368-914</b>	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	with extension rod
100 - 200mm	<b>368-915</b>	100-125, 125-150, 150-175, 175-200mm	ø125mm, ø175mm	with extension rod

Inch Individual <input type="checkbox"/> with TiN coated contact points				
Range	Order No.	Individual range	Setting rings included	Remarks
.08" - .12"	<b>368-926</b>	.08-.1", .1-.12"	.1" DIA.	—
.12" - .28"	<b>368-927</b>	.12-.16", .16-.2", .2-.24", .24-.28"	.16" DIA., .24" DIA.	—
.275" - .5"	<b>368-916</b>	.275-.35", .35-.425", .425-.5"	.35" DIA., .5" DIA.	with extension rod
.5" - .8"	<b>368-917</b>	.5-.65", .65-.8"	.65" DIA.	with extension rod
.8" - 2"	<b>368-918</b>	.8-1", 1-1.2", 1.2-1.6", 1.6-2"	1" DIA., 1.6" DIA.	with extension rod
2" - 4"	<b>368-919</b>	2-2.5", 2.5-3", 3-3.5", 3.5-4"	2.5" DIA., 3.5" DIA.	with extension rod
4" - 8"	<b>368-920</b>	4-5", 5-6", 6-7", 7-8"	5" DIA., 7" DIA.	with extension rod

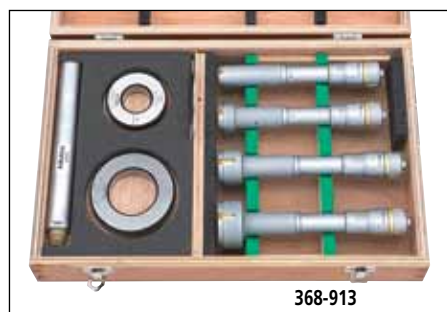
\*.0001" graduation



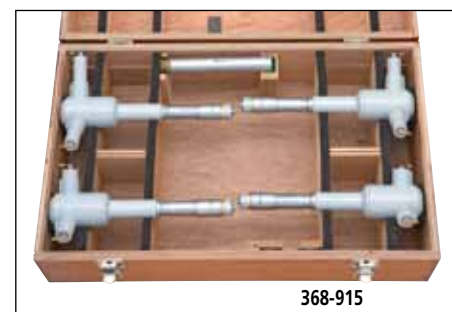
368-906



368-901-10



368-913



368-915

# Holtest (Type II)

## SERIES 368 — Three-Point Internal Micrometers

### FEATURES

- The Holtests (type II) have three contact points made of alloyed steel.
- Measurement can be taken closer to the bottom of the blind bore (up to 100mm / 4" models).
- Can measure deep holes using an Extension Rod (optional).
- With Ratchet Stop for constant force.
- Setting Rings for origin point settings are optional.
- Supplied in fitted plastic case up to 100mm / 4". Over 100mm / 4" supplied in wooden case.



368-869

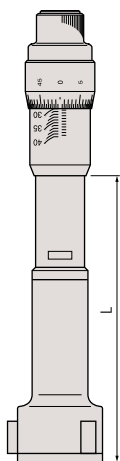


368-770



368-774

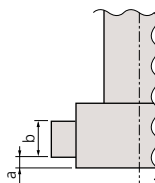
### DIMENSIONS AND MASS



Range	L	Mass (g)
12 - 16mm / .5 - .65"	82	150
16 - 20mm / .65 - .8"	82	150
20 - 25mm / .8 - 1"	94	260
25 - 30mm / 1 - 1.2"	94	280
30 - 40mm / 1.2 - 1.6"	98	290
40 - 50mm / 1.6 - 2"	98	330
50 - 63mm / 2 - 2.5"	102	440
62 - 75mm / 2.5 - 3"	102	450
75 - 88mm / 3 - 3.5"	105	560
87 - 100mm / 3.5 - 4"	105	570
100 - 125mm / 4 - 5"	161	1020
125 - 150mm / 5 - 6"	161	1110
150 - 175mm / 6 - 7"	161	1200
175 - 200mm / 7 - 8"	161	1300
200 - 225mm / 8 - 9"	161	1420
225 - 250mm / 9 - 10"	161	1540
250 - 275mm / 10 - 11"	161	1690
275 - 300mm / 11 - 12"	161	1860

### Measuring a Blind Hole

The measuring contact points held in the jaws permit measuring the diameter of a blind hole right down to the bottom (up to 100mm / 4" models).



Range	a	b
12 - 20mm / .5 - .8"	2.6	3.5
20 - 30mm / .8 - .12"	3.4	5.2
30 - 50mm / 1.2 - 2"	3.4	10
50 - 100mm / 2 - 4"	3.4	14
100 - 300mm / 4 - 12"	19.6	13.8

Unit: mm



### Technical Data

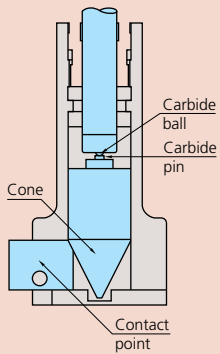
Graduation: 0.005mm or .0002"  
 Measuring method: Three-point method  
 Contact point: Hardening Steel (over HRC 60)

### Optional Accessories

- 952621:** Extension rod 150mm / 5.9"  
For range 12-20mm / .5 - .8" models
- 952622:** Extension rod 150mm / 5.9"  
For range 20-50mm / .8 - 2" models
- 952623:** Extension rod 150mm / 5.9"  
For range 50-300mm / 2 - 12" models



## SPECIFICATIONS



### HT (Type II)

Head Assy Order No.	Measuring Range	HT (type II) Order No.
04AZA839	12 - 16mm	368-764
04AZA840	16 - 20mm	368-765
04AZA848	20 - 25mm	368-766
04AZA849	25 - 30mm	368-767
04AZA857	30 - 40mm	368-768
04AZA858	40 - 50mm	368-769
04AZA870	50 - 63mm	368-770
04AZA871	62 - 75mm	368-771
04AZA872	75 - 88mm	368-772
04AZA873	87 - 100mm	368-773
04AZA895	100 - 125mm	368-774
04AZA896	125 - 150mm	368-775
04AZA897	150 - 175mm	368-776
04AZA898	175 - 200mm	368-777
04AZA899	200 - 225mm	368-778
04AZA900	225 - 250mm	368-779
04AZA901	250 - 275mm	368-780
04AZA902	275 - 300mm	368-781
04AZA841	.5 - .65"	368-864
04AZA842	.65 - .8"	368-865
04AZA850	.8 - 1"	368-866
04AZA851	1 - 1.2"	368-867
04AZA859	1.2 - 1.6"	368-868
04AZA860	1.6 - 2"	368-869
04AZA874	2 - 2.5"	368-870
04AZA875	2.5 - 3"	368-871
04AZA876	3 - 3.5"	368-872
04AZA877	3.5 - 4"	368-873
04AZA903	4 - 5"	368-874
04AZA904	5 - 6"	368-875
04AZA905	6 - 7"	368-876
04AZA906	7 - 8"	368-877
04AZA907	8 - 9"	368-878
04AZA908	9 - 10"	368-879
04AZA909	10 - 11"	368-880
04AZA910	11 - 12"	368-881

Metric Individual		
Range	Order No.	Accuracy
12 - 16mm	368-764	±2µm
16 - 20mm	368-765	±2µm
20 - 25mm	368-766	±3µm
25 - 30mm	368-767	±3µm
30 - 40mm	368-768	±3µm
40 - 50mm	368-769	±3µm
50 - 63mm	368-770	±3µm
62 - 75mm	368-771	±3µm
75 - 88mm	368-772	±3µm
87 - 100mm	368-773	±3µm
100 - 125mm	368-774	±5µm
125 - 150mm	368-775	±5µm
150 - 175mm	368-776	±5µm
175 - 200mm	368-777	±5µm
200 - 225mm	368-778	±5µm
225 - 250mm	368-779	±5µm
250 - 275mm	368-780	±5µm
275 - 300mm	368-781	±5µm

Inch Individual		
Range	Order No.	Accuracy
.5 - .65"	368-864	±.0001"
.65 - .8"	368-865	±.0001"
.8 - 1"	368-866	±.00015"
1 - 1.2"	368-867	±.00015"
1.2 - 1.6"	368-868	±.00015"
1.6 - 2"	368-869	±.00015"
2 - 2.5"	368-870	±.00015"
2.5 - 3"	368-871	±.00015"
3 - 3.5"	368-872	±.00015"
3.5 - 4"	368-873	±.00015"
4 - 5"	368-874	±.00025"
5 - 6"	368-875	±.00025"
6 - 7"	368-876	±.00025"
7 - 8"	368-877	±.00025"
8 - 9"	368-878	±.00025"
9 - 10"	368-879	±.00025"
10 - 11"	368-880	±.00025"
11 - 12"	368-881	±.00025"

### Complete Unit Set

Each set includes complete gages (micrometer head units and measuring heads for each size).

Metric				
Range	Order No.	Individual range	Setting rings included	Remarks
12 - 20mm	368-991	12-16, 16-20mm	ø16mm	with extension rod
20 - 50mm	368-992	20-25, 25-30, 30-40, 40-50mm	ø25mm, ø40mm	with extension rod
50 - 100mm	368-993	50-63, 62-75, 75-88, 87-100mm	ø62mm, ø87mm	with extension rod
100 - 200mm	368-994	100-125, 125-150, 150-175, 175-200mm	ø125mm, ø175mm	with extension rod

Inch				
Range	Order No.	Individual range	Setting rings included	Remarks
.5" - .8"	368-995	.5-.65", .65-.8"	.65" DIA.	with extension rod
.8" - 2"	368-996	.8-1", 1-1.2", 1.2-1.6", 1.6-2"	1" DIA., 1.6" DIA.	with extension rod
2" - 4"	368-997	2-2.5", 2.5-3", 3-3.5", 3.5-4"	2.5" DIA., 3.5" DIA.	with extension rod
4" - 8"	368-998	4-5", 5-6", 6-7", 7-8"	5" DIA., 7" DIA.	with extension rod



# Borematic

## SERIES 568 — ABSOLUTE Digimatic Snap Bore Gages

The Borematic enables the operator to take measurements more accurately and quicker than ever before. Once the origin point is set with the ORIGIN button, the Borematic retains the setting for the entire battery life. Therefore no longer repeated origin setting (presetting) is necessary.



568-333-10



568-438-10

### FEATURES

- TiN-coated measuring contact points provide excellent durability and impact resistance and allow the instrument to measure to the bottom of a blind hole.
- Large LCD digits of 8.5mm height for error-free reading.
- 330-degree rotatable display unit for easy reading at any angle.
- GO/NO-GO judgment function.
- The ABSOLUTE linear encoder eliminates over-speed errors.
- With SPC data output.
- Setting rings for origin point setting are optional.
- Can measure deep holes by attaching an optional extension rod.
- Measurement can be taken closer to the bottom of a blind bore.
- Supplied in fitted wooden case.



TiN coated contact points (" -10" suffix models only)

### SPECIFICATIONS

Metric	Individual		
Range	Order No.	Accuracy	Mass (g)
6 - 8mm	568-331-10	±5µm	480
8 - 10mm	568-332-10	±5µm	485
10 - 12mm	568-333-10	±5µm	485
12 - 16mm	568-334-10	±5µm	475
16 - 20mm	568-335-10	±5µm	480
20 - 25mm	568-336-10	±6µm	540
25 - 30mm	568-337-10	±6µm	555
30 - 40mm	568-338-10	±6µm	565
40 - 50mm	568-339-10	±6µm	610
50 - 63mm	568-340-10	±6µm	730
62 - 75mm	568-341-10	±6µm	740
75 - 88mm	568-342-10	±6µm	790
87 - 100mm	568-343-10	±6µm	800
100 - 113mm	568-344-10	±6µm	900
112 - 125mm	568-345-10	±6µm	910
50 - 75mm	568-346-10	±6µm	780
75 - 100mm	568-347-10	±6µm	850
100 - 125mm	568-348-10	±6µm	970

Inch/Metric			
Range	Order No.	Accuracy	Mass (g)
.275 - .350" / 6.985 - 8.89mm	568-431-10	±.00025"	480
.350 - .425" / 8.89 - 10.795mm	568-432-10	±.00025"	485
.425 - .5" / 10.795 - 12.7mm	568-433-10	±.00025"	485
.50 - .65" / 12.7 - 16.51mm	568-434-10	±.00025"	475
.65 - .80" / 16.51 - 20.32mm	568-435-10	±.00025"	480
.8 - 1.0" / 20.32 - 25.4mm	568-436-10	±.0003"	540
1.0 - 1.2" / 25.4 - 30.48mm	568-437-10	±.0003"	555
1.2 - 1.6" / 30.48 - 50.8mm	568-438-10	±.0003"	565
1.6 - 2.0" / 40.64 - 50.8mm	568-439-10	±.0003"	610
2.0 - 2.5" / 50.8 - 63.5mm	568-440-10	±.0003"	730
2.5 - 3.0" / 63.5 - 76.2mm	568-441-10	±.0003"	740
3.0 - 3.5" / 76.2 - 88.9mm	568-442-10	±.0003"	790
3.5 - 4.0" / 88.9 - 101.6mm	568-443-10	±.0003"	800
4.0 - 4.5" / 101.6 - 114.3mm	568-444-10	±.0003"	900
4.5 - 5.0" / 114.3 - 127mm	568-445-10	±.0003"	910
2.0 - 3.0" / 50.8 - 76.2mm	568-446-10	±.0003"	780
3.0 - 4.0" / 76.2 - 101.6mm	568-447-10	±.0003"	850
4.0 - 5.0" / 101.6 - 127mm	568-448-10	±.0003"	970



### Technical Data

Accuracy: Refer to the list of specifications.

Resolution: 0.001mm or .00005"/0.001mm

Contact point: Carbide or TiN coating\*  
(\*over 12mm/.5" models)

Measuring method: Three-point method

Display: LCD

Battery: SR44 (1 pc.) (938882)

Battery life: Approx. 1 year

### Functions

Zero/ABS, presetting, GO/NO-GO judgment, power on/off, inch/mm conversion (on inch/metric models only), SPC data output, data hold

### Optional Accessories

937387: SPC cable (1m / 40")

965013: SPC cable (2m / 80")

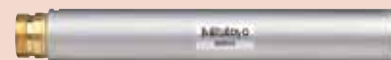
952322: Extension rod 100mm / 3.94"  
For range 6-12mm / .275-.5" models

952621: Extension rod 150mm / 5.9"  
For range 12-20mm / .5" - .8" models

952622: Extension rod 150mm / 5.9"  
For range 20-50mm / .8" - 2" models

952623: Extension rod 150mm / 5.9"  
For range 50-300mm / 2" - 12" models

----: Setting ring (See page C-30.)



## Complete Unit Set

Each set includes complete gages display units and measuring heads for each size and extension rod.

### Metric

Range	Set Order No.	Individual Order No.	Setting rings included
6 - 12mm	568-981-10	568-331-10, 568-332-10 568-333-10	177-125 (ø8mm) 177-126 (ø10mm)
12 - 25mm	568-982-10	568-334-10, 568-335-10 568-336-10	177-177 (ø16mm) 177-286 (ø20mm)
25 - 50mm	568-983-10	568-337-10, 556-338-10 568-339-10	177-139 (ø25mm) 177-290 (ø40mm)
50 - 75mm	568-984-10	568-340-10 568-341-10	177-314 (ø62mm) 177-318 (ø87mm)
75 - 100mm	568-985-10	568-342-10 568-343-10	177-314 (ø62mm) 177-318 (ø87mm)
50 - 100mm	568-986-10	568-346-10 568-347-10	177-314 (ø62mm) 177-318 (ø87mm)

\*interchangeable contact points (4 sets)

### Inch/Metric

Range	Set Order No.	Individual Order No.	Setting rings included
.275" - .5" / 6.985 - 12.7mm	568-987-10	568-431-10, 568-432-10 568-433-10	177-179 (.35" DIA.) 177-283 (.425" DIA.)
.5" - 1" / 12.7 - 25.4mm	568-988-10	568-434-10, 568-435-10 568-436-10	177-182 (.65" DIA.) 177-287 (.8" DIA.)
1" - 2" / 25.4 - 50.8mm	568-989-10	568-437-10, 568-438-10 568-439-10	177-289 (1.2" DIA.) 177-291 (1.6" DIA.)
2" - 3" / 50.8 - 76.2mm	568-990-10	568-440-10 568-441-10	177-315 (2.5" DIA.) 177-319 (3.5" DIA.)
3" - 4" / 76.2 - 101.6mm	568-991-10	568-442-10 568-443-10	177-315 (2.5" DIA.) 177-319 (3.5" DIA.)
2" - 4" / 50.8 - 101.6mm	568-992-10	568-446-10 568-447-10	177-315 (2.5" DIA.) 177-319 (3.5" DIA.)

## Interchangeable Head Set

Each set includes one display unit with interchangeable measuring heads of the sizes specified and extension rod.

### Metric

Range	Set Order No.	Display Unit	Adaptor Supplied	Individual Head No.	Setting rings included
6 - 12mm	568-971-10	568-012	954595	04AZB136 04AZB137 04AZB138	177-125 (ø8mm) 177-126 (ø10mm)
12 - 25mm	568-972-10	568-012	216556 216557	04AZA719 04AZA720 04AZA728	177-177 (ø16mm) 177-286 (ø20mm)
25 - 50mm	568-973-10	568-012	216557	04AZA729 04AZA737 04AZA738	177-139 (ø25mm) 177-290 (ø40mm)
50 - 100mm	568-974-10	568-012	216558	04AZA750, 04AZA751, 04AZA752 04AZA753	177-314 (ø62mm) 177-318 (ø87mm)
50 - 100mm	568-975-10	568-012	216558	04AZA044* 04AZA045*	177-314 (ø62mm) 177-318 (ø87mm)

\*interchangeable anvils (Total 4 sets)

### Inch/Metric

Range	Set Order No.	Display Unit	Adaptor Supplied	Individual Head No.	Setting rings included
.275" - .5" / 6.985 - 12.7mm	568-976-10	568-013	954595	04AZB139 04AZB140 04AZB141	177-179 (.35" DIA.) 177-283 (.425" DIA.)
.5" - 1" / 12.7 - 25.4mm	568-977-10	568-013	216556 216557	04AZA721 04AZA722 04AZA730	177-182 (.65" DIA.) 177-287 (.8" DIA.)
1" - 2" / 25.4 - 50.8mm	568-978-10	568-013	216557	04AZA731 04AZA739 04AZA740	177-289 (1.2" DIA.) 177-291 (1.6" DIA.)
2" - 4" / 50.8 - 101.6mm	568-979-10	568-013	216558	04AZA754 04AZA755 04AZA756 04AZA757	177-315 (2.5" DIA.) 177-319 (3.5" DIA.)
2" - 4" / 50.8 - 101.6mm	568-980-10	568-013	216558	04AZA938* 04AZA939*	177-315 (2.5" DIA.) 177-319 (3.5" DIA.)

\*interchangeable anvils (Total 4 sets)

## Interchangeable Contact Head Set



568-971-10

## Complete Unit Set



568-983-10

## DIMENSIONS

### Measuring a Blind Hole

The measuring pins held in the jaws permit measuring the diameter of a blind hole right down to the bottom.

Unit: mm

Range	L	a	b	c
6 - 12mm / .275 - .5"	83	2	—	2.5
12 - 20mm / .5 - .8"	53	0.3	5.6	3.5
20 - 30mm / .8 - 1.2"	59	0.3	8.3	5.2
30 - 50mm / 1.2 - 2"	67	0.3	13	10
50 - 125mm / 2 - 5"	75	0.3	17	14

( ) : 50-125mm model

# Holtest/Digimatic Holtest/Borematic

## SERIES 368, 468, 568 Replacement Head Assy List

TiN-coated measuring contact head assy

Head Assy Order No.	Measuring Range	HT(Type I)		HTD		SBM	
		Order No.	Model	Order No.	Model	Order No.	Model
04AZB136	6 - 8mm	368-161	HT-8R	468-161	HTD-8R	568-331-10	SBM-8C
04AZB137	8 - 10mm	368-162	HT-10R	468-162	HTD-10R	568-332-10	SBM-10C
04AZB138	10 - 12mm	368-163	HT-12R	468-163	HTD-12R	568-333-10	SBM-12C
04AZA719	12 - 16mm	368-164	HT-16R	468-164	HTD-16R	568-334-10	SBM-16C
04AZA720	16 - 20mm	368-165	HT-20R	468-165	HTD-20R	568-335-10	SBM-20C
04AZA728	20 - 25mm	368-166	HT-25R	468-166	HTD-25R	568-336-10	SBM-25C
04AZA729	25 - 30mm	368-167	HT-30R	468-167	HTD-30R	568-337-10	SBM-30C
04AZA737	30 - 40mm	368-168	HT-40R	468-168	HTD-40R	568-338-10	SBM-40C
04AZA738	40 - 50mm	368-169	HT-50R	468-169	HTD-50R	568-339-10	SBM-50C
04AZA750	50 - 63mm	368-170	HT-63R	468-170	HTD-63R	568-340-10	SBM-63C
04AZA751	62 - 75mm	368-171	HT-75R	468-171	HTD-75R	568-341-10	SBM-75C
04AZA752	75 - 88mm	368-172	HT-88R	468-172	HTD-88R	568-342-10	SBM-88C
04AZA753	87 - 100mm	368-173	HT-100R	468-173	HTD-100R	568-343-10	SBM-100C
04AZA775	100 - 125mm	368-174	HT-125R	468-174	HTD-125R	—	—
04AZA776	125 - 150mm	368-175	HT-150R	468-175	HTD-150R	—	—
04AZA777	150 - 175mm	368-176	HT-175R	468-176	HTD-175R	—	—
04AZA778	175 - 200mm	368-177	HT-200R	468-177	HTD-200R	—	—
04AZA779	200 - 225mm	368-178	HT-225R	468-178	HTD-225R	—	—
04AZA780	225 - 250mm	368-179	HT-250R	468-179	HTD-250R	—	—
04AZA781	250 - 275mm	368-180	HT-275R	468-180	HTD-275R	—	—
04AZA782	275 - 300mm	368-181	HT-300R	468-181	HTD-300R	—	—
04AZB139	.275 - .35"	368-261	HT-.35"R	468-261	HTD-.35"R	568-431-10	SBM-.35"C
04AZB140	.35 - .425"	368-262	HT-.425"R	468-262	HTD-.425"R	568-432-10	SBM-.425"C
04AZB141	.425 - .5"	368-263	HT-.5"R	468-263	HTD-.5"R	568-433-10	SBM-.5"C
04AZA721	.5 - .65"	368-264	HT-.65"R	468-264	HTD-.65"R	568-434-10	SBM-.65"C
04AZA722	.65 - .8"	368-265	HT-.8"R	468-265	HTD-.8"R	568-435-10	SBM-.8"C
04AZA730	.8 - 1"	368-266	HT-1"R	468-266	HTD-1"R	568-436-10	SBM-1"C
04AZA731	1 - 1.2"	368-267	HT-1.2"R	468-267	HTD-1.2"R	568-437-10	SBM-1.2"C
04AZA739	1.2 - 1.6"	368-268	HT-1.6"R	468-268	HTD-1.6"R	568-438-10	SBM-1.6"C
04AZA740	1.6 - 2"	368-269	HT-2"R	468-269	HTD-2"R	568-439-10	SBM-2"C
04AZA754	2 - 2.5"	368-270	HT-2.5"R	468-270	HTD-2.5"R	568-440-10	SBM-2.5"C
04AZA755	2.5 - 3"	368-271	HT-3"R	468-271	HTD-3"R	568-441-10	SBM-3"C
04AZA756	3 - 3.5"	368-272	HT-3.5"R	468-272	HTD-3.5"R	568-442-10	SBM-3.5"C
04AZA757	3.5 - 4"	368-273	HT-4"R	468-273	HTD-4"R	568-443-10	SBM-4"C
04AZA783	4 - 5"	368-274	HT-5"R	468-274	HTD-5"R	—	—
04AZA784	5 - 6"	368-275	HT-6"R	468-275	HTD-6"R	—	—
04AZA785	6 - 7"	368-276	HT-7"R	468-276	HTD-7"R	—	—
04AZA786	7 - 8"	368-277	HT-8"R	468-277	HTD-8"R	—	—
04AZA787	8 - 9"	368-278	HT-9"R	468-278	HTD-9"R	—	—
04AZA788	9 - 10"	368-279	HT-10"R	468-279	HTD-10"R	—	—
04AZA789	10 - 11"	368-280	HT-11"R	468-280	HTD-11"R	—	—
04AZA790	11 - 12"	368-281	HT-12"R	468-281	HTD-12"R	—	—
04AZA941	100 - 113mm	—	—	—	—	568-344-10	SBM-113C
04AZA942	112 - 125mm	—	—	—	—	568-345-10	SBM-125C
04AZA943	4 - 4.5"	—	—	—	—	568-444-10	SBM-4.5"C
04AZA944	4.5 - 5"	—	—	—	—	568-445-10	SBM-5"C
04AZA935	50 - 75mm	—	—	—	—	568-346-10	SBMC-75C
04AZA936	75 - 100mm	—	—	—	—	568-347-10	SBMC-100C
04AZA937	100 - 125mm	—	—	—	—	568-348-10	SBMC-125C
04AZA938	2 - 3"	—	—	—	—	568-446-10	SBMC-3"C
04AZA939	3 - 4"	—	—	—	—	568-447-10	SBMC-4"C
04AZA940	4 - 5"	—	—	—	—	568-448-10	SBMC-5"C

# Tubular Inside Micrometers

## SERIES 133 — Single Rod Type

### FEATURES

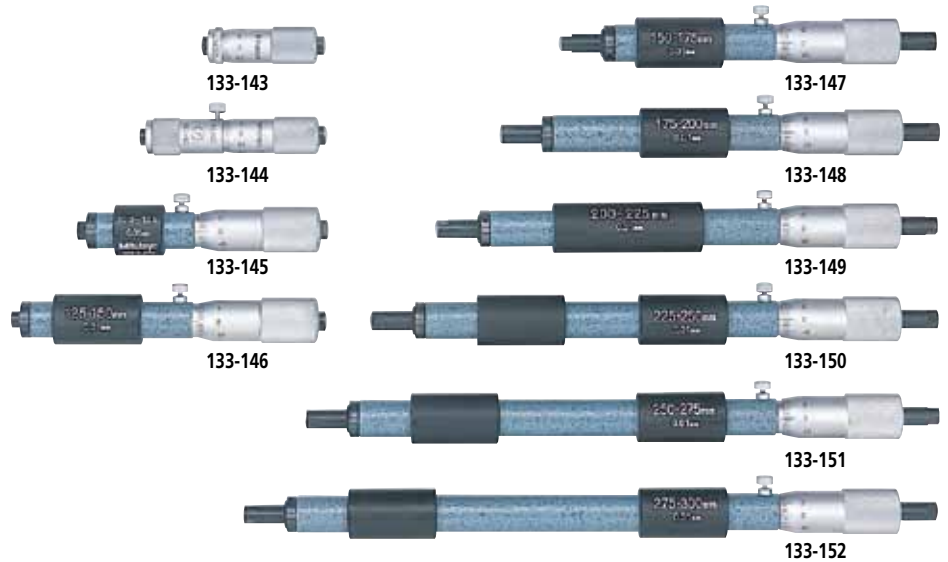
- With locking clamp.
- Zero point can be readjusted by rotating the micrometer head sleeve. A key wrench is supplied.
- Clear, crisp graduations on the satin chrome finished micrometer head.
- Carbide-tipped measuring faces.
- Supplied in fitted plastic case. Over 200mm / 8" supplied in wooden case.

### Technical Data

Accuracy: Refer to the list of specifications.  
Graduation: 0.01mm or .001"

### Optional Accessories

---- : Setting ring (See page C-30.)



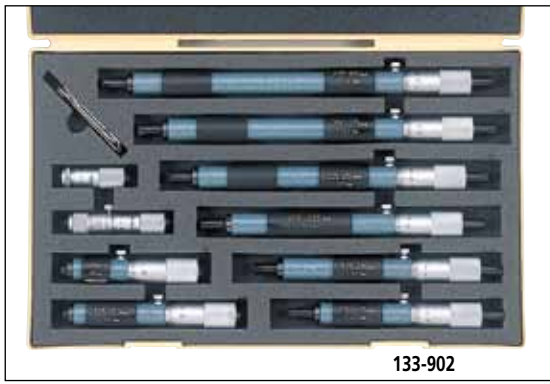
### SPECIFICATIONS

Metric Individual		
Range	Order No.	Accuracy
50 - 75mm	133-143	±3µm
75 - 100mm	133-144	±4µm
100 - 125mm	133-145	±5µm
125 - 150mm	133-146	±5µm
150 - 175mm	133-147	±5µm
175 - 200mm	133-148	±5µm
200 - 225mm	133-149	±5µm
225 - 250mm	133-150	±6µm
250 - 275mm	133-151	±6µm
275 - 300mm	133-152	±6µm
300 - 325mm	133-153	±7µm
325 - 350mm	133-154	±7µm
350 - 375mm	133-155	±7µm
375 - 400mm	133-156	±8µm
400 - 425mm	133-157	±8µm
425 - 450mm	133-158	±8µm
450 - 475mm	133-159	±9µm
475 - 500mm	133-160	±9µm
500 - 525mm	133-161	±9µm
525 - 550mm	133-162	±10µm
550 - 575mm	133-163	±10µm
575 - 600mm	133-164	±10µm
600 - 625mm	133-165	±11µm
625 - 650mm	133-166	±11µm
650 - 675mm	133-167	±11µm
675 - 700mm	133-168	±12µm

Metric Individual		
Range	Order No.	Accuracy
700 - 725mm	133-169	±12µm
725 - 750mm	133-170	±12µm
750 - 775mm	133-171	±13µm
775 - 800mm	133-172	±13µm
800 - 825mm	133-173	±13µm
825 - 850mm	133-174	±14µm
850 - 875mm	133-175	±14µm
875 - 900mm	133-176	±14µm
900 - 925mm	133-177	±15µm
925 - 950mm	133-178	±15µm
950 - 975mm	133-179	±15µm
975 - 1000mm	133-180	±16µm

Inch Individual		
Range	Order No.	Accuracy
2" - 3"	133-223	±.00015"
3" - 4"	133-224	±.0002"
4" - 5"	133-225	±.00025"
5" - 6"	133-226	±.00025"
6" - 7"	133-227	±.00025"
7" - 8"	133-228	±.00025"
8" - 9"	133-229	±.00025"
9" - 10"	133-230	±.0003"
10" - 11"	133-231	±.0003"
11" - 12"	133-232	±.0003"





133-902

**Metric** Micrometer set

Range	Order No.	Included in set
50 - 150mm (4 pcs. set)	<b>133-901</b>	<ul style="list-style-type: none"> <li>• 133-143, 133-144, 133-145, 133-146</li> <li>• with fitted case</li> </ul>
50 - 300mm (10 pcs. set)	<b>133-902</b>	<ul style="list-style-type: none"> <li>• 133-143, 133-144, 133-145, 133-146, 133-147, 133-148, 133-149, 133-150, 133-151, 133-152</li> <li>• with fitted case</li> </ul>

**Inch** Micrometer set

Range	Order No.	Included in set
2" - 6" (4 pcs. set)	<b>133-903</b>	<ul style="list-style-type: none"> <li>• 133-223, 133-224, 133-225, 133-226</li> <li>• with fitted case</li> </ul>
2" - 12" (10 pcs. set)	<b>133-904</b>	<ul style="list-style-type: none"> <li>• 133-223, 133-224, 133-225, 133-226, 133-227, 133-228, 133-229, 133-230, 133-231, 133-232</li> <li>• with fitted case</li> </ul>

**DIMENSIONS**

Unit: mm

Order No.	L	a	b
133-145 / 133-225	100	5	3
133-146 / 133-226	125	5	3
133-147 / 133-227	150	18	15
133-148 / 133-228	175	18	15
133-149 / 133-229	200	18	15
133-180 / 133-232	975	18	15

# Inside Micrometers

## SERIES 141 — Interchangeable Rod Type

### FEATURES

- Wide range of ID measurements with interchangeable rods.

- Each interchangeable rod is marked with its measuring range.
- The sizes of interchangeable rods can be adjusted with spacing collars.
- Both micrometer head and furnished rods are satin-chrome finished throughout.
- Supplied in fitted plastic case. Over 1000mm / 40" supplied in wooden case.

### Technical Data

Metric Model

Accuracy:  $\pm(6+L/50)\mu\text{m}^*$   
 \*L=Maximum measuring length (mm)  
 Fraction rounded up

Inch Model

Accuracy:  $\pm\{.00024 + (.00004 \times R/2)\}^*^*$   
 \*R=Maximum measuring length (inch)  
 Fraction rounded up

Graduation: 0.01mm or .001"

### Optional Accessories

---- : Setting ring (See page C-30.)

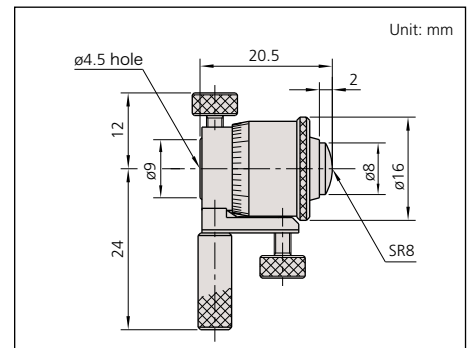


141-233



When using the extension rod

### DIMENSIONS



### SPECIFICATIONS

Metric			
Range	Order No.	Travel of micrometer head	Remarks
25 - 32mm	141-001 / 141-003*	7mm	—
25 - 50mm	141-101 / 141-103*	7mm	with 2 rods
50 - 63mm	141-025 / 141-027*	13mm	—
50 - 200mm	141-205 / 141-211*	13mm	with 3 rods
50 - 300mm	141-206 / 141-212*	13mm	with 5 rods
200 - 225mm	141-009 / 141-011*	25mm	—
200 - 500mm	141-117	25mm	with 3 rods
200 - 1000mm	141-118	25mm	with 8 rods

\*with carbide tipped face

### Inch

Range	Order No.	Travel of micrometer head	Remarks
1" - 1.25"	141-002 / 141-004*	.25"	—
1" - 2"	141-102 / 141-104*	.25"	with 2 rods
2" - 2.5"	141-026 / 141-028*	.5"	—
2" - 8"	141-208 / 141-214*	.5"	with 3 rods
2" - 12"	141-233 / 141-215*	.5"	with 5 rods
8" - 9"	141-010 / 141-012*	1"	—
8" - 20"	141-121	1"	with 3 rods
8" - 40"	141-122	1"	with 8 rods

\*with carbide tipped face

# Digimatic Tubular Inside Micrometers

**SERIES 337 — Extension Rod Type / SERIES 339 — Extension Pipe Type**

## FEATURES

- Wide range of ID measurements by combining extension rods (pipes) and anvils with the micrometer head.
- The 339 Series uses highly-durable extension pipes.
- Carbide-tipped measuring faces.
- Supplied in wooden case.



337-303



339-304



### Metric — Extension rod type

Range	Order No.	Travel of micrometer head	Extension rods
200 - 225mm	337-101	25mm	—
200 - 1000mm	337-301	25mm	25mm, 50mm, 100mm (2 pcs.), 200mm, 300mm
200 - 1500mm	337-302	25mm	25mm, 50mm, 100mm, 200mm, 300mm (3 pcs.)

### Inch/Metric — Extension rod type

Range	Order No.	Travel of micrometer head	Extension rods
8 - 9"	337-102	1"	—
8 - 40"	337-303	1"	1", 2", 4" (2 pcs.), 8", 12"
8 - 60"	337-304	1"	1", 2", 4", 8", 12" (3 pcs.)

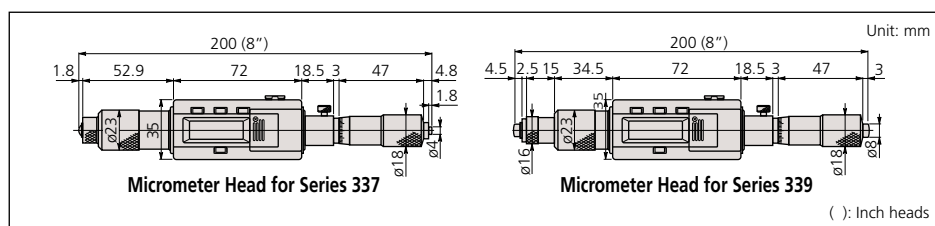
### Metric — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
200 - 225mm	339-101	25mm	—
200 - 1000mm	339-301	25mm	25mm, 50mm, 100mm, 200mm, 400mm
200 - 2000mm	339-302	25mm	25mm, 50mm, 100mm, 200mm (2 pcs.), 400mm (3 pcs.)

### Inch/Metric — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
8 - 9"	339-102	1"	—
8 - 40"	339-303	1"	1", 2", 4", 8", 16"
8 - 80"	339-304	1"	1", 2", 4", 8" (2 pcs.), 16" (3 pcs.)

## DIMENSIONS



## Technical Data

Metric Model

Accuracy:  $\pm(3+n+L/50)\mu\text{m}^*$

\* n=Number of rod, L=Maximum measuring length (mm), Fraction rounded up, Excluding quantizing error

Inch Model

Accuracy:  $\pm\{.00012+ (.00004 \times R/2)\}^**$

\* R=Maximum measuring length (inch) Fraction rounded up

Resolution: 0.001mm or .0001"/0.001mm

Display: LCD

Battery: SR44 (1 pcs.), 938882

Battery life: Approx. 8 months under normal use

## Function

Zero/ABS, Data hold, Data output, Preset, inch/mm conversion (inch/mm models)

Alarm: Low voltage, Counting value composition error

## Optional Accessories

05CZA662: SPC cable (1m)

05CZA663: SPC cable (2m)

----- : Setting ring (See page C-30.)



# Tubular Inside Micrometers

## SERIES 137 — Extension Rod Type

### FEATURES

- Wide range of ID measurements by combining extension rods (pipes) and anvils with the micrometer head.
- Carbide-tipped measuring faces are available.
- Supplied in fitted plastic case except 1500 mm / 60" come in wooden case.



137-011



137-205

### Technical Data

Metric Model

Accuracy:  $\pm(3+n+L/50)\mu\text{m}$   
 L=Maximum measuring length (mm), Fraction rounded up

Inch Model

Accuracy:  $\pm\{.00012+n+(.00004 \times R/2)\}^*$   
 R=Maximum measuring length (inch), Fraction rounded up

Graduation: 0.01mm or .001"

### Optional Accessories

---- : Setting ring (See page C-30.)

### SPECIFICATIONS

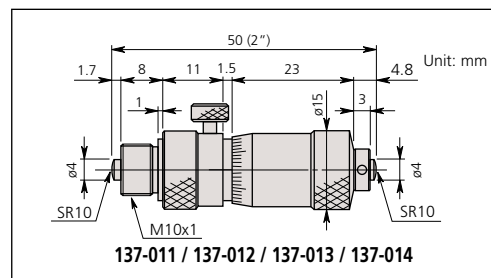
Metric — Extension rod type			
Range	Order No.	Travel of micrometer head	Extension rods
50 - 63mm	137-011 / 137-013*	13mm	—
50 - 150mm	137-201 / 137-206*	13mm	13mm, 25mm, 50mm
50 - 300mm	137-202 / 137-207*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm
50 - 500mm	137-203 / 137-208*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm, 200mm
50 - 1000mm	137-204 / 137-209*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm, 200mm (2 pcs.), 300mm
50 - 1500mm	137-205 / 137-210*	13mm	13mm, 25mm, 50mm (2 pcs.), 100mm, 200mm (3pcs.), 300mm (2 pcs.)

\*with carbide tipped face

Inch — Extension rod type			
Range	Order No.	Travel of micrometer head	Extension rods
2" - 2.5"	137-012 / 137-014*	.5"	—
2" - 6"	137-211 / 137-216*	.5"	.5", 1", 2"
2" - 12"	137-212 / 137-217*	.5"	.5", 1", 2" (2 pcs.), 4"
2" - 20"	137-213 / 137-218*	.5"	.5", 1", 2" (2 pcs.), 4", 8"
2" - 40"	137-214 / 137-219*	.5"	.5", 1", 2" (2 pcs.), 4", 8" (2 pcs.), 12"
2" - 60"	137-215 / 137-220*	.5"	.5", 1", 2" (2 pcs.), 4", 8" (3 pcs.), 12" (2 pcs.)

\*with carbide tipped face

### DIMENSIONS



# Tubular Inside Micrometers

## SERIES 139 — Extension Pipe Type

### FEATURES

- Wide range of ID measurements by combining extension pipes and anvils with the micrometer head.
- Supplied in fitted wooden case except 500 mm / 20" come in plastic case.



### Metric — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
100 - 125mm	<b>139-001</b>	25mm	—
100 - 500mm	<b>139-173</b>	25mm	25mm, 50mm, 100mm, 200mm
100 - 900mm	<b>139-174</b>	25mm	25mm, 50mm, 100mm, 200mm, 400mm
100 - 1300mm	<b>139-175</b>	25mm	25mm, 50mm, 100mm, 200mm, 400mm (2 pcs.)
100 - 1700mm	<b>139-176</b>	25mm	25mm, 50mm, 100mm, 200mm, 400mm (3 pcs.)
100 - 2100mm	<b>139-177</b>	25mm	25mm, 50mm, 100mm, 200mm, 400mm (4 pcs.)

### Inch — Extension pipe type

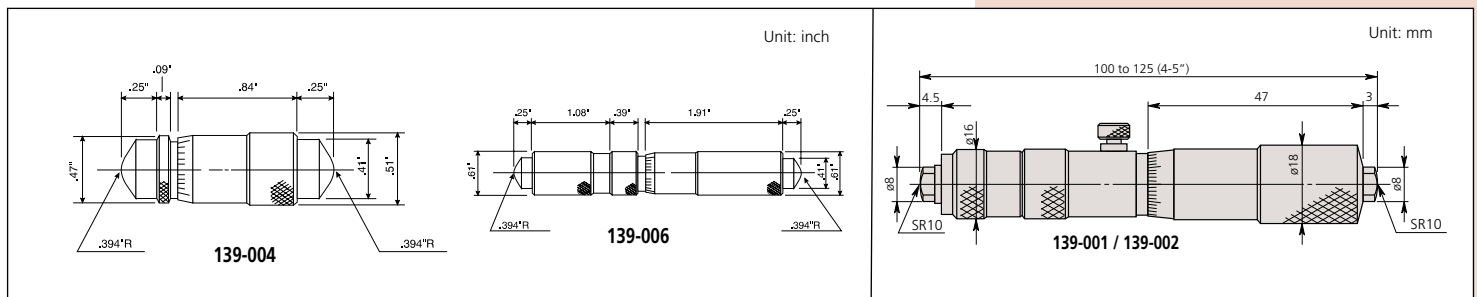
Range	Order No.	Travel of micrometer head	Extension pipes
4" - 5"	<b>139-002</b>	1"	—
4" - 20"	<b>139-178</b>	1"	1", 2", 4", 8"
4" - 36"	<b>139-179</b>	1"	1", 2", 4", 8", 16"
4" - 52"	<b>139-180</b>	1"	1", 2", 4", 8", 16" (2 pcs.)
4" - 68"	<b>139-181</b>	1"	1", 2", 4", 8", 16" (3 pcs.)
4" - 84"	<b>139-182</b>	1"	1", 2", 4", 8", 16" (4 pcs.)



### Inch — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes	Remarks
1.5 - 2"	<b>139-004</b>	.5"	—	—
4 - 5"	<b>139-006</b>	1"	—	—
1.5 - 12"	<b>139-201</b>	.5"	.5", 1", 2", 2.5", 3", 3.5", 4", 6"	Includes <b>139-004</b>
4 - 40"	<b>139-202</b>	1"	1", 2", 3", 6", 9", 12", 14", 16", 17", 19"	Includes <b>139-006</b>

### DIMENSIONS



### Technical Data

Metric Model

Accuracy:

- Series 139:  $\pm(3+n+L/50)\mu\text{m}$   
L=Maximum measuring length (mm), Fraction rounded up

Inch Model

Accuracy:

- Series 139:  $\pm(.00012+m+(.00004xR/2))^*$   
R=Maximum measuring length (inch), Fraction rounded up

Graduation: 0.01mm or .001"

### Optional Accessories

-----: Setting ring (See page C-30.)



# Tubular Inside Micrometers

## SERIES 140 — Extension Pipe Type

### Technical Data

Metric Model  
 Accuracy:  $\pm(3+n+L/50)\mu\text{m}^*$   
\*n=Number of rod, L=Maximum measuring length (mm), Fraction rounded up

Inch Model  
 Accuracy:  $\pm\{.00012+m+(.00004 \times R/2)\}^*$   
\*n=Number of rod, L=Maximum measuring length (mm), Fraction rounded up

Graduation: 0.01mm or .001"

### Optional Accessories

----- : Setting ring (See page C-30.)

### FEATURES

- Wide range of ID measurements by combining extension rods (pipes) and anvils with the micrometer head.
- The Series 140 use highly-durable/ large-diameter extension pipes.
- Supplied in fitted wooden case.

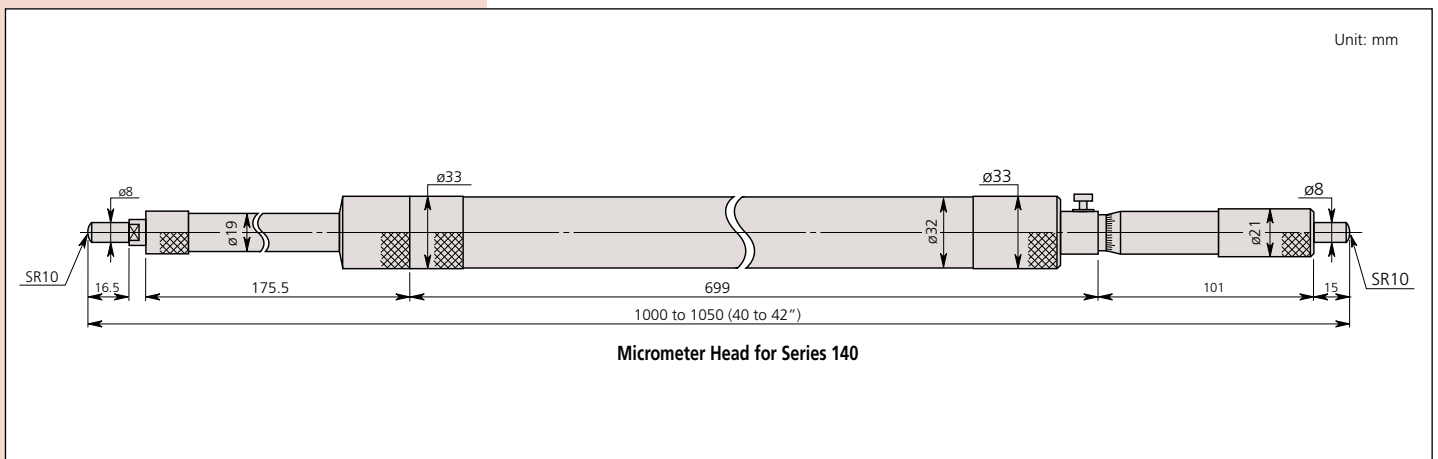
#### Metric — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
1000 - 2000mm	<b>140-157</b>	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm
1000 - 3000mm	<b>140-158</b>	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm, 1000mm
1000 - 4000mm	<b>140-159</b>	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm, 1000mm (2 pcs.)
1000 - 5000mm	<b>140-160</b>	50mm	50mm, 100mm (2 pcs.), 200mm, 500mm, 1000mm (3 pcs.)

#### Inch — Extension pipe type

Range	Order No.	Travel of micrometer head	Extension pipes
40" - 80"	<b>140-161</b>	2"	2", 4" (2 pcs.), 8", 20"
40" - 120"	<b>140-162</b>	2"	2", 4" (2 pcs.), 8", 20", 40"
40" - 160"	<b>140-163</b>	2"	2", 4" (2 pcs.), 8", 20", 40" (2 pcs.)
40" - 200"	<b>140-164</b>	2"	2", 4" (2 pcs.), 8", 20", 40" (3 pcs.)

### DIMENSIONS



# Inside Micrometers

## SERIES 345, 145 — Caliper Type

### FEATURES

- Caliper type jaws are made of high-grade, tool steel.
- Locking clamp for positive locking of spindle.
- Satin-chrome finished.
- A special holder is available to be used with Mitutoyo Micrometer Stand.
- Supplied in fitted plastic case. Over 175mm / 4" supplied in wooden case.



345-350-10



145-193



145-187

### SPECIFICATIONS

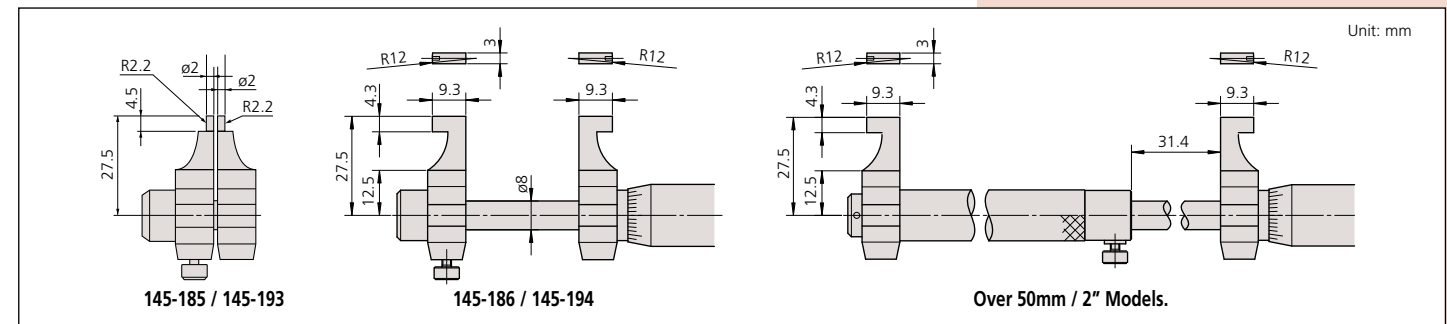
Metric		
Range	Order No.	Accuracy
5 - 30mm	345-250-10	±5μm
50 - 75mm	345-251-10	±6μm

Metric		
Range	Order No.	Accuracy
5 - 30mm	145-185	±5μm
25 - 50mm	145-186	±6μm
50 - 75mm	145-187	±7μm
75 - 100mm	145-188	±8μm
100 - 125mm	145-189	±9μm
125 - 150mm	145-190	±9μm
150 - 175mm	145-191	±10μm
175 - 200mm	145-192	±10μm
200 - 225mm	145-217	±11μm
225 - 250mm	145-218	±11μm
250 - 275mm	145-219	±12μm
275 - 300mm	145-220	±12μm

Inch/Metric		
Range	Order No.	Accuracy
.2 - 1.2" / 5-30mm	345-350-10	±.00025"
1 - 2" / 25-50mm	345-351-10	±.0003"

Inch		
Range	Order No.	Accuracy
.2 - 1.2"	145-193	±.00025"
1 - 2"	145-194	±.0003"
2 - 3"	145-195	±.00035"
3 - 4"	145-196	±.0004"
4 - 5"	145-197	±.00045"
5 - 6"	145-198	±.00045"
6 - 7"	145-199	±.0005"
7 - 8"	145-200	±.0005"

### DIMENSIONS



### Technical Data

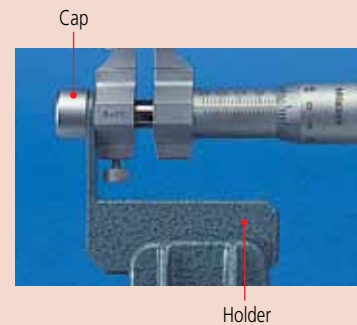
Accuracy: Refer to the list of specifications.  
(excluding quantizing error for digital models)  
Resolution\*: 0.01mm or .00005"/0.001mm  
Graduation\*\*: 0.01mm or .001"  
Measuring faces: Carbide tipped  
Display\*: LCD  
Battery\*: SR44 (1 pc.), 938882  
Battery life\*: Approx. 1.2 years under normal use  
\*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero-setting, Data hold, Data output, inch/mm conversion (inch/mm models)  
Alarm: Low voltage, Counting value composition error  
Function Lock  
2 Presets

### Optional Accessories

- 05CZA662:** SPC cable with data switch 1m / 40"
- 05CZA663:** SPC cable with data switch 2m / 80"
- : Setting ring (See page C-30.)
- 300401:** Cap for stand holder
- 300400:** Stand holder



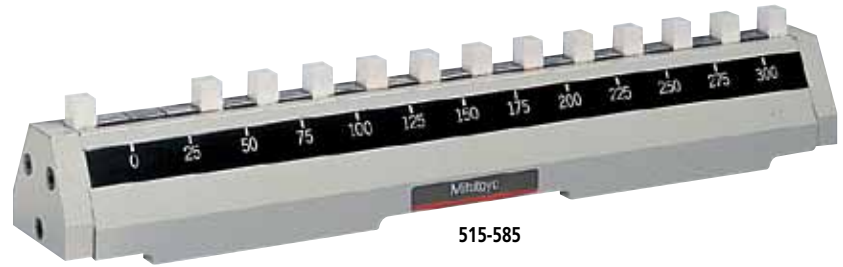


# Inside Micro Checker

## SERIES 515

### FEATURES

- The Inside Micro Checker is designed to efficiently check the zero point of a tubular inside micrometer.
- Each measuring block is made of zirconia-based ceramic and it is free from deterioration and dimensional changes over time.



515-585



Standard accessory

### Technical Data

Block pitch accuracy:  $\pm(0.001+L/150000)$ mm\*  
 \*L= Length to check (mm)

### Optional Accessories

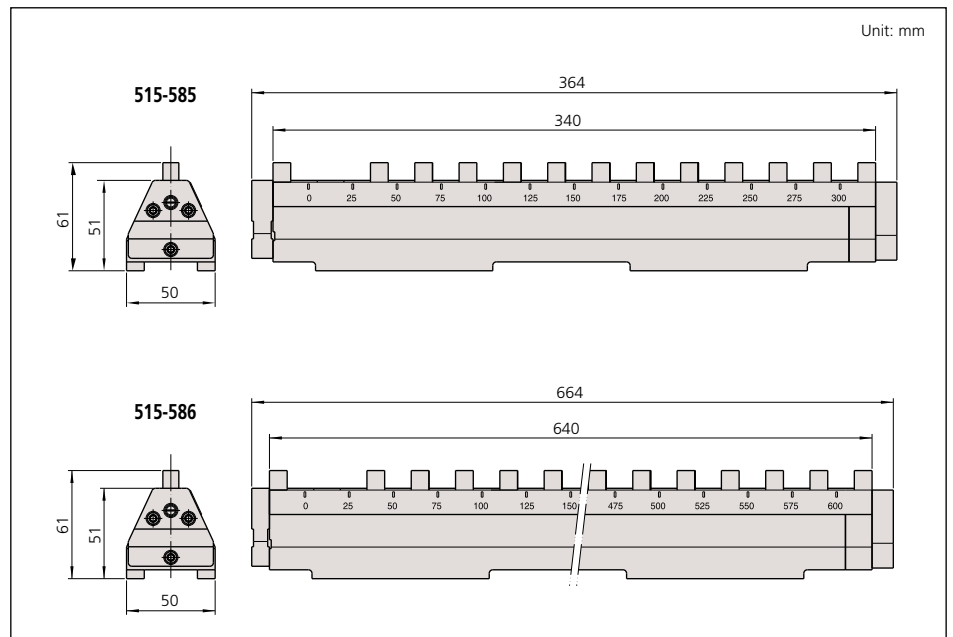
- 602160:** Wooden case for 300mm Inside Micro Checker  
**602163:** Wooden case for 600mm Inside Micro Checker



### SPECIFICATIONS

Range	Order No.	Length to check
300mm	<b>515-585</b>	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300mm
600mm	<b>515-586</b>	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600mm

### DIMENSIONS



# Bore Gages

## SERIES 511 — for Small Holes

### FEATURES

- Its interchangeable anvils are made of alloyed steel.
- The dial indicator is fully protected by a rugged cover.

### SPECIFICATIONS

#### Metric    Gage Stem $\varnothing$ 8mm

Measuring Range	Order No. Without Dial Gage	Order No. With 2046SB Graduation 0.01mm	Order No. With 2109SB-10 Graduation 0.001mm	Number of Anvils	Number of Spacers
6 - 10mm	511-209*	511-211	511-210	9	1
10 - 18.5mm	511-201*	511-204	511-203	9	1

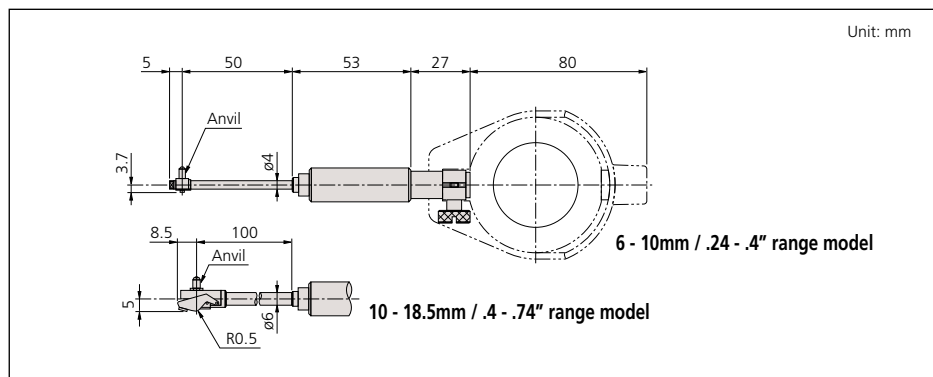
\*Does not come supplied with Dial Gage Protector Cover (21DZA000)

#### Inch    Gage Stem Dia .375"

Measuring Range	Order No. Without Dial Gage	Order No. With 2922SB Graduation .0005"	Order No. With 2923SB-10 Graduation .0001"	Number of Anvils	Number of Spacers
.24 - .4"	511-214*	511-213	511-212	9	1
.4 - .74"	511-205*	511-207	511-206	9	1

\*Does not come supplied with Dial Gage Protector Cover (21DZA000)

### DIMENSIONS

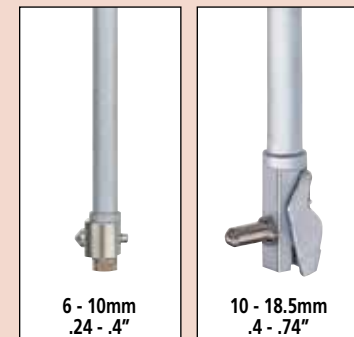


511-204

### Technical Data

Accuracy:  $5\mu\text{m} / .0002''$   
 Indication stability:  $2\mu\text{m} / .00008''$   
 Graduation: 0.01mm, 0.001mm, .0005" or .0001"

### Measuring Heads



6 - 10mm  
.24 - .4"

10 - 18.5mm  
.4 - .74"

### Optional Accessories

21DZA000: Dial Gage Protector Cover  
 ----- : Setting ring (See page C-30.)

# Bore Gages

## SERIES 511—Standard Type

Mitutoyo offers a complete selection of Bore Gages, all of them with interchangeable anvils and necessary accessories to perform close tolerance ID measurements.

### FEATURES

- Most popular Bore Gages.
- Carbide-tipped contact points for durability.
- The dial indicator is fully protected by a rugged cover.
- Optional extension rods can be attached for measuring deep holes.



511-743

### SPECIFICATIONS

**Inch** — Gage Stem  $\varnothing$  3/8"

Measuring Range	Order No. Without Indicator	Order No. With 2922SB Graduation .0005"	Order No. With 2923SB-10 Graduation .0001"	Number of Anvils	Number of Spacers
.7 - 1.4"	511-731*	511-741	511-751	9	2
1.4 - 2.5"	511-732*	511-742	511-752	6	4
2.0 - 6.0"	511-733*	511-743	511-753	11 (2" sub anvil)	4
4.0 - 6.5"	511-734*	511-744	511-754	13	4
6.5 - 10"	511-735*	511-745	511-755	6	7
10 - 16"	511-736*	511-746	511-756	5 (3" sub anvil)	7
.7 - 6"	—	511-931	511-932	26 (2" sub anvil)	10

\*Does not come supplied with Dial Gage Protector Cover ( 21DZA000 )

**Metric** — Gage Stem  $\varnothing$  8mm

Measuring Range	Order No. Without Indicator	Order No. With 2046SB Graduation 0.01mm	Order No. With 2109SB-10 Graduation 0.001mm	Number of Anvils	Number of Spacers
18 - 35mm	511-701*	511-711	511-721	9	2
35 - 60mm	511-702*	511-712	511-722	6	4
50 - 150mm	511-703*	511-713	511-723	11 (50mm Sub Anvil)	4
100 - 160mm	511-704*	511-714	511-724	13	4
160 - 250mm	511-705*	511-715	511-725	6	7
250 - 400mm	511-706*	511-716	511-726	5 (75mm Sub Anvil)	7
18 - 150mm	—	511-921 (3 pc set)	511-922 (3 pc set)	26 (50mm Sub Anvil)	10

\*Does not come supplied with Dial Gage Protector Cover ( 21DZA000 )

### Technical Data

Accuracy:  $2\mu\text{m} / .00008"$

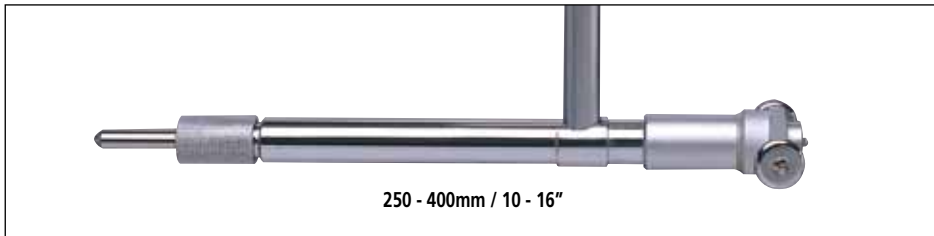
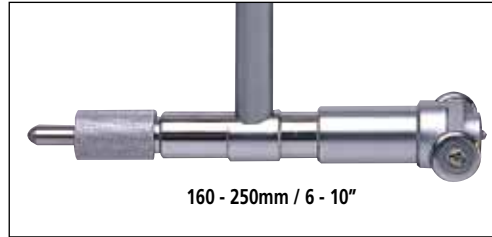
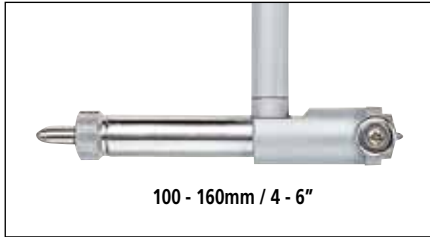
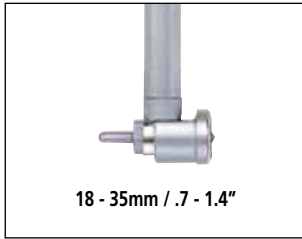
Indication stability:  $1\mu\text{m} / .00004"$

Graduation: 0.01mm, 0.001mm, .0005" or .0001"

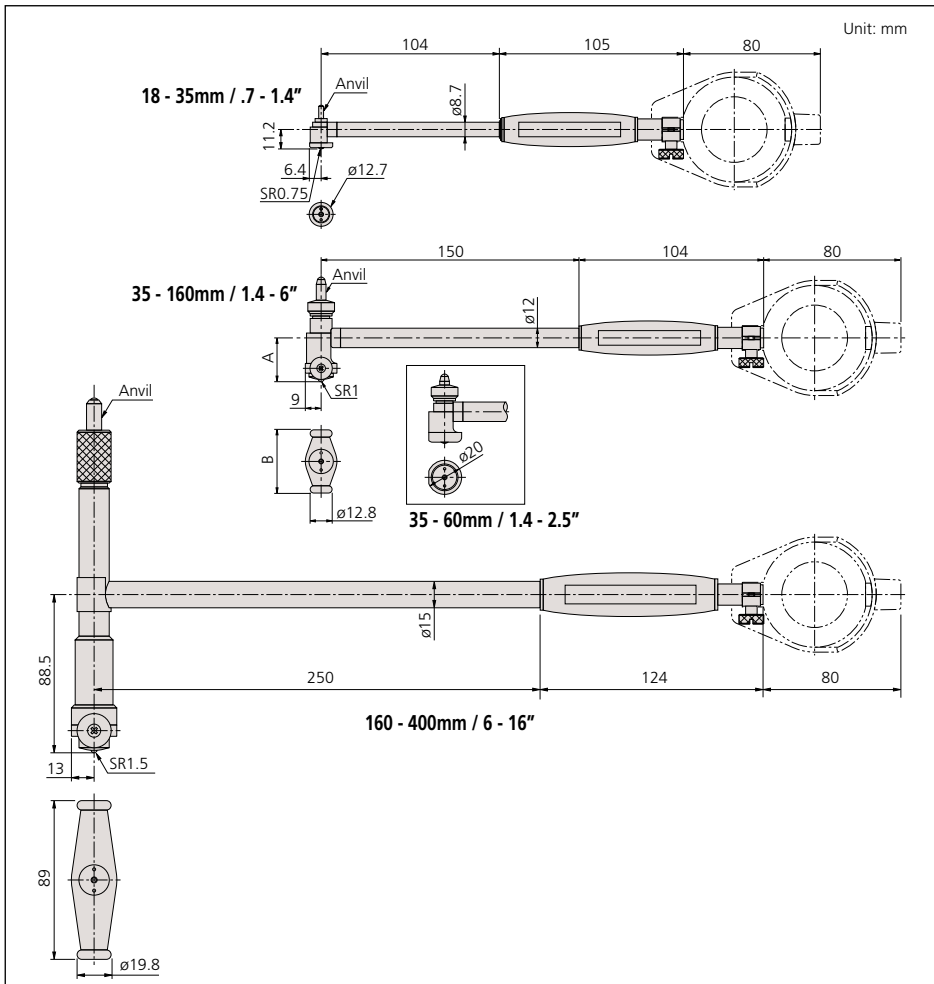


511-931

## Contact Point

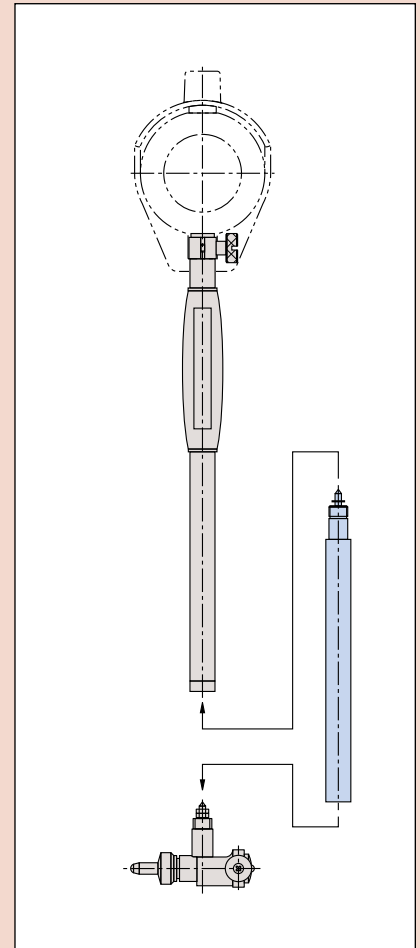


## DIMENSIONS



## Optional Accessories

- 953549:** 125mm / 4.92" Extension rod for 18-35mm / .7 - 1.4" models
- 953552:** 125mm / 4.92" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953557:** 125mm / 4.92" Extension rod for 160-400mm / 6.5 - 16" models
- 953550:** 250mm / 9.84" Extension rod for 18-35mm / .7 - 1.4" models
- 953553:** 250mm / 9.84" Extension rod for 35-160mm / 1.4 - 6.5" models
- 952361:** 250mm / 9.84" Extension rod for 160-400mm / 6.5 - 16" models
- 953551:** 500mm / 19.69" Extension rod for 18-35mm / .7 - 1.4" models
- 953554:** 500mm / 19.69" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953558:** 500mm / 19.69" Extension rod for 160-400mm / 6.5 - 16" models
- 953555:** 750mm / 29.53" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953559:** 750mm / 29.53" Extension rod for 160-400mm / 6.5 - 16" models
- 953556:** 1000mm / 39.37" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953560:** 1000mm / 39.37" Extension rod for 160-400mm / 6.5 - 16" models



Setting ring (See page C-30.)



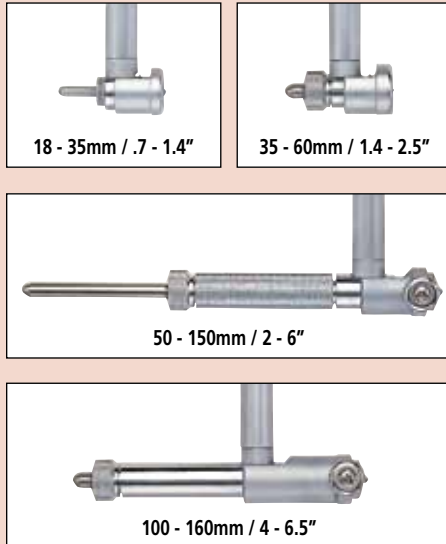


511-786

### Technical Data

Accuracy:  $2\mu\text{m} / .00008''$   
 Indication stability:  $1\mu\text{m} / .00004''$   
 Graduation: 0.01mm, 0.001mm, .0005" or .0001"

### Contact Point



### Optional Accessories

---- : Setting ring (See page C-30.)

# Bore Gages

## SERIES 511 — Short Leg Type

### FEATURES

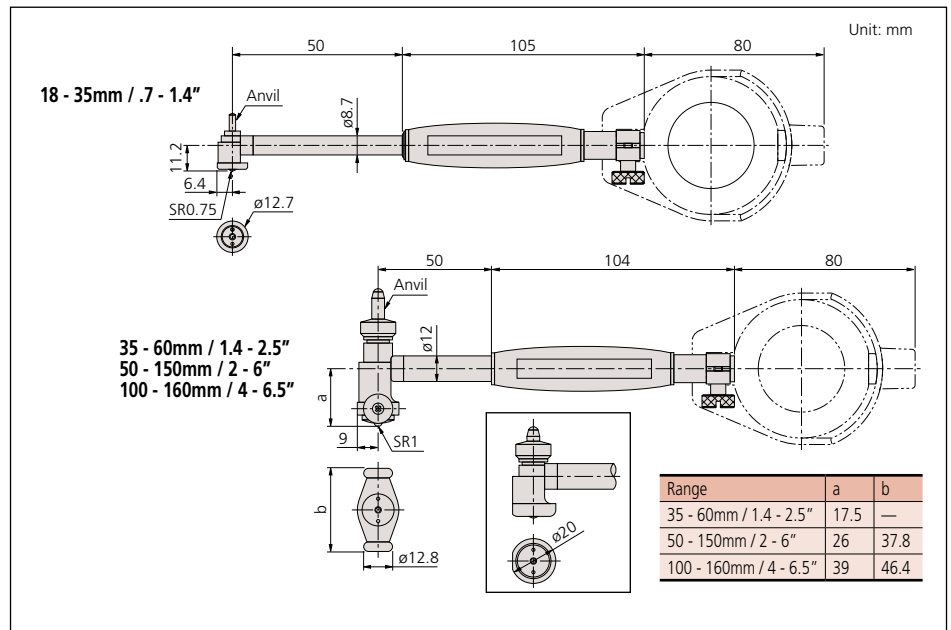
- Compact and lightweight because of the short length below the grip.
- Carbide-tipped contact point for durability.

### SPECIFICATIONS

Inch		Gage Stem $\varnothing 3/8''$		
Measuring Range	Order No. With 2922SB Graduation .0005"	Order No. With 2923SB-10 Graduation .0001"	Number of Anvils	Number of Spacers
.7 - 1.4"	511-786	511-791	9	2
1.4 - 2.5"	511-787	511-792	6	4
2.0 - 6.0"	511-788	511-793	11 (2" sub anvil)	4
4.0 - 6.5"	511-789	511-794	13	4

Metric		Gage Stem $\varnothing 8\text{mm}$		
Measuring Range	Order No. With 2046SB Graduation 0.01mm	Order No. With 2109SB-10 Graduation 0.001mm	Number of Anvils	Number of Spacers
18 - 35mm	511-766	511-771	9	2
35 - 60mm	511-767	511-772	6	4
50 - 150mm	511-768	511-773	11 (50mm Sub Anvil)	4
100 - 160mm	511-769	511-774	13	4

### DIMENSIONS



# Bore Gages

## SERIES 511 — for Blind Holes

### FEATURES

- Can measure ID at position close to the bottom of blind holes.

### SPECIFICATIONS

**Metric** Gage Stem  $\varnothing$  8mm

Measuring Range	Order No. Without Dial Gage	Order No. With 2046SB Graduation 0.01mm	Order No. With 2019SB-10 Graduation 0.001mm	Number of Anvils	Number of Spacers
15 - 35mm	511-401*	511-411	511-421	11 10mm Sub-Anvil	1
35 - 60mm	511-402*	511-412	511-422	6	4
50 - 100mm	511-403*	511-413	511-423	11	4
50 - 150mm	511-404*	511-414	511-424	11 50mm Sub-Anvil	4

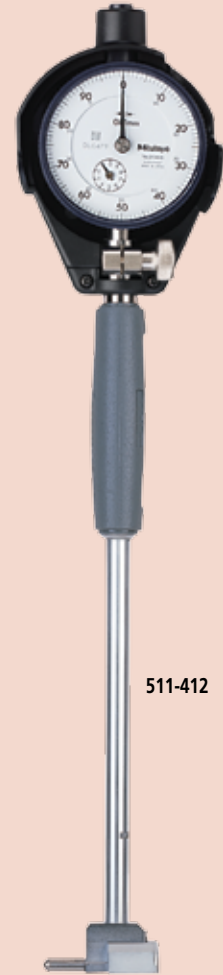
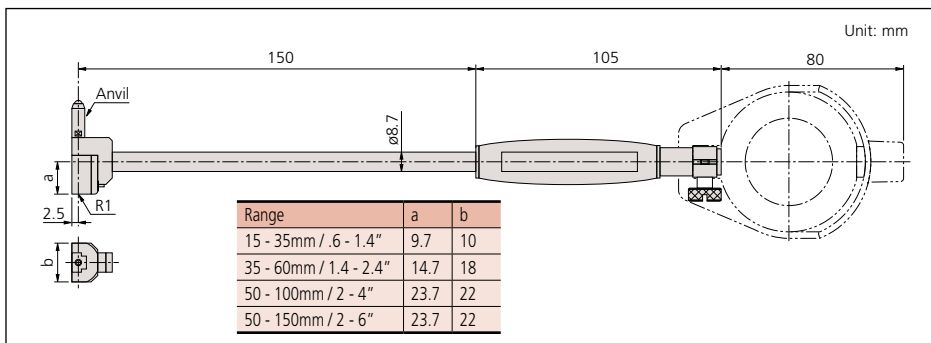
\*Does not come supplied with Dial Gage Protector Cover (21DZA000)

**Inch** Gage Stem Dia. .375"

Measuring Range	Order No. Without Dial Gage	Order No. With 2922SB Graduation .0005"	Order No. With 2923SB-10 Graduation .0001"	Number of Anvils	Number of Spacers
.6 - 1.4"	511-406*	511-431	511-441	11 .4" Sub-Anvil	1
1.4 - 2.4"	511-407*	511-432	511-442	6	4
2 - 4"	511-408*	511-433	511-443	11	4
2 - 6"	511-409*	511-434	511-444	11 2" Sub-Anvil	4

\*Does not come supplied with Dial Gage Protector Cover (21DZA000)

### DIMENSIONS



511-412

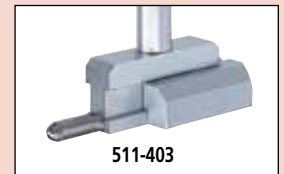
### Technical Data

Accuracy:  $5\mu\text{m} / .0002''$   
 Indication stability:  $2\mu\text{m} / .00008''$   
 Graduation: 0.01mm, 0.001mm, .0005" or .0001"

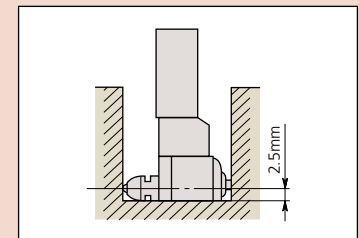
### Contact Point



511-401



511-403



### Optional Accessories

----- : Setting ring (See page C-30.)  
 Extension Rods are not available for these models



511-843

# Bore Gages

## SERIES 511 — with Micrometer Head

### FEATURES

- Interchangeable anvil is attached to a micrometer head for accurate dimensional setting.
- Wide measuring range with sub-anvils.
- Carbide ball contact point for durability.
- Extension rods (optional) can be attached for measuring deep holes.
- Optional Setting Rings offer the best method of zero-setting Bore Gages.

### SPECIFICATIONS

Inch		Gage Stem ø 3/8"			
Measuring Range	Order No. Without Indicator	Order No. With 2922SB Graduation .0005"	Order No. With 2923SB-10 Graduation .0001"	Mic Head Travel	Sub Anvil
2.4 - 4.0"	511-833*	511-843	511-853	.4"	.4", .8"
4.0 - 6.4"	511-834*	511-844	511-854	.5"	.4", .8", .8"
6.0 - 10"	511-835*	511-845	511-855	.5"	.4", .8", .8", 2"
10 - 16"	511-836*	511-846	511-856	1"	1", 2", 2"
16 - 24"	511-837*	511-847	511-857	2"	2", 4"
24 - 32"	511-838*	511-848	511-858	2"	2", 4"

\*Does not come supplied with Dial Gage Protector Cover (21DZA000)

### Technical Data

Accuracy: 2µm / .00008"  
 Indication stability: 1µm / .00004"  
 Graduation: 0.01mm, 0.001mm, .0005" or .0001"

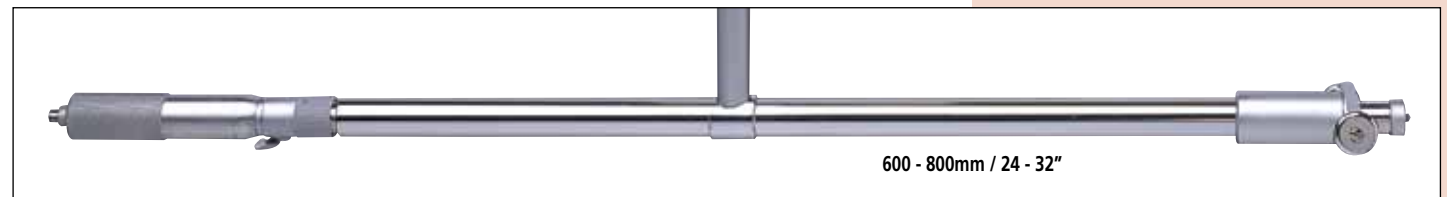
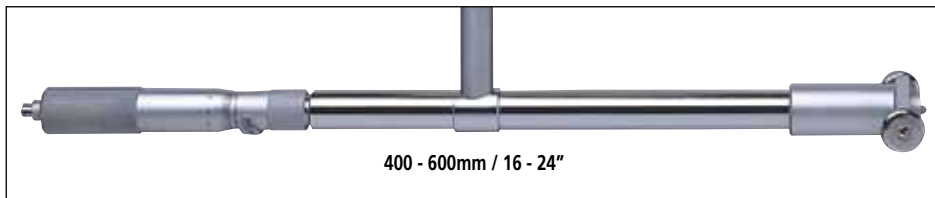
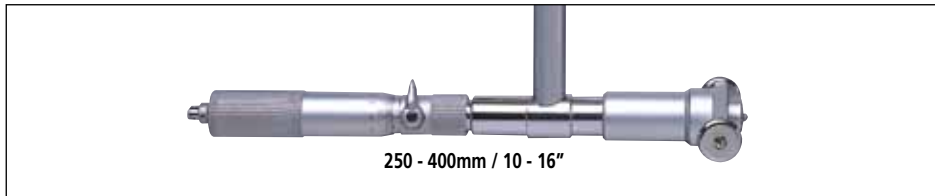
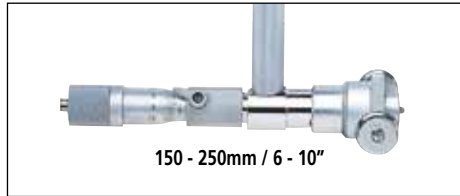
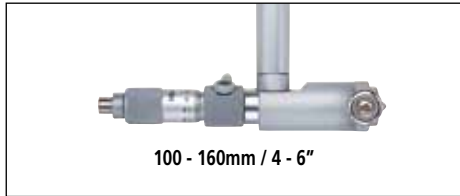
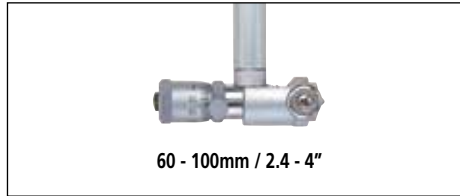
### Optional Accessories

- 953549: 125mm / 4.92" Extension rod for 18-35mm / .7 - 1.4" models
- 953552: 125mm / 4.92" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953557: 125mm / 4.92" Extension rod for 160-400mm / 6.5 - 16" models
- 953550: 250mm / 9.84" Extension rod for 18-35mm / .7 - 1.4" models
- 953553: 250mm / 9.84" Extension rod for 35-160mm / 1.4 - 6.5" models
- 952361: 250mm / 9.84" Extension rod for 160-400mm / 6.5 - 16" models
- 953551: 500mm / 19.69" Extension rod for 18-35mm / .7 - 1.4" models
- 953554: 500mm / 19.69" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953558: 500mm / 19.69" Extension rod for 160-400mm / 6.5 - 16" models
- 953555: 750mm / 29.53" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953559: 750mm / 29.53" Extension rod for 160-400mm / 6.5 - 16" models
- 953556: 1000mm / 39.37" Extension rod for 35-160mm / 1.4 - 6.5" models
- 953560: 1000mm / 39.37" Extension rod for 160-400mm / 6.5 - 16" models

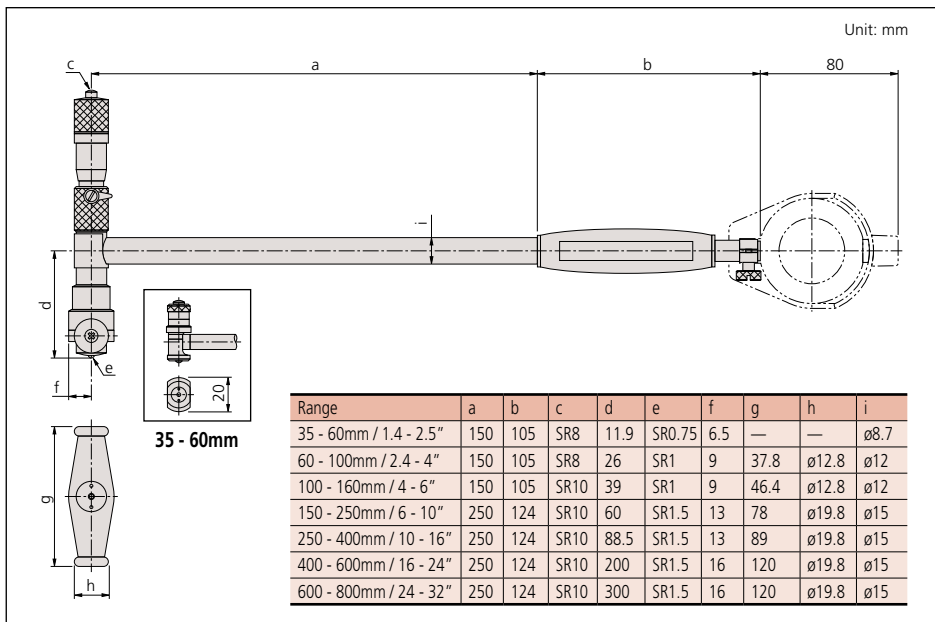
Metric		Gage Stem ø 8mm			
Measuring Range	Order No. Without Indicator	Order No. With 2046SB Graduation 0.01mm	Order No. With 2109SB-10 Graduation 0.001mm	Mic Head Travel	Sub Anvil
60 - 100mm	511-803*	511-813	511-823	10mm	10mm, 20mm
100 - 160mm	511-804*	511-814	511-824	13mm	10mm, 20mm, 20mm
150 - 250mm	511-805*	511-815	511-825	13mm	10mm, 20mm, 20mm, 50mm
250 - 400mm	511-806*	511-816	511-826	25mm	25mm, 50mm, 50mm
400 - 600mm	511-807*	511-817	511-827	50mm	50mm, 100mm
600 - 800mm	511-808*	511-818	511-828	50mm	50mm, 100mm

\*Does not come supplied with Dial Gage Protector Cover (21DZA000)

## Contact Point



## DIMENSIONS





SPC

**ABSOLUTE**  
Absolute System Patented by MITUTOYO

### Technical Data

Accuracy: Wide Range: 0.003mm / .00012"  
Narrow Range: 0.002mm / .00008"  
Resolution: .00005" / 0.001mm

Display: LCD

Battery: SR44 (1 pc.) (938882)

Battery life: Approx. 9 months for normal use

Dust/Water protection level: Conforming to IP53

### Functions

Origin-set, Zero-Setting, Presetting, Power on/off, inch/mm conversion (inch/mm type only), Data output, GO/±NG tolerance judgment

Alarm: Low battery voltage, scale contamination, over-flow error, tolerance limit setting error

### Optional Accessories

**21DZA089:** Extension rod 250 mm (10")

**21DZA081:** Extension rod 500 mm (20")

**516-118-10:** Origin setup metric rectangular gage block set

**516-119-10:** Origin setup metric square gage block set

**516-120-26:** GB calibration kit for series 511 bore gage. (9 pcs GB and plain jaw, 160mm holder)

**905338:** SPC cable (40" / 1m)

**905409:** SPC cable (80" / 2m)

-----: Setting ring (See page C-30.)



Origin setup gage block set

Example:  
using four extension rods.

# ABSOLUTE Digimatic Bore Gage

## SERIES 511

This ABSOLUTE Digimatic bore gage is exclusively designed for ID measurement.



511-521

### FEATURES

- The minimum value holding function provides the easy detection of hole diameter.

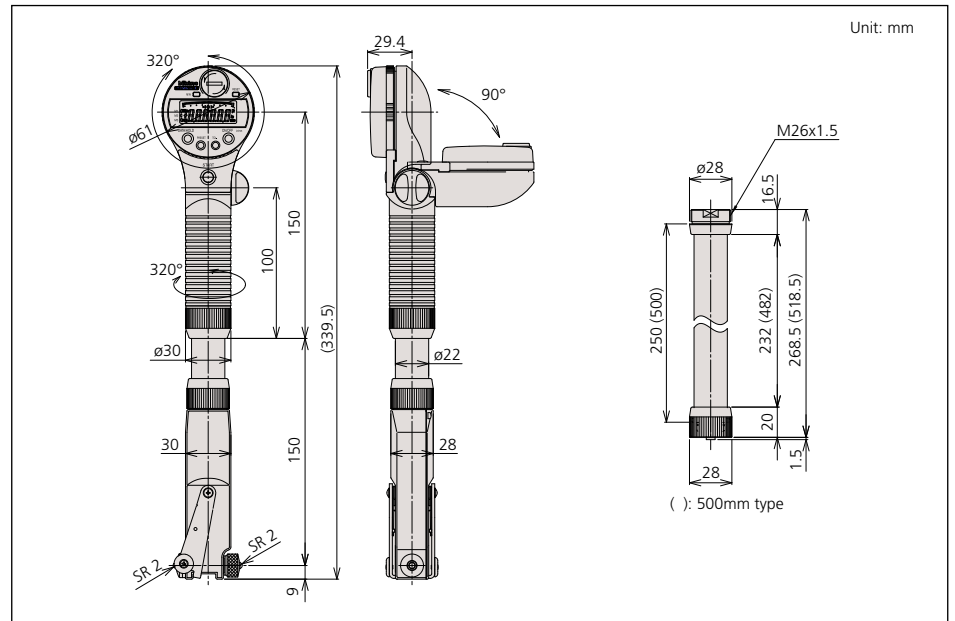


- Up to three sets of master value and upper/lower tolerance value can be memorized.
- An analog bar indicator is integrated to enhance the intuition in reading.
- GO/±NG judgment is performed by setting the upper and lower tolerances.
- Up to four rods (250mm or 500mm) can be used.

### SPECIFICATIONS

Inch/Metric		
Range	Order No.	Probe depth
1.8 - 4" / 45 - 100mm	511-521	6" (152.4mm)

### DIMENSIONS AND MASS



MASS: 500g

# Bore Gages

## SERIES 526 — for Extra Small Holes

These Bore Gages measure diameters of small holes. The radial displacement of split-ball contact is converted to axial displacement of measuring rod, which is shown on the dial indicator.

### FEATURES

- Optional stand (215-120M) is available for efficient measurement of multiple small holes.

### SPECIFICATIONS

**Metric** Gage Stem  $\varnothing$  8mm

Measuring Range	Order No. Without Dial Gage	Order No. With 2046SB Graduation 0.01mm	Order No. With 2019SB-10 Graduation 0.001mm	Number of Anvils	Number of Needles	Probe depth (D)
0.95 - 1.55mm	526-170*	526-173	526-172	6	1	11.5mm
1.5 - 4mm	526-160*	526-163	526-162	9	2	17.5, 22.5mm
3.7 - 7.3mm	526-150*	526-153	526-152	7	1	32mm
7 - 10mm	—	526-126	526-124	6	1	56mm
10 - 18mm	—	526-127	526-125	8	1	62mm

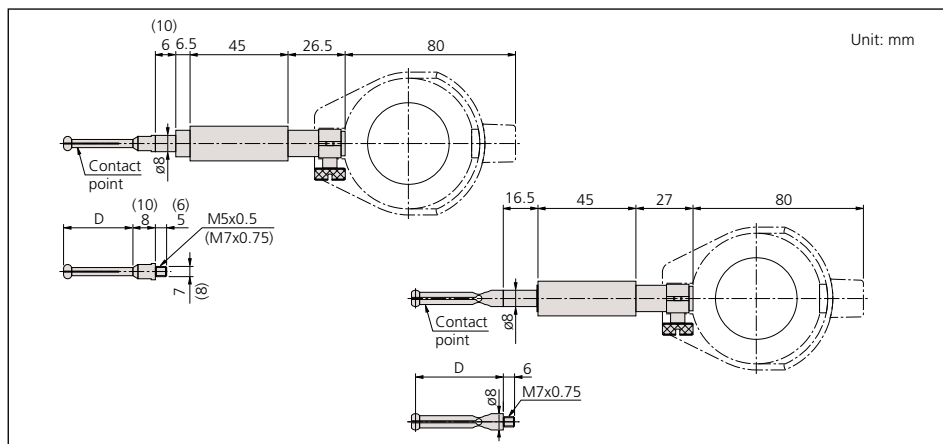
\*Does not come supplied with Dial Gage Protector (21DZA000)

**Inch** Gage Stem Dia .375"

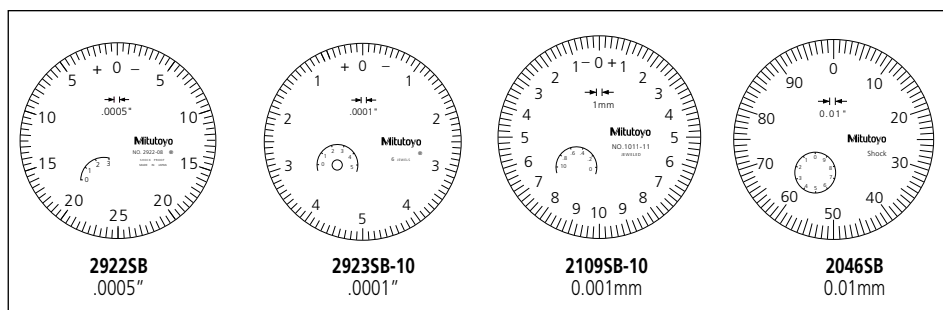
Measuring Range	Order No. Without Dial Gage	Order No. With 2922SB Graduation .0005"	Order No. With 2923SB-10 Graduation .0001"	Number of Anvils	Number of Needles	Probe depth (D)
.037 - .061"	526-175*	—	526-176	5	1	.45"
.06 - .157"	526-165*	—	526-166	9	2	.68", .89"
.145 - .29"	526-155*	—	526-156	7	1	1.26"
.3 - .4"	526-103*	526-119	526-122	6	1	2.2"
.4 - .7"	526-104*	526-120	526-123	8	1	2.4"

\*Does not come supplied with Dial Gage Protector (21DZA000)

### DIMENSIONS



### DIAL FACES



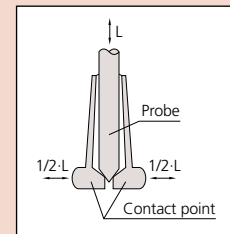
526-172

526-127

### Technical Data

Accuracy:  $4\mu\text{m} / .00016''$   
 Indication stability:  $2\mu\text{m} / .00008''$   
 Graduation: 0.01mm, 0.001mm, .0005" or .0001"

### Contact Point



### Optional Accessory

215-120M: Bore gage stand



----- : Setting ring (See page C-30.)



# Digimatic Chamfer Chek

**SERIES 547 - I.D. Measures the top diameter of tapered holes and chamfers  
O.D. measures the minor end diameter of tapered conical parts**

## Standard Accessories

- 64AAA012:** Master Plate 3"(W) x 2"(D) x .925"(H)  
**21BZA778:** Black Leather Case 9.7"(W) x 2"(D) x 6.1"(H)  
**21BZA779\*:** Wooden box 12.8"(W) x 5.1"(D) x 3.63"(H)  
 \* 547-481 (DCI-2090) only

## Optional Accessories

### Setting Master

Order No.	Model No.	Diameter	Accuracy
<b>Chamfer Chek I.D.</b>			
64AAA007	SM-1000	*.375" / .750" (I.D.)	±.0002"
64AAA008	SM-2000	*1.25" / 1.75" (I.D.)	±.0003"
64AAA133		9.525mm (I.D.)	±0.005mm
64AAA134		19.05mm (I.D.)	±0.008mm
<b>Chamfer Chek O.D.</b>			
64AAA009	SM-1000E	*.375" / .750" (O.D.)	±.0002"

- 905338: SPC cable (40" / 1m)  
 905409: SPC cable (80" / 2m)



526-007M-10

MEASURES THIS DIAMETER



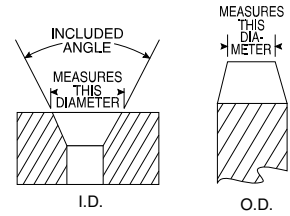
## Standard Accessories

- 21BZA778:** Black Leather Case 9.7"(W) x 2"(D) x 6.1"(H)



547-480

547-482



I.D.

O.D.



547-480 Shown with optional setting master.

## SPECIFICATIONS

### Inch / Metric

Resolution	Diameter Range	Order No.	Model No.	Accuracy	Mass
<b>Chamfer Chek I.D.</b>					
.0005"/0.01mm	.02-1" / 0.5-25.4mm	547-480	DCI-1090	±.001" / ±0.025mm	1.75lbs./793g
.0005"/0.01mm	1-2" / 25.4-50.8mm	547-481	DCI-2090	±.001" / ±0.025mm	3.97lbs./1,800g
<b>Chamfer Chek O.D.</b>					
.0005"/0.01mm	1/8"-1/2" / 3.18-12.7mm	547-482	DCO-0590	±.001" / ±0.025mm	1.75lbs./793g
.0005"/0.01mm	3/8"-1" / 9.52-25.4mm	547-483	DCO-1090	±.001" / ±0.025mm	1.75lbs./793g

# Digimatic Hole Chek

**SERIES 526 - Instant diameter measurement of small holes**

## SPECIFICATIONS

### Inch / Metric

Resolution	Diameter Range	Order No.	Model No.	Accuracy	Mass
.0005"/0.01mm	.010" - .330"	526-007M-10	DHC-0133	±.001" / ±0.025mm	1.5lbs./680g

## Optional Accessories

### Setting Master

Order No.	Model No.	Diameter	Accuracy
64AAA003	SM-040	.029"	±.0002"
64AAA004	SM-130	.078"	±.0002"
64AAA005	SM-230	.178"	±.0002"
64AAA006	SM-330	.278"	±.0002"

# Setting Ring

**SERIES 177 — Accessories for Inside Micrometers, Holtest and Dial Bore Gages**



177-147

177-146

177-139

177-205

## SPECIFICATION

### Setting Rings

Metric				
Size	Order No.	Accuracy	Outside Diameter	Width
1mm	177-220	±1.5µm	20mm	4mm
1.1mm	177-222	±1.5µm	20mm	4mm
1.2mm	177-225	±1.5µm	20mm	4mm
1.3mm	177-227	±1.5µm	20mm	4mm
1.4mm	177-230	±1.5µm	20mm	4mm
1.75mm	177-236	±1.5µm	25mm	5mm
2mm	177-239	±1.5µm	25mm	5mm
2.25mm	177-242	±1.5µm	25mm	5mm
2.5mm	177-208	±1.5µm	25mm	7mm
2.75mm	177-246	±1.5µm	25mm	7mm
3mm	177-248	±1.5µm	25mm	7mm
3.25mm	177-250	±1.5µm	25mm	7mm
3.5mm	177-252	±1.5µm	25mm	7mm
3.75mm	177-255	±1.5µm	25mm	7mm
4mm	177-204	±1.5µm	25mm	7mm
4.5mm	177-257	±1.5µm	25mm	7mm
5mm	177-205	±1.5µm	25mm	7mm
5.5mm	177-263	±1.5µm	25mm	7mm
6mm	177-267	±1.5µm	25mm	7mm
6.5mm	177-271	±1.5µm	25mm	7mm
7mm	177-275	±1.5µm	25mm	7mm
8mm	177-125	±1.5µm	32mm	10mm
10mm	177-126	±1.5µm	32mm	10mm
12mm	177-284	±1.5µm	32mm	10mm
14mm	177-132	±1.5µm	38mm	10mm
16mm	177-177	±1.5µm	45mm	10mm
17mm	177-133	±1.5µm	45mm	10mm
20mm	177-286	±1.5µm	45mm	10mm
25mm	177-139	±1.5µm	53mm	15mm
30mm	177-288	±1.5µm	71mm	15mm
35mm	177-140	±1.5µm	71mm	15mm
40mm	177-290	±1.5µm	71mm	15mm
45mm	177-178	±1.5µm	85mm	15mm
50mm	177-146	±1.5µm	85mm	20mm
60mm	177-292	±1.5µm	112mm	20mm
62mm	177-314	±1.5µm	112mm	20mm
70mm	177-147	±1.5µm	112mm	20mm
75mm	177-316	±1.5µm	125mm	25mm
80mm	177-294	±1.5µm	125mm	25mm
87mm	177-318	±1.5µm	140mm	25mm
90mm	177-148	±1.5µm	140mm	25mm
100mm	177-296	±1.5µm	160mm	25mm
125mm	177-298	±2.5µm	210mm	38.1mm
150mm	177-300	±2.5µm	235mm	38.1mm
175mm	177-302	±2.5µm	260mm	38.1mm
200mm	177-304	±2.5µm	311mm	38.1mm
225mm	177-306	±2.5µm	337mm	38.1mm
250mm	177-308	±2.5µm	362mm	38.1mm
275mm	177-310	±2.5µm	413mm	38.1mm
300mm	177-312	±2.5µm	438mm	38.1mm

## FEATURES

- Used for quick zero adjustment of dial bore gages, Holtest, and inside micrometers.
- Actual inside diameter is marked on each ring.



177-300

Inch				
Size	Order No.	Accuracy	Outside Diameter	Width
.1"	177-209	±.00004"	.98"	.28"
.16"	177-206	±.00004"	.98"	.28"
.24"	177-207	±.00004"	.98"	.28"
.275"	177-281	±.00004"	.98"	.28"
.35"	177-179	±.00004"	1.26"	.39"
.425"	177-283	±.00004"	1.26"	.39"
.50"	177-180	±.00004"	1.26"	.39"
.60"	177-181	±.00004"	1.5"	.39"
.65"	177-182	±.00004"	1.77"	.39"
.70"	177-183	±.00004"	1.77"	.39"
.80"	177-287	±.00004"	1.77"	.39"
1.0"	177-184	±.00004"	2.09"	.59"
1.2"	177-289	±.00004"	2.8"	.59"
1.4"	177-185	±.00004"	2.8"	.59"
1.6"	177-291	±.00004"	2.8"	.59"
1.8"	177-186	±.00004"	3.5"	.59"
2.0"	177-187	±.00004"	3.5"	.79"
2.4"	177-293	±.00004"	4.41"	.79"
2.5"	177-315	±.00006"	4.41"	.79"
2.8"	177-188	±.00006"	4.41"	.79"
3.0"	177-317	±.00006"	4.92"	.98"
3.2"	177-295	±.00006"	4.92"	.98"
3.5"	177-319	±.00006"	5.51"	.98"
3.6"	177-189	±.00006"	5.51"	.98"
4.0"	177-297	±.00008"	6.3"	.98"
5.0"	177-299	±.00008"	8.27"	1.5"
6.0"	177-301	±.00008"	9.25"	1.5"
7.0"	177-303	±.00010"	10.24"	1.5"
8.0"	177-305	±.00010"	12.24"	1.5"
9.0"	177-307	±.00010"	13.27"	1.5"
10.0"	177-309	±.00012"	14.25"	1.5"
11.0"	177-311	±.00012"	16.26"	1.5"
12.0"	177-313	±.00012"	17.24"	1.5"

## Technical Data

Tolerance between the nominal size and the actual diameter:

- ±0.01mm for ø1 - 45mm setting rings
- ±0.02mm for ø50 - 300mm setting rings
- ±.0004" for .1" - 1.8" DIA. setting rings
- ±.0008" for 2" - 12" DIA. setting rings

- Cylindricity:
- 1.0µm for ø1 - 60mm setting rings
  - 1.5µm for ø62 - 90mm setting rings
  - 2.0µm for ø100 - 150mm setting rings
  - 2.5µm for ø175 - 225mm setting rings
  - 3.0µm for ø250 - 300mm setting rings
  - .00004" for .1" - 2.4" DIA. setting rings
  - .00006" for 2.5" - 3.6" DIA. setting rings
  - .00008" for 4" - 6" DIA. setting rings
  - .00010" for 7" - 9" DIA. setting rings
  - .00012" for 10" - 12" DIA. setting rings

# Ceramic Setting Ring

**SERIES 177 — Accessories for Inside Micrometers, Holtest and Dial Bore Gages**

## FEATURES

- No more anti-corrosion treatment is required when handling Ceramic Setting Rings normally, resulting in simple maintenance and storage.



## Technical Data

Tolerance between the nominal size and the actual diameter:  
 $\pm 0.01\text{mm}$  for  $\varnothing 1 - 45\text{mm}$  setting rings  
 $\pm 0.0004''$  for  $.1'' - 1.8''$  DIA. setting rings

Cylindricity:  $1.0\mu\text{m}$  for  $\varnothing 1 - 45\text{mm}$  setting rings  
 $.00004''$  for  $.1'' - 1.8''$  DIA. setting rings

## Ceramic Setting Rings

Metric			Inch		
Size	Order No.	Accuracy	Size	Order No.	Accuracy
6mm	177-420	$\pm 1.5\mu\text{m}$	.275"	177-522	$\pm 0.00006''$
8mm	177-423	$\pm 1.5\mu\text{m}$	.35"	177-523	$\pm 0.00006''$
10mm	177-424	$\pm 1.5\mu\text{m}$	.425"	177-524	$\pm 0.00006''$
12mm	177-425	$\pm 1.5\mu\text{m}$	.5"	177-525	$\pm 0.00006''$
16mm	177-427	$\pm 1.5\mu\text{m}$	.65"	177-527	$\pm 0.00006''$
20mm	177-429	$\pm 1.5\mu\text{m}$	.8"	177-529	$\pm 0.00006''$
25mm	177-430	$\pm 1.5\mu\text{m}$	1"	177-530	$\pm 0.00006''$
30mm	177-431	$\pm 1.5\mu\text{m}$	1.2"	177-531	$\pm 0.00006''$
35mm	177-432	$\pm 1.5\mu\text{m}$	1.4"	177-532	$\pm 0.00006''$
40mm	177-433	$\pm 1.5\mu\text{m}$	1.6"	177-533	$\pm 0.00006''$
45mm	177-434	$\pm 1.5\mu\text{m}$	1.8"	177-534	$\pm 0.00006''$

# Bore Gage Zero Checker

**SERIES 515**

The Bore Gage Zero Checker allows easy zero adjustment of dial bore gages with ranges of 18mm (.7") through 400mm (16") using gage blocks.



## SPECIFICATIONS

Order No.	Applicable range
515-590	18 - 400mm (.7" - 16")



# RM-120 Ring Master

## Ring Gage Measuring Machine

### FEATURES

- The laser holoscale incorporated in the RM-120 eliminates the need for a reference gage block set and reference ring gages.
- Probe change is not required for the entire measuring range.
- Enhanced repeatability and lower measuring force achieved with the air bearing on the probe carriage guide.
- Workpiece alignment is easy to perform with the specially designed measuring table which is capable of moving, tilting, elevating, and 90 degree rotating.
- The model with an analog meter will further facilitate workpiece positioning.



### SPECIFICATIONS

Model No.	RM-120 with analog meter
Order No.	565-204A
Range	ID: .236 to 4.75" / 6 to 120mm
Resolution (Counter)	.00000001" / 0.0001mm
Analog meter	200 $\mu$ m / .007874", 20 $\mu$ m / .0007874"
Accuracy ( $\pm 2\sigma$ )	$\pm(0.3 + 5D/1000)\mu$ m D: Ring gage size diameter (mm)
Measuring unit	Laser Holoscale
Measuring force	Approx. 0.2N
Work piece size	OD: .7874 - 7.874" / 20 - 200mm Thickness: Up to 1.574" / 40mm
Air requirement	400KPa (58psi)
Air consumption	Approx. 30 liter per minute (12.8CFM)
Dimension (W x D x H)	720mm x 494mm x 875mm 28.35" x 19.45" x 34.45"
Mass	Approx. 260kg (573.2lbs)



This RM-120 conforms to the US CDRH regulations in 21 CFR 1040.

### Optional Accessories

- 02ASE690:** Master gage .250" with factory Inspection Certificate
- 02ASE700:** Master gage .500" with factory Inspection Certificate
- 02ASE710:** Master gage 3" with factory Inspection Certificate
- 02ASE720:** Master gage 4.750" with factory Inspection Certificate
- 02ASC530:** Master gage 6mm with factory Inspection Certificate
- 02ASC560:** Master gage 12.5mm with factory Inspection Certificate
- 02ASC580:** Master gage 75mm with factory Inspection Certificate
- 02ASC540:** Master gage 120mm with factory Inspection Certificate
- 02ASE480:** Vibration stand

# D

## Small Tool Instruments and Data Management

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**Digimatic Caliper**



**Digimatic Height Gages**



**Linear Height**



**Depth Gages**



**SuperCaliper**



**ABSOLUTE Coolant Proof Caliper**



**ABSOLUTE Digimatic Caliper**



**ABSOLUTE Digimatic Offset Caliper**



**Digimatic Height Gage**

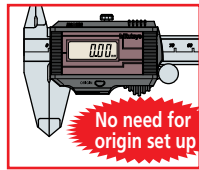
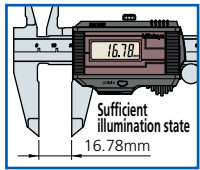
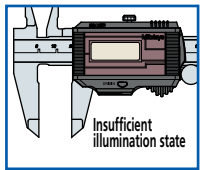


# Super Caliper-Solar Powered

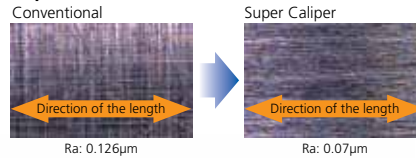
**SERIES 500 — No battery or origin reset needed for IP67 Digital Caliper**

## FEATURES

- With no annoying origin restoration necessary, a measurement can be started any time and there is no restriction on operating speed.
- World's unique\* solar-powered Super Caliper that is eco-friendly with no battery.  
\*According to Mitutoyo investigation in January, 2005
- The impact resistance of the display unit has been increased for improved usability in workshop conditions.
- IP67 protection assures waterproof reliability.
- This Super Caliper uses components that do not contain harmful substances and is compatible with RoHS Directives.
- Supplied in fitted plastic case.



### Improvement in surface finish of beam



500-784

## SPECIFICATIONS

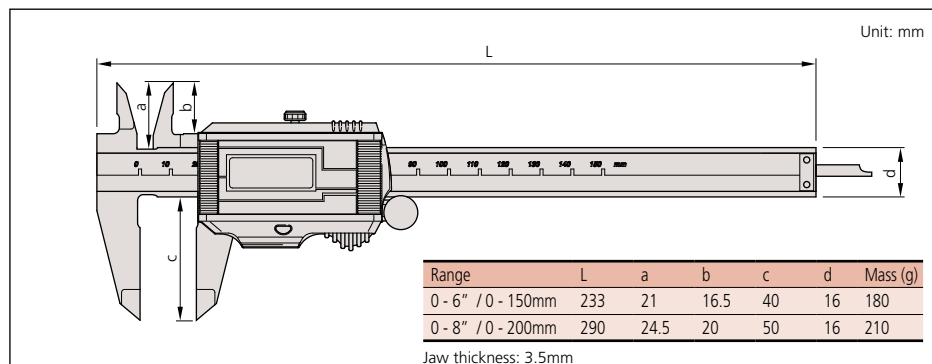
Metric			
Range	Order No.	Accuracy	Resolution
0 - 150mm	<b>500-776</b>	±0.02mm	0.01mm
0 - 150mm	<b>500-774*</b>	±0.02mm	0.01mm
0 - 200mm	<b>500-777</b>	±0.02mm	0.01mm
0 - 200mm	<b>500-775*</b>	±0.02mm	0.01mm

\*Without SPC data output

Inch/Metric			
Range	Order No.	Accuracy	Resolution
0 - 6" / 0 - 150mm	<b>500-786</b>	±.001"	.0005" / 0.01mm
0 - 6" / 0 - 150mm	<b>500-784*</b>	±.001"	.0005" / 0.01mm
0 - 8" / 0 - 200mm	<b>500-787</b>	±.001"	.0005" / 0.01mm
0 - 8" / 0 - 200mm	<b>500-785*</b>	±.001"	.0005" / 0.01mm

\*Without SPC data output

## DIMENSIONS AND MASS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: .0005" / 0.01mm or 0.01mm  
 Repeatability: .0005" / 0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electromagnetic induction linear encoder  
 Max. response speed: Unlimited  
 Battery: Solar battery\*  
 Dust/Water protection level: IP67  
 \*Can be used continuously above 60 lux ambient illumination.

## Function

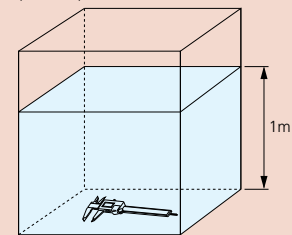
Origin-set, inch/mm conversion (on inch/metric models only)  
 Alarm: Counting value composition error

## Optional Accessories

**05CZA624:** SPC cable with data switch (40" / 1m)  
**05CZA625:** SPC cable with data switch (80" / 2m)

## IP67 protection level

Level 6: Dust-tight  
 No ingress of dust.  
 Level 7: Protected against the effects of temporary immersion in water.  
 Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed 1 meter in water under standardized conditions of pressure and time (30 min.).



## About the charge function (Super Caliper)

The minimum illumination required in the uncharged state is 60 lux. As shown in the table 'JIS Z 9110 Artificial Illumination Intensity Standard', this Super Caliper can be used without problems in a normal work environment.

The charge function allows the operator to use this Super Caliper without interrupting work even if the ambient illumination is temporarily insufficient.

- In the fully charged state this Super Caliper can operate for approximately an hour in an environment of 50lux illumination (less than the minimum necessary illumination intensity).
- The time necessary for full charge differs, depending on the charging conditions. If this Super Caliper is left unused in an illumination of 500 lux (usual for manufacturing environments), it takes approximately one hour to reach full charge.



# ABSOLUTE Solar Caliper

**SERIES 500 — No battery or origin reset needed**

Mitutoyo's Absolute Solar Digimatic Caliper retains its origin point even the display turns off for the entire life of the caliper. At 60 Lux and up the ABSOLUTE solar caliper is turned on ready to start measurement.

## FEATURES

- No more repeated zero setting caused by low light intensity.
- Hard-coated solar panel for increased durability.
- No fear for overspeed errors.
- With thumb roller.
- Supplied in fitted plastic case.



500-474

## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: .0005"/0.01mm or 0.01mm  
 Repeatability: .0005" / 0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Battery: Solar battery\*  
 \*Can be used continuously above 60 lux ambient illumination.

## Function

Origin-set, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Counting value composition error

## Optional Accessories

- 959143:** Data hold unit (SPC output model only)
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)

## SPECIFICATIONS

### Metric

Range	Order No.	Accuracy	Resolution	Remarks
0 - 100mm	<b>500-443</b>	±0.02mm	0.01mm	ø1.9mm round depth bar
0 - 100mm	<b>500-453*</b>	±0.02mm	0.01mm	ø1.9mm round depth bar
0 - 150mm	<b>500-444</b>	±0.02mm	0.01mm	
0 - 150mm	<b>500-454*</b>	±0.02mm	0.01mm	
0 - 200mm	<b>500-445</b>	±0.02mm	0.01mm	
0 - 200mm	<b>500-455*</b>	±0.02mm	0.01mm	

\*without SPC data output

### Inch/Metric

Range	Order No.	Accuracy	Resolution	Remarks
0 - 4" / 0 - 100mm	<b>500-463</b>	±.001"	.0005" / 0.01mm	.075" round depth bar
0 - 4" / 0 - 100mm	<b>500-473*</b>	±.001"	.0005" / 0.01mm	.075" round depth bar
0 - 6" / 0 - 150mm	<b>500-464</b>	±.001"	.0005" / 0.01mm	
0 - 6" / 0 - 150mm	<b>500-474*</b>	±.001"	.0005" / 0.01mm	
0 - 8" / 0 - 200mm	<b>500-465</b>	±.001"	.0005" / 0.01mm	
0 - 8" / 0 - 200mm	<b>500-475*</b>	±.001"	.0005" / 0.01mm	

\*without SPC data output

## DIMENSIONS AND MASS

Unit: mm

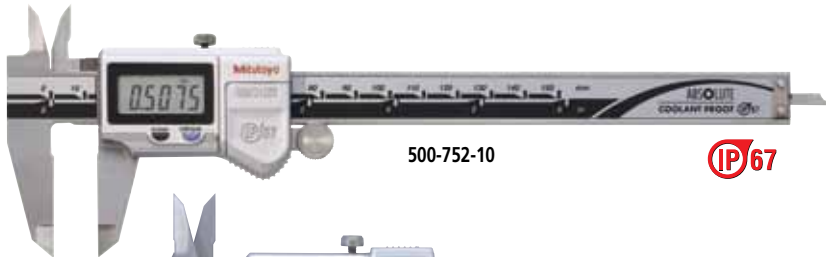
Range	L	a	b	c	Mass (g)
0 - 4" / 0 - 100mm	182	40	21	16.5	125
0 - 6" / 0 - 150mm	233	40	21	16.5	150
0 - 8" / 0 - 200mm	290	50	24.5	20	180

# ABSOLUTE Coolant Proof Caliper

**SERIES 500 — with Dust/Water Protection Conforming to IP67 Level**

## FEATURES

- Can be used in workshop conditions exposed to coolant, water, dust or oil.
- Easy to use - no need to wipe or clean the scale.
- Advanced design styling.
- Incorporates absolute measurement system.
- Automatic power-on/off.
- Data output function.
- With thumb roller.
- Supplied in fitted plastic case.



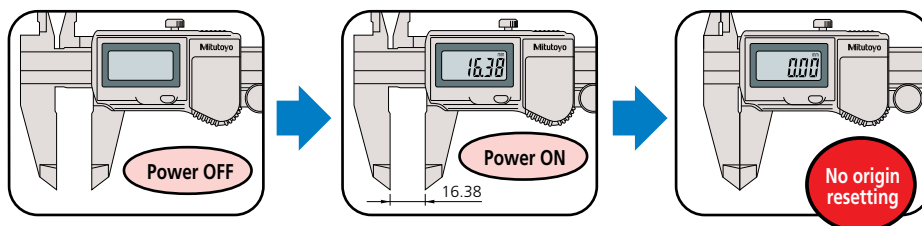
500-752-10



500-763-10



Built-in ABS (absolute) scale means that these calipers are ready to use immediately after power-on without origin resetting. It's as easy as vernier caliper measurements.



Certificate of inspection

CERTIFICATE OF INSPECTION / CERTIFICAT DE CONTROLE		Inspection result/Résultats				(GR)(P)
Product name/Désignation	Digital Caliper/Pied à coulisse Digital	Measuring length / Position de mesure	Permissible values / Erreur admissible	Instrumental error/Erreur	Interval/Intervalle	
Model No./Modèle	CD-15PB	∅ 4	+0.01	---	-0.01	
Code No./Référence	500-752	60	0.00	0.00	0.01	
Serial No./No. de série	0489811	100	±0.02	-0.01	0.00	
Measuring range/Capacité de mesure	0-150mm	150	---	-0.01	0.00	Unit:mm
Minimum indication/Résolution	0.01mm	200	---	---	---	Unit:mm
Standard Temperature / Température de Référence	20°C	∅ 0.16	+0.0005	---	---	
QC Manager/Responsable Qualité Contrôle	<i>g. g. g.</i>		-0.0015	---	---	
Inspection standard: Mitutoyo standard		0	---	---	---	
Based on: JIS B 7507:1995/EN 602:1996		2	---	---	---	
Traceable to: NMI/JANIST by JCS8 No. 0030/JIST via 82105M034.03		4	±0.0010	---	---	Unit:inch
PTB via 3745-PTB 02.4340-PTB 03		6	---	---	---	Unit:inch
		8	---	---	---	

Overall Judgment: Passed / Passé Conformité: conforme

Mitutoyo Corporation



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: .0005"/0.01mm or 0.01mm  
 Repeatability: .0005"/0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electromagnetic induction linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc./2 pcs\*), 938882  
 Battery life: Approx. 3 years under normal use (1 year: over 12" / 300mm models)  
 Dust/Water protection level: IP67  
 \*0 - 300mm model

## Function

Origin-set, Zero-setting, Automatic power on/off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

05CZA624: SPC cable with data switch (40" / 1m)  
 05CZA625: SPC cable with data switch (80" / 2m)



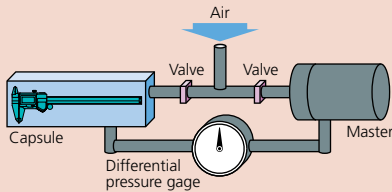
05CZA624



Measurement data output function is available with a water-resistant SPC cable.

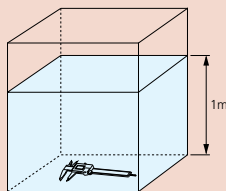
## Air leakage detection system used for water-proof testing

Generally, air leakage tests are performed to evaluate water resistance. Testing begins by placing a measuring tool into the capsule. Next, air with equivalent pressure is supplied to the capsule and the master, then the valves are closed. If none of the air in the capsule seeps into the measuring tool, the capsule's air pressure will remain equal to that in the master, and the differential pressure gage will continue to point to the center. However, if some air does seep into the measuring tool, it will create an air pressure difference in the amount indicated by the differential pressure gage. Thus, detection of air pressure differences is used as a criterion for judging leakage. Every single unit of the ABS Coolant Proof calipers and Coolant Proof micrometer is tested this way for air leakage to help ensure product quality.



## IP67 protection level

- Level 6: Dust-tight  
No ingress of dust.
- Level 7: Protected against the effects of temporary immersion in water.  
Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed 1 meter in water under standardized conditions of pressure and time (30 min.).



## SPECIFICATIONS

### Metric IP67 model

Range	Order No.	Accuracy	Resolution	Remarks
0-150mm	<b>500-702-10*</b>	+/-0.02mm	0.01mm	
0-150mm	<b>500-712-10</b>	+/-0.02mm	0.01mm	
0-150mm	<b>500-719-10</b>	+/-0.02mm	0.01mm	dia. 1.9mm rod depth bar
0-150mm	<b>500-721-10</b>	+/-0.02mm	0.01mm	carbide-tipped jaws for ID measurement
0-150mm	<b>500-723-10</b>	+/-0.02mm	0.01mm	carbide-tipped jaws for OD & ID measurement
0-200mm	<b>500-703-10*</b>	+/-0.02mm	0.01mm	
0-200mm	<b>500-713-10</b>	+/-0.02mm	0.01mm	
0-200mm	<b>500-722-10</b>	+/-0.02mm	0.01mm	carbide-tipped jaws for ID measurement
0-200mm	<b>500-724-10</b>	+/-0.02mm	0.01mm	carbide-tipped jaws for OD & ID measurement
0-300mm	<b>500-704-10*</b>	+/-0.03mm	0.01mm	
0-300mm	<b>500-714-10</b>	+/-0.03mm	0.01mm	

\*without SPC data output

### Inch/Metric IP67 model

Range	Order No.	Accuracy	Resolution	Remarks
0-6"/0-150mm	<b>500-752-10*</b>	+/- .001"	.0005"/0.01mm	
0-6"/0-150mm	<b>500-762-10</b>	+/- .001"	.0005"/0.01mm	
0-6"/0-150mm	<b>500-768-10*</b>	+/- .001"	.0005"/0.01mm	.075" rod depth bar
0-6"/0-150mm	<b>500-769-10</b>	+/- .001"	.0005"/0.01mm	.075" rod depth bar
0-6"/0-150mm	<b>500-731-10*</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for ID measurement
0-6"/0-150mm	<b>500-735-10</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for ID measurement
0-6"/0-150mm	<b>500-733-10*</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for OD & ID measurement
0-6"/0-150mm	<b>500-737-10</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for OD & ID measurement
0-8"/0-200mm	<b>500-753-10*</b>	+/- .001"	.0005"/0.01mm	
0-8"/0-200mm	<b>500-763-10</b>	+/- .001"	.0005"/0.01mm	
0-8"/0-200mm	<b>500-732-10*</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for ID measurement
0-8"/0-200mm	<b>500-736-10</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for ID measurement
0-8"/0-200mm	<b>500-734-10*</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for OD & ID measurement
0-8"/0-200mm	<b>500-738-10</b>	+/- .001"	.0005"/0.01mm	carbide-tipped jaws for OD & ID measurement
0-12"/0-300mm	<b>500-754-10*</b>	+/- .0015"	.0005"/0.01mm	
0-12"/0-300mm	<b>500-764-10</b>	+/- .0015"	.0005"/0.01mm	

\*without SPC data output

## DIMENSIONS AND MASS

Unit: mm

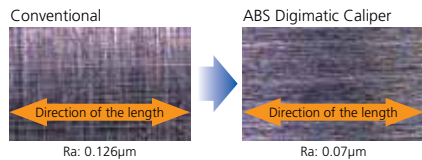
Range	L	a	b	c	e	Mass (g)
0-6" / 0-150mm	233	40	21	16.5	16	168
0-8" / 0-200mm	290	50	24.5	20	16	198
0-12" / 0-300mm	404	64	27.5	22	20	350

# ABSOLUTE Digimatic Caliper

**SERIES 500 — with Exclusive ABSOLUTE Encoder Technology**

Mitutoyo's absolute Digimatic Caliper is the next generation of electronic calipers. It keeps track of its origin point once set. Whenever turned on, the large LCD screen displays the actual slider position ready to start measurement. No more repeated zero setting is necessary with the absolute encoder technology as well as no more care for overspeed errors.

## High quality guide surface finish for smooth slider movement



## FEATURES

- Large and clear LCD readout.
- The ZERO/ABS key allows the display to be Zero-Set at any slider position along the scale for incremental comparison measurements. This switch will also allow return to the absolute (ABS) coordinate and display of the true position from the origin point (usually jaws-closed point).
- Data Hold Unit (959143) is optional.
- Carbide-tipped jaw type calipers are also available.
- Thumb roller included only on calipers up to and including 12" or 300mm.
- Supplied in fitted plastic case. Except 40" / 1000mm supplied in wooden case.



## DIMENSIONS AND MASS

Unit: mm

Range	L	a	b	c	d	Mass (g)
0 - 4" / 0 - 100mm	182	40	21	16.5	16	143
0 - 6" / 0 - 150mm	233	40	21	16.5	16	168
0 - 8" / 0 - 200mm	290	50	24.5	20	16	198
0 - 12" / 0 - 300mm	403	64	27.5	22	20	350

Range	L	a	b	c	d	Mass (g)
0 - 18" / 0 - 450mm	630	90	47	38	25	1170
0 - 24" / 0 - 600mm	780	90	47	38	25	1350
0 - 40" / 0 - 1000mm	1240	130	61	50	32	3300

## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: .0005"/0.01mm or 0.01mm  
 Repeatability: .0005"/0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3.5 years under normal use

## Function

Origin-set, Zero-setting, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

- 959143:** Data hold unit
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)





500-506-10

500-502-10

500-501-10

500-500-10

## SPECIFICATIONS

### Metric

Range	Order No.	Accuracy	Resolution	Remarks
0 - 100mm	<b>500-150-20</b>	±0.02mm	0.01mm	ø1.9mm rod depth bar
0 - 150mm	<b>500-151-20</b>	±0.02mm	0.01mm	—
0 - 150mm	<b>500-154-20</b>	±0.02mm	0.01mm	Carbide-tipped jaws for OD measurement
0 - 150mm	<b>500-155-20</b>	±0.02mm	0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 150mm	<b>500-158-20</b>	±0.02mm	0.01mm	ø1.9mm rod depth bar
0 - 200mm	<b>500-152-20</b>	±0.02mm	0.01mm	—
0 - 200mm	<b>500-156-20</b>	±0.02mm	0.01mm	Carbide-tipped jaws for OD measurement
0 - 200mm	<b>500-157-20</b>	±0.02mm	0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 300mm	<b>500-153</b>	±0.03mm	0.01mm	—
0 - 450mm	<b>500-500-10*</b>	±0.05mm	0.01mm	Without Thumb Roller
0 - 600mm	<b>500-501-10*</b>	±0.05mm	0.01mm	Without Thumb Roller
0 - 1000mm	<b>500-502-10*</b>	±0.07mm	0.01mm	Without Thumb Roller

\*without thumb rollers

### Inch/Metric

Range	Order No.	Accuracy	Resolution	Remarks
0 - 4" / 0 - 100mm	<b>500-170-20</b>	±.001"	.0005" / 0.01mm	.075" rod depth bar
0 - 4" / 0 - 100mm	<b>500-195-20*</b>	±.001"	.0005" / 0.01mm	.075" rod depth bar
0 - 6" / 0 - 150mm	<b>500-171-20</b>	±.001"	.0005" / 0.01mm	—
0 - 6" / 0 - 150mm	<b>500-174-20</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD measurement
0 - 6" / 0 - 150mm	<b>500-175-20</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 6" / 0 - 150mm	<b>500-178-20</b>	±.001"	.0005" / 0.01mm	.075" rod depth bar
0 - 6" / 0 - 150mm	<b>500-196-20*</b>	±.001"	.0005" / 0.01mm	—
0 - 6" / 0 - 150mm	<b>500-159-20*</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD measurement
0 - 6" / 0 - 150mm	<b>500-160-20*</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 8" / 0 - 200mm	<b>500-172-20</b>	±.001"	.0005" / 0.01mm	—
0 - 8" / 0 - 200mm	<b>500-176-20</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD measurement
0 - 8" / 0 - 200mm	<b>500-177-20</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 8" / 0 - 200mm	<b>500-197-20*</b>	±.001"	.0005" / 0.01mm	—
0 - 8" / 0 - 200mm	<b>500-163-20*</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD measurement
0 - 8" / 0 - 200mm	<b>500-164-20*</b>	±.001"	.0005" / 0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 12" / 0 - 300mm	<b>500-173</b>	±.0015"	.0005" / 0.01mm	—
0 - 12" / 0 - 300mm	<b>500-167</b>	±.0015"	.0005" / 0.01mm	Carbide-tipped jaws for OD measurement
0 - 12" / 0 - 300mm	<b>500-168</b>	±.0015"	.0005" / 0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 12" / 0 - 300mm	<b>500-193*</b>	±.0015"	.0005" / 0.01mm	—
0 - 12" / 0 - 300mm	<b>500-165*</b>	±.0015"	.0005" / 0.01mm	Carbide-tipped jaws for OD measurement
0 - 12" / 0 - 300mm	<b>500-166*</b>	±.0015"	.0005" / 0.01mm	Carbide-tipped jaws for OD & ID measurement
0 - 18" / 0 - 450mm	<b>500-505-10</b>	±.002"	.0005" / 0.01mm	Without Thumb Roller
0 - 24" / 0 - 600mm	<b>500-506-10</b>	±.002"	.0005" / 0.01mm	Without Thumb Roller
0 - 40" / 0 - 1000mm	<b>500-507-10</b>	±.003"	.0005" / 0.01mm	Without Thumb Roller

\*without SPC data output

# Dial Caliper

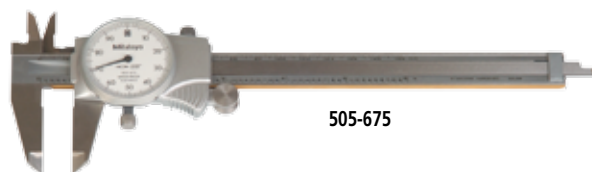
## SERIES 505

### FEATURES

- New designed dial movement for ultra smooth sliding and high shock protection.
- Titanium Nitride (TiN) coating is applied to the sliding surface to increase wear resistance (except for 0 - 12" and 0 - 300mm model).
- Lock screw for dial bezel and for holding the sliding jaw position.
- Can measure OD, ID, depth, and steps.
- Models available with carbide-tipped OD and ID jaws.
- Supplied in fitted plastic case.



505-677



505-675



505-673



505-681

### SPECIFICATIONS

**Metric** 1mm Per One Revolution

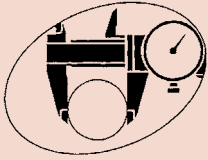
Range	Order No.	Accuracy	Graduation	Remarks
0-100mm	505-680	+/-0.015mm	0.01mm	—
0-150mm	505-681	+/-0.03mm	0.01mm	—
0-200mm	505-682	+/-0.03mm	0.01mm	—

**Metric** 2mm Per One Revolution

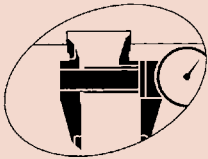
Range	Order No.	Accuracy	Graduation	Remarks
0-150mm	505-671	+/-0.03mm	0.02mm	—
0-150mm	505-707	+/-0.03mm	0.02mm	Carbide-tipped jaws for OD measurement
0-150mm	505-711	+/-0.03mm	0.02mm	Carbide-tipped jaws for OD & ID measurement
0-200mm	505-672	+/-0.03mm	0.02mm	—
0-300mm	505-673	+/-0.04mm	0.02mm	—



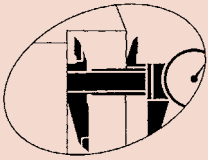
## "Quadri" (4-way) Measurement



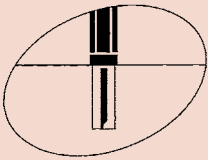
1. Outside measurement



2. Inside measurement



3. Step measurement



4. Depth measurement

### Results of 1,000,000 cycle sliding wear test

#### TiN coating



Wear: 0µm

#### Conventional



Wear: 4µm

## SPECIFICATIONS

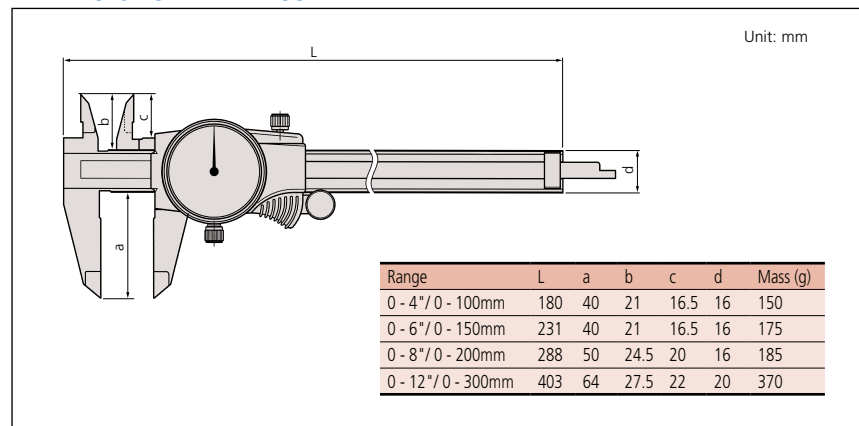
**Inch**  $\frac{1}{16}$ " Per One Revolution

Range	Order No.	Accuracy	Graduation	Remarks
0-4"	505-674	+/- .001"	.001"	-
0-6"	505-675	+/- .001"	.001"	-
0-6"	505-675-51	+/- .001"	.001"	Blue Dial Face
0-6"	505-675-52	+/- .001"	.001"	Purple Dial Face
0-6"	505-675-53	+/- .001"	.001"	Green Dial Face
0-6"	505-675-54	+/- .001"	.001"	Red Dial Face
0-6"	505-675-55	+/- .001"	.001"	Orange Dial Face
0-6"	505-675-56	+/- .001"	.001"	Black Dial Face
0-6"	505-675-66	+/- .001"	.001"	Black Dial Face with Ratchet Stop
0-6"	505-689	+/- .001"	.001"	Extra smooth movement
0-6"	505-708	+/- .001"	.001"	Carbide-tipped jaws for OD measurement
0-6"	505-712	+/- .001"	.001"	Carbide-tipped jaws for OD & ID measurement
0-8"	505-676	+/- .002"	.001"	-
0-8"	505-690	+/- .002"	.001"	Extra smooth movement
0-8"	505-709	+/- .002"	.001"	Carbide-tipped jaws for OD measurement
0-8"	505-713	+/- .002"	.001"	Carbide-tipped jaws for OD & ID measurement
0-12"	505-677	+/- .002"	.001"	—
0-12"	505-710	+/- .002"	.001"	Carbide-tipped jaws for OD measurement
0-12"	505-714	+/- .002"	.001"	Carbide-tipped jaws for OD & ID

**Inch**  $\frac{1}{32}$ " Per One Revolution

Range	Order No.	Accuracy	Graduation	Remarks
0-4"	505-716	+/- .001"	.001"	—
0-6"	505-717	+/- .001"	.001"	—
0-6"	505-718	+/- .001"	.001"	Carbide-tipped jaws for OD measurement
0-8"	505-719	+/- .002"	.001"	—
0-12"	505-720	+/- .002"	.001"	—
0-12"	505-721	+/- .002"	.001"	Carbide-tipped jaws for OD measurement

## DIMENSIONS AND MASS

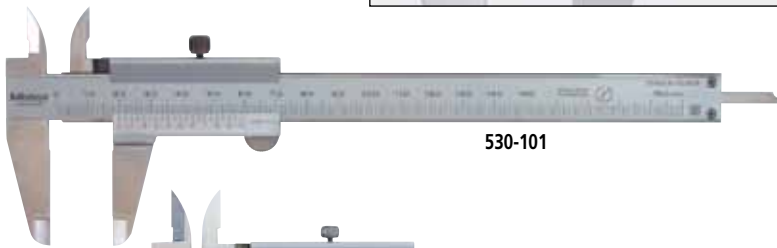
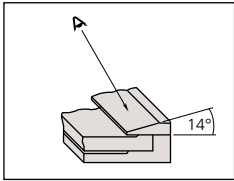


# Vernier Caliper

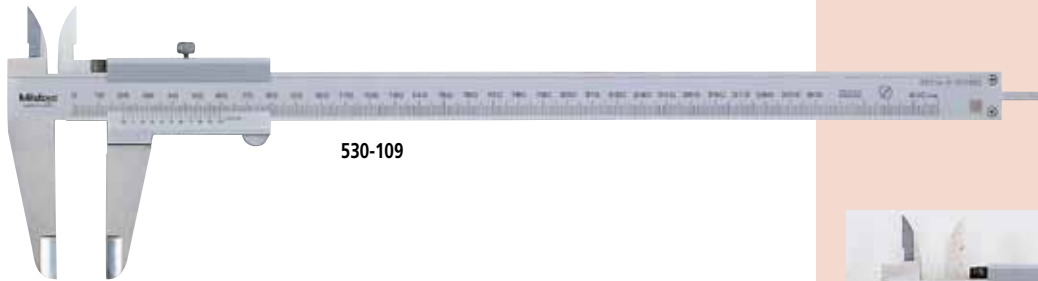
## SERIES 530 — Standard Model

### FEATURES

- Can measure OD (outside diameter), ID (inside diameter), depth, and steps.
- The small vernier face angle ( $14^\circ$ ) provides easy reading.
- Dual reading scales on vernier. (metric/inch and inch models only)
- Lock screw for holding the sliding jaw position.
- Carbide-tipped jaw type calipers are also available.
- Supplied with vinyl holster in fitted carton. Except 24" / 600mm models are carton only. 40" / 1000mm supplied in wooden case.



530-101

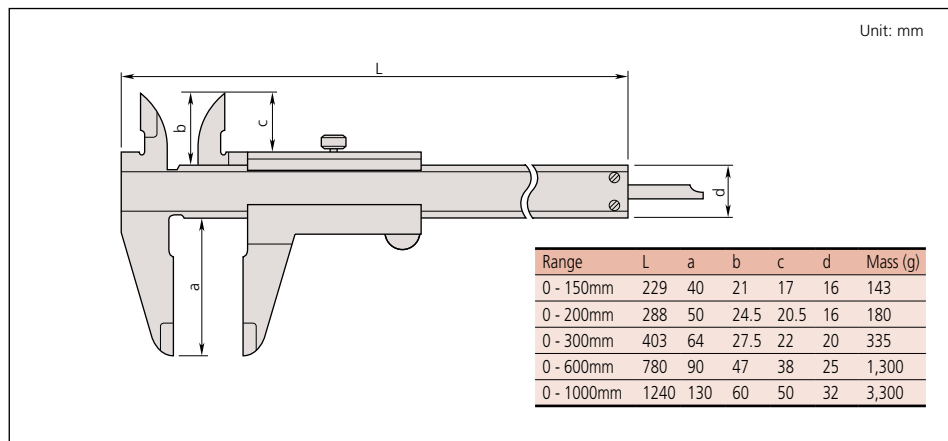


530-109



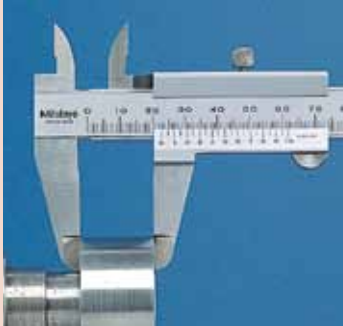
Carbide-tipped jaw type

### DIMENSIONS AND MASS

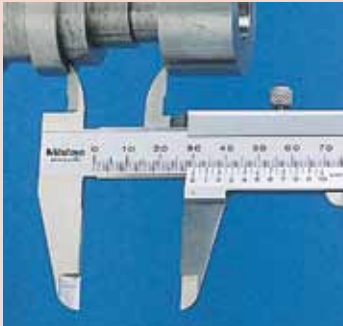


Round depth bar type

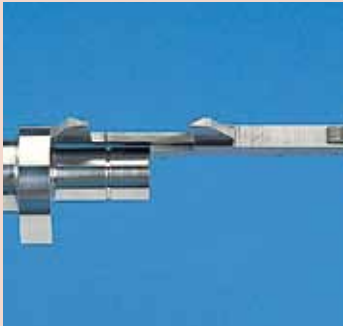
## "Quadri" (4 way) Measurement Measurement Applications



OD measurement



ID measurement



Step measurement



Depth measurement

## SPECIFICATIONS

### Metric

Range	Order No.	Accuracy	Graduation	Remarks
0 - 150mm	<b>530-102</b>	±0.05mm	0.05mm	∅ 1.9mm Depth bar
0 - 150mm	<b>530-101</b>	±0.05mm	0.05mm	—
0 - 150mm	<b>530-320</b>	±0.05mm	0.05mm	Carbide-tipped jaws for OD measurement
0 - 150mm	<b>530-335</b>	±0.05mm	0.05mm	Carbide-tipped jaws for OD & ID measurement
0 - 150mm	<b>530-122*</b>	±0.03mm	0.02mm	High accuracy model
0 - 200mm	<b>530-108</b>	±0.05mm	0.05mm	—
0 - 200mm	<b>530-321</b>	±0.05mm	0.05mm	Carbide-tipped jaws for OD measurement
0 - 200mm	<b>530-123*</b>	±0.03mm	0.02mm	High accuracy model
0 - 300mm	<b>530-109</b>	±0.08mm	0.05mm	—
0 - 300mm	<b>530-322</b>	±0.08mm	0.05mm	Carbide-tipped jaws for OD measurement
0 - 300mm	<b>530-124*</b>	±0.04mm	0.02mm	High accuracy model: ±0.04mm
0 - 600mm	<b>530-501**</b>	±0.1mm	0.05mm	—
0 - 1000mm	<b>530-502 **</b>	±0.15mm	0.05mm	—

\*Graduation: 0.02mm

\*\*No depth measuring bar

### Metric/Inch with metric/inch dual scale

Range	Order No.	Accuracy	Vernier Graduation		Remarks
			Lower Scale	Upper Scale	
0 - 150mm / 0 - 6"	<b>530-104</b>	±0.05mm	0.05mm	1/128"	—
0 - 150mm / 0 - 6"	<b>530-316</b>	±0.05mm	0.05mm	1/128"	—
0 - 150mm / 0 - 6"	<b>530-312*</b>	±0.03mm	0.02mm	.001"	High accuracy model
0 - 200mm	<b>530-114</b>	±0.05mm	0.05mm	1/128"	—
0 - 200mm	<b>530-118*</b>	±0.03mm	0.02mm	.001"	High accuracy model
0 - 300mm	<b>530-115</b>	±0.08mm	0.05mm	1/128"	—
0 - 300mm	<b>530-119*</b>	±0.04mm	0.02mm	.001"	High accuracy model

\*Graduation: 0.02mm

### Inch with inch/inch dual scale

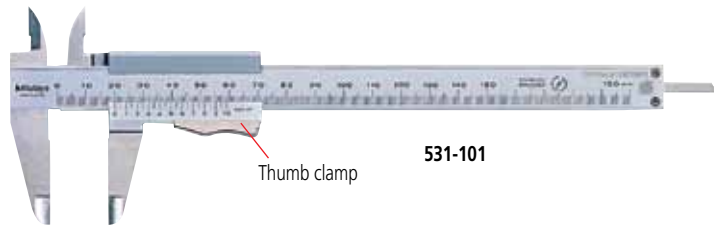
Range	Order No.	Accuracy	Vernier Graduation		Remarks
			Lower Scale	Upper Scale	
0 - 6"	<b>530-105</b>	±.0015"	.001"	1/128"	—
0 - 8"	<b>530-116</b>	±.0015"	.001"	1/128"	—

# Vernier Caliper

**SERIES 531 — with Thumb Clamp**

## FEATURES

- The slider moves only when the spindle loaded thumb clamp is depressed.
- Can measure OD, ID, depth, and steps
- Supplied with vinyl holster in fitted carton.



531-101

Thumb clamp

## SPECIFICATIONS

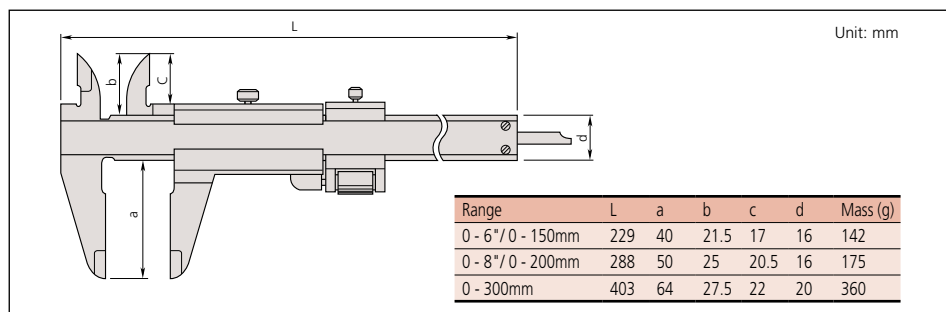
### Metric

Range	Order No.	Accuracy	Graduation	Remarks
0 - 150mm	531-101	±0.05mm	0.05mm	—
0 - 200mm	531-102	±0.05mm	0.05mm	—
0 - 300mm	531-103	±0.08mm	0.05mm	—

### Metric/Inch with metric/inch dual scale

Range	Order No.	Accuracy	Graduation		Remarks
			Lower Scale	Upper Scale	
0 - 150mm / 0 - 6"	531-122	±0.05mm	0.05mm	1/128"	with inch/mm conversion label
0 - 150mm / 0 - 6"	531-128	±0.03mm	0.02mm	.001"	High accuracy model
0 - 200mm / 0 - 8"	531-108	±0.05mm	0.05mm	1/128"	—
0 - 200mm / 0 - 8"	531-129	±0.03mm	0.02mm	.001"	High accuracy model
0 - 300mm / 0 - 12"	531-109	±0.08mm	0.05mm	1/128"	—
0 - 300mm / 0 - 12"	531-112	±0.04mm	0.02mm	.001"	High accuracy model

## DIMENSIONS AND MASS



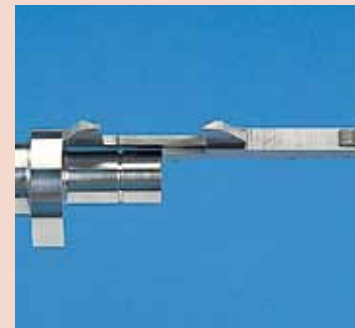
## "Quadri" (4 way) Measurement Measurement Applications



OD measurement



ID measurement



Step measurement

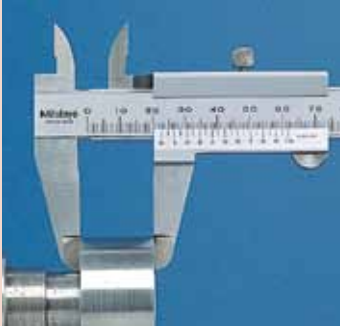


Depth measurement

# Vernier Caliper

**SERIES 532 — with Fine Adjustment**

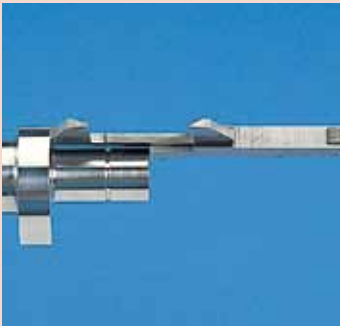
## "Quadri" (4 way) Measurement Measurement Applications



OD measurement



ID measurement



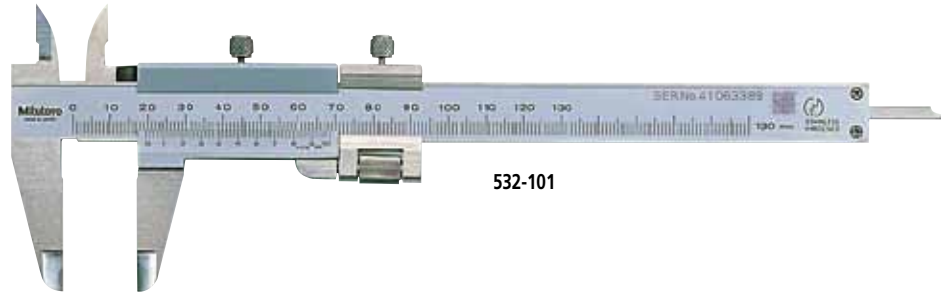
Step measurement



Depth measurement

## FEATURES

- Provided with a fine-adjustment carriage to feed the slider finely.
- Can measure OD, ID, depth, and steps.
- Supplied with vinyl holster in fitted carton.



532-101

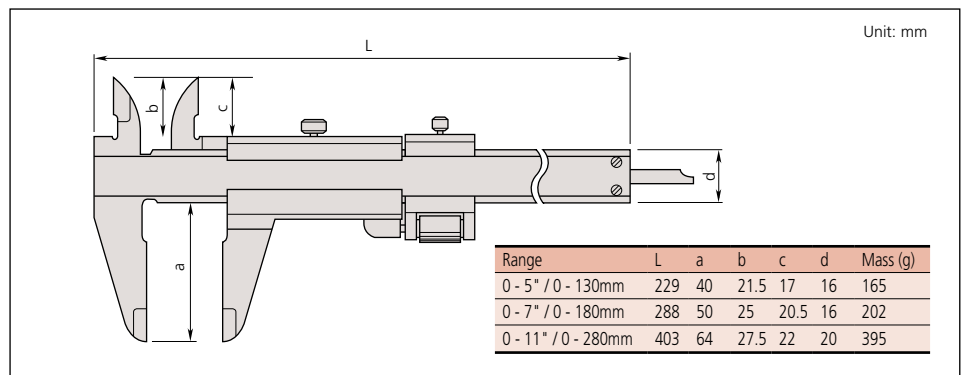
## SPECIFICATIONS

Metric			
Range	Order No.	Accuracy	Graduation
0 - 130mm	<b>532-101</b>	±0.03mm	0.02mm
0 - 180mm	<b>532-102</b>	±0.03mm	0.02mm
0 - 280mm	<b>532-103</b>	±0.04mm	0.02mm

Metric/Inch with metric/inch dual scale				
Range	Order No.	Accuracy	Graduation	
			Lower Scale	Upper Scale
0 - 130mm / 0 - 5"	<b>532-119</b>	±0.03mm	0.02mm	.001"
0 - 180mm / 0 - 7"	<b>532-120</b>	±0.03mm	0.02mm	.001"
0 - 280mm / 0 - 11"	<b>532-121</b>	±0.04mm	0.02mm	.001"

Inch with inch/inch dual scale				
Range	Order No.	Accuracy	Graduation	
			Lower Scale	Upper Scale
0 - 5"	<b>532-104</b>	±.0015"	.001"	1/128"
0 - 7"	<b>532-105</b>	±.0015"	.001"	1/128"
0 - 11"	<b>532-106</b>	±.0015"	.001"	1/128"

## DIMENSIONS AND MASS



# Vernier Caliper

## SERIES 160 — with Nib Style Jaws and Fine Adjustment

### FEATURES

- The jaws have round measuring faces for accurate ID measurement.
- With fine adjustment carriage to feed the slider finely.
- Inside and outside measurements can be directly read from the upper and lower slider graduations, respectively.
- Supplied with vinyl holster in fitted carton. Except 12" / 300mm, 18" / 450mm and 24" / 600mm are fitted carton only. Over 24" / 600mm supplied in wooden case.



### SPECIFICATIONS

**Metric** \_\_\_\_\_ with metric/metric dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (10) - 300mm	<b>160-127</b>	±0.04mm	0.02mm	0.02mm	450
0 (20) - 450mm	<b>160-128</b>	±0.05mm	0.02mm	0.02mm	1,200
0 (20) - 600mm	<b>160-101</b>	±0.05mm	0.02mm	0.02mm	2,600
0 (20) - 1000mm	<b>160-104</b>	±0.07mm	0.02mm	0.02mm	3,500
0 (20) - 1500mm	<b>160-110</b>	±0.09mm	0.02mm	0.02mm	4,850
0 (20) - 2000mm	<b>160-113</b>	±0.12mm	0.02mm	0.02mm	10,200

\*( ): Minimum dimension in ID measurement

**Metric/Inch** \_\_\_\_\_ with metric/inch dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (10) - 300mm / 0 (.3") - 12"	<b>160-150</b>	±0.04mm	0.02mm	.001"	450
0 (20) - 450mm / 0 (.5") - 18"	<b>160-151</b>	±0.05mm	0.02mm	.001"	1,200
0 (20) - 600mm / 0 (.5") - 24"	<b>160-153</b>	±0.05mm	0.02mm	.001"	1,400
0 (20) - 1000mm / 0 (1") - 40"	<b>160-155</b>	±0.07mm	0.02mm	.001"	3,500
0 (20) - 1500mm / 0 (1") - 60"	<b>160-157</b>	±0.09mm	0.02mm	.001"	4,850
0 (20) - 2000mm / 0 (1") - 80"	<b>160-159</b>	±0.12mm	0.02mm	.001"	10,200

\*( ): Minimum dimension in ID measurement

**Inch** \_\_\_\_\_ with inch/inch dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (.3") - 12"	<b>160-124</b>	±.0015"	.001"	.001"	450
0 (.5") - 18"	<b>160-116</b>	±.002"	.001"	.001"	1,200
0 (.5") - 24"	<b>160-102</b>	±.002"	.001"	.001"	1,400
0 (1") - 40"	<b>160-105</b>	±.003"	.001"	.001"	3,500
0 (1") - 60"	<b>160-111</b>	±.004"	.001"	.001"	4,850
0 (1") - 80"	<b>160-114</b>	±.005"	.001"	.001"	10,200

\*( ): Minimum dimension in ID measurement

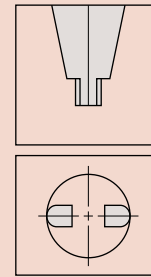
**Inch/Metric** \_\_\_\_\_ with inch/metric dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (.3") - 12" / 0 (10) - 300mm	<b>160-125</b>	±.0015"	.001"	0.02mm	450
0 (.5") - 18" / 0 (20) - 450mm	<b>160-119</b>	±.002"	.001"	0.02mm	1,200
0 (.5") - 24" / 0 (20) - 600mm	<b>160-103</b>	±.002"	.001"	0.02mm	1,400
0 (1") - 40" / 0 (20) - 1000mm	<b>160-106</b>	±.003"	.001"	0.02mm	3,500
0 (1") - 60" / 0 (20) - 1500mm	<b>160-112</b>	±.004"	.001"	0.02mm	4,850
0 (1") - 80" / 0 (20) - 2000mm	<b>160-115</b>	±.005"	.001"	0.02mm	10,200

\*( ): Minimum dimension in ID measurement

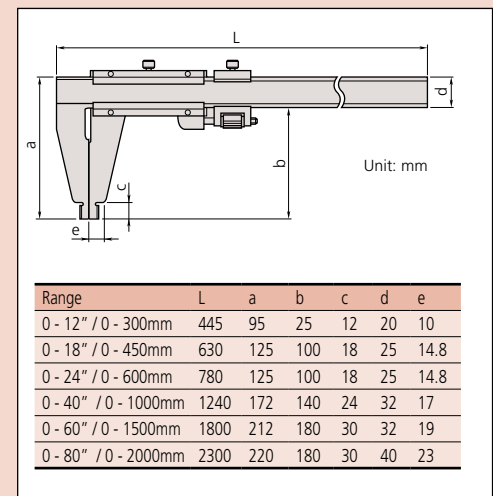
### Technical Data

Accuracy: Refer to the list of specifications.  
Graduation: Refer to the list of specifications.



Round surface of jaws for accurate ID measurement

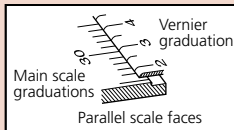
### DIMENSIONS







**ABSOLUTE**  
Absolute System Patented by MITUTOYO



### Technical Data

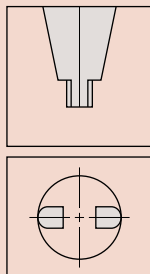
Accuracy: Refer to the list of specifications.  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero-setting, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

- 959143:** Data hold unit
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)
- 05CZA624:** SPC cable with data switch (40" / 1m) for IP67 model
- 05CZA625:** SPC cable with data switch (80" / 2m) for IP67 model



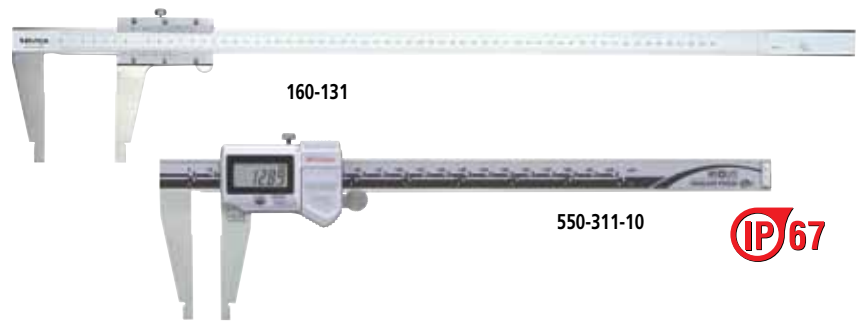
Round surface of jaws for accurate ID measurement

# ABSOLUTE Digimatic & Vernier Caliper

**SERIES 550, 160 — with Nib Style Jaws**

### FEATURES

- The rounded faces of the jaws are ideal for accurate ID (inside diameter) measurement.
- Inside and outside measurements can be directly read from the upper and lower slider graduations (Series 160).
- With fine-adjustment carriage type is available (Series 160).
- Parallax-free vernier scale type is available for easy and positive measurement (Series 160).
- With SPC output (Series 550).
- Supplied in fitted plastic case. Except 40" / 1000mm supplied in wooden case.



### SPECIFICATIONS

#### Metric Digital model

Range*	Order No.	Accuracy	Resolution	Mass (g)	Remarks
0 (10) - 200mm	<b>550-301-10</b>	±0.03mm	0.01mm	180	IP67
0 (10) - 300mm	<b>550-331-10</b>	±0.03mm	0.01mm	380	w/ offset/preset function for easy ID measurement, IP67
0 (20) - 450mm	<b>550-203-10</b>	±0.05mm	0.01mm	1,110	
0 (20) - 600mm	<b>550-205-10</b>	±0.05mm	0.01mm	1,290	
0 (20) - 1000mm	<b>550-207-10</b>	±0.07mm	0.01mm	3,350	

\*( ): Minimum dimension in ID measurement

#### Inch/Metric Digital model

Range*	Order No.	Accuracy	Resolution	Mass (g)	Remarks
0 (.4") - 8" / 0 (10) - 200mm	<b>550-311-10</b>	±.001"	.0005" / 0.01mm	180	IP67
0 (.4") - 12" / 0 (10) - 300mm	<b>550-341-10</b>	±.0015"	.0005" / 0.01mm	380	w/ offset/preset function for easy ID measurement, IP67
0 (.5") - 18" / 0 (20) - 450mm	<b>550-223-10</b>	±.002"	.0005" / 0.01mm	1,110	—
0 (.5") - 24" / 0 (20) - 600mm	<b>550-225-10</b>	±.002"	.0005" / 0.01mm	1,290	—
0 (1") - 40" / 0 (20) - 1000mm	<b>550-227-10</b>	±.003"	.0005" / 0.01mm	3,350	—

\*( ): Minimum dimension in ID measurement

#### Metric with metric/metric dual scale

Range*	Order No.	Accuracy	Graduation	Mass (g)	Remarks
0 (20) - 450mm	<b>160-130</b>	±0.10mm	0.02mm	1,100	—
0 (20) - 600mm	<b>160-131</b>	±0.10mm	0.02mm	1,300	—
0 (20) - 1000mm	<b>160-132</b>	±0.15mm	0.02mm	3,350	—
0 (20) - 1500mm	<b>160-133</b>	±0.22mm	0.05mm	4,850	
0 (20) - 2000mm	<b>160-134</b>	±0.28mm	0.05mm	10,000	

\*( ): Minimum dimension in ID measurement

### DIMENSIONS

Range	L	a	b	d
0 - 8" / 0 - 200mm	288 (290)	60	8	16
0 - 12" / 0 - 300mm	445	75	12	20
0 - 18" / 0 - 450mm	632	100	18	25
0 - 24" / 0 - 600mm	780	100	18	25
0 - 40" / 0 - 1000mm	1240	140	24	32

Unit: mm  
 ( ): Digital models

# Long Jaw Vernier Caliper

**SERIES 534**

## FEATURES

- Long jaws for measuring hard-to-reach features.
- Supplied in fitted wooden case.



## SPECIFICATIONS

**Metric** with metric/metric dual scale without fine adjustment

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (10) - 300mm	<b>534-109</b>	±0.07mm	0.05mm	0.05mm	400
0 (20) - 500mm	<b>534-110</b>	±0.13mm	0.05mm	0.05mm	1,400

\*( ): Minimum dimension in ID measurement

**Metric** with metric/metric dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (10) - 300mm	<b>534-113</b>	±0.04mm	0.02mm	0.02mm	460
0 (20) - 500mm	<b>534-114</b>	±0.06mm	0.02mm	0.02mm	1,500
0 (20) - 750mm	<b>534-115</b>	±0.08mm	0.02mm	0.02mm	2,900
0 (20) - 1000mm	<b>534-116</b>	±0.10mm	0.02mm	0.02mm	3,500

\*( ): Minimum dimension in ID measurement

**Metric/Inch** with metric/inch dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (10) - 300mm / 0 (.3") - 12"	<b>534-101</b>	±0.07mm	0.05mm	1/128"	460
0 (10) - 300mm / 0 (.3") - 12"	<b>534-105</b>	±0.04mm	0.02mm	.001"	460
0 (20) - 500mm / 0 (.8") - 20"	<b>534-102</b>	±0.13mm	0.05mm	1/128"	1,500
0 (20) - 500mm / 0 (.8") - 20"	<b>534-106</b>	±0.06mm	0.02mm	.001"	1,500
0 (20) - 700mm / 0 (.8") - 30"	<b>534-103</b>	±0.16mm	0.05mm	1/128"	2,900
0 (20) - 700mm / 0 (.8") - 30"	<b>534-107</b>	±0.08mm	0.02mm	.001"	2,900
0 (20) - 1000mm / 0 (.8") - 40"	<b>534-104</b>	±0.20mm	0.05mm	1/128"	3,500
0 (20) - 1000mm / 0 (.8") - 40"	<b>534-108</b>	±0.10mm	0.02mm	.001"	3,500

\*( ): Minimum dimension in ID measurement

**Inch** with inch/inch dual scale

Range*	Order No.	Accuracy	Graduation		Mass (g)
			Lower Scale	Upper Scale	
0 (.3") - 12"	<b>534-117</b>	±.002"	.001"	.001"	400
0 (.8") - 20"	<b>534-118</b>	±.003"	.001"	.001"	1500
0 (.8") - 30"	<b>534-119</b>	±.004"	.001"	.001"	2900
0 (.8") - 40"	<b>534-120</b>	±.004"	.001"	.001"	3500

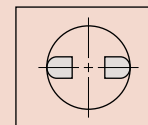
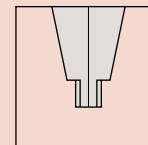
\*( ): Minimum dimension in ID measurement

## DIMENSIONS

Range	L	a	b	c	d	e
0 - 12" / 0 - 300mm	445	110	90	12	20	7
0 - 20" / 0 - 500mm	682	225	200	18.5	25	12
0 - 30" / 0 - 750mm	995	232	200	18.5	32	12
0 - 40" / 0 - 1000mm	1230	232	200	18.5	32	12

## Technical Data

Accuracy: Refer to the list of specifications.  
 Graduation: Refer to the list of specifications.



Round surface of jaws for accurate CD measurement



### Technical Data

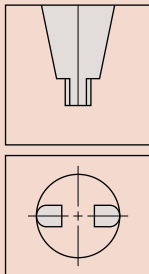
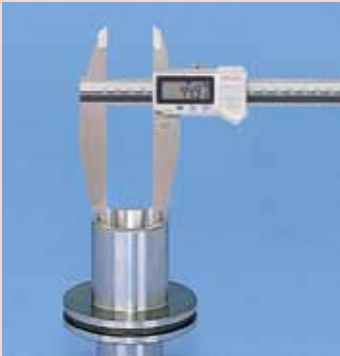
Accuracy: Refer to the list of specifications.  
 Resolution: 0.01mm or .0005"/0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3.5 years under normal use

### Function of Digital Model

Origin-set, Zero-setting, Data output,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA624:** SPC cable with data switch (1m / 40")  
**05CZA625:** SPC cable with data switch (2m / 80")



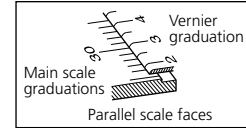
Round surface of jaws for accurate ID measurement

# ABSOLUTE Digimatic & Vernier Caliper

**SERIES 551 — with Nib Style and Standard Jaws**

### FEATURES

- The rounded faces of the jaws are ideal for accurate ID (inside diameter) measurement.
- Parallax-free vernier scale type is available for easy and positive measurement.
- With SPC output.
- Supplied in fitted plastic holster in carton. 18" / 450mm and larger supplied wooden case.



### SPECIFICATIONS

Metric		Digital model				
Range*	Order No.	Accuracy	Resolution	Mass (g)	Remarks	
0 (10) - 200mm	<b>551-301-10</b>	±0.03mm	0.01mm	180	IP67	
0 (10) - 300mm	<b>551-331-10</b>	±0.04mm	0.01mm	380	with offset/preset function for easy ID measurement, IP67	
0 (20) - 500mm	<b>551-204-10</b>	±0.06mm	0.01mm	1,060	—	
0 (20) - 750mm	<b>551-206-10</b>	±0.06mm	0.01mm	1,410	—	
0 (20) - 1000mm	<b>551-207-10</b>	±0.07mm	0.01mm	3,430	—	

\*( ): Minimum dimension in ID measurement

Inch/Metric		Digital model				
Range*	Order No.	Accuracy	Resolution	Mass (g)	Remarks	
0 (.4") - 8" / 0 (10) - 200mm	<b>551-311-10</b>	±.001"	.0005" / 0.01mm	180	IP67	
0 (.4") - 12" / 0 (10) - 300mm	<b>551-341-10</b>	±.002"	.0005" / 0.01mm	380	w/ offset/preset function for easy ID measurement, IP67	
0 (.5") - 20" / 0 (20) - 500mm	<b>551-224-10</b>	±.0025"	.0005" / 0.01mm	1,060	—	
0 (.5") - 30" / 0 (20) - 750mm	<b>551-226-10</b>	±.0025"	.0005" / 0.01mm	1,410	—	
0 (1") - 40" / 0 (20) - 1000mm	<b>551-227-10</b>	±.003"	.0005" / 0.01mm	3,430	—	

\*( ): Minimum dimension in ID measurement

### DIMENSIONS

Series 551 Unit: mm

Range	a	b	c	d	R
0 - 8" / 0 - 200mm	60	43	8	30	5
0 - 12" / 0 - 300mm	90	68	10	40.1	5
0 - 20" / 0 - 500mm	150	115	15	56	10
0 - 30" / 0 - 750mm	150	115	15	56	10
0 - 40" / 0 - 1000mm	150	115	20	56	10

# Digimatic Carbon Fiber Caliper

**SERIES 552 — with optional jaw attachments**

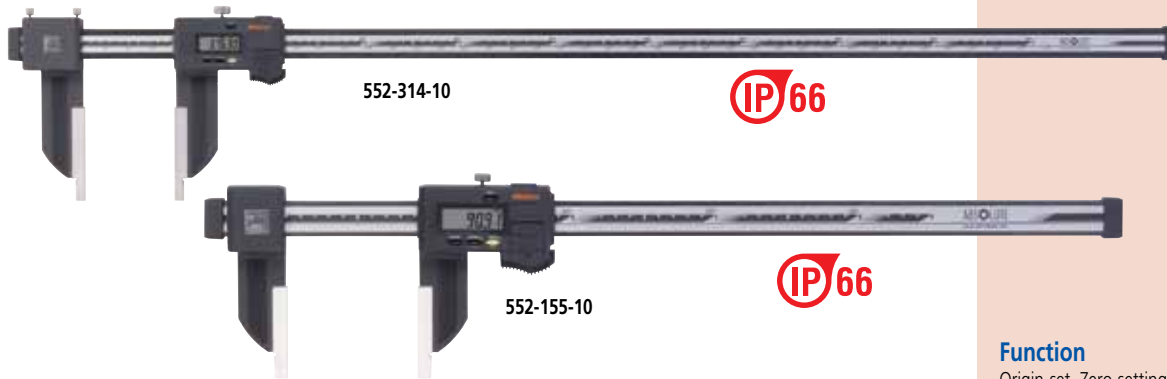


## FEATURES

- Lightweight Digimatic Calipers that employ CFRP (Carbon Fiber Reinforced Plastics) in the beam and jaws.
- Highly durable and easy to handle.
- The range of applications can be expanded by using the optional attachments.
- Direct readout of ID measurements from the LCD. (Offset value can be set easily by pressing the Offset key.)
- Preset function for setting a desired starting point.
- With SPC data output.
- Special model available with ceramic jaws which are suitable for measuring abrasive and magnetic products.
- Supplied in fitted wooden case.

## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005"/0.01mm or 0.01mm  
 Display: LCD  
 Length standard: Electrostatic capacitance type linear encoder  
 Max. response speed: 1600mm/s  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3,000 hours in continuous use



## SPECIFICATIONS

Metric				
Range*	Order No.	Accuracy	Resolution	Remarks
0(20)-450mm	<b>552-302-10</b>	+/-0.04mm	0.01mm	
0(20)-450mm	<b>552-150-10</b>	+/-0.06mm	0.01mm	long jaws 200mm
0(20)-450mm	<b>552-155-10</b>	+/-0.04mm	0.01mm	ceramic jaws
0(20)-600mm	<b>552-303-10</b>	+/-0.04mm	0.01mm	
0(20)-600mm	<b>552-151-10</b>	+/-0.06mm	0.01mm	long jaws 200mm
0(20)-600mm	<b>552-156-10</b>	+/-0.04mm	0.01mm	ceramic jaws
0(20)-1000mm	<b>552-304-10</b>	+/-0.05mm	0.01mm	
0(20)-1000mm	<b>552-152-10</b>	+/-0.07mm	0.01mm	long jaws 200mm
0(20)-1500mm	<b>552-305-10</b>	+/-0.09mm	0.01mm	
0(20)-1500mm	<b>552-153-10</b>	+/-0.11mm	0.01mm	long jaws 200mm
0(20)-2000mm	<b>552-306-10</b>	+/-0.12mm	0.01mm	
0(20)-2000mm	<b>552-154-10</b>	+/-0.14mm	0.01mm	long jaws 200mm

\*( ): Minimum dimension in ID measurement

Inch/Metric				
Range*	Order No.	Accuracy	Resolution	Remarks
0(.5")-18"	<b>552-312-10</b>	+/- .002"	.0005"/0.01mm	
0(.5")-18"	<b>552-160-10</b>	+/- .0025"	.0005"/0.01mm	long jaws 7.9"
0(.5")-18"	<b>552-165-10</b>	+/- .002"	.0005"/0.01mm	ceramic jaws
0(.5")-24"	<b>552-313-10</b>	+/- .002"	.0005"/0.01mm	
0(.5")-24"	<b>552-161-10</b>	+/- .0025"	.0005"/0.01mm	long jaws 7.9"
0(.5")-24"	<b>552-166-10</b>	+/- .002"	.0005"/0.01mm	ceramic jaws
0(1")-40"	<b>552-314-10</b>	+/- .002"	.0005"/0.01mm	
0(1")-40"	<b>552-162-10</b>	+/- .003"	.0005"/0.01mm	long jaws 7.9"
0(1")-60"	<b>552-315-10</b>	+/- .004"	.0005"/0.01mm	
0(1")-60"	<b>552-163-10</b>	+/- .0045"	.0005"/0.01mm	long jaws 7.9"
0(1")-80"	<b>552-316-10</b>	+/- .005"	.0005"/0.01mm	
0(1")-80"	<b>552-164-10</b>	+/- .0055"	.0005"/0.01mm	long jaws 7.9"

\*( ): Minimum dimension in ID measurement

## Function

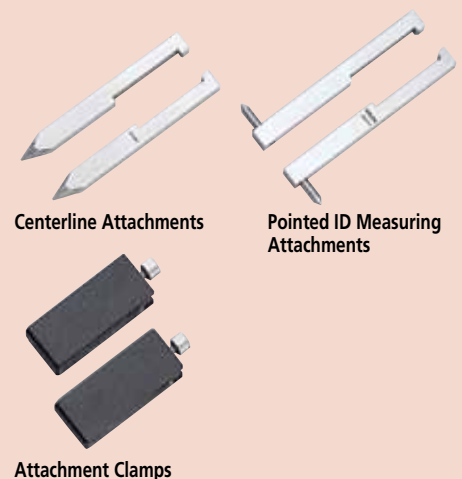
Origin-set, Zero-setting, Presetting, Offsetting, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

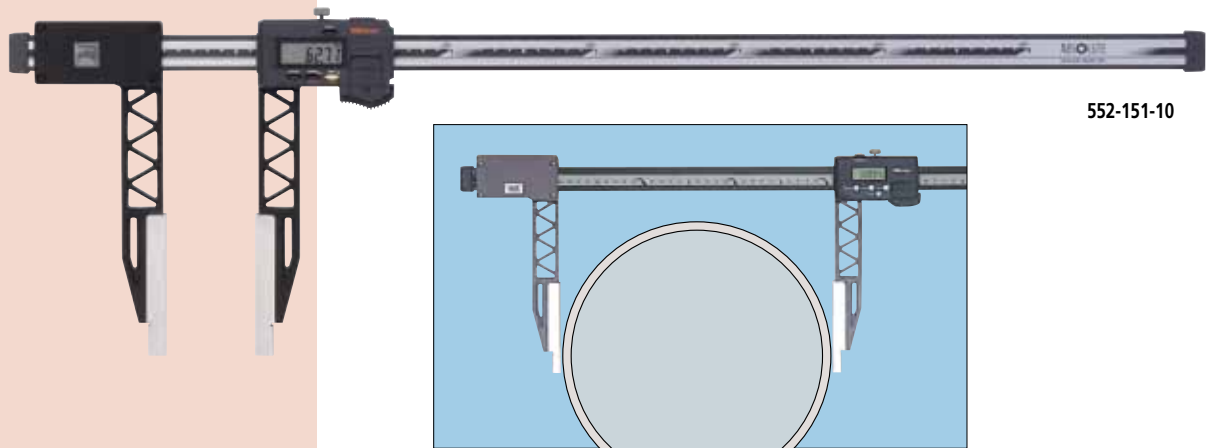
## Optional Accessories

**05CZA624:** SPC cable with data switch (40"/ 1m)  
**05CZA625:** SPC cable with data switch (80"/ 2m)

- 914055:** Centerline attachments (mm)\*
- 914056:** Centerline attachments (inch)\*
- 914057:** Pointed ID measuring attachments (mm)\*
- 914058:** Pointed ID measuring attachments (inch)\*
- 914053:** Attachment clamps (for models up to 24" / 600mm range)
- 914054:** Attachment clamps (for models over 24" / 600mm range)

\* Attachment clamps are required and not available for long jaw type.





552-151-10



Ceramic jaws



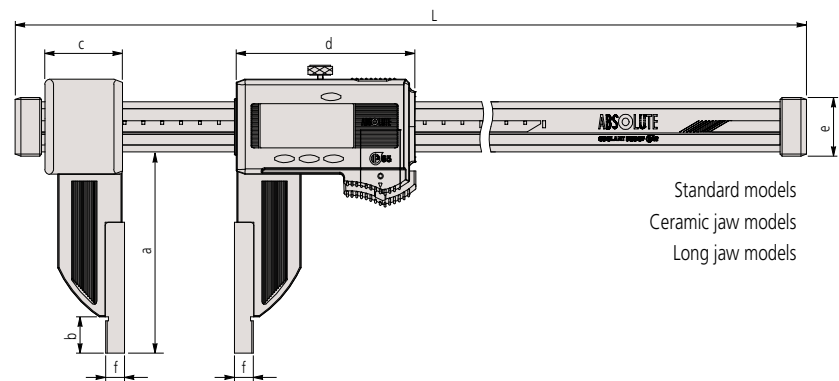
Centerline attachments



ID point attachments

## DIMENSIONS AND MASS

Unit: mm



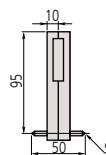
Standard models  
Ceramic jaw models  
Long jaw models

Standard models, Ceramic jaw models

Range	L	a	b	c	d	e	f	Mass (g)
0 - 18" / 0 - 450mm	640	100	18	41.2	91.8	25	10 (.25")	715
0 - 24" / 0 - 600mm	790	100	18	41.2	91.8	25	10 (.25")	790
0 - 40" / 0 - 1000mm	1230	150	24	62.8	113.8	32	10 (.5")	1,760
0 - 60" / 0 - 1500mm	1740	150	24	62.8	113.8	32	10 (.5")	2,160
0 - 80" / 0 - 2000mm	2250	150	24	62.8	113.8	32	10 (.5")	2,560

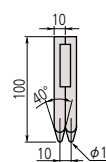
( ) : inch/mm models

Pointed ID Measuring Attachments



Unit: mm

Centerline Attachments



Long jaw models

Range	L	a	b	c	d	e	f	Mass (g)
0 - 18" / 0 - 450mm	680	200	24	89	91.8	25	10 (.25")	1,215
0 - 24" / 0 - 600mm	830	200	24	89	91.8	25	10 (.25")	1,290
0 - 40" / 0 - 1000mm	1280	200	24	110	113.8	32	10 (.5")	2,090
0 - 60" / 0 - 1500mm	1790	200	24	110	113.8	32	10 (.5")	2,490
0 - 80" / 0 - 2000mm	2300	200	24	110	113.8	32	10 (.5")	2,890

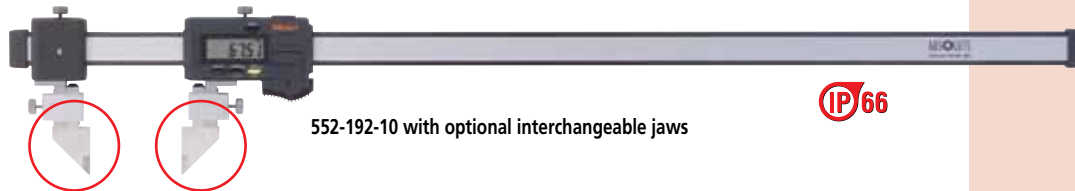
( ) : inch/mm models

# ABSOLUTE Coolant Proof Carbon Fiber Caliper

**SERIES 552 — with Interchangeable Jaws**

## FEATURES

- The range of applications can be expanded by using interchangeable jaws (optional).
- Quick and easy exchanging of jaws due to the unique clamping mechanism. (A pair of clamping wheels is a standard accessory.)
- Provided with preset function for setting a desired starting point, which allows direct readout of offset measurements.
- SPC data output.



552-192-10 with optional interchangeable jaws



## SPECIFICATIONS

Inch/Metric		
Range	Order No.	Accuracy
0 - 18" / 0 - 450mm	552-191-10	±.002"
0 - 24" / 0 - 600mm	552-192-10	±.002"
0 - 40" / 0 - 1000mm	552-193-10	±.002"
0 - 60" / 0 - 1500mm	552-194-10	±.004"
0 - 80" / 0 - 2000mm	552-195-10	±.005"

## Interchangeable Jaws (Optional)

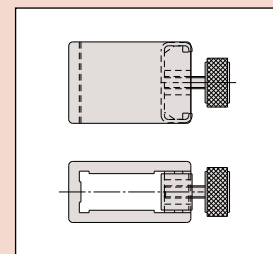
Standard type		Inside point type	
<b>Standard Type</b>			
<b>Order No.</b>	<b>Components</b>	<b>a</b>	<b>b</b>
07CZA056	Right (07CAA044), Left (07CAA045)	28mm (1.1")	30mm (1.2")
<b>Inside Point Type</b>			
<b>Order No.</b>	<b>Components</b>	<b>a</b>	<b>b</b>
07CZA058	07CZA041 x 2pcs.	25mm	50mm
07CZA059	07CZA048 x 2pcs.	1"	2"
<b>Surface Plate Type</b>			
<b>Order No.</b>	<b>Components</b>	<b>a</b>	<b>b</b>
07CZA055	Right (07CZA042), Left (07CZA043)	8mm	30mm
07CZA061	Right (07CZA042), Left (07CZA049)	031"	1.2"
<b>Centerline Type</b>			
<b>Order No.</b>	<b>Components</b>	<b>a</b>	<b>b</b>
07CZA057	07CZA039 x 2pcs.	30mm	30mm
07CZA060	07CZA047 x 2pcs.	1.2"	1.2"

Unit: mm



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005"/0.01mm  
 Display: LCD  
 Scale type: ABSOLUTE electromagnetic linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), 938882  
 Battery life: Approx. 5,000 hours in continuous use  
 Dust/Water protection level: IP66  
 Standard accessory: Jaw clamps (2 pcs.), 05GZA033

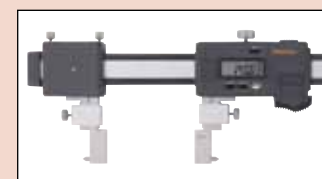


## Functions

Origin-set, Zero-setting, Presetting, Offsetting, Data hold,  
 Automatic power on/off, Data output, inch/mm conversion  
 (inch/mm models)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

- 05CZA624: SPC cable with data switch (40" / 1m)
- 05CZA625: SPC cable with data switch (80" / 2m)
- 02AZD790A: SPC cable for U-WAVE w/ data switch (160mm)







**ABSOLUTE**<sup>®</sup>

Absolute System Patented by MITUTOYO

# ABSOLUTE Back-Jaw Centerline Caliper

**SERIES 573 — Center-to-Center & Edge-to-Center Types**

## FEATURES

- Specially designed to measure the distance between two centers or the distance from an edge to center.
- Provided with jaws on the back of the slider, measurements can be read easily by looking down.
- Direct reading of pitch measurements is available due to the offset value setting function.
- With SPC data output.
- Supplied fitted in wooden case.

## Technical Data

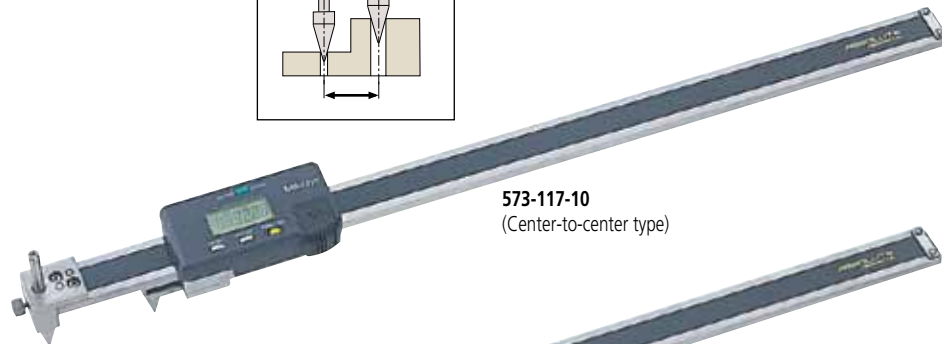
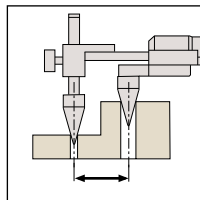
Accuracy: Refer to the list of specifications.  
 Resolution: 0.01mm  
 Display: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3.5 years under normal use

## Function

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

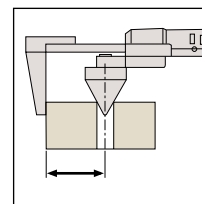
- 959143:** Data hold unit  
**959149:** SPC cable with data switch (1m)  
**959150:** SPC cable with data switch (2m)



**573-117-10**  
(Center-to-center type)



**573-119-10**  
(Edge-to-center type)



## SPECIFICATIONS

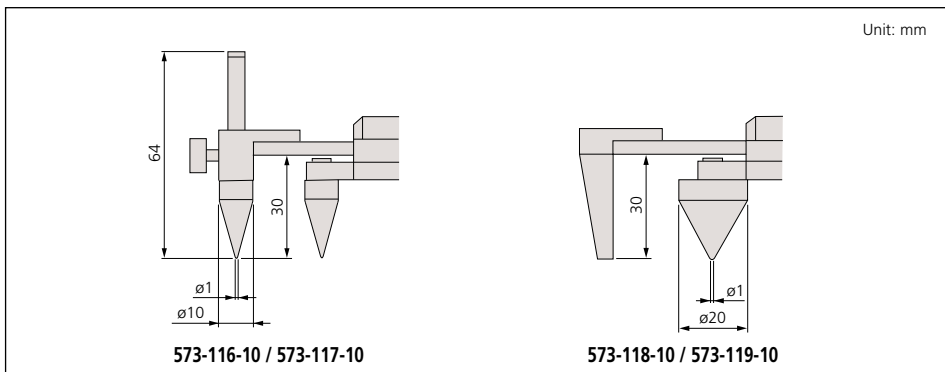
**Metric** Center-to-center distance type

Range	Order No.	Accuracy	Resolution	Mass (g)
10 - 200mm	<b>573-116-10</b>	±0.10mm	0.01mm	482
10 - 300mm	<b>573-117-10</b>	±0.15mm	0.01mm	578

**Metric** Edge-to-center distance type

Range	Order No.	Accuracy	Resolution	Mass (g)
10 - 200mm	<b>573-118-10</b>	±0.10mm	0.01mm	485
10 - 300mm	<b>573-119-10</b>	±0.15mm	0.01mm	581

## DIMENSIONS



**573-116-10 / 573-117-10**

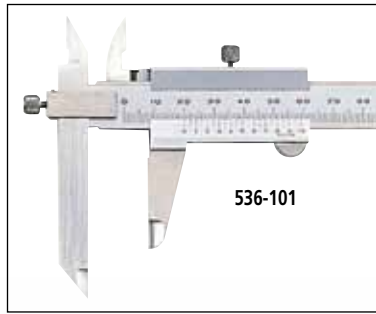
**573-118-10 / 573-119-10**

# Offset Caliper

SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type

## FEATURES

- Main scale jaw can slide up and down to facilitate measurement of stepped sections. (Hard-to-get-at dimensions such as A, B, C can be accurately measured.)
- With depth bar.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



536-101



573-701



## SPECIFICATIONS

**Metric** Digital model

Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 150mm	573-601	±0.02mm	0.01mm	168
0 - 200mm	573-602	±0.02mm	0.01mm	198
0 - 300mm	573-604	±0.03mm	0.01mm	350

**Metric**

Range	Order No.	Accuracy	Graduation	Mass (g)
0 - 150mm	536-101	±0.05mm	0.05mm	150
0 - 200mm	536-102	±0.05mm	0.05mm	200
0 - 300mm	536-103	±0.08mm	0.05mm	400

**Inch/Metric** Digital model

Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 6" / 0 - 150mm	573-701	±.001"	.0005" / 0.01mm	168
0 - 8" / 0 - 200mm	573-702	±.001"	.0005" / 0.01mm	198
0 - 12" / 0 - 300mm	573-704	±.0015"	.0005" / 0.01mm	350

## DIMENSIONS

Unit: mm

Range	a	b	c	d
0 - 6" / 0 - 150mm	95	10	40	30.4 (30)
0 - 8" / 0 - 200mm	95	10	50	40.4 (38.5)
0 - 12" / 0 - 300mm	135	15	64	51

( ) Digital Model



## Technical Data

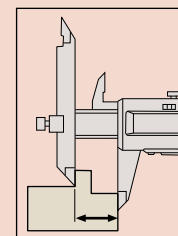
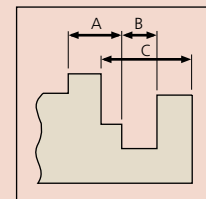
Accuracy: Refer to the list of specifications.  
 Resolution\*: .0005"/0.01mm or 0.01mm  
 Graduation\*\*: 0.05mm  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

## Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

- 05CZA624**: SPC cable with data switch (40" / 1m)
- 05CZA625**: SPC cable with data switch (80" / 2m)





### Technical Data

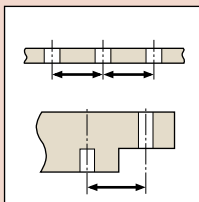
Accuracy: Refer to the list of specifications.  
 Resolution\*: .0005"/0.01mm or 0.01mm  
 Graduation\*\*: 0.05mm  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA624**: SPC cable with data switch (40" / 1m)  
**05CZA625**: SPC cable with data switch (80" / 2m)



# Offset Centerline Caliper

## SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type

### FEATURES

- Specially designed for center to center distance measurements on the same and offset planes.
- Can also measure from edge to center.
- Hole diameter should be in the range of 1.5mm - 10mm (.06" - .4").
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



573-605



536-105

### SPECIFICATIONS

Metric		Digital model		
Range	Order No.	Accuracy	Resolution	Mass (g)
10 - 150mm	<b>573-605</b>	±0.03mm	0.01mm	157
10 - 200mm	<b>573-606</b>	±0.03mm	0.01mm	177
10 - 300mm	<b>573-608</b>	±0.04mm	0.01mm	320

Inch/Metric		Digital model		
Range	Order No.	Accuracy	Resolution	Mass (g)
.4 - 6" / 10 - 150mm	<b>573-705</b>	±.0015"	.0005" / 0.01mm	157
.4 - 8" / 10 - 200mm	<b>573-706</b>	±.0015"	.0005" / 0.01mm	177
.4 - 12" / 10 - 300mm	<b>573-708</b>	±.0015"	.0005" / 0.01mm	320

Metric		Vernier model		
Range	Order No.	Accuracy	Graduation	Mass (g)
10 - 150mm	<b>536-105</b>	±0.05mm	0.05mm	140
10 - 200mm	<b>536-106</b>	±0.05mm	0.05mm	160
10 - 300mm	<b>536-107</b>	±0.08mm	0.05mm	320

### DIMENSIONS

Unit: mm

Range	a	t
0 - 6" / 0 - 150mm	75	3
0 - 8" / 0 - 200mm	75	3
0 - 12" / 0 - 300mm	100	3.8

# Point Caliper

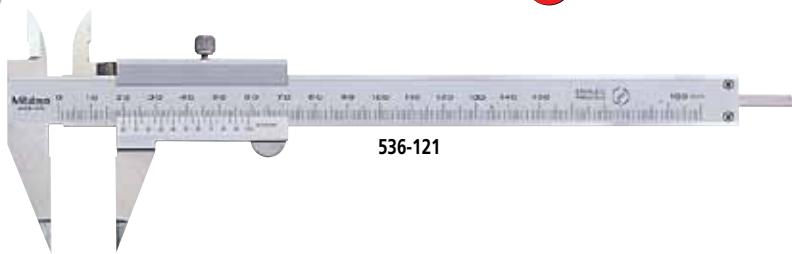
**SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type**

## FEATURES

- Narrow tip jaws fit into very small grooves and tracks, making many previously difficult outside measurements far easier to obtain.
- With depth bar.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



573-721



536-121

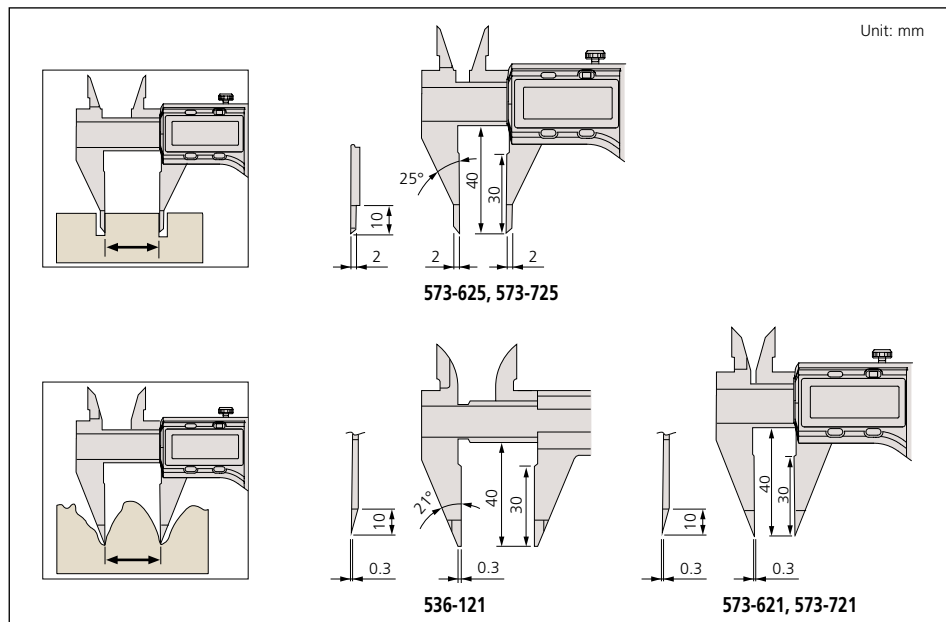
## SPECIFICATIONS

Metric		Digital model		
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 150mm	573-621	±0.02mm	0.01mm	163
0 - 150mm	573-625	±0.02mm	0.01mm	163

Inch/Metric		Digital model		
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 6" / 0 - 150mm	573-721	±.001"	.0005" / 0.01mm	163
0 - 6" / 0 - 150mm	573-725	±.001"	.0005" / 0.01mm	163

Metric		Digital model		
Range	Order No.	Accuracy	Graduation	Mass (g)
0 - 150mm	536-121	±0.05mm	0.05mm	150

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .0005"/0.01mm or 0.01mm  
 Graduation\*\*: 0.05mm  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

## Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

- 05CZA624**: SPC cable with data switch (40" / 1m)
- 05CZA625**: SPC cable with data switch (80" / 2m)





### Technical Data

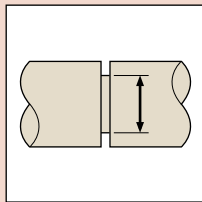
Accuracy: Refer to the list of specifications.  
 Resolution\*: .0005" / 0.01mm or 0.01mm  
 Graduation\*\*: 0.05mm  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA624**: SPC cable with data switch (40" / 1m)  
**05CZA625**: SPC cable with data switch (80" / 2m)

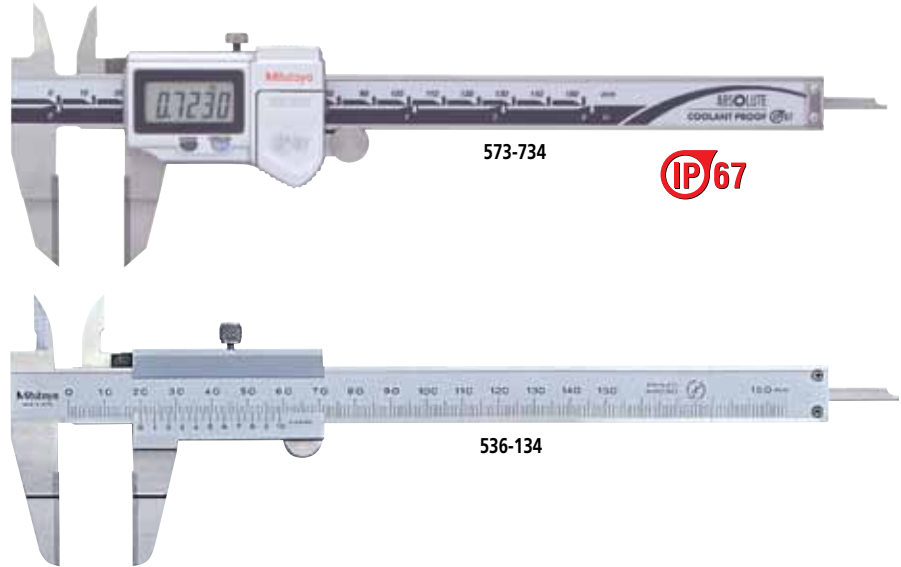


# Blade Type Caliper

## SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type

### FEATURES

- The thin blade type jaws fit into very small grooves and making previously difficult outside measurements far easier to obtain.
- The OD measuring faces are carbide-tipped.
- With depth bar.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



### SPECIFICATIONS

Metric		Digital model		
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 150mm	<b>573-634</b>	±0.02mm	0.01mm	168

Inch/Metric		Digital model		
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 6" / 0 - 150mm	<b>573-734</b>	±.001"	.0005" / 0.01mm	168

Metric				
Range	Order No.	Accuracy	Graduation	Mass (g)
0 - 150mm	<b>536-134</b>	±0.05mm	0.05mm	130
0 - 200mm	<b>536-135</b>	±0.05mm	0.05mm	160
0 - 300mm	<b>536-136</b>	±0.08mm	0.05mm	340

### DIMENSIONS

Unit: mm

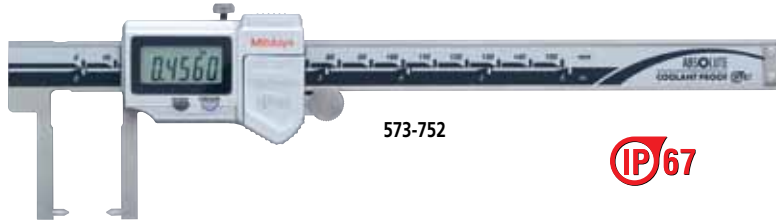
Range	a	b	c	t
0 - 6" / 0 - 150mm	40	20	0.75	3
0 - 200mm	50	25	0.75	3
0 - 300mm	64	30	1	3.8

# Neck Caliper

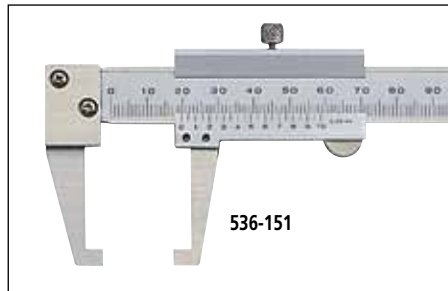
SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type

## FEATURES

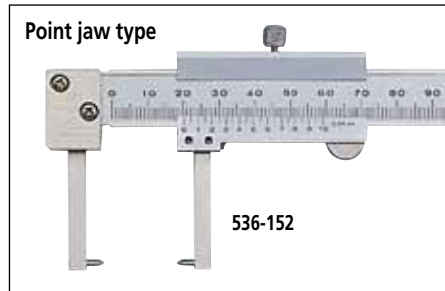
- Point jaw type can measure wall thickness inside bores and recesses.
- Flat jaw type can measure grooves and recesses.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



573-752



536-151



Point jaw type

536-152

## SPECIFICATIONS

### Metric Digital model

Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 150mm	573-651	±0.03mm	0.01mm	157
0 - 150mm	573-652*	±0.03mm	0.01mm	157

\*Point jaw type

### Inch/Metric Digital model

Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 6" / 0 - 150mm	573-751	±.0015"	.0005" / 0.01mm	157
0 - 6" / 0 - 150mm	573-752*	±.0015"	.0005" / 0.01mm	157

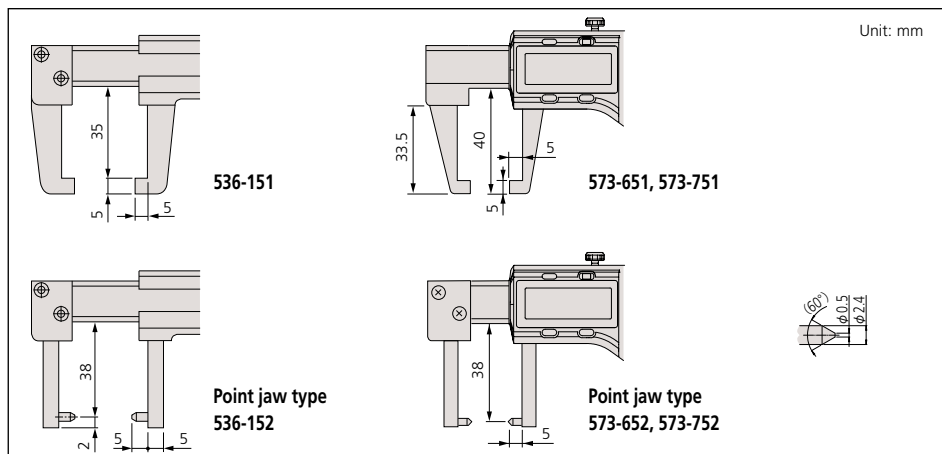
\*Point jaw type

### Metric

Range	Order No.	Accuracy	Graduation	Mass (g)
0 - 150mm	536-151	±0.05mm	0.05mm	140
0 - 150mm	536-152*	±0.05mm	0.05mm	140

\*Point jaw type

## DIMENSIONS



## Technical Data

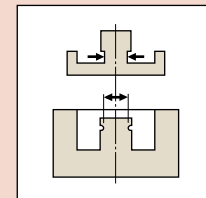
Accuracy: Refer to the list of specifications.  
 Resolution\*: 0.01mm or .0005"/0.01mm  
 Graduation\*\*: 0.05mm  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

## Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digital Model

- 05CZA624:** SPC cable with data switch (1m / 40")
- 05CZA625:** SPC cable with data switch (2m / 80")







### Technical Data

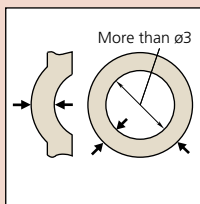
Accuracy: Refer to the list of specifications.  
 Display\*: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

### Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories for Digital Model

**05CZA624**: SPC cable with data switch (40" / 1m)  
**05CZA625**: SPC cable with data switch (80" / 2m)

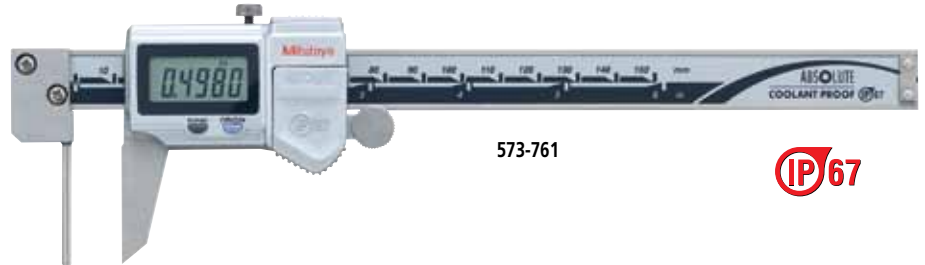


# Tube Thickness Caliper

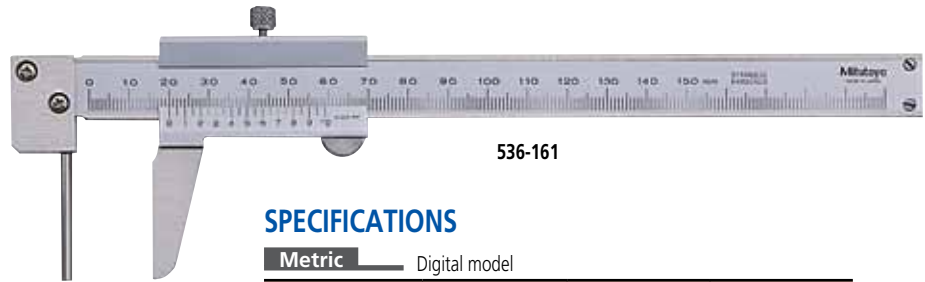
## SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type

### FEATURES

- The main scale jaw is a round bar that facilitates measurements of tube wall thickness.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



573-761



536-161

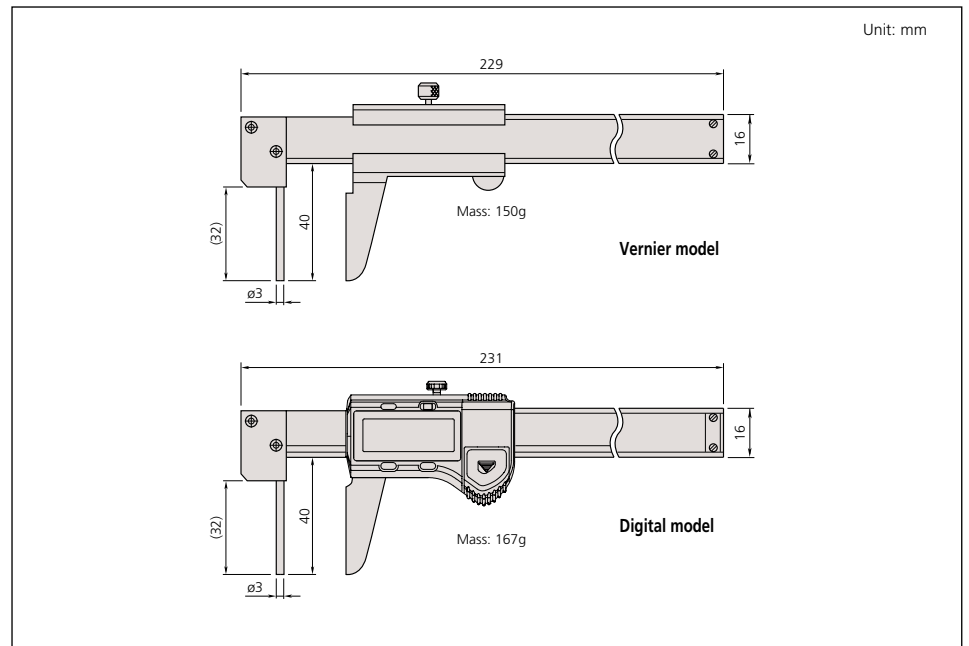
### SPECIFICATIONS

Metric		Digital model	
Range	Order No.	Accuracy	Resolution
0 - 150mm	<b>573-661</b>	$\pm 0.05\text{mm}$	0.01mm

Inch/Metric		Digital model	
Range	Order No.	Accuracy	Resolution
0 - 6" / 0 - 150mm	<b>573-761</b>	$\pm 0.002"$	.0005" / 0.01mm

Metric		Vernier model	
Range	Order No.	Accuracy	Graduation
0 - 150mm	<b>536-161</b>	$\pm 0.05\text{mm}$	0.05mm

### DIMENSIONS AND MASS



# ABSOLUTE Low Force Caliper

**SERIES 573**

## FEATURES

- Due to the low measuring force these calipers are ideal for elastic or resilient workpieces such as plastic parts and rubber parts that standard calipers cannot measure.
- With SPC data output.
- Supplied in fitted plastic case.



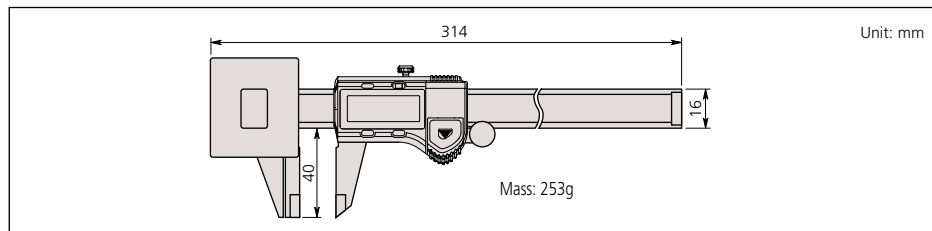
573-191-20

## SPECIFICATIONS

Metric				
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 180mm	573-191-20	±0.05mm	0.01mm	253

Inch/Metric				
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 7" / 0 - 180mm	573-291-20	±.002"	.0005" / 0.01mm	253

## DIMENSIONS AND MASS



# ABSOLUTE Snap Caliper

**SERIES 573**

## FEATURES

- The ABSOLUTE Digimatic snap caliper features a spring-loaded mechanism to allow quick and efficient GO/NO-GO inspection for mass production parts.
- With SPC data output.
- Supplied in fitted plastic case.



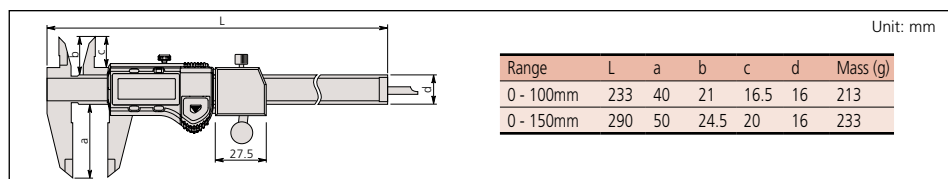
573-281-20

## SPECIFICATIONS

Metric				
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 100mm	573-181-20	±0.02mm	0.01mm	213
0 - 150mm	573-182-20	±0.02mm	0.01mm	233

Inch/Metric				
Range	Order No.	Accuracy	Resolution	Mass (g)
0 - 4" / 0 - 100mm	573-281-20	±.001"	.0005" / 0.01mm	213
0 - 6" / 0 - 150mm	573-282-20	±.001"	.0005" / 0.01mm	233

## DIMENSIONS AND MASS



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005"/0.01mm or 0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Measuring force: 0.49N to 0.98N (50gf to 100gf)  
 Jaw retraction: 0.3mm  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3.5 years under normal use

## Function

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

- 959143:** Data hold unit
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)



## Measurement procedures



To measure resilient workpieces take the measurement when the pointer is between the two index lines.



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005"/0.01mm or 0.01mm  
 Repeatability: .0005" / 0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Measuring force: 7N to 14N (700gf to 1400gf)  
 Jaw retraction: 2mm  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3.5 years under normal use

## Function

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

- 959143:** Data hold unit
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)



### Technical Data

Accuracy: Refer to the list of specifications.  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 3.5 years under normal use

### Function

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Optional Accessories

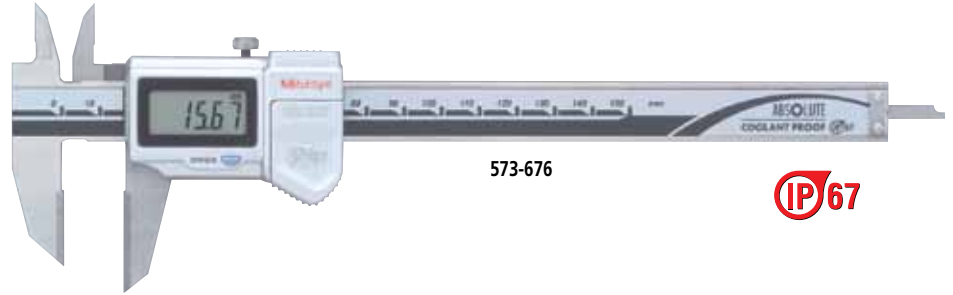
**05CZA624:** SPC cable with data switch (40" / 1m)  
**05CZA625:** SPC cable with data switch (80" / 2m)

# Scribing Caliper

## SERIES 573, 536 — ABSOLUTE Digimatic and Vernier Type

### FEATURES

- The carbide-tipped jaws facilitate fine scribing on workpiece.
- With depth bar.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case.



### SPECIFICATIONS

Metric		Digital model			
Range	Order No.	Accuracy	Resolution	Mass (g)	
0 - 150mm	<b>573-676</b>	±0.02mm	0.01mm	166	
0 - 200mm	<b>573-677</b>	±0.02mm	0.01mm	196	
0 - 300mm	<b>573-679</b>	±0.03mm	0.01mm	345	

Metric		Vernier type			
Range	Order No.	Accuracy	Graduation	Mass (g)	
0 - 150mm	<b>536-221</b>	±0.05mm	0.05mm	150	
0 - 200mm	<b>536-222</b>	±0.05mm	0.05mm	180	
0 - 300mm	<b>536-223</b>	±0.08mm	0.05mm	355	

### DIMENSIONS

Unit: mm

Range	L	a	b	c	d	e
0 - 150mm	229	46	21.5	17	16	33
0 - 200mm	288	50	25	20.5	16	43
0 - 300mm	403	64	27.5	22	20	54

# ABSOLUTE Inside Caliper

SERIES 573, 536 — Knife-edge/Inside Groove/Point Jaw Type

## FEATURES

- Specially designed for inside measurements in hard-to-reach places.
- With SPC data output. (Series 573)
- Supplied in fitted plastic case. 18" / 450mm and 24" / 600mm supplied in wooden case.

### Knife-edge type



### Inside groove type



### Point jaw type



## SPECIFICATIONS

### Metric Digital model

Range	Order No.	Accuracy	Remarks	Mass (g)
10 - 200mm	<b>573-642</b>	±0.05mm	Knife-edge type, Measurable min. hole diameter: ø10mm	227
10 - 160mm	<b>573-645</b>	±0.05mm	Inside groove type, Measurable min. hole diameter: ø10mm	147
20 - 170mm	<b>573-646</b>	±0.03mm	Point jaw type, Measurable min. hole diameter: ø20mm	157

### Inch/Metric Digital model

Range	Order No.	Accuracy	Remarks	Mass (g)
.4" - 8" / 10-200mm	<b>573-742</b>	±.002"	Knife-edge type, Measurable min. hole diameter: ø.4"	227
.4" - 6" / 10-150mm	<b>573-745</b>	±.002"	Inside groove type, Measurable min. hole diameter: ø.4"	147
.8" - 6" / 20-150mm	<b>573-746</b>	±.0015"	Point jaw type, Measurable min. hole diameter: ø.8"	157

### Metric

Range	Order No.	Accuracy	Remarks	Mass (g)
10 - 200mm	<b>536-142</b>	±0.12mm	Knife-edge type, Measurable min. hole diameter: ø10mm	210
10 - 150mm	<b>536-145</b>	±0.05mm	Inside groove type, Measurable min. hole diameter: ø10mm	130
20 - 150mm	<b>536-146</b>	±0.05mm	Point jaw type, Measurable min. hole diameter: ø20mm	140
30 - 300mm	<b>536-147</b>	±0.08mm	Point jaw type, Measurable min. hole diameter: ø30mm	370
70 - 450mm	<b>536-148</b>	±0.10mm	Point jaw type, Measurable min. hole diameter: ø70mm	1,250
70 - 600mm	<b>536-149</b>	±0.12mm	Point jaw type, Measurable min. hole diameter: ø70mm	1,430



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .0005"/0.01mm / 0.01mm  
 Graduation\*\*: 0.05mm  
 Display\*: LCD  
 Length standard\*: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed\*: Unlimited  
 Battery\*: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Analog models

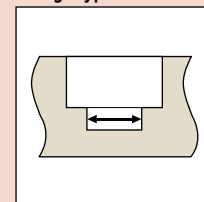
## Function of Digital Model

Origin-set, Zero-setting, Power On/Off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

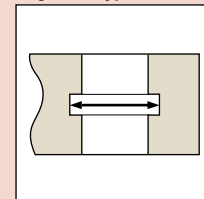
## Optional Accessories for Digital Model

- 05CZA624**: SPC cable with data switch (40" / 1m)
- 05CZA625**: SPC cable with data switch (80" / 2m)

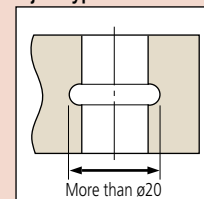
### Knife-edge type



### Inside groove type



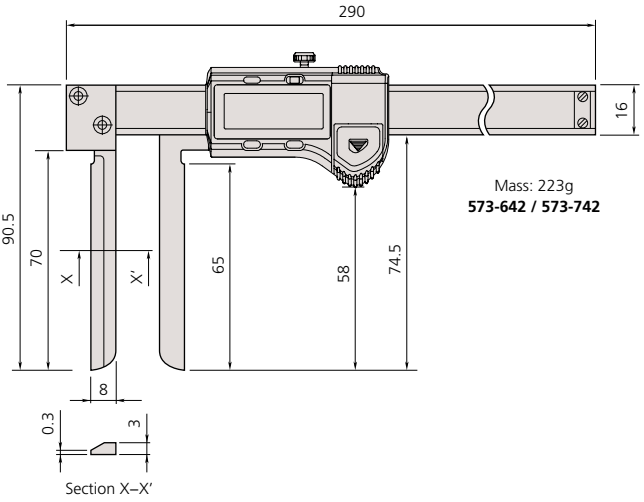
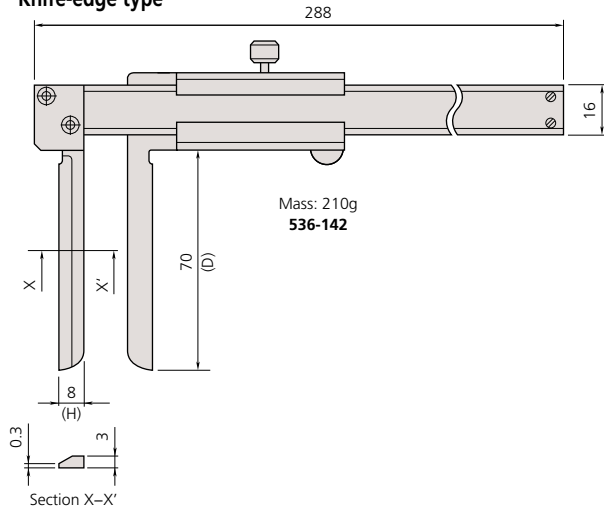
### Point jaw type



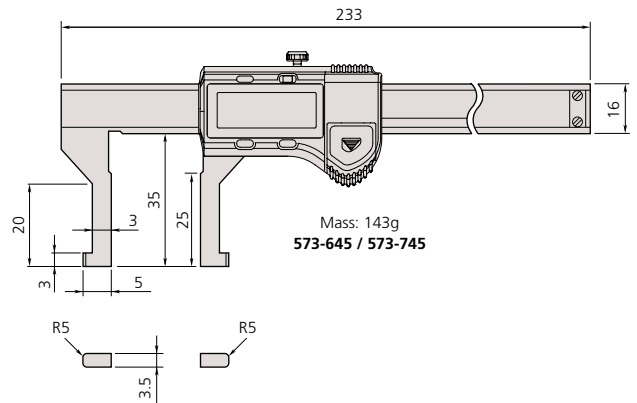
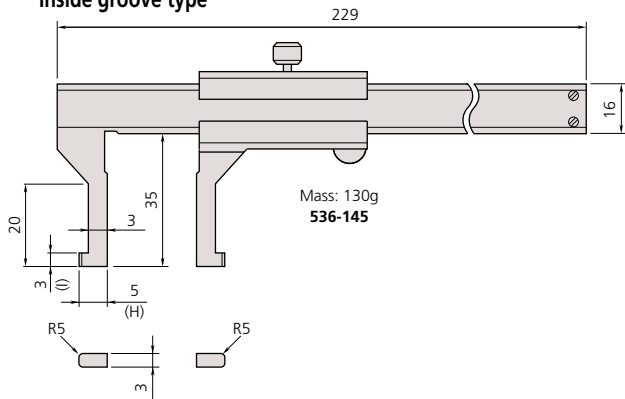
# DIMENSIONS AND MASS

Unit: mm

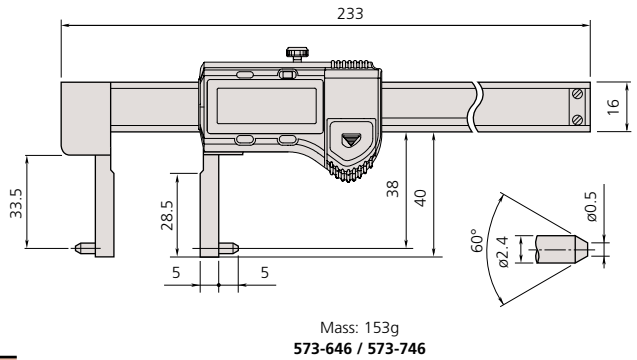
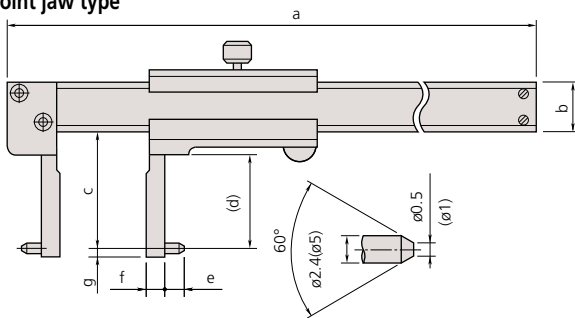
## Knife-edge type



## Inside groove type



## Point jaw type



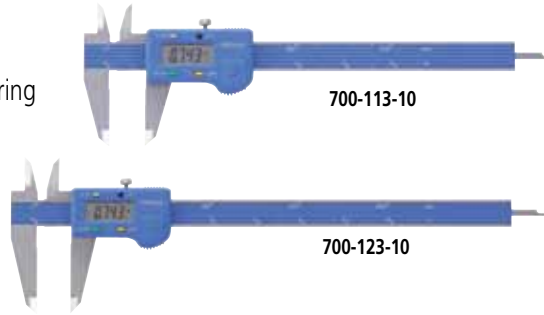
Order No.	Range	a	b	c	d	e	f	g	Mass (g)
<b>536-146</b>	150mm	229	16	38	31	5	5	2	140
<b>536-147</b>	300mm	403	20	98	89	5	10	2	370
<b>536-148</b>	450mm	610	25	145	136	10	25	5	1,250
<b>536-149</b>	600mm	750	25	145	136	10	25	5	1,430

# MyCAL-Lite

## SERIES 700 — Digital Caliper for DIY

### FEATURES

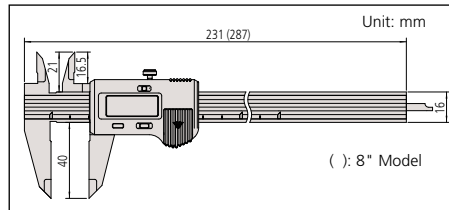
- The "MyCAL-Lite" is an ideal measuring tool for DIY.
- The LCD screen allows error-free readout of measurements.
- With depth measuring bar.



### SPECIFICATIONS

Inch/Metric			
Range	Order No.	Accuracy	Mass (g)
0 - 6" / 0 - 150mm	<b>700-113-10</b>	±.005" / ±0.2mm	150
0 - 8" / 0 - 200mm	<b>700-123-10</b>	±.005" / ±0.2mm	170

### DIMENSIONS



### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .001" / 0.1mm  
 Display: LCD  
 Length standard: Electrostatic capacitance type linear encoder  
 Max. response speed: 1800mm/s  
 Battery: SR44 (1 pc.), **938882**  
 Battery life\*: Approx. 2 years under normal use

### Function

Zero-setting, Power on/off  
 inch/mm conversion  
 Alarm: Low voltage, Counting value composition error

# Plastic Caliper

## SERIES 700 — Digital Caliper for DIY

### FEATURES

- Plastic construction for durable and lightweight use.
- Also ideal for use in Lab, wood-shop, nursery, doctor's, office, etc.



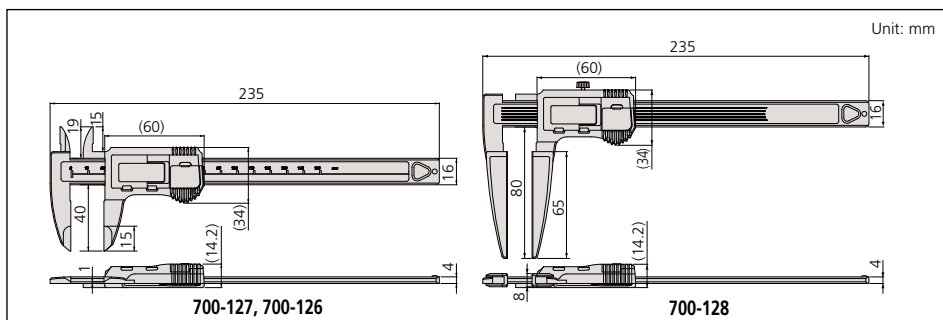
### SPECIFICATIONS

Metric		
Range	Order No.	Accuracy
0 - 150mm	<b>700-127</b>	±0.2mm
0 - 150mm	<b>700-128*</b>	±0.5mm

Inch/Metric		
Range	Order No.	Accuracy
0 - 6" / 0 - 150mm	<b>700-126</b>	±.008" / ±0.2mm

\*Deep throat type without inside measuring jaws.

### DIMENSIONS



### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .001"/0.1mm or 0.1mm  
 Display: LCD  
 Length standard: Electrostatic capacitance type linear encoder  
 Max. response speed: 1800mm/s  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 2 years under normal use

### Function

Zero-setting, Power on/off  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error



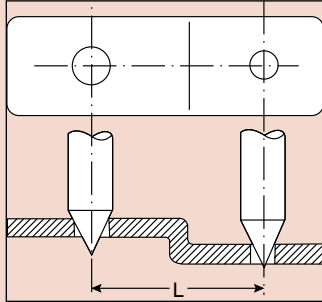


# Center Line Gage

## Optional Accessories for Caliper

### FEATURES

Pairs of conical probes are specially designed for Digimatic, Dial and Vernier calipers to quickly measure centerline distances.



**050001**

Application for 4", 6" and 8" Vernier, Dial and Digimatic Calipers, requiring dimensions over .375".



**050018**

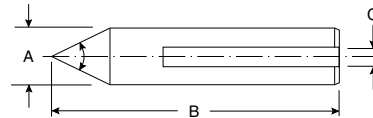
Application for 12" Vernier, Dial and Digimatic Calipers requiring dimensions over .5".

### SPECIFICATIONS

Center Line Gage

Order No.	Description
<b>050001</b>	For 4, 6 and 8" Calipers
<b>050018</b>	For 12" Calipers

### DIMENSIONS



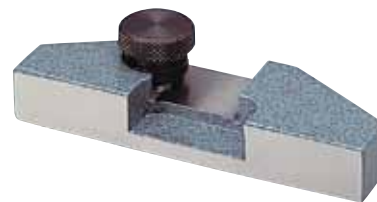
	A	B	C
<b>050001</b>	.375"	2.187"	.141"
<b>050018</b>	.500"	2.75"	.154"

# Depth Base Attachment

## Optional Accessories for Caliper

### FEATURES

- For 4", 6", 8", 12" / 100mm, 150mm, 200mm, 300mm, vernier, dial and digital calipers which have a depth measuring bar.
- Finely grounded base surface and secure locking clamp.



**050084**

### SPECIFICATIONS

Inch/Metric

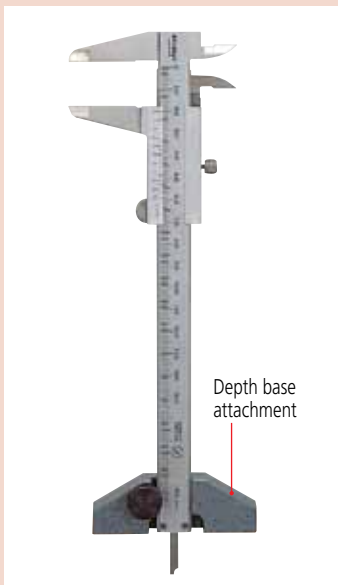
Size	Order No.	Remarks (applicable measuring range of caliper)
3" / 75mm	<b>050083</b>	4", 6", 8" / 100mm, 150mm, 200mm
4" / 100mm	<b>050084</b>	4", 6", 8" / 100mm, 150mm, 200mm
5" / 125mm	<b>050085</b>	12" / 300mm

### DIMENSIONS

Unit: mm

Size	a	b	c	d	e	t
3" / 75mm	25	75	26.5	13	18.5	12
4" / 100mm	25	100	26.5	13	18.5	12
5" / 125mm	30	125	28.5	13	20	14

t: Base thickness



# Digimatic Height Gage

**SERIES 192 — Multi-Function Type with SPC Data Output**

## FEATURES

- Highly versatile multi-function type.
- Carbide-tipped long scriber is provided.
- Rigid construction ensures repeatable measurement.
- Switchable resolution.
- Coarse/fine feed switching.
- Bi-directional touch-signal probe is an optional accessory. It can quickly and accurately measure steps, inside width, and outside width.
- With SPC data output.
- Two preset reference height.



## SPECIFICATIONS

### Inch/Metric

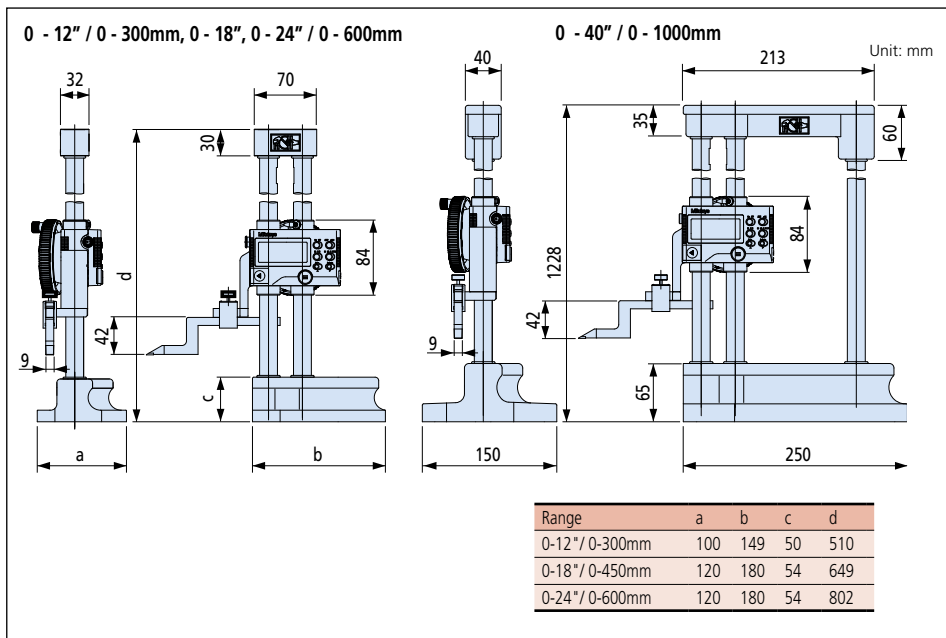
Range	Order No.	Accuracy	Resolution	Mass (kg)
0-12"/0-300mm	<b>192-670-10</b>	±001"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	5.7
0-18"/0-450mm	<b>192-671-10</b>	±0015"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	7.5
0-24"/0-600mm	<b>192-672-10</b>	±0015"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	8.3
0-40"/0-1000mm	<b>192-673-10</b>	±0025"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	15.7

### Metric

Range	Order No.	Accuracy	Resolution	Mass (kg)
0-300mm	<b>192-663-10</b>	±0.02mm	Switchable between 0.01mm and 0.005mm	5.7
0-600mm	<b>192-664-10</b>	±0.04mm	Switchable between 0.01mm and 0.005mm	8.3
0-1000mm	<b>192-665-10</b>	±0.06mm	Switchable between 0.01mm and 0.005mm	15.7

**192-670-10**  
Shown with optional touch-signal probe

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: 0.01+0.005mm or 0.0005" (0.01mm)  
 [0.0002" (0.005mm) switchable]  
 Display: LCD, 7-digits, character height 11mm  
 Max. response speed: 500mm/s  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 2000 hours under normal use

## Function

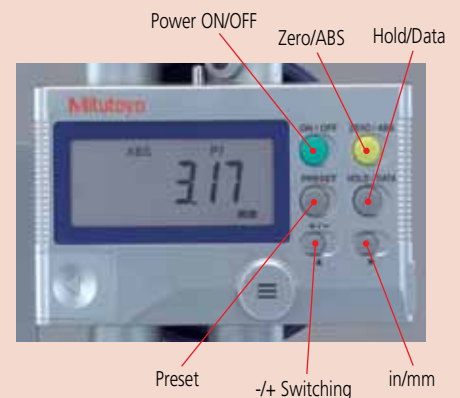
Zero-setting, ABS/INC switching, Two presets, Probe tip diameter compensation, +/- switching, Power ON/OFF, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Standard Scriber Provided

Metric models: Carbide-tipped scriber (**905200**) and scriber clamp (**05GZA033**)  
 Inch/Metric models: Carbide-tipped scriber (**905201**) and scriber clamp (**901385**)

## Optional Accessories

- 905338:** SPC cable (40" / 1m)
- 905409:** SPC cable (80" / 2m)
- 905691:** SPC cable (L-shape, 40" / 1m)
- 905692:** SPC cable (L-shape, 80" / 2m)
- 192-007:** Bi-directional touch-signal probe (metric)
- 192-008:** Bi-directional touch-signal probe (inch)
- 953638:** Holding bar for test indicator (length: 50mm)
- 900209:** Holding bar for test indicator (length: 100mm)
- 953639:** Holding bar for test indicator (length: 2")
- 900306:** Holding bar for test indicator (length: 4")
- 900321:** Swivel clamp used with holding bar (metric)
- 900322:** Swivel clamp used with holding bar (inch)





# Digimatic Height Gage

**SERIES 192 — Standard Type with SPC Data Output**

## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005" (0.01mm) [.0002" (0.005mm)]  
 or 0.01mm and 0.005mm  
 Display: LCD, 7-digit, character height 11mm  
 Max. response speed: 500mm/s  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 2000 hours under normal use

## Function

Zero-setting, ABS/INC switching, Two presets, Probe tip diameter compensation, +/- switching, Power ON/OFF, Data hold, No Output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Standard Scriber Provided

Metric models: Carbide-tipped scriber (**07GZA000**) and scriber clamp (**05GZA033**)  
 Inch/Metric models: Carbide-tipped scriber (**900258**) and scriber clamp (**901385**)

## Optional Accessories

**953638:** Holding bar for test indicator (length: 50mm)  
**900209:** Holding bar for test indicator (length: 100mm)  
**953639:** Holding bar for test indicator (length: 2")  
**900306:** Holding bar for test indicator (length: 4")  
**900321:** Swivel clamp used with holding bar (metric)  
**900322:** Swivel clamp used with holding bar (inch)

## FEATURES

- Easy-to-use standard type.
- Carbide-tipped scriber is provided.
- Double-column structure ensures high measuring accuracy.
- Coarse/fine feed switching.
- Switchable resolution
- Two preset reference height

## SPECIFICATIONS

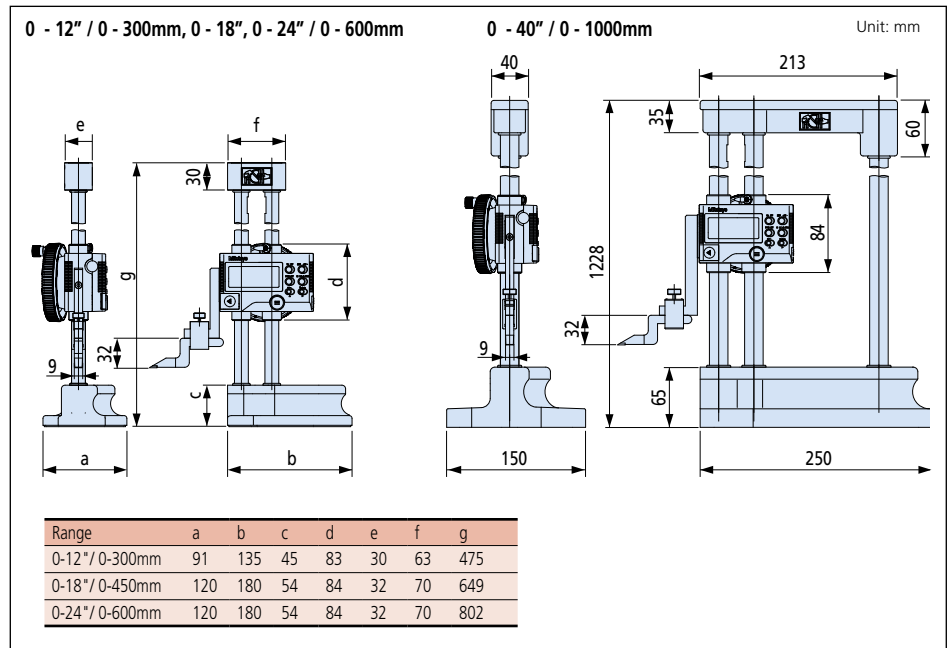
Inch/Metric				
Range	Order No.	Accuracy	Resolution	Mass (kg)
0-12"/0-300mm	<b>192-630-10</b>	±001"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	4.7
0-18"/0-450mm	<b>192-631-10</b>	±002"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	7.5
0-24"/0-600mm	<b>192-632-10</b>	±002"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	8.3
0-40"/0-1000mm	<b>192-633-10</b>	±003"	.0005" (0.01mm) [.0002" (0.005mm) Switchable]	15.7

Metric				
Range	Order No.	Accuracy	Resolution	Mass (kg)
0-300mm	<b>192-613-10</b>	±0.02mm	Switchable between 0.01mm and 0.005mm	4.7
0-600mm	<b>192-614-10</b>	±0.05mm	Switchable between 0.01mm and 0.005mm	8.3
0-1000mm	<b>192-615-10</b>	±0.07mm	Switchable between 0.01mm and 0.005mm	15.7



192-630-10

## DIMENSIONS



# Dial Height Gage

**SERIES 192 — with Digital Counter**

## FEATURES

- Easy and error-free reading with both up and down digital counters as well as a dial.
- Provided with a feed wheel for easy coarse feeding.
- Carbide-tipped scriber is provided.
- The counters and dial can be re-zeroed at any scriber position.

## SPECIFICATIONS

### Metric

Range	Order No.	Accuracy	Graduation	Mass (kg)
0 - 300mm	<b>192-130</b>	±0.03mm	0.01mm	4.2
0 - 450mm	<b>192-131</b>	±0.05mm	0.01mm	9.2
0 - 600mm	<b>192-132</b>	±0.05mm	0.01mm	9.8
0 - 1000mm	<b>192-133</b>	±0.07mm	0.01mm	17.0

### Inch

Range	Order No.	Accuracy	Graduation	Mass (kg)
0 - 12"	<b>192-150</b>	±.0015"	.001"	4.2
0 - 18"	<b>192-151</b>	±.002"	.001"	9.2
0 - 24"	<b>192-152</b>	±.002"	.001"	9.8
0 - 40"	<b>192-153</b>	±.003"	.001"	17.0

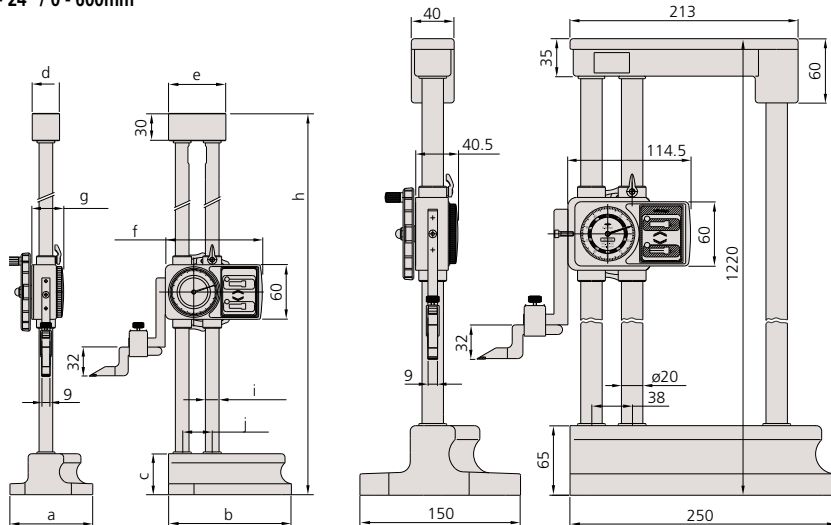


## DIMENSIONS

0 - 12" / 0 - 300mm, 0 - 18" / 0 - 450mm  
0 - 24" / 0 - 600mm

0 - 40" / 0 - 1000mm

Unit: mm



Range	a	b	c	d	e	f	g	h	i	j
0-12" / 0-300mm	91	135	45	30	63	106.5	35.5	470	ø15	33
0-18" / 0-450mm	120	180	54	32	70	114.5	40.5	645	ø20	38
0-24" / 0-600mm	120	180	54	32	70	114.5	40.5	798	ø20	38

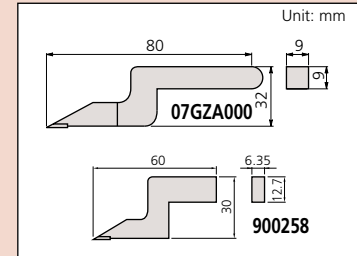
## Technical Data

Dial reading: 0.01mm or .001"

## Standard Scriber Provided

Metric models: Carbide-tipped scriber (**07GZA000**) and scriber clamp (**05GZA033**)  
Inch/Metric models: Carbide-tipped scriber (**900258**) and scriber clamp (**901385**)

## Dimension of scriber



## Optional Accessories

- 953638:** Holding bar for test indicator (length: 50mm)
- 900209:** Holding bar for test indicator (length: 100mm)
- 953639:** Holding bar for test indicator (length: 2")
- 900306:** Holding bar for test indicator (length: 4")
- 900321:** Swivel clamp used with holding bar (metric)
- 900322:** Swivel clamp used with holding bar (inch)



Comfortable grip base



Easy and secure clamping



Easy and error free reading

# ABSOLUTE Digimatic Height Gage

**SERIES 570 — with ABSOLUTE Linear Encoder**

## FEATURES

- Built in ABSOLUTE linear encoder  
This encoder eliminates the necessity of setting the reference point at every power-on. It has improved reliability because no over-speed error will occur.
- Fine-adjustment carriage to feed the slider finely.
- Carbide-tipped scriber is provided.
- With SPC data output.

## Technical Data

Accuracy: Refer to the list of specifications.  
Resolution: .0005" / 0.01mm or 0.01mm  
Display: LCD, 6-digit  
Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
Max. response speed: Un limited  
Battery: SR44 (1 pc.), **938882**  
Battery life: Approx. 5000 hours under normal use

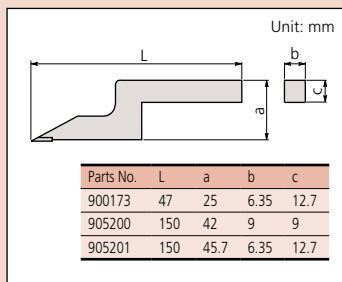
## Function

Origin setting, ABS/INC switching, Presetting, +/- switching, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
Alarm: Low voltage, Counting value composition error

## Standard Scriber Provided

Metric models: Carbide-tipped scriber (900173/905200\*) and scriber clamp (901338/05GZA033\*)  
\*0 - 1000mm model  
Inch/Metric models: Carbide-tipped scriber (900173/905201\*) and scriber clamp (901338/901385\*)  
\*0 - 40" model

## Dimension of scriber

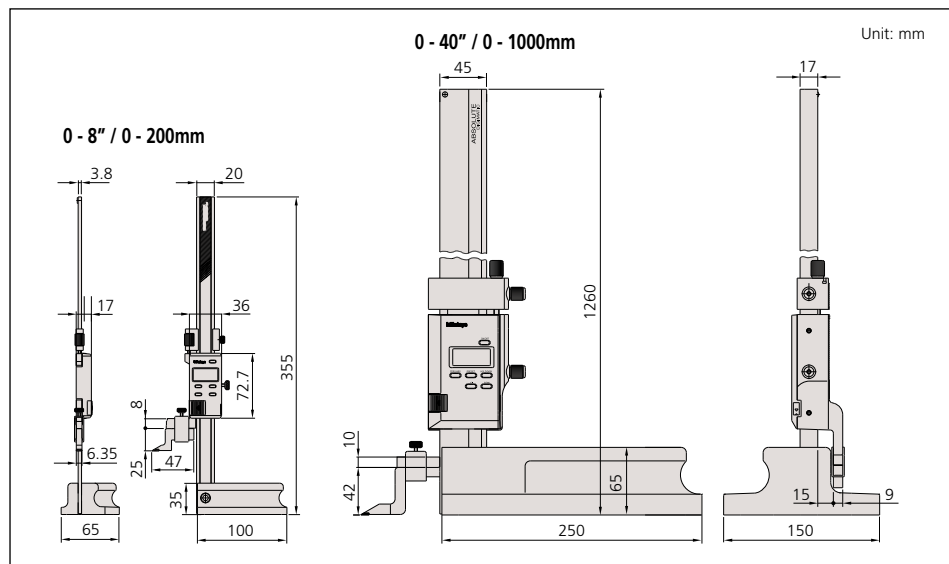


## SPECIFICATIONS

Metric				
Range	Order No.	Accuracy	Resolution	Mass (kg)
0 - 200mm	<b>570-227</b>	±0.03mm	0.01mm	1.4
0 - 1000mm	<b>570-230</b>	±0.07mm	0.01mm	16.8

Inch/Metric				
Range	Order No.	Accuracy	Resolution	Mass(kg)
0 - 8" / 0 - 200mm	<b>570-244</b>	±.001"	.0005" / 0.01mm	1.4
0 - 40" / 0 - 1000mm	<b>570-248</b>	±.003"	.0005" / 0.01mm	16.8

## DIMENSIONS



## Optional Accessories

- 905338: SPC cable (40" / 1m)
- 905409: SPC cable (80" / 2m)
- 953638: Holding bar for test indicator (length: 50mm)
- 953639: Holding bar for test indicator (length: 2")
- 902053: Swivel clamp used with holding bar (metric)
- 900322: Swivel clamp used with holding bar (inch)

# ABSOLUTE Digimatic Height Gage

**SERIES 570 — with ABSOLUTE Linear Encoder**



## FEATURES

- Built in ABSOLUTE linear encoder  
This encoder eliminates the necessity of setting the reference point at every power-on. It has improved reliability because no over-speed error will occur.
- Rigid column structure ensures high measuring accuracy.
- With large smooth slider feed wheel.
- Carbide-tipped scriber is provided.
- With SPC data output.

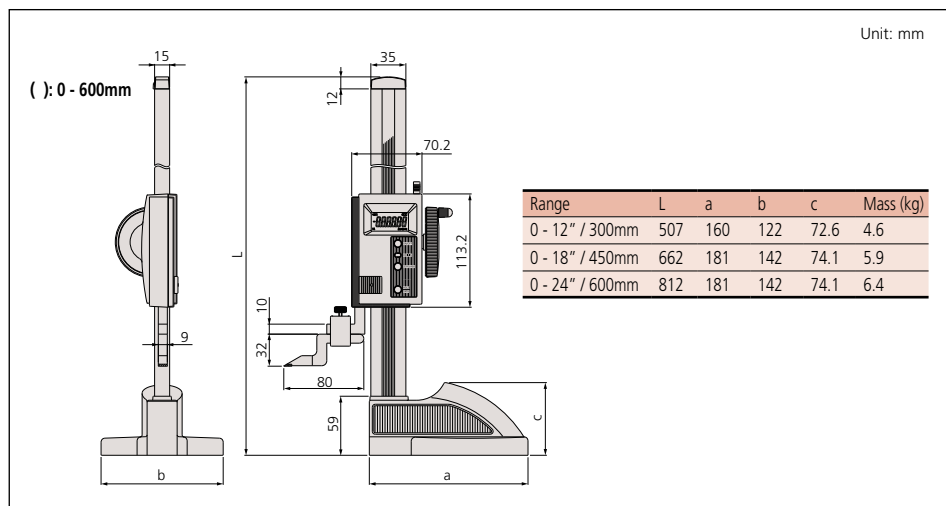


## SPECIFICATIONS

Metric			
Range	Order No.	Accuracy	Resolution
0 - 300mm	<b>570-302</b>	±0.03mm	0.01mm
0 - 600mm	<b>570-304</b>	±0.05mm	0.01mm

Inch/Metric			
Range	Order No.	Accuracy	Resolution
0 - 12" / 0 - 300mm	<b>570-312</b>	±.0015"	.0005" / 0.01mm
0 - 18" / 0 - 450mm	<b>570-313</b>	±.002"	.0005" / 0.01mm
0 - 24" / 0 - 600mm	<b>570-314</b>	±.002"	.0005" / 0.01mm

## DIMENSIONS AND MASS



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005"/0.01mm or 0.01mm  
 Display: LCD, 6-digit  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Un limited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 20000 hours under normal use

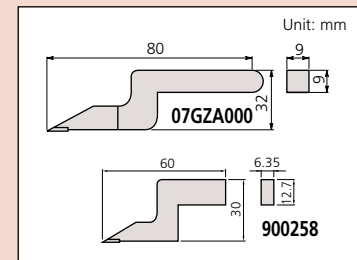
## Function

Origin setting, ABS/INC switching, Power ON/OFF, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Standard Scriber Provided

Metric models: Carbide-tipped scriber (**07GZA000**), scriber clamp (**05GZA033**)  
 Inch/Metric models: Carbide-tipped scriber (**900258**), scriber clamp (**901385**)

## Dimension of scriber



## Optional Accessories

- 905338:** SPC cable (40" / 1m)
- 905409:** SPC cable (80" / 2m)
- 953638:** Holding bar for test indicator (length: 50mm)
- 953639:** Holding bar for test indicator (length: 2")
- 902053:** Swivel clamp used with holding bar (metric)
- 900322:** Swivel clamp used with holding bar (inch)



Large smooth slider feed wheel



Large clamp lever



Comfortable grip base



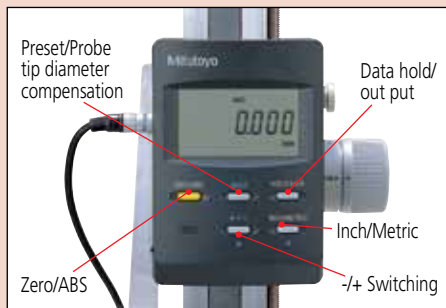


### Technical Data

Accuracy: Refer to the list of specifications.  
 Repeatability: .0001" / 0.001mm  
 Resolution: .0001"/0.001mm or 0.001mm  
 Display: LCD, 6-digit  
 Power supply: Via AC adapter

### Function

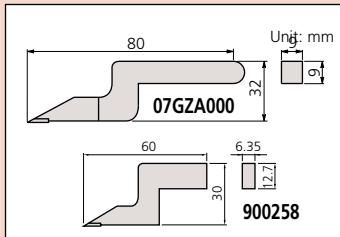
Zero-setting, Presetting, Probe tip diameter compensation, +/- switching, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Counting value composition error



### Standard Accessories

- 574-007: Touch-Signal Probe
- 901385: Scriber Clamp
- 525694A: AC Adapter

### Dimensions of Optional Scribers



### Optional Accessories

- 905691: SPC cable (40" / 1m)
- 905692: SPC cable (80" / 2m)
- 900322: Swivel clamp for dial test indicator (inch)
- 953639: Holding bar for swivel clamp (inch)
- 900258: Carbide-tipped scriber (inch)
- 145250: ø1mm contact point for touch-signal probe
- 145251: ø2mm contact point for touch-signal probe

### Touch-Signal Probe (Standard accessory)



Order No.: 574-007

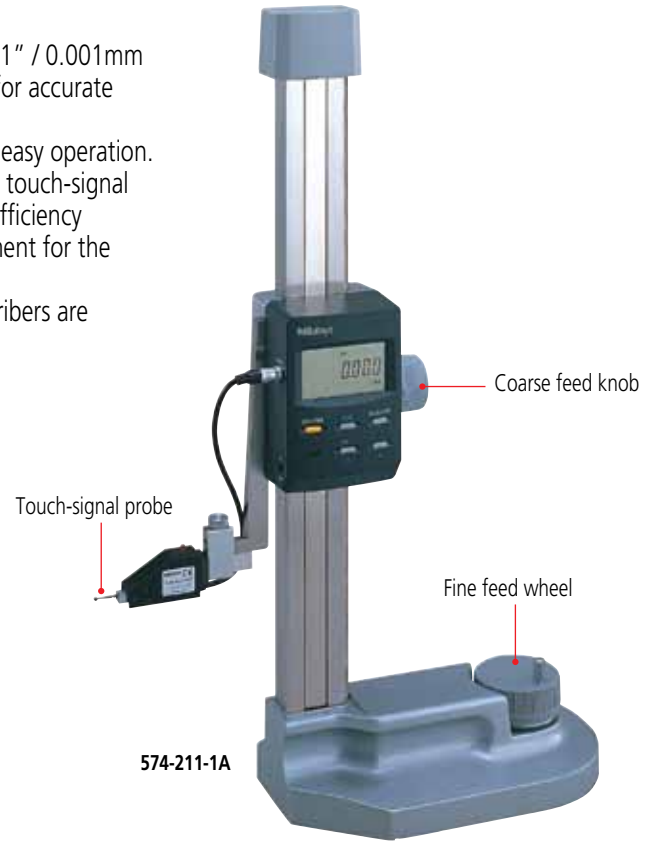
- Bi-directional type
- Over travel: Less than 3mm
- Contact point: ø3mm ball
- Repeatability: 0.0015mm
- Measuring force: 0.4N

# Heightmatic™

## SERIES 574 — High Precision Height Gage

### FEATURES

- Provides resolution of .0001" / 0.001mm on the large LCD readout for accurate measurements.
- Excellent functionality and easy operation.
- The standard bi-directional touch-signal probe provides improved efficiency and reliability of measurement for the Heightmatic.
- Optional carbide-tipped scribers are available.
- With SPC data output.



### SPECIFICATIONS

Inch/Metric			
Range	Order No.	Accuracy	Resolution
0 - 12" / 300mm	574-212-1A	±.0002"	.0001" / 0.001mm
0 - 18" / 450mm	574-211-1A	±.0002"	.0001" / 0.001mm
0 - 24" / 600mm	574-210-1A	±.0002"	.0001" / 0.001mm

### DIMENSIONS AND MASS

Unit: mm

Range	H	Mass (kg)
0 - 12" / 300mm	574	13.6
0 - 18" / 450mm	724	14.9
0 - 24" / 600mm	874	16.2

# Vernier Height Gage

## SERIES 514 — Standard Height Gage with Adjustable Main Scale

### FEATURES

- Zero reference point can be adjusted.
- Stain chrome finished scales for glare-free reading.
- Extra-large base for rigidity.
- Optional magnifier for easier reading
- Carbide-tipped scriber is provided.



### SPECIFICATIONS

Metric				
Range	Order No.	Accuracy	Graduation	Mass (kg)
0 - 300mm	<b>514-102</b>	±0.04mm	0.02mm	3.1
0 - 450mm	<b>514-104</b>	±0.05mm	0.02mm	3.4
0 - 600mm	<b>514-106</b>	±0.05mm	0.02mm	7.4
0 - 1000mm	<b>514-108</b>	±0.07mm	0.02mm	20.0
0 - 1500mm	<b>514-170</b>	±0.18mm	0.02mm	26.0

### Inch/Metric — Inch model with inch/metric dual scale

Range	Order No.	Accuracy	Graduation	Mass (kg)
0 - 12" / 0 - 300mm	<b>514-103</b>	±.002"	.001" / 0.02mm	3.1
0 - 18" / 0 - 450mm	<b>514-105</b>	±.002"	.001" / 0.02mm	3.4
0 - 24" / 0 - 600mm	<b>514-107</b>	±.002"	.001" / 0.02mm	7.4
0 - 40" / 0 - 1000mm	<b>514-109</b>	±.003"	.001" / 0.02mm	20.0

### DIMENSIONS

Range	L	a	b	c	d	e
0 - 12" / 0 - 300mm	525	32	20	70	28	45
0 - 18" / 0 - 450mm	675	32	20	70	28	45
0 - 24" / 0 - 600mm	870	32	24	85	35	54
0 - 40" / 0 - 1000mm	1340	42	30	110	45	65

### Technical Data

Main scale adjustment: 15mm or 25mm  
Slider fine feed: 4mm, 6mm, 7mm or 20mm

### Standard Scriber Provided

- Up to 600mm: Carbide-tipped scriber (**07GZA000**) and scriber clamp (**05GZA033**)
- 0 - 1000mm: Carbide-tipped scriber (**905200**) and scriber clamp (**05GZA033**)
- 0 - 1500mm: Carbide-tipped scriber (**900390**) and scriber clamp (**905008**)

### Dimension of scriber

Parts No.	L	a	b	c
905200	150	42	9	9
900390	144	45	45	16

### Optional Accessories

- 07GZA003:** Magnifier for 300, 450mm, 600mm models
- 07GZA015:** Magnifier for 1000mm and 1500mm models
- 953638:** Holding bar for test indicator (length: 50mm)
- 902053:** Swivel clamp used with holding bar



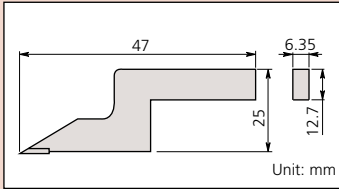
# Vernier Height Gage

## SERIES 506 — Light Weight Height Gage

### Standard Scriber Provided

Carbide-tipped scriber (900173) and scriber clamp (901338)

### Dimension of scriber



### Optional Accessories

953639: Holding bar for test indicator (length: 2" / 50mm)

900322: Swivel clamp used with holding bar



### FEATURES

- The Light Weight Height Gage is designed for scribing from a vertical base or for small parts.
- Stain chrome finished scales for glare-free reading.
- Beam and slider are made of stainless steel.
- Carbide-tipped scriber is provided.



### SPECIFICATIONS

#### Metric

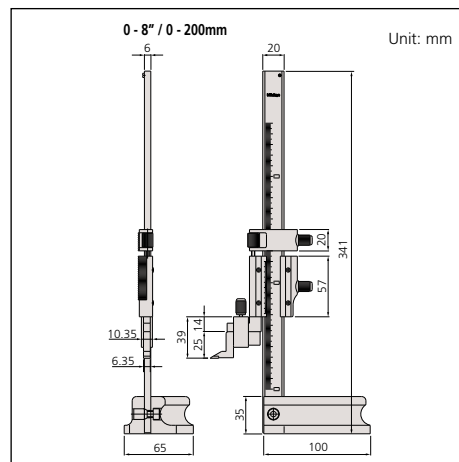
Range	Order No.	Accuracy	Graduation	Mass (kg)
0 - 200mm	506-207	±0.03mm	0.02mm	1.4

#### Inch/Metric

Inch model with inch/metric double scale

Range	Order No.	Accuracy	Graduation	Mass (kg)
0 - 8" / 0 - 200mm	506-208	±.001"	.001" / 0.02mm	1.4

### DIMENSIONS



# Carbide-Tipped Scriber

## Optional Accessory for Height Gage

### FEATURES

- Use the appropriate scriber and clamp for each height gage.

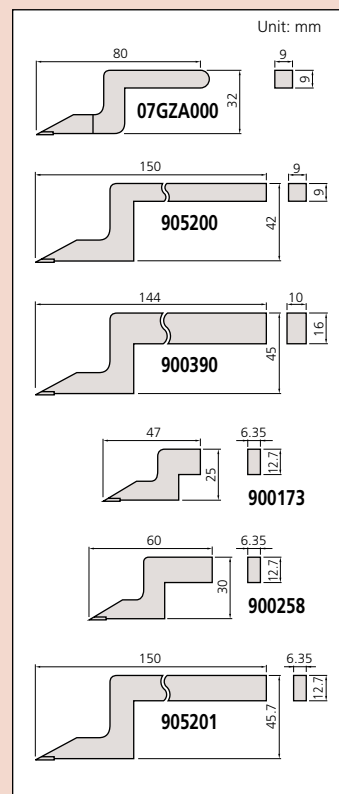
### SPECIFICATIONS

Metric	
Order No.	Remarks (applicable height gage)
07GZA000	192 Series Digimatic height gages (192-613-10, 192-614-10, 192-615-10)
	570 Series Digimatic Height Gages (570-302, 570-304)
	192 Series Dial Height Gages (192-130, 192-131, 192-132, 192-133)
	514 Series Vernier Height Gages (514-102, 514-104, 514-106, 514-103, 514-105, 514-107) 574 Series Heightmatic (574-112-1, 574-111-1, 574-110-1)
905200	192 Series Digimatic Height Gages (192-663-10, 192-664-10, 192-665-10)
	570 Series Digimatic Height Gages (570-230)
	514 Series Vernier Height Gages (514-108, 514-109)
900390	514 Series Vernier Height Gage (514-170)

Inch	
Order No.	Remarks (applicable height gage)
900173	570 Series Digimatic height gages (570-227, 570-244)
	506 Series Vernier Height Gages (506-201, 506-202, 506-204, 506-205, 506-207, 506-208)
	509 Series Vernier Height Gages (509-301, 509-302, 509-313, 509-314)
900258	192 Series Digimatic Height Gages (192-630-10, 192-631-10, 192-632-10, 192-633-10)
	570 Series Digimatic Height Gages (570-312, 570-313, 570-314)
	574 Series Heightmatic (574-212-1, 574-211-1, 574-210-1)
905201	192 Series Digimatic Height Gages (192-670-10, 192-671-10, 192-672-10, 192-673-10)
	570 Series Digimatic Height Gages (570-248)

### Dimension of scriber



# Optional Accessories

## Optional Accessories for Height Gage



### Center Master

#### FEATURES

- Allows quick measurement of center-to-center distance between holes.
- Measurable hole diameters: .040" to 1.50" /  $\varnothing 1 - \varnothing 38\text{mm}$ .

#### SPECIFICATIONS

Order No.: 951144 (with metric type holding bar)  
900581 (with inch type holding bar)



### Depth Gauge Attachment

#### FEATURES

- Attached to a height gage to measure groove and hole depth.
- Minimum hole diameter: 5.5mm
- Maximum distance from the bottom of the holding bar to the contact point: 2.95" (inch type), 80mm (metric type)
- Uses standard dial indicator points

#### SPECIFICATIONS

Order No.: 900878 (with inch type holding bar)  
900764 (with metric type holding bar)



### Contact Sensor

#### FEATURES

- The contact sensor eliminates errors caused by jacking-up the height gage while taking measurements. When the scriber of a height gage touches a conductive workpiece, an indicator will light up to indicate that measurement can be taken, which will result in consistent height measurement.
- Battery (2 pcs. SR44 required) is not included.

#### SPECIFICATIONS

Order No.: 900872



# CERA Caliper Checker

## SERIES 515

### FEATURES

- The CERA Caliper Checker is designed to inspect vernier, dial and Digimatic calipers. It is comprised of permanently wrung, high-grade CERA gage blocks in a protective casting.
- The CERA Caliper Checker also stands perpendicular to a surface for height gage inspection.
- The zirconia based ceramic CERA measuring blocks are corrosion resistant and dimensionally stable.



### Technical Data

Block pitch accuracy:  $\pm 0.005\text{mm}$  for range up to 300mm  
 $\pm 0.002\text{''}$  for range up to 12''  
 $\pm 0.007\text{mm}$  for range up to 600mm

Parallelism of blocks: 0.002mm for range up to 300mm  
 0.004mm for range up to 600mm

### Optional Accessories

**602162:** Wooden case for 300mm model  
**602164:** Wooden case for 600mm model

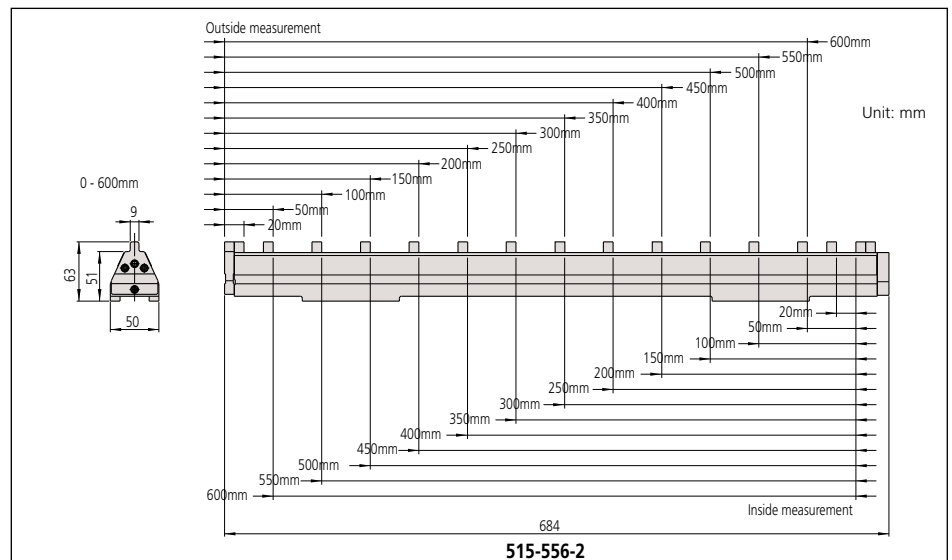
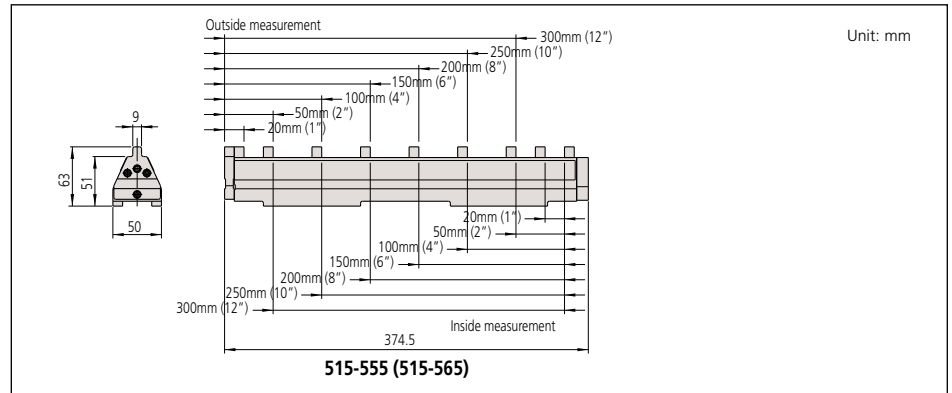
### SPECIFICATIONS

Metric			
Range	Order No.	Remarks (length to check)	Mass (kg)
0 - 300mm	<b>515-555</b>	Outside measurement: 20, 50, 100, 150, 200, 250, 300mm Inside measurement: 20, 50, 100, 150, 200, 250, 300mm	4.0
0 - 600mm	<b>515-556-2</b>	Outside, Inside measurement: 20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600mm	8.5

Inch			
Range	Order No.	Remarks (length to check)	Mass (kg)
0 - 12''	<b>515-565</b>	Outside measurement: 1'', 2'', 4'', 6'', 8'', 10'', 12'' Inside measurement: 1'', 2'', 4'', 6'', 8'', 10'', 12''	4.0

### DIMENSIONS



Used for caliper



Used for height gage



# Linear Height LH-600D

## SERIES 518 — High Performance 2D Measurement System

### FEATURES

- Excellent accuracy of  $(1.1+0.6L/600)\mu\text{m}$  with  $0.1\mu\text{m}/0.5\mu\text{m}$  resolution/repeatability.
- Perpendicularity (frontal) of  $5\mu\text{m}$  and straightness of  $4\mu\text{m}$  are guaranteed.
- Pneumatic full/semi-floating system allows adjustment of air-cushion height.
- Basic statistical functions are provided and, additionally, RS-232C / USB data output provides the option of evaluating measurement data externally with SPC software on a PC.
- One-key operation for running a semi-automatic measurement.
- Data entry from a Digimatic tool.

with power grip



518-341A-21

### SPECIFICATIONS

Inch/Metric	
<b>Order No.</b>	<b>518-341A-21 (120V with English manual)</b>
Measuring Range (stroke)	0-38" (34") / 0-972mm(600mm)
Resolution (selectable)	.000001"/.00001"/.0001"/.001"/ 0.0001mm/0.001mm/0.01mm/0.1mm
Accuracy at 20°C	Measuring accuracy .000043 + (.000024 x L*/24)" / (1.1 + 0.6L**/600) $\mu\text{m}$ Repeatability (2s) Plane: .000015"/0.4 $\mu\text{m}$ Bore: .000035"/0.9 $\mu\text{m}$ Perpendicularity .0002"/5 $\mu\text{m}$ Straightness .0002"/4 $\mu\text{m}$
Drive Method	Motor Drive (5, 10, 15, 20, 25, 30, 40mm/s=7 steps) / manual
Measuring Force	1N
Balancing Method	Counter balance
Main Unit Floating Method	Full/semi-floating with air
Air Source	Built-in air compressor
LCD	Graphic LCD (320 x 240 dot, with LED backlight)
Language for Display	English/German/French/Spanish/Italian/Japanese
Number of Programs	50 (max.)
Number of Datas	60,000 (max.) 1 program 30,000 (Max.)
Power Supply	AC Adapter/Battery (Ni-MH)
Power Consumption	43VA
Operation Time	Approx. 5 hours
Standard Accessories	$\varnothing 5$ Eccentric probe (12AAF634) Probe diameter calibration block (12AAF715) Battery (12AAA712) AC adapter (357651) Clear Cover (223587) Conveying handle (510434)
Mass	24kg

L\*=Measuring length (inch) L\*\*=Measuring length (mm)

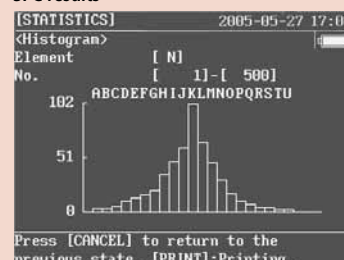


### Technical Data

Measuring range: 0 - 38" / 0 - 972mm  
 Slider stroke: 24" / 600mm  
 Resolution: .000001" / .00001" / .0001" / .001" or (switchable) 0.0001 / 0.001 / 0.01 / 0.1mm / 0.0001 / 0.001 / 0.01 / 0.1mm  
 Accuracy at 20°C: Refer to the list of specifications.  
 Floating method: Full / semi-floating with built-in air compressor  
 Display: Graphic LCD (320x240 dot, with back light)



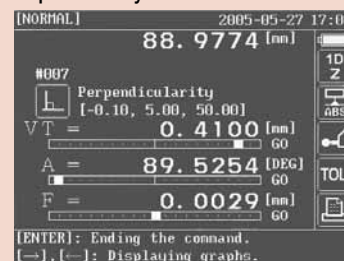
### SPC results



### Histogram



### Perpendicularity/measurement



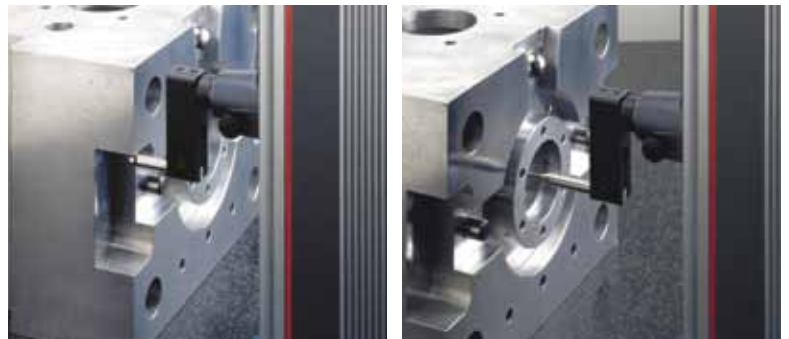
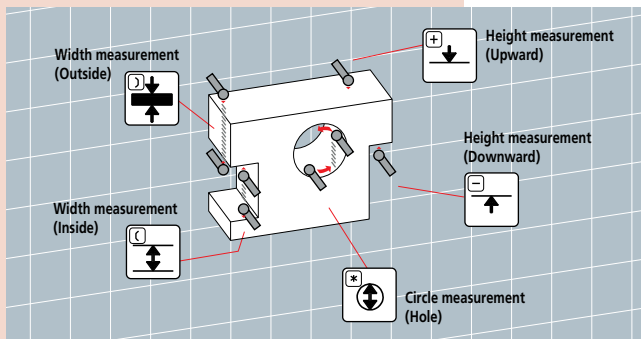
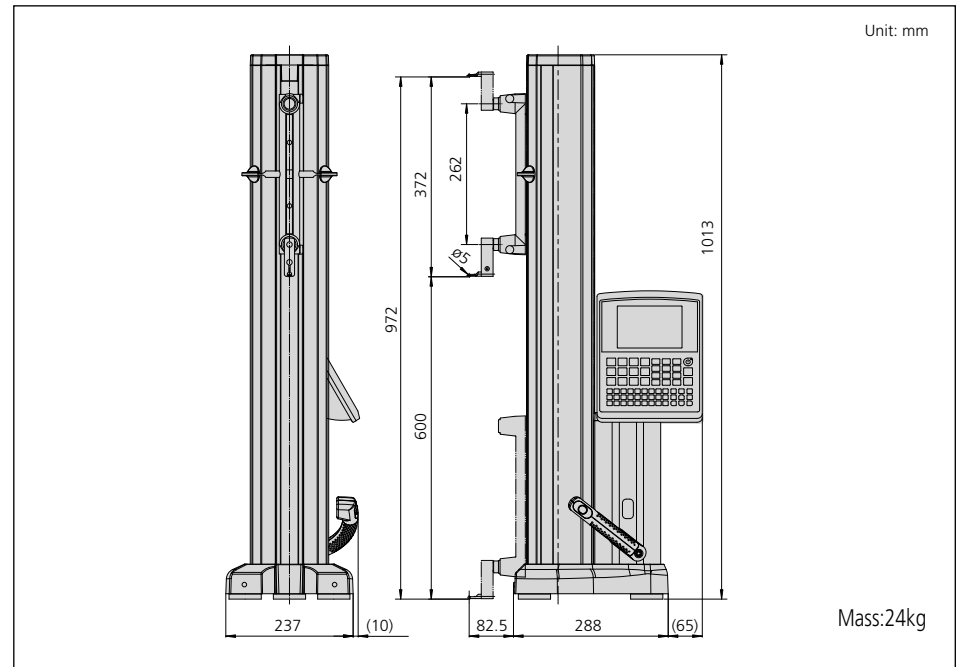


## Optional Accessories

- 12AAC072: ① Depth probe  
 12AAC073: ②  $\varnothing$ 20mm taper probe  
 12AAA787: Block for calibrating probe diameter (applicable to taper probe)  
 12AAA792: ③ Dial indicator ( $\varnothing$ 8mm stem) holder  
 12AAA837: Dial indicator ( $\varnothing$ 3/8" stem) holder  
 12AAA793: ④ Probe extension holder (3.3" / 85mm)  
 12AAB136:  $\varnothing$ 10mm cylindrical probe  
 932361: ⑥ Mu-checker lever head holder  
 12AAF666:  $\varnothing$ 1mm ball probe  
 12AAF667:  $\varnothing$ 2mm ruby ball probe  
 957261: ⑧  $\varnothing$ 2mm ball probe  
 957262: ⑨  $\varnothing$ 3mm ball probe  
 957263: ⑩  $\varnothing$ 4mm ball probe  
 12AAB552: ⑪  $\varnothing$ 10 mm ball probe, L=55mm  
 12AAF668:  $\varnothing$ 10mm ball probe, L=82mm  
 12AAF669:  $\varnothing$ 10mm ball probe, L=120mm  
 12AAF670:  $\varnothing$ 5mm disk probe  
 12AAF671:  $\varnothing$ 10mm disk probe  
 957264: ⑫  $\varnothing$ 14mm disk probe  
 957265: ⑬  $\varnothing$ 20mm disk probe  
 12AAF672:  $\varnothing$ 1mm ball offset probe  
 12AAA788: ⑭  $\varnothing$ 4mm ball offset probe  
 12AAA789: ⑮  $\varnothing$ 6mm ball offset probe  
 226116: ⑯ Test indicator ( $\varnothing$ 6mm stem) adapter  
 226117: ⑰ M2 CMM stylus adapter  
 226118: ⑱ M3 CMM stylus adapter  
 \_\_\_\_\_: CMM ball and disk hard probes are available.  
 12AAF712: Battery pack  
 12AAF675: Large capacity battery pack  
 12AAA797: Thermal printer (120V)  
 12AAA802: Thermal printing paper (10pcs.)  
 12AAA804: Cable for page printer\*\* (2m)  
 12AAA807: RS-232C cable 80" / 2m)  
 12AAA808: RS-232C cable (160" / 4m)  
 12AAH034: USB-Memory  
 12AAH035: USB-FDD



## DIMENSIONS AND MASS



# QM-Height

## SERIES 518 — High Precision ABSOLUTE Digital Height Gage

### FEATURES

- Newly developed high accuracy and high resolution ABSOLUTE linear encoder for position detection.
- Easy reference icon keys.
- Possible to measure inside/outside diameter via unique process (detect the circle apex and process by tracing measurement).
- Various types of optional probes are available.
- Large size LCD with back light.
- GO/±NG judgment is performed by setting the upper and lower tolerances. If a judgment result is out of tolerance, the display backlighting changes from green to red, so tolerance judgment can be made at a glance.
- Slider elevation knob (for travel) / wheel (for measurement).
- With SPC and RS-232C output.



### SPECIFICATIONS

Inch/Metric		
Order No.	518-221	518-223
Range	0 - 14" (0 - 350mm)	0 - 24" (0 - 600mm)
Resolution	.00005", .0001", .0002" / 0.001mm, 0.005mm	
Accuracy	± (.00011 + .0002xL / 40)"	
Repeatability	.00007" (2s)	
Display	LCD	
Functions	Zero setting, +/- switching, Presetting, Data hold, Probe tip diameter compensation, inch/mm conversion (Inch/Metric model only), Data output	
Perpendicularity	.0003"	
Measuring force	1.6 ± 0.5N	
Data output	SPC, RS-232C	
Power supply	AC adapter (optional accessory) / Battery (LR6x4)	
Battery Life	Approx. 800 Hrs. (when backlight is not used)	
	Approx. 260 Hrs. (When backlight is used in the power saving mode)	
	Approx. 6 Hrs. (When backlight is used in the Full-Time Turn-On mode)	
Standard Accessories	ø5mm stepped probe (05HZA148) 4 pcs. AA Alkaline Batteries (LR6)	
Users Manual	99MAF017B	
Mass	22kg	27kg



### Technical Data

Measuring range:	0 - 18.3" or 0 - 28.1" 0 - 465mm or 0 - 715mm
Slider stroke:	14" / 350mm or 24" / 600mm
Resolution:	.00005" / .0001" / .0002" / 0.001 / 0.005mm or 0.001 / 0.005mm
Accuracy at 20°C:	Refer to the list of specifications
Guiding method:	Roller bearing
Drive method:	Manual
Length standard:	ABSOLUTE electrostatic capacitance type linear encoder
Measuring force:	1.6±0.5N
Display:	LCD
Power supply:	AC adapter (optional) / battery (LR6x4)
Battery operation time:	Approx. 260 hours (approx. 6 hours when using back light)



GO



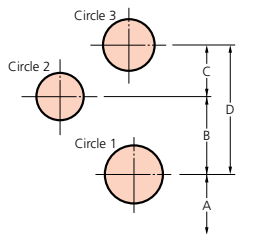
±NG

## Optional Accessories

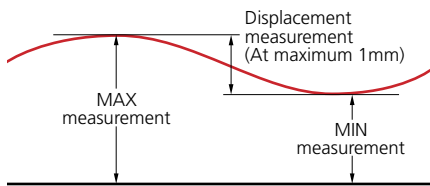
- 12AAC072:** Depth probe
- 12AAA792:** Dial indicator (ø8mm stem) holder
- 12AAA837:** Dial indicator (ø3/8" stem) holder
- 12AAA793:** Probe extension holder (3.3" / 85mm)
- 12AAF667:** ø2mm ruby ball probe
- 957261:** ø2mm ball probe
- 957262:** ø3mm ball probe
- 957263:** ø4mm ball probe
- 05HAA394:** ø5mm ball probe (for 05HZA148)
- 12AAB552:** ø10 mm ball probe, L=55mm
- 12AAF670:** ø5mm disk probe
- 12AAF671:** ø10mm disk probe
- 957264:** ø14mm disk probe
- 957265:** ø20mm disk probe
- 12AAA788:** ø4mm ball offset probe
- 05HAA394:** ø5mm ball offset probe
- 12AAA789:** ø6mm ball offset probe
- 226116:** Test indicator (ø6mm stem) adapter
- 05HZA173:** Scriber
- 264-504-5A:** DP-1VR
- 936937:** SPC cable (40" / 1m)
- 965014:** SPC cable (80" / 2m)
- 526688A:** AC adapter (120V)

## Circle pitch measurement

The length A, B, C and D can be determined by measuring circles 1 to 3 once each, using the memory of measuring data together with the calculation function. (A maximum of nine circle measurement data can be saved.)



## Maximum/minimum and displacement measurement

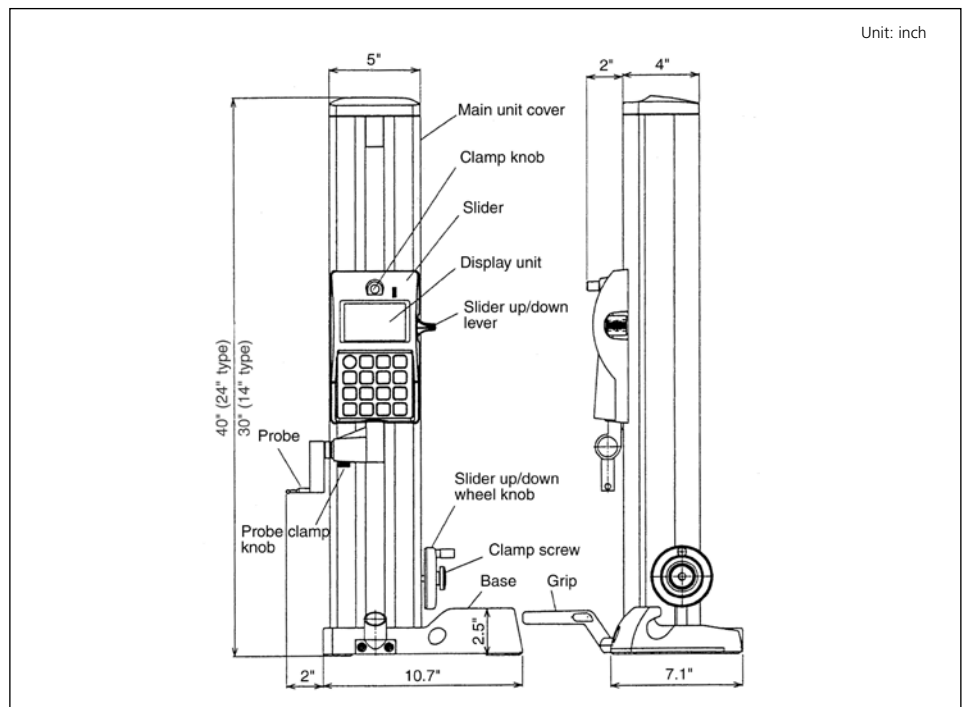


## Height measurement



Inside diameter measurement

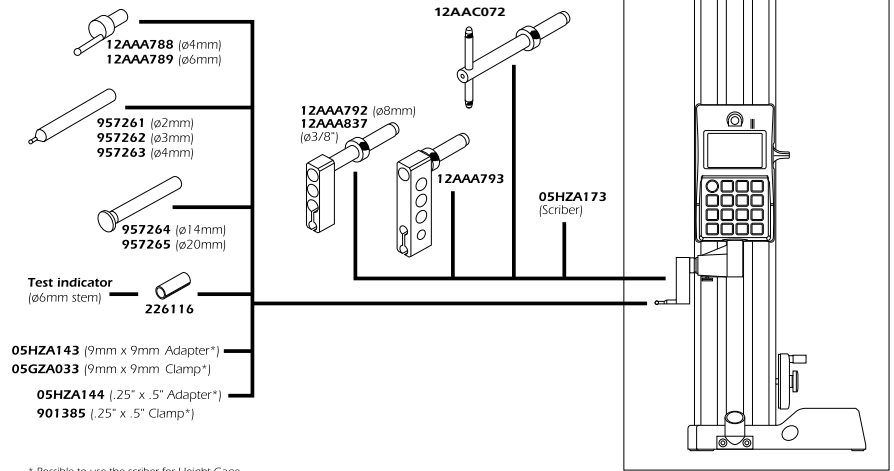
## DIMENSIONS



Digimatic mini processor DP-1VR



936937 (1m)  
965014 (2m)



\* Possible to use the scriber for Height Gauge.

# Depth Micrometer

**SERIES 329, 129 — Interchangeable Rod Type**

## FEATURES

- $\varnothing 4$ mm interchangeable rods, with lapped measuring end, provide a wide measuring range.
- The rod length can be adjusted in 1" or 25mm increments.
- With ratchet stop for constant force.
- With measuring rod clamp.
- With SPC output (Series 329).
- Supplied in fitted plastic case.



## SPECIFICATIONS

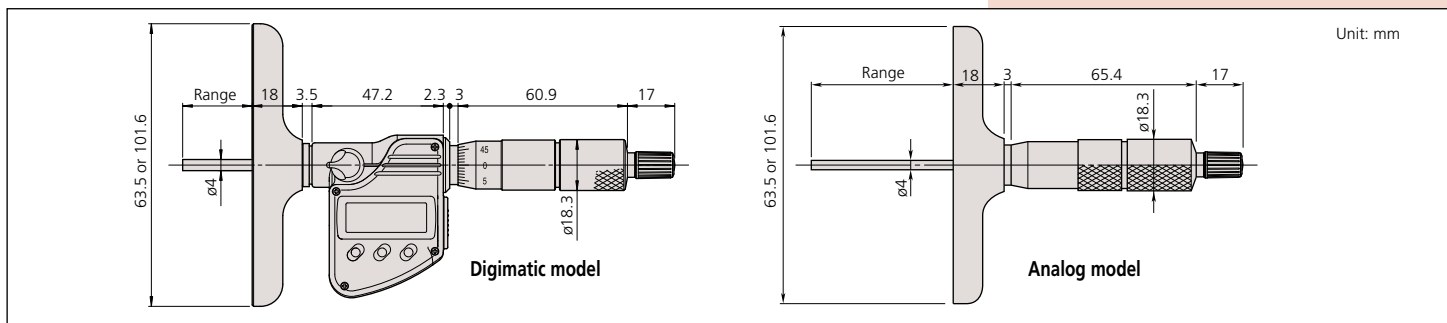
Metric Digimatic model			
Range	Order No.	Base Size	Rod Qty.
0 - 150mm	<b>329-250-10</b>	101.6x16mm	6 rods
0 - 300mm	<b>329-251-10</b>	101.6x16mm	12 rods

Metric			
Range	Order No.	Base Size	Rod Qty.
0 - 50mm	<b>129-109</b>	63.5x16mm	2 rods
0 - 100mm	<b>129-111</b>	63.5x16mm	4 rods
0 - 100mm	<b>129-115</b>	101.6x16mm	4 rods
0 - 150mm	<b>129-112</b>	63.5x16mm	6 rods
0 - 150mm	<b>129-116</b>	101.6x16mm	6 rods

Inch/Metric Digimatic model			
Range	Order No.	Base Size	Rod Qty.
0 - 6" / 0 - 152.4mm	<b>329-350-10</b>	4"x.63"	6 rods
0 - 12" / 0 - 304.8mm	<b>329-351-10</b>	4"x.63"	12 rods

Inch			
Range	Order No.	Base Size	Rod Qty.
0 - 4"	<b>129-127</b>	2.5"x.63"	4 rods
0 - 4"	<b>129-131</b>	4"x.63"	4 rods
0 - 6"	<b>129-128</b>	2.5"x.63"	6 rods
0 - 6"	<b>129-132</b>	4"x.63"	6 rods
0 - 12"	<b>129-149</b>	2.5"x.63"	12 rods
0 - 12"	<b>129-150</b>	4"x.63"	12 rods

## DIMENSIONS



## Technical Data

Accuracy:  $\pm 0.0012'' / \pm 3\mu\text{m}$  for micrometer head feed  
 $\pm [0.0008 + (0.0004 \times R/3)]''$   
 R = max. measuring length (inch)  
 $\pm (2 + L/75)\mu\text{m}$  for interchangeable rod,  
 L = Max. measuring length (mm)

Resolution\*:  $.00005'' / 0.001\text{mm}$  or  $0.001\text{mm}$

Graduation\*\*:  $.001''$  or  $0.01\text{mm}$

Flatness of reference face:  $.00005''$  for  $2.5'' / 1.3\mu\text{m}$  for  $63.5\text{mm}$  width base,  $.00008''$  for  $4'' / 2\mu\text{m}$  for  $101.6\text{mm}$  width base

Flatness of measuring rod face:  $0.3\mu\text{m}$

Parallelism between reference face and measuring rod face:  
 $[.00016 + (0.0004 \times R/2)]''$

R = max. measuring range (inch)

$(4 + L/50)\mu\text{m}$ , L = Max. measuring length (mm)

Measuring rod diameter:  $.157'' / 4\text{mm}$

Display\*: LCD

Battery\*: SR44 (1 pc.), **938882**

Battery life\*: Approx. 3.5 years under normal use

\*Digital models \*\*Analog models

## Function of Digimatic Model

Origin-set, Zero-setting, Data hold, Data output, inch/mm conversion (on inch/metric models only)

Alarm: Low voltage, Counting value composition error

Function Lock

2 Presets

## Optional Accessories for Digimatic Model

**05CZA662**: SPC cable with data switch (40" / 1m)

**05CZA663**: SPC cable with data switch (80" / 2m)



# Depth Micrometer

## SERIES 128

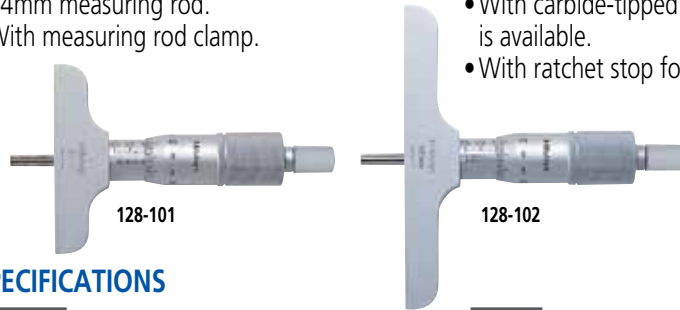
### Technical Data

Accuracy:  $\pm 3\mu\text{m}$  for micrometer head feed  
 Graduation: .001" or 0.01mm  
 Flatness of reference face: 1.3 $\mu\text{m}$  for 63.5mm width base,  
 2 $\mu\text{m}$  for 101.6mm width base  
 Flatness of measuring rod face: 0.3 $\mu\text{m}$   
 Parallelism between reference face and measuring rod face:  
 (4+L/50) $\mu\text{m}$ , L=Max. measuring length (mm)  
 Measuring rod diameter: 4mm



### FEATURES

- $\varnothing 4\text{mm}$  measuring rod.
- With measuring rod clamp.



- With carbide-tipped measuring rod model is available.
- With ratchet stop for constant force.

### SPECIFICATIONS

Metric		
Range	Order No.	Remarks (base)
0 - 25mm	<b>128-101</b>	63.5x16mm
0 - 25mm	<b>128-103*</b>	63.5x16mm
0 - 25mm	<b>128-102</b>	101.6x16mm
0 - 25mm	<b>128-104*</b>	101.6x16mm

Inch		
Range	Order No.	Remarks (base)
0 - 1"	<b>128-105</b>	2.5"x.63"
0 - 1"	<b>128-106</b>	4"x.63"

\*with carbide-tipped measuring rod

# Depth Micro Checker

## SERIES 515

### FEATURES

- The Depth Micro Checker is designed to efficiently check the zero point of a depth micrometer.

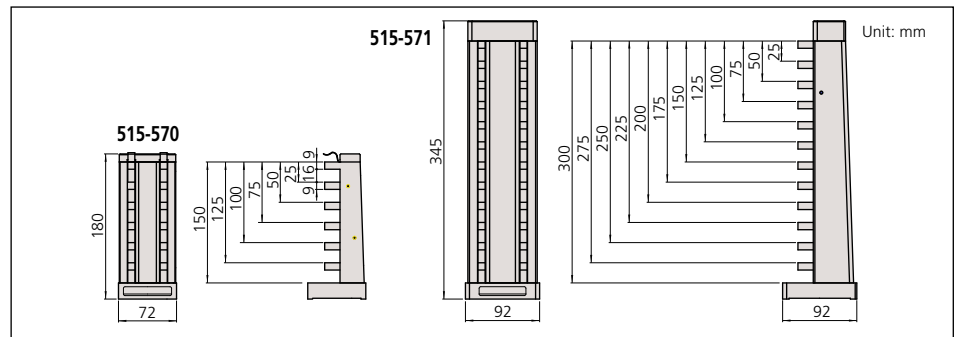


### SPECIFICATIONS

Metric		
Range	Order No.	Remarks (length to check)
0 - 150mm	<b>515-570</b>	25, 50, 75, 100, 125, 150mm
0 - 300mm	<b>515-571</b>	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300mm

Inch		
Range	Order No.	Remarks (length to check)
0 - 6"	<b>515-575</b>	1", 2", 3", 4", 5", 6"

### DIMENSIONS



### Technical Data

Block pitch accuracy:  $\pm(1+L/150)\mu\text{m}$ ,  
 L=Length to check (mm)  
 Anvil block accuracy:  $\pm 0.5\mu\text{m}$

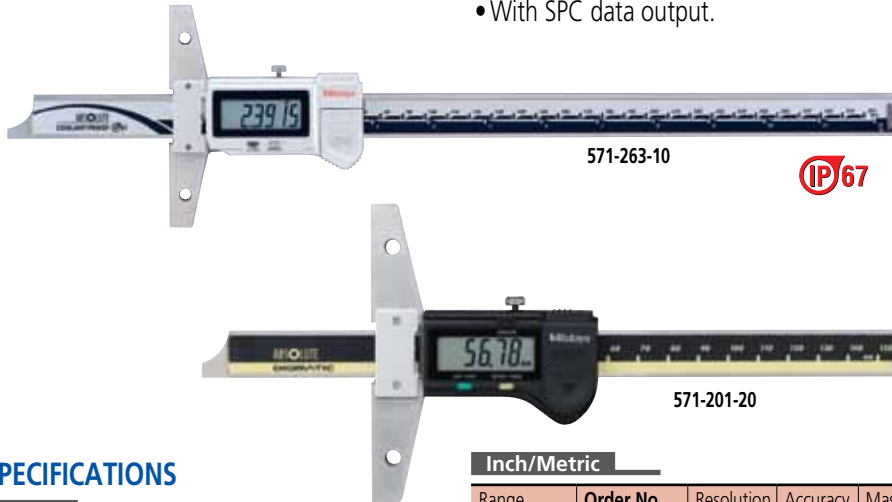


# ABSOLUTE Digimatic Depth Gage

**SERIES 571**

## FEATURES

- ABSOLUTE Digimatic Depth Gage can keep track of the origin point once set for the entire life of the battery.
- Base and measuring faces are hardened and micro-lapped.
- Optional wider extension base are available. (up to 450mm range models)
- With SPC data output.



## SPECIFICATIONS

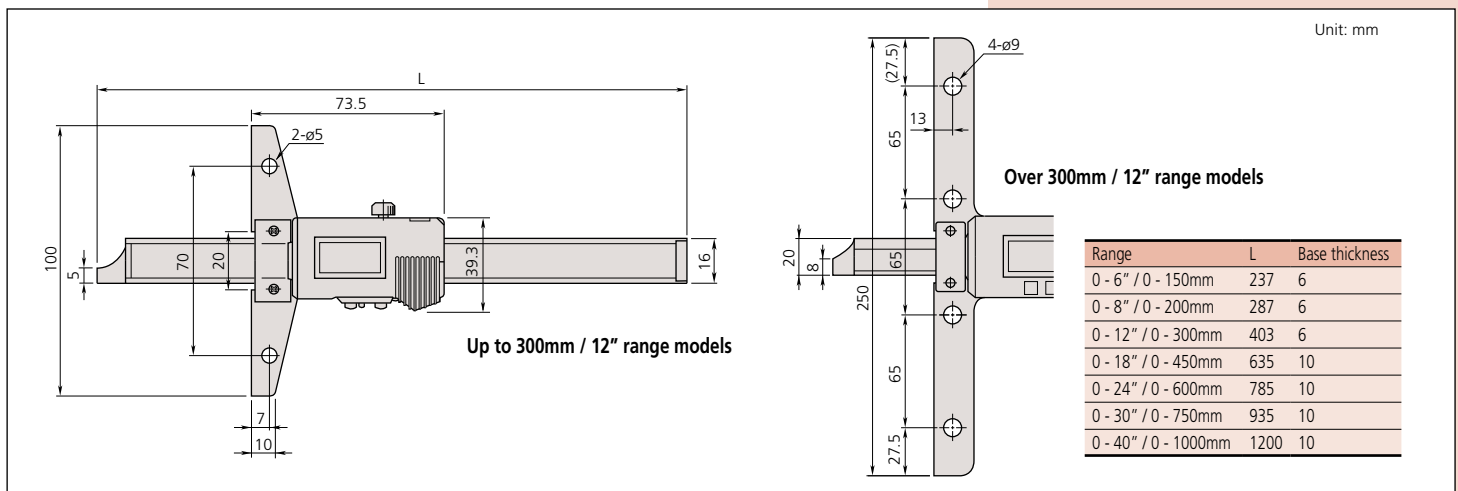
Metric				
Range	Order No.	Resolution	Accuracy	Mass(g)
0 - 150mm	<b>571-201-20</b>	0.01mm	±0.02mm	192
0 - 150mm	<b>571-251-10*</b>	0.01mm	±0.02mm	199
0 - 200mm	<b>571-202-20</b>	0.01mm	±0.02mm	212
0 - 200mm	<b>571-252-10*</b>	0.01mm	±0.02mm	219
0 - 300mm	<b>571-203-20</b>	0.01mm	±0.03mm	310
0 - 300mm	<b>571-253-10*</b>	0.01mm	±0.03mm	320
0 - 450mm	<b>571-204-10</b>	0.01mm	±0.05mm	1270
0 - 600mm	<b>571-205-10</b>	0.01mm	±0.05mm	1400
0 - 750mm	<b>571-206-10</b>	0.01mm	±0.06mm	1530
0 - 1000mm	<b>571-207-10</b>	0.01mm	±0.07mm	1760

\*IP67 Coolant Proof model

Inch/Metric				
Range	Order No.	Resolution	Accuracy	Mass(g)
0 - 6" / 0 - 150mm	<b>571-211-20</b>	.0005" / 0.01mm	±.001"	192
0 - 6" / 0 - 150mm	<b>571-261-10*</b>	.0005" / 0.01mm	±.001"	199
0 - 8" / 0 - 200mm	<b>571-212-20</b>	.0005" / 0.01mm	±.001"	212
0 - 8" / 0 - 200mm	<b>571-262-10*</b>	.0005" / 0.01mm	±.001"	219
0 - 12" / 0 - 300mm	<b>571-213-10</b>	.0005" / 0.01mm	±.0015"	310
0 - 12" / 0 - 300mm	<b>571-263-10*</b>	.0005" / 0.01mm	±.0015"	320
0 - 18" / 0 - 450mm	<b>571-214-10</b>	.0005" / 0.01mm	±.002"	1270
0 - 24" / 0 - 600mm	<b>571-215-10</b>	.0005" / 0.01mm	±.002"	1400
0 - 30" / 0 - 750mm	<b>571-216-10</b>	.0005" / 0.01mm	±.0025	1530
0 - 40" / 0 - 1000mm	<b>571-217-10</b>	.0005" / 0.01mm	±.0025	1760

\*IP67 Coolant Proof model

## DIMENSIONS



## Technical Data

Resolution: .0005" / 0.01mm or 0.01mm  
 Repeatability: 0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance (electromagnetic induction)\* type linear encoder  
 Max. response speed: Unlimited  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 20,000 hours (3 years)\* under normal use  
 Dust/Water protection level: IP67\*  
 \*Coolant Proof models

## Function

Origin-set, Zero-setting, Automatic power on/off, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories

- 959143:** Data hold unit
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)
- 05CZA624:** SPC cable with data switch (40" / 1m)\*
- 05CZA625:** SPC cable with data switch (80" / 2m)\*
- \_\_\_\_\_ Extension base (see page D-53.)

\*For IP67 models



Measurement data output function is available with a water-resistant SPC cable.



# Vernier Depth Gage

## SERIES 527

### FEATURES

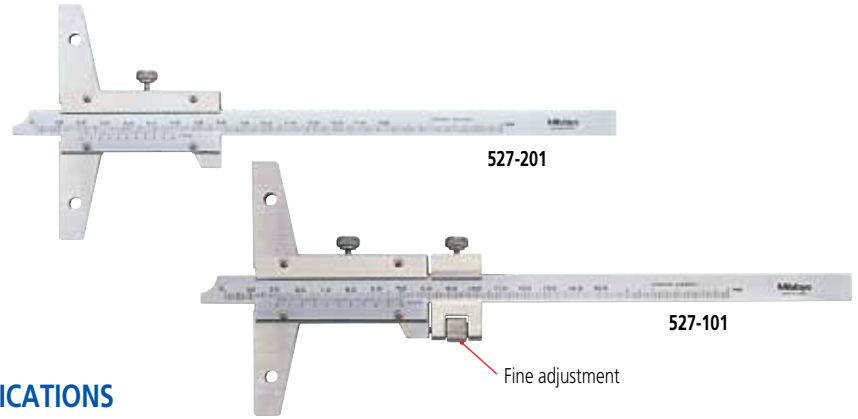
- Made of hardened stainless steel.
- Base and measuring faces are hardened and micro-lapped.
- Optional wider extension base are available. (up to 450mm range models)

### Technical Data

Graduation: .001" or 0.05mm, 0.02mm

### Optional Accessories

—: Extension base (see page D-53.)



### SPECIFICATIONS

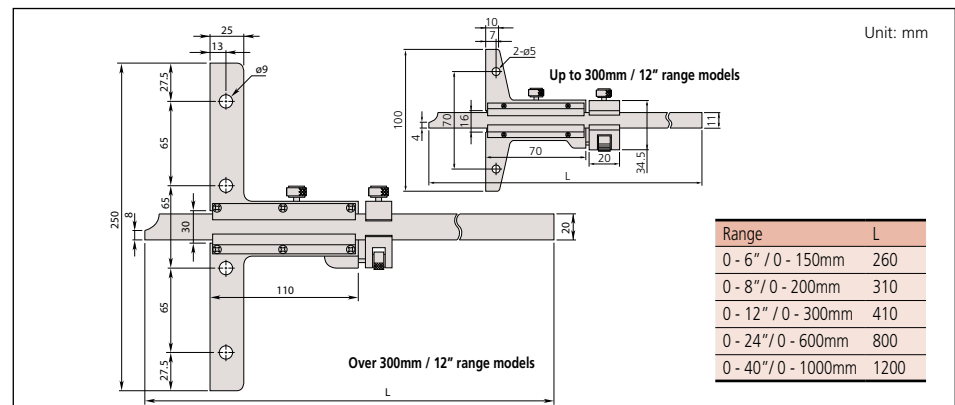
#### Metric

Range	Order No.	Vernier reading	Accuracy	Mass (g)	Remarks
0 - 150mm	527-201	0.05mm	±0.05mm	240	—
0 - 150mm	527-121	0.02mm	±0.03mm	215	—
0 - 150mm	527-101	0.02mm	±0.03mm	280	with fine adjustment
0 - 200mm	527-202	0.05mm	±0.05mm	260	—
0 - 200mm	527-122	0.02mm	±0.03mm	230	—
0 - 200mm	527-102	0.02mm	±0.03mm	300	with fine adjustment
0 - 300mm	527-203	0.05mm	±0.08mm	300	—
0 - 300mm	527-123	0.02mm	±0.04mm	265	—
0 - 300mm	527-103	0.02mm	±0.04mm	350	with fine adjustment
0 - 600mm	527-204	0.05mm	±0.10mm	1511	—
0 - 600mm	527-104	0.02mm	±0.05mm	1511	with fine adjustment
0 - 1000mm	527-205	0.05mm	±0.15mm	1880	—
0 - 1000mm	527-105	0.02mm	±0.07mm	1880	with fine adjustment

#### Inch

Range	Order No.	Vernier reading	Accuracy	Mass (g)	Remarks
0 - 6"	527-111	.001"	±.001"	280	with fine adjustment
0 - 8"	527-112	.001"	±.001"	300	with fine adjustment
0 - 12"	527-113	.001"	±.0015"	350	with fine adjustment
0 - 24"	527-114	.001"	±.002"	1511	with fine adjustment
0 - 40"	527-115	.001"	±.003"	1880	with fine adjustment

### DIMENSIONS



# Vernier Depth Gage

## SERIES 527 — Hook End Type

### FEATURES

- The end of the main scale is hook-shaped to allow depth and thickness measurements of a projected portion or lip in a hole, in addition to standard depth measurement.
- With fine adjustment models are available.
- Optional wider extension base are available.



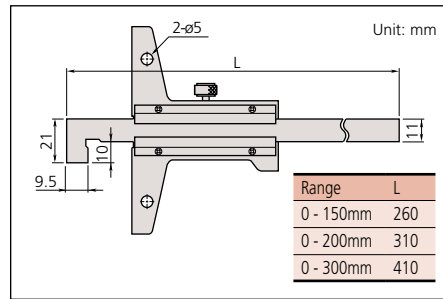
527-401

### SPECIFICATIONS

Metric				
Range	Order No.	Vernier reading	Accuracy	Mass (g)
0 - 150mm	527-401	0.05mm	±0.05mm	240
0 - 200mm	527-402	0.05mm	±0.05mm	240
0 - 300mm	527-403	0.05mm	±0.08mm	270

Metric with fine adjustment				
Range	Order No.	Vernier reading	Accuracy	Mass (g)
0 - 150mm	527-411	0.02mm	±0.03mm	280
0 - 200mm	527-412	0.02mm	±0.03mm	300
0 - 300mm	527-413	0.02mm	±0.04mm	350

### DIMENSIONS

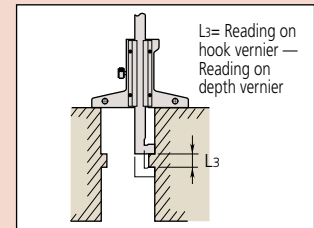
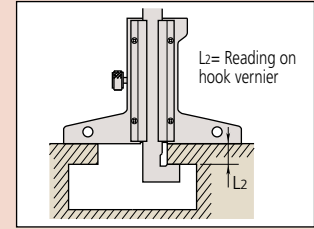
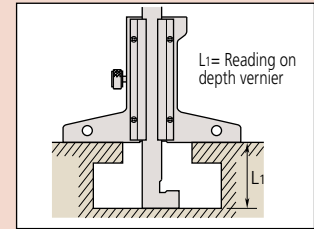


### Technical Data

Graduation: 0.05mm or 0.02mm  
Base size: 100x6.5mm (WxT)

### Optional Accessory

—: Extension base (see page D-53.)



# ABSOLUTE Digimatic Depth Gage

## SERIES 571 — Hook End Type

### FEATURES

- ABSOLUTE Digimatic Depth Gage can keep track of the origin point once set for the entire life of the battery.
- Base and measuring faces are hardened and micro-lapped.
- Optional wider extension base are available.
- With SPC data output.



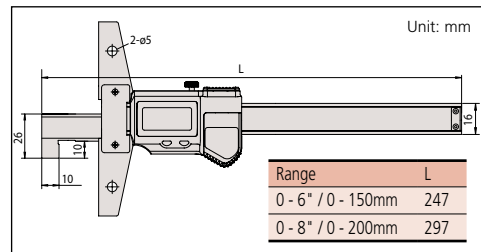
571-264-10



### SPECIFICATIONS

Inch/Metric				
Range	Order No.	Resolution	Accuracy	Mass (g)
0 - 6" / 0 - 150mm	571-264-10	.0005" / 0.01mm	±.0015"	578
0 - 8" / 0 - 200mm	571-265-10	.0005" / 0.01mm	±.0015"	598

### DIMENSIONS



### Technical Data

Resolution: .0005"/0.01mm  
Repeatability: .0005"/0.01mm  
Display: LCD  
Length standard: ABSOLUTE electrostatic capacitance (electromagnetic induction)\* type linear encoder  
Max. response speed: Unlimited  
Battery: SR44 (1 pc.), 938882  
Battery life: Approx. 20,000 hours (3 years)\* under normal use  
Dust/Water protection level: IP67

### Function

Origin-set, Zero-setting, Automatic power on/off, Data output, inch/mm conversion (on inch/metric models only)  
Alarm: Low voltage, Counting value composition error

### Optional Accessories

05CZA624: SPC cable with data switch (40" / 1m)\*

05CZA625: SPC cable with data switch (80" / 2m)\*

—: Extension base (see page D-53.)

\*For IP67 models

# Dial Depth Gage

**SERIES 527 — with Fine Adjustment**

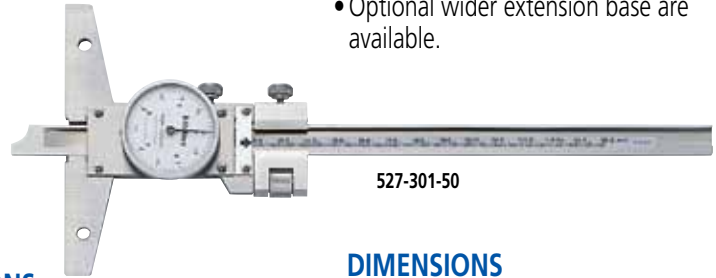
## Technical Data

Dial reading: .001" or 0.05mm  
Base size: 100x6.5mm (WxT)



## FEATURES

- Easier and faster reading of dial.
- Made of hardened stainless steel.
- Base and measuring faces are hardened and micro-lapped.
- Optional wider extension base are available.



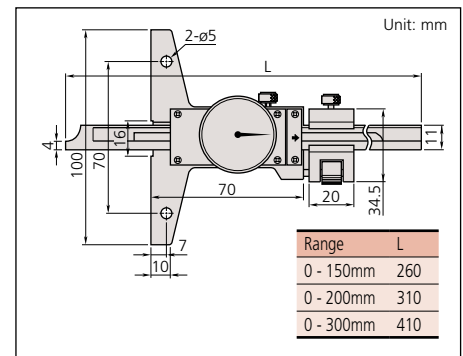
527-301-50

## SPECIFICATIONS

Metric				
Range	Order No.	Dial reading	Accuracy	Mass (g)
0 - 150mm	527-301-50	0.05mm	±0.05mm	280
0 - 200mm	527-302-50	0.05mm	±0.05mm	300
0 - 300mm	527-303-50	0.05mm	±0.08mm	340

Inch				
Range	Order No.	Dial reading	Accuracy	Mass (g)
0 - 6"	527-311-50	.001"	±.001"	280
0 - 8"	527-312-50	.001"	±.001"	300
0 - 12"	527-313-50	.001"	±.0015"	340

## DIMENSIONS

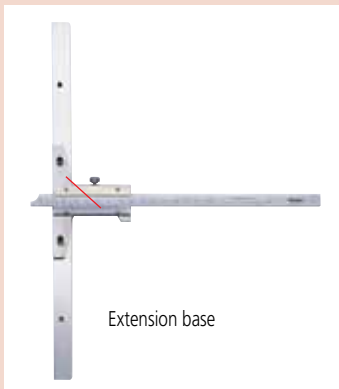


# Extension Bases

**Optional Accessory for Depth Gage**

## FEATURES

- Attached to the base (reference face) plate of a depth gage to extend its span.
- These extension base cannot be attached to 0-24" and 0-40", 0-600mm, 0-1000mm, range models.



Extension base

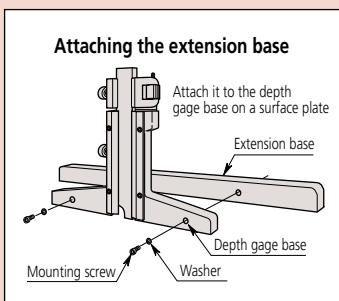
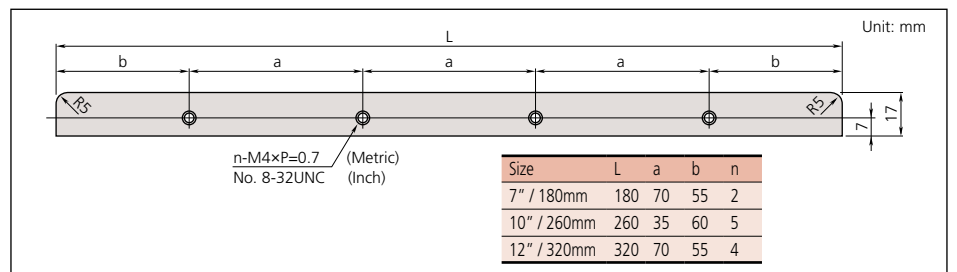
900372

## SPECIFICATIONS

Metric			
Size	Order No.	Remarks (dimension a, b / n)	
180mm	900370	70mm, 55mm	2
260mm	900371	35mm, 60mm	5
320mm	900372	70mm, 55mm	4

Inch			
Size	Order No.	Remarks (dimension a, b / n)	
7"	900367	2.76", 2.17"	2
10"	900368	1.38", 2.36"	5
12"	900369	2.76", 2.17"	4

## DIMENSIONS



# ABSOLUTE Digimatic/Dial Depth Gage

SERIES 547, 7



## FEATURES

- ABSOLUTE Digimatic Depth Gage can keep track of the origin point once set for the entire life of the battery. (Series 547)
- Wide probing range is available with the supplied extension rod.
- Bottom surface of the base is hardened, ground and lapped for highest degree of flatness.
- Designed with a back plunger type dial indicator for upward facing readings. (7231, 7237, 7238)
- With SPC data output. (Series 547)



## SPECIFICATIONS

Metric Digimatic model							
Range	Order No.	Resolution	Stroke	Accuracy	Extension rod	Base (WxT)	Flatness
0 - 200mm	547-211	0.01mm	12mm	±0.02mm	5 pcs. (10, 20, 30, 30, 100mm)	63.5x16mm	5µm
0 - 200mm	547-212	0.01mm	12mm	±0.02mm	5 pcs. (10, 20, 30, 30, 100mm)	101.6x16mm	5µm
0 - 200mm	547-251	0.001mm	12mm	±0.005mm	5 pcs. (10, 20, 30, 30, 100mm)	63.5x16mm	2µm
0 - 200mm	547-252	0.001mm	12mm	±0.005mm	5 pcs. (10, 20, 30, 30, 100mm)	101.6x16mm	2µm

0.01mm graduation 0.001mm graduation

Inch/Metric Digimatic model							
Range	Order No.	Resolution	Stroke	Accuracy	Extension rod	Base (WxT)	Flatness
0 - 8" / 0-200mm	547-2175	.0005" / 0.01mm	.5"	±.001"	4 pcs. (.5", 1", 2", 4")	2.5"x.63"	.0002"
0 - 8" / 0-200mm	547-2185	.0005" / 0.01mm	.5"	±.001"	4 pcs. (.5", 1", 2", 4")	4"x.63"	.0002"
0 - 8" / 0-200mm	547-2575	.00005" / 0.001mm	.5"	±.0003"	4 pcs. (.5", 1", 2", 4")	2.5"x.63"	.00008"
0 - 8" / 0-200mm	547-2585	.00005" / 0.001mm	.5"	±.0003"	4 pcs. (.5", 1", 2", 4")	4"x.63"	.00008"

.005"/0.01mm graduation .00005"/0.001mm graduation

Metric Dial Type							
Range	Order No.	Graduation	Stroke	Accuracy	Extension rod	Base (WxT)	Flatness
0 - 10mm	7210*	0.01mm	10mm	±0.015mm	—	40x16mm,	5µm
0 - 200mm	7211	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	63.5x16mm	5µm
0 - 200mm	7212	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	101.6x16mm	5µm
0 - 210mm	7213	0.01mm	30mm	±0.03mm	3 pcs. (30, 60, 90mm)	63.5x16mm	5µm
0 - 210mm	7214	0.01mm	30mm	±0.03mm	3 pcs. (30, 60, 90mm)	101.6x16mm	5µm
0 - 200mm	7220	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	100x18mm	5µm
0 - 200mm	7221	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	150x18mm	5µm
0 - 10mm	7222*	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	ø16mm	5µm
0 - 10mm	7223	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	ø25mm	5µm
0 - 10mm	7224	0.01mm	10mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	ø40mm	5µm
0 - 200mm	7231	0.01mm	5mm	±0.015mm	5 pcs. (10, 20, 30, 30, 100mm)	63.5x16mm	5µm

\*with needle probe

Inch Dial Type							
Range	Order No.	Graduation	Stroke	Accuracy	Extension rod	Base (WxT)	Flatness
0 - 8"	72175	.001"	1"	±.002"	4 pcs. (.5", 1", 2", 4")	2.5"x.63"	.0002"
0 - 8"	72185	.001"	1"	±.002"	4 pcs. (.5", 1", 2", 4")	4"x.63"	.0002"
0 - 8"	7237	.001"	.2"	±.002"	4 pcs. (.5", 1", 2", 4")	2.5"x.63"	.0002"
0 - 8"	7238	.001"	.2"	±.002"	4 pcs. (.5", 1", 2", 4")	4"x.63"	.0002"

## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution\*: .0005"/0.01mm or 0.001mm, 0.01mm, .00005"/0.001mm  
 Dial reading\*\*: .001" or 0.01mm  
 Flatness of base face: 5µm  
 Contact point: Carbide-tipped ball point or needle point (7210, 7222)  
 Measuring force: 1.4N, 1.5N (digital model), 2.5N (7213, 7214, 72175, 72185)  
 Display\*: LCD  
 Battery\*: SR44 (1 pc.), 938882  
 Battery life\*: Approx. 3.5 years under normal use  
 \*Digital models \*\*Dial models

## Technical Data of Dial Mode

Accuracy: Refer to the list of specifications.  
 Dial reading: .001" or 0.01mm  
 Flatness of base face: 5µm or 2µm  
 Contact point: Carbide-tipped ball point (needle point: 7210, 7222)  
 Measuring force: 1.4N (2.5N: 7213, 7214, 7217, 7218)

## Function of Digimatic Model

Origin-set, Zero-setting, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

## Optional Accessories for Digimatic Model

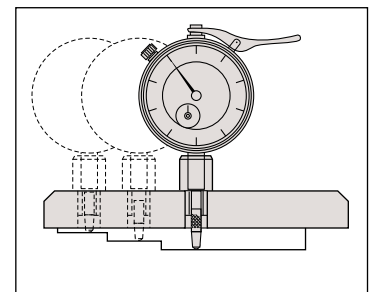
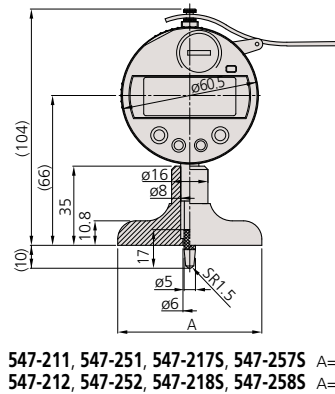
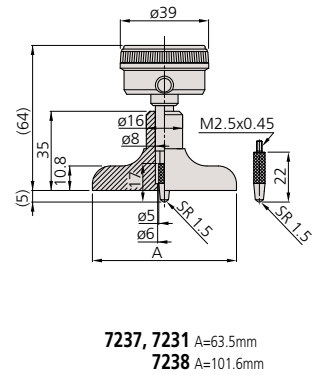
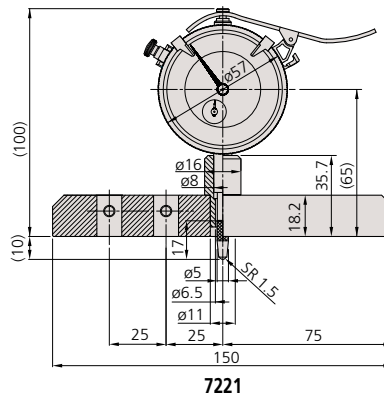
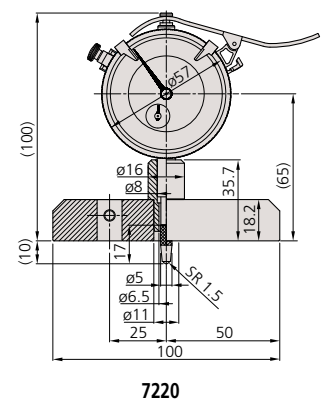
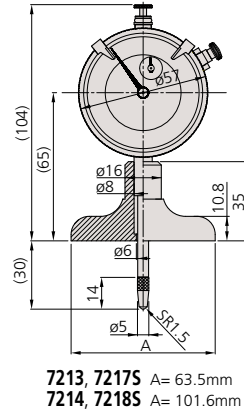
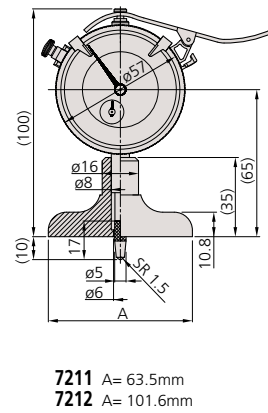
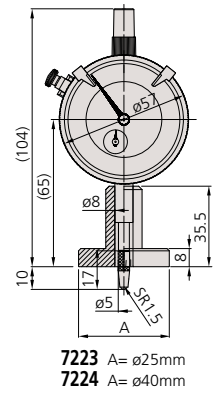
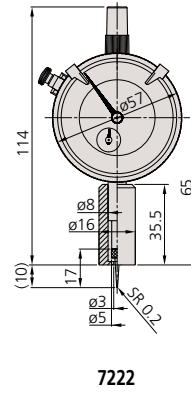
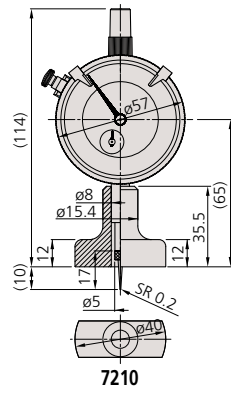
905338: SPC cable (40" / 1m)  
 905409: SPC cable (80" / 2m)  
 139167: .5" Extension Rod  
 301655: 1" Extension Rod  
 301657: 2" Extension Rod  
 301659: 4" Extension Rod  
 303611: 10mm Extension Rod  
 303612: 20mm Extension Rod  
 303613: 30mm Extension Rod  
 303614: 100mm Extension Rod

## Base Only (3/8" dia. hole)

Part No.	length	remark
902164:	2.5"	72175, 7237, 547-2175, 547-2575
902165:	4"	72185, 7238, 547-2185, 547-2585

# DIMENSIONS

Unit: mm



# Tire Thread Depth Gage

**SERIES 571, 700**

## FEATURES

- ABSOLUTE Digimatic Thread Depth Gage can keep track of the origin point once set for the entire life of the battery. (Series 571)
- Specially designed to measure tire thread depth.
- Plastic construction for light-weight use. (Series 700)
- With SPC data output. (Series 571)



571-100MOT-10



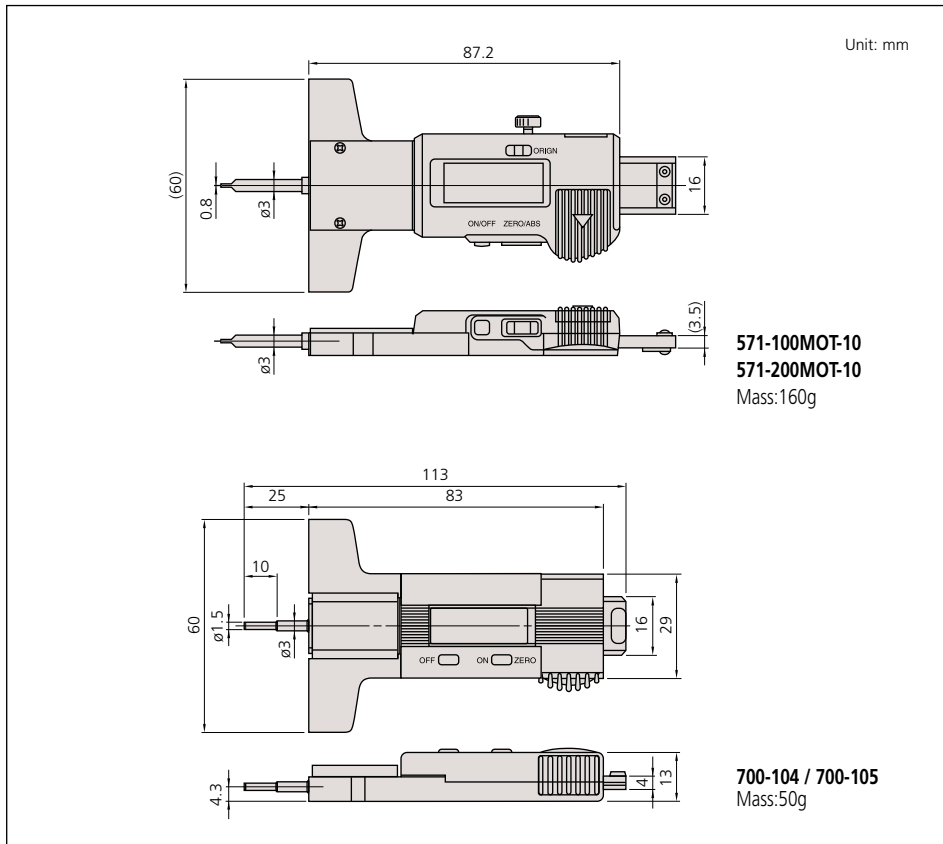
700-105

## SPECIFICATIONS

Metric			
Range	Order No.	Resolution	Accuracy
0 - 25mm	<b>571-100MOT-10</b>	0.01mm	±0.02mm
0 - 25mm	<b>700-104</b>	0.1mm	±0.2mm

Inch/Metric			
Range	Order No.	Resolution	Accuracy
0 - 1" / 0 - 25.4mm	<b>571-200MOT-10</b>	.0005" / 0.01mm	±.0005"
0 - 1" / 0 - 25.4mm	<b>700-105</b>	.001" / 0.1mm	±.008"

## DIMENSIONS AND MASS



## Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: .0005"/0.01mm or 0.01mm (571 Series)  
 .001"/0.1mm or 0.1mm (700 Series)  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 2 years under normal use  
 (approx. 2000 hours: Series 571)

## Function

Origin-set\*, Zero-setting, Power ON/OFF,  
 inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error  
 \*Series 571

## Optional Accessories for Series 571

- 959143:** Data hold unit
- 959149:** SPC cable with data switch (40" / 1m)
- 959150:** SPC cable with data switch (80" / 2m)







**Gage Block**



**Height Master**



**Reference Gages**



**Granite Surface Plates & Bench Comparator**



**CERA/Steel Combination Gage Block Sets**



**Step Master**



**Ceramic Straight Master**

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# Gage Block

## SERIES 516

### FEATURES

Precision gage blocks are the primary standards vital to dimensional quality control in the manufacture of parts. Mitutoyo offers

a complete selection of gage blocks available in a choice of rectangular or square, metric or inch and steel or CERA (ceramic) types.

### Accuracy

Gage blocks offered by an all-round precision measuring machine manufacturer, Mitutoyo, guarantee such a high accuracy that users can use them without anxiety. 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 lapping technique, developed for more than a half century, enables us to achieve the best flatness and surface roughness needed for gage blocks and realize a great wringing force.

### Abrasion Resistance and Dimensional Stability

High-carbon high-chrome steel is employed to sufficiently satisfy a variety of material characteristics required for gage blocks. A high degree of hardness, obtained by our heat treatment technology and that reassures users, as well as methodically repeated heat treatment, have successfully reduced deterioration change over time to the minimum.

### CERA Blocks

CERA blocks, made of ceramic materials with superior surface quality, that were developed by Mitutoyo's ultra precision machining techniques solve all problems that the steel gage block had.

#### 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

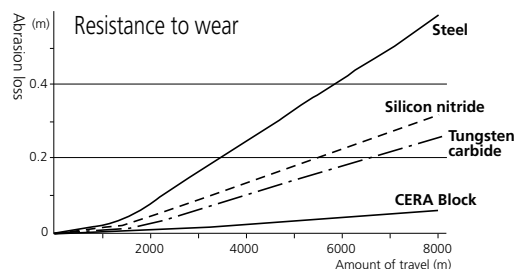
CERA Blocks have 10 times the abrasion resistance of steel gage blocks.

#### 4. Dimensional Stability

CERA Blocks are free from dimensional change over time.

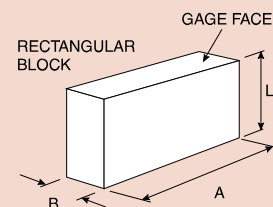
#### 5. Marking

The black characters, indicating the nominal length, are inscribed by laser and are clearly visible against the white surface of the block.



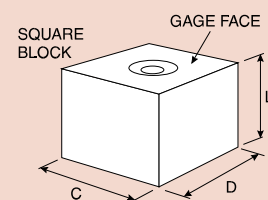
### Selecting Gage Blocks

- Select gage blocks in accordance with the combination range required. If a large length is required, add a long block set.
- Select gage blocks in accordance with the minimum length step required. Add wear block sets if necessary.
- If a set containing a large number of gage blocks is selected, the number of combination gage blocks required for a length is reduced and the number of combinations is increased. The accuracy will be retained and damage will be reduced.
- The specific gage block set for micrometer inspection and caliper inspection is available.
- If using only one length repeatedly, it is a good idea to purchase discrete gage blocks.
- The 2mm-based gage blocks, which take the base of the minimum length step as 2mm, are easy to handle and will not warp, as compared to the 1mm-based gage blocks.



### Rectangular Block

Gage Size	Face Width (A)	Face Depth (B)
Up to 2"	1.181"	.355"
Over .2" up to 40"	1.378"	.355"
Up to 10mm	30mm	9mm
Over 10mm up to 1000mm	35mm	9mm



### Square Block

Gage Size	Face Width (C)	Face Depth (D)
Inch (up to 40")	.95"	.95"
Metric (up to 1000mm)	24.1mm	24.1mm

## Grade and Application

Refer to the following table to select the gage block grade according to usage.

	Applications	Grade
Workshop use	<ul style="list-style-type: none"> <li>Mounting tools and cutters</li> </ul>	AS-1 or AS-2
	<ul style="list-style-type: none"> <li>Manufacturing gages</li> <li>Calibrating instruments</li> </ul>	0 or AS-1
Inspection use	<ul style="list-style-type: none"> <li>Inspecting mechanical parts, tools, etc.</li> </ul>	0 or AS-1
	<ul style="list-style-type: none"> <li>Checking the accuracy of gages</li> <li>Calibrating instruments</li> </ul>	00 or 0
Calibration use	<ul style="list-style-type: none"> <li>Checking the accuracy of gage blocks for workshop</li> <li>Checking the accuracy of gage blocks for inspection</li> <li>Checking the accuracy of instruments</li> </ul>	K or 00
Reference use	<ul style="list-style-type: none"> <li>Checking the accuracy of gage blocks for calibration</li> <li>For academic research</li> </ul>	K

### Grade AS-1:

These gage blocks are intended for shop floor use to set and calibrate fixtures as well as precision instruments.

### Grade 0:

This grade is used within an inspection area to verify the accuracy of plug and snap gages as well as for setting electronic measuring devices.

### Grade 00:

These higher accuracy gages 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 gage blocks.

### Grade K:

Gage 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 gage blocks which are calibrated by comparison.

### Combination of a Required Length

Multiple combinations of gage blocks can be used to make a required length. Care should be exercised in the following points.

- Use as few gage blocks as possible to obtain the required length. (= Select thick gage blocks whenever possible.)
- Select gage blocks starting with the one that has least significant digit required, and then work up to ones with more significant digits.
- There are multiple combinations for the integer part of a length. To prevent wear as much as possible, do not always use the same gage blocks.

Example combination

Required length = 45.6785mm

#### For the 1mm-based gage block set (112 pcs.)

```

1.005
1.008
1.17
17.5
+ 25
-----
45.6785mm
    
```

#### For the 2mm-based gage block set (112 pcs.)

```

2.005
2.008
2.17
14.5
+ 25
-----
45.6785mm
    
```

## 6. Anti-magnetic Nature Keeps Away Steel Powders

### 7. High wringing force

An even, dense tissue can maintain a strong wringing force.



### 8. Material of CERA block

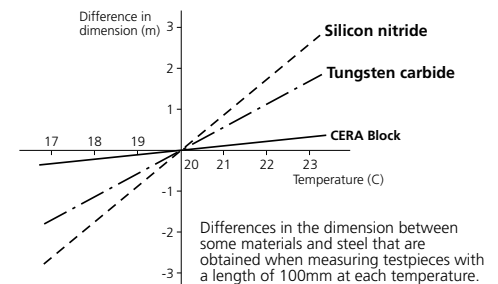
Property	Material	CERA Block (ZrO <sub>2</sub> )	Steel (Fe)	Carbide (WC-Co)	Silicon nitride (Si <sub>3</sub> N <sub>4</sub> )
Hardness (HV)		1350	800	1650	1500
Coefficient of thermal expansion (10 <sup>-6</sup> /K)		9.3±0.5	10.8±0.5	5.5±1.0	2
Flexural strength by 3-point bending (MPa)		1270	1960	1960	580
Fracture toughness K1c (MPa•m <sup>1/2</sup> )		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

### 9. Closest Expansion Coefficient to Steel

The thermal expansion coefficient of a CERA Block is quite similar to that of a steel gage block.

### 10. Highly Resistant Against Drops and Other Shocks

The CERA Block material is one of the toughest ceramics materials. It is extremely difficult to crack under normal use.



## Features of Square Gage Blocks

### 1. Perfect wringing is possible using the center hole.

After wringing the square gage blocks, an optional tie rod can be inserted through the center hole to fix the blocks using a screw.

### 2. A height reference standard can easily be made.

A precision height reference standard can be made easily and inexpensively using accessories such as the plain jaw and block base.

### 3. A dedicated inspection jig can be easily be made.

A dedicated inspection jig for periodic inspection of instruments can be made easily and inexpensively.

### 4. A wide measuring surface with cross section dimensions of [24.1 x 24.1mm / .95 x .95"] is available.

A square gage block can retain stable orientation both longitudinally and laterally. A wide range of application measurements can be made, including cutting tool positioning, angle measurement with a sine bar, taper measurement with a roller, and inspection of depth micrometers.



## Long and Ultra-Thin Gage Blocks

Mitutoyo offers extra thin gage blocks from 0.10 mm to 0.99 mm (increments of 0.01 mm) as well as long gage blocks up to 1,000 mm as standard products.

# Gage Block

## SERIES 516

### Accuracies of Mitutoyo Gage Blocks

All Mitutoyo gage blocks meet or exceed all known specifications. The flatness, parallelism and surface finish necessary to achieve the required accuracies are the same as or better than government requirements.

### ASME (American Society of Mechanical Engineers) Deviations and Tolerance on Length for Metric and inch Gage Blocks: ASME B89.1.9-2002 (USA)

Nominal Length Range l <sub>n</sub> in inches	Calibration Grade K		Grade 00		Grade 0		Grade AS-1		Grade AS-2	
	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μin.	Tolerance for the Variation In Length ± l <sub>v</sub> μin.	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μin.	Tolerance for the Variation In Length ± l <sub>v</sub> μin.	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μin.	Tolerance for the Variation In Length ± l <sub>v</sub> μin.	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μin.	Tolerance for the Variation In Length ± l <sub>v</sub> μin.	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μin.	Tolerance for the Variation In Length ± l <sub>v</sub> μin.
l <sub>n</sub> ≤ .05	12	2	4	2	6	4	12	6	24	12
.05 l <sub>n</sub> ≤ .4	10	2	3	2	5	4	8	6	18	12
.45 l <sub>n</sub> ≤ 1	12	2	3	2	6	4	12	6	24	12
1 l <sub>n</sub> ≤ 2	16	2	4	2	8	4	16	6	32	12
2 l <sub>n</sub> ≤ 3	20	2	5	3	10	4	20	6	40	14
3 l <sub>n</sub> ≤ 4	24	3	6	3	12	5	24	8	48	14
4 l <sub>n</sub> ≤ 5	32	3	8	3	16	5	32	8	64	16
5 l <sub>n</sub> ≤ 6	32	3	8	3	16	5	32	8	64	16
6 l <sub>n</sub> ≤ 7	40	4	10	4	20	6	40	10	80	16
7 l <sub>n</sub> ≤ 8	40	4	10	4	20	6	40	10	80	16
8 l <sub>n</sub> ≤ 10	48	4	12	4	24	6	48	10	104	18
10 l <sub>n</sub> ≤ 12	56	4	14	4	28	7	56	10	112	20
12 l <sub>n</sub> ≤ 16	72	5	18	5	36	8	72	12	144	20
16 l <sub>n</sub> ≤ 20	88	6	20	6	44	10	88	14	176	24
20 l <sub>n</sub> ≤ 24	104	6	25	6	52	10	104	16	200	28
24 l <sub>n</sub> ≤ 28	120	7	30	7	60	12	120	18	240	28
28 l <sub>n</sub> ≤ 32	136	8	34	8	68	12	136	20	260	32
32 l <sub>n</sub> ≤ 36	152	8	38	8	76	14	152	20	300	36
36 l <sub>n</sub> ≤ 40	160	10	40	10	80	16	168	24	320	40

Nominal Length Range l <sub>n</sub> in mm	Calibration Grade K		Grade 00		Grade 0		Grade AS-1		Grade AS-2	
	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μm	Tolerance for the Variation In Length ± l <sub>v</sub> μm	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μm	Tolerance for the Variation In Length ± l <sub>v</sub> μm	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μm	Tolerance for the Variation In Length ± l <sub>v</sub> μm	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μm	Tolerance for the Variation In Length ± l <sub>v</sub> μm	Limit Deviations of Length at any Point From Nominal Length ± l <sub>e</sub> μm	Tolerance for the Variation In Length ± l <sub>v</sub> μm
l <sub>n</sub> ≤ 0.5	0.30	0.05	0.10	0.05	0.14	0.10	0.30	0.16	0.60	0.30
0.5 l <sub>n</sub> ≤ 10	0.20	0.05	0.07	0.05	0.12	0.10	0.20	0.16	0.45	0.30
10 l <sub>n</sub> ≤ 25	0.30	0.05	0.07	0.05	0.14	0.10	0.30	0.16	0.60	0.30
25 l <sub>n</sub> ≤ 50	0.40	0.06	0.10	0.06	0.20	0.10	0.40	0.18	0.80	0.30
50 l <sub>n</sub> ≤ 75	0.50	0.06	0.12	0.06	0.25	0.12	0.50	0.18	1.00	0.35
75 l <sub>n</sub> ≤ 100	0.60	0.07	0.15	0.07	0.30	0.12	0.60	0.20	1.20	0.35
100 l <sub>n</sub> ≤ 150	0.80	0.08	0.20	0.08	0.40	0.14	0.80	0.20	1.60	0.40
150 l <sub>n</sub> ≤ 200	1.00	0.09	0.25	0.09	0.50	0.16	1.00	0.25	2.00	0.40
200 l <sub>n</sub> ≤ 250	1.20	0.10	0.30	0.10	0.60	0.16	1.20	0.25	2.40	0.45
250 l <sub>n</sub> ≤ 300	1.4	0.10	0.35	0.10	0.70	0.18	1.40	0.25	2.80	0.50
300 l <sub>n</sub> ≤ 400	1.80	0.12	0.45	0.12	0.90	0.20	1.80	0.30	3.60	0.50
400 l <sub>n</sub> ≤ 500	2.20	0.14	0.50	0.14	1.10	0.25	2.20	0.35	4.40	0.60
500 l <sub>n</sub> ≤ 600	2.60	0.16	0.65	0.16	1.30	0.25	2.60	0.40	5.00	0.70
600 l <sub>n</sub> ≤ 700	3.00	0.18	0.75	0.18	1.50	0.30	3.00	0.45	6.00	0.70
700 l <sub>n</sub> ≤ 800	3.40	0.20	0.85	0.20	1.70	0.30	3.40	0.50	6.50	0.80
800 l <sub>n</sub> ≤ 900	3.80	0.20	0.95	0.20	1.90	0.35	3.80	0.50	7.50	0.90
900 l <sub>n</sub> ≤ 1000	4.20	0.25	1.00	0.25	2.00	0.40	4.20	0.60	8.00	1.00

### Mitutoyo Gage Blocks and Inspection Certificates

A Certificate of Inspection is furnished with all Mitutoyo gage blocks with a serial number on the case and an identification number on each block. The deviation of each block is registered. For this inspection, each gage block is measured relative to the upper level master using a gage block comparator. Grade K gage blocks are manufactured by absolute measurement using an interferometer. The gage block set and discrete gage block are supplied with a Certificate of Calibration. The Certificate of Calibration specifies the deviation from the nominal length. (Comparative measurement, however, is performed for all square gage blocks.)



A Certificate of Accuracy, traceable to the NIST, is furnished with each MITUTOYO gage block set and individual block



# Metric Rectangular Gage Block Set

## SERIES 516 — 1mm Base Block Set



Steel 112-block set



Steel 103-block set



Steel 47-block set



CERA 112-block set

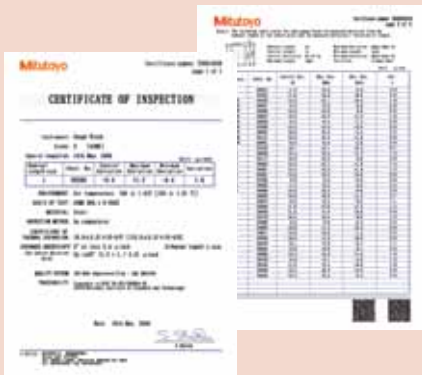


CERA 56-block set



CERA/Steel combination  
47-block set

Provided with Inspection Certificate



### SPECIFICATIONS

#### 1mm Base Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
112	516-531-56	516-541-56	K	1.0005		1
	516-937-26	516-337-26	00	1.001 - 1.009	0.001	9
	516-938-26	516-338-26	0	1.01 - 1.49	0.01	49
	516-939-26	516-339-26	AS-1	0.5 - 24.5	0.5	49
	516-940-26	516-340-26	AS-2	25 - 100	25	4
	516-533-56	516-542-56	K	1.005		1
103	516-941-26	516-341-26	00	1.01 - 1.49	0.01	49
	516-942-26	516-342-26	0	0.5 - 24.5	0.5	49
	516-943-26	516-343-26	AS-1	25 - 100	25	4
	516-944-26	516-344-26	AS-2			
	516-535-56	516-543-56	K	1.001 - 1.009	0.001	9
	516-945-26	516-345-26	00	1.01 - 1.49	0.01	49
87	516-946-26	516-346-26	0	0.5 - 9.5	0.5	19
	516-947-26	516-347-26	AS-1	10 - 100	10	10
	516-948-26	516-348-26	AS-2			
	516-536-56	516-544-56	K	0.5		1
	516-953-26	516-353-26	00	1.001 - 1.009	0.001	9
	516-954-26	516-354-26	0	1.01 - 1.09	0.01	9
56	516-955-26	516-355-26	AS-1	1.1 - 1.9	0.1	9
	516-956-26	516-356-26	AS-2	1 - 24	1	24
				25 - 100	25	4
	516-537-56	516-545-56	K	1.005		1
	516-957-26	516-357-26	00	1.01 - 1.09	0.01	9
	516-958-26	516-358-26	0	1.1 - 1.9	0.1	9
47	516-959-26	516-359-26	AS-1	1 - 24	1	24
	516-960-26	516-360-26	AS-2	25 - 100	25	4

# Metric Rectangular Gage Block Set

**SERIES 516 — Long Block Set, Wear Block Set**



CERA 8-block set



Steel 8-block set

Provided with Inspection Certificate

## SPECIFICATIONS

### Long Block Set

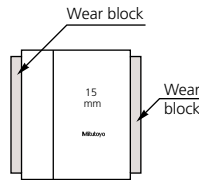
Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		ASME	Size	Step
8	—	516-547-56	K	25-200	25	8
	—	516-164-26	00	—	—	—
	516-115-26	516-165-26	0	—	—	—
	516-116-26	516-166-26	AS-1	—	—	—
8	516-540-26	516-546-56	K	125 - 175	25	3
	516-701-26	516-731-26	00	200 - 250	50	2
	516-702-26	516-732-26	0	300 - 500	100	3
	516-703-26	516-733-26	AS-1	—	—	—
	—	—	—	—	—	—



CERA 2-block set



Steel 2-block



## SPECIFICATIONS

### Wear Block Set

Blocks per set	Order No.*		Grade	Blocks included in set	
	Carbide	CERA		ASME	Size
2	516-807-26	516-832-26	0	1	2
	516-806-26	516-833-26	AS-1	—	—
	—	—	—	—	—
2	516-803-26	516-830-26	0	2	2
	516-802-26	516-831-26	AS-1	—	—



# Inch Rectangular Gage Block Set

**SERIES 516 — Inch Block Set, Thin Block Set, Long Block Set, Wear Block Set**

## SPECIFICATIONS

### Inch Block Set

Blocks per set	Order No.			Grade	Blocks included in set		
	Steel	CERA	Steel/CERA		Size	Step	Qty.
<b>81</b>	516-549-56	516-557-56	—	K	.1001 – .1009	.0001	9
	516-901-26	516-301-26	—	00	.101 – .149	.001	49
	516-902-26	516-302-26	516-302-27**	0	.05 – .95	.05	19
	516-903-26	516-303-26	—	AS-1	1 - 4	1	4
	516-904-26	516-304-26	—	AS-2			
<b>35</b>	516-550-56	516-558-56	—	K	.10005		1
	516-913-26	516-313-26	—	00	.1001 – .1009	.0001	9
	516-914-26	516-314-26	—	0	.101 – .109	.001	9
	516-915-26	516-315-26	—	AS-1	.11 – .19	.01	9
	516-916-26	516-316-26	—	AS-2	.1 - .3	.1	3
					.5, 1, 2, 4	4	

\*\*CERA blocks are adopted for frequently-used blocks.  
81-block set: All are CERA blocks. Except 2", 3", and 4" are Steel blocks

Provided with Inspection Certificate



## SPECIFICATIONS

### Thin Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>28</b>	516-551-56	—	K	.02005		1
	516-917-26	—	00	.0201 – .0209	.0001	9
	516-918-26	—	0	.021 – .029	.001	9
	516-919-26	—	AS-1	.01 – .09	.01	9
	516-920-26	—	AS-2			
<b>10</b>	516-926-26	—	0	.005 - .050	.005	10
	516-927-26	—	AS-1			

## SPECIFICATIONS

### Long Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>8</b>	516-126-26	516-176-26	0	1-8	1	8
	516-127-26	516-177-26	AS-1			
<b>8</b>	—	516-564-56	K	5 - 7	1	3
	—	516-741-26	00	8, 10, 12	2	3
	516-712-26	516-742-26	0	16, 20	4	2
	516-713-26	516-743-26	AS-1			

## SPECIFICATIONS

### Wear Block Set

Blocks per set	Order No.		Grade	Blocks included in set	
	Carbide	CERA		Size	Qty.
<b>2</b>	516-809-26	516-836-26	0	.05	2
	516-808-26	516-837-26	AS-1		
<b>2</b>	516-805-26	516-834-26	0	.1	2
	516-804-26	516-835-26	AS-1		

# Micrometer Inspection Gage Block Sets

## SERIES 516

- Can be fixed a series of gage blocks to be used for micrometer inspection.
- Can be measured in both vertical and horizontal posture.
- Parallelism is measured by attaching the optical parallel (optional accessory) to the GB set.

### SPECIFICATIONS

#### Metric Micro Checker (holder only)

Order No.	516-607
Applicable gage block set	516-106-26, 516-107-26, 516-156-26, 516-157-26
Applicable gage block size (mm)	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25

#### Inch/Metric Micro Checker (holder only)

Order No.	516-608
Applicable gage block set	516-921-26, 516-922-26, 516-923-26, 516-321-26, 516-322-26, 516-323-26
Applicable gage block size (inch)	.105, .210, .315, .420, .5, .605, .815, .920

#### Metric Block Set

Blocks per set	Order No.		Grade	Blocks included in set
	Steel	CERA		
10	516-103-26	516-152-26	0	1.00, 1.25, 1.50, 2, 3, 5, 10, 15, 20, 25mm
	516-101-26	516-153-26	AS-1	
10	516-106-26	516-156-26	0	2.5, 5.1, 7.7, 10.3, 12.9, 15, 17.6, 20.2, 22.8, 25mm • Optical parallel (t = 12mm)
	516-107-26	516-157-26	AS-1	

#### Inch Block Set

Blocks per set	Order No.		Grade	Blocks included in set
	Steel	CERA		
10	516-552-56	516-559-56	K	.105, .210, .315, .420, .500, .605, .710, .815, .920, 1" • Optical parallel (t = .5")
	516-921-26	516-321-26	00	
	516-922-26	516-322-26	0	
	516-923-26	516-323-26	AS-1	
10	516-529-26*	516-319-26*	0	.087, .189, .307, .409, .472, .598, .669, .772, .890, 1" • Optical parallel (t = .5")
9	516-554-56	516-561-56	K	.0625, .100, .125, .200, .250, .300, .500, 1, 2" • Optical parallel (t = .5")
	516-929-26	516-333-26	00	
	516-930-26	516-334-26	0	
	516-931-26	516-335-26	AS-1	
9	—	516-563-56	K	.0625, .100, .125, .200, .250, .300, .500, 1, 2"
	—	516-329-26	00	
	516-934-26	516-330-26	0	
	516-935-26	516-331-26	AS-1	

\* For QuantuMike

### Micro Checker



(Gage Blocks are optional)

# Bore Gage Calibration Kit

## SERIES 516

### SPECIFICATIONS

Blocks per set	Order No.	Grade	Blocks included in set
	Carbide		Size
9	516-120-26	0	.04", .08", .16", .2", .4", .8", 1", 2", 3" 2pcs. of 619970 (plain jaw) and 619004 (160mm holder)

# Individual Metric Rectangular Gage Block

## FEATURES

- If using only one length repeatedly, it is a good idea to purchase discrete gage blocks.
- Each gage block is supplied with a Certificate of Inspection.
- Each Grade K gage block of ASME standard is specially supplied with a Certificate of Calibration which certifies that the gage block was manufactured through interferometry.



## Suffix Number for Selecting Standard and Certificate Provided

ASME	
Grade	Steel, CERA
K	-516**
00	-521*
0	-531*
AS-1	-541*
AS-2	-551*

\* provided with Inspection Certificate  
 \*\* provided with Calibration Certificate and Inspection Certificate

Example: 611821-521  
 0.1mm gage block in grade 00.  
 We make custom length gage block length:  
 0.1-1000mm



Inspection Certificate

## SPECIFICATIONS

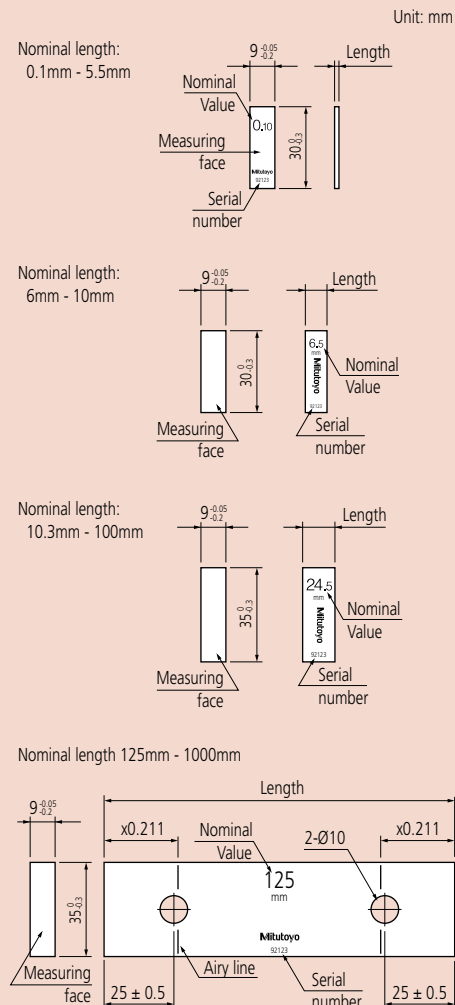
### Metric Block

Length (mm)	Order No.		Length (mm)	Order No.		Length (mm)	Order No.	
	Steel	CERA		Steel	CERA		Steel	CERA
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	613551
0.15	611822	—	0.58	611899	—	0.992	611552	613552
0.16	611864	—	0.59	611900	—	0.993	611553	613553
0.17	611865	—	0.6	611901	—	0.994	611554	613554
0.18	611866	—	0.61	611902	—	0.995	611555	613555
0.19	611867	—	0.62	611903	—	0.996	611556	613556
0.2	611823	—	0.63	611904	—	0.997	611557	613557
0.21	611868	—	0.64	611905	—	0.998	611558	613558
0.22	611869	—	0.65	611906	—	0.999	611559	613559
0.23	611870	—	0.66	611907	—	1	611611	613611
0.24	611871	—	0.67	611908	—	1.0005	611520	613520
0.25	611824	—	0.68	611909	—	1.001	611521	613521
0.26	611872	—	0.69	611910	—	1.002	611522	613522
0.27	611873	—	0.7	611911	—	1.003	611523	613523
0.28	611874	—	0.71	611912	—	1.004	611524	613524
0.29	611875	—	0.72	611913	—	1.005	611525	613525
0.3	611825	—	0.73	611914	—	1.006	611526	613526
0.31	611876	—	0.74	611915	—	1.007	611527	613527
0.32	611877	—	0.75	611916	—	1.008	611528	613528
0.33	611878	—	0.76	611917	—	1.009	611529	613529
0.34	611879	—	0.77	611918	—	1.01	611561	613561
0.35	611826	—	0.78	611919	—	1.02	611562	613562
0.36	611880	—	0.79	611920	—	1.03	611563	613563
0.37	611881	—	0.8	611921	—	1.04	611564	613564
0.38	611882	—	0.81	611922	—	1.05	611565	613565
0.39	611883	—	0.82	611923	—	1.06	611566	613566
0.4	611827	—	0.83	611924	—	1.07	611567	613567
0.41	611884	—	0.84	611925	—	1.08	611568	613568
0.42	611885	—	0.85	611926	—	1.09	611569	613569
0.43	611886	—	0.86	611927	—	1.1	611570	613570
0.44	611887	—	0.87	611928	—	1.11	611571	613571
0.45	611828	—	0.88	611929	—	1.12	611572	613572
0.46	611888	—	0.89	611930	—	1.13	611573	613573
0.47	611889	—	0.9	611931	—	1.14	611574	613574
0.48	611890	—	0.91	611932	—	1.15	611575	613575
0.49	611891	—	0.92	611933	—	1.16	611576	613576
0.5	611506	613506	0.93	611934	—	1.17	611577	613577
0.51	611892	—	0.94	611935	—	1.18	611578	613578
0.52	611893	—	0.95	611936	—	1.19	611579	613579

Length (mm)	Order No.		Length (mm)	Order No.		Length (mm)	Order No.	
	Steel	CERA		Steel	CERA		Steel	CERA
1.2	611580	613580	2.17	611717	—	13	611623	613623
1.21	611581	613581	2.18	611718	—	13.5	611653	613653
1.22	611582	613582	2.19	611719	—	14	611624	613624
1.23	611583	613583	2.2	611720	—	14.5	611654	613654
1.24	611584	613584	2.21	611721	—	15	611625	613625
1.25	611585	613585	2.22	611722	—	15.5	611655	613655
1.26	611586	613586	2.23	611723	—	16	611626	613626
1.27	611587	613587	2.24	611724	—	16.5	611656	613656
1.28	611588	613588	2.25	611725	—	17	611627	613627
1.29	611589	613589	2.26	611726	—	17.5	611657	613657
1.3	611590	613590	2.27	611727	—	17.6	611854	613854
1.31	611591	613591	2.28	611728	—	18	611628	613628
1.32	611592	613592	2.29	611729	—	18.5	611658	613658
1.33	611593	613593	2.3	611730	—	19	611629	613629
1.34	611594	613594	2.31	611731	—	19.5	611659	613659
1.35	611595	613595	2.32	611732	—	20	611672	613672
1.36	611596	613596	2.33	611733	—	20.2	611855	613855
1.37	611597	613597	2.34	611734	—	20.5	611660	613660
1.38	611598	613598	2.35	611735	—	21	611631	613631
1.39	611599	613599	2.36	611736	—	21.5	611661	613661
1.4	611600	613600	2.37	611737	—	22	611632	613632
1.41	611601	613601	2.38	611738	—	22.5	611662	613662
1.42	611602	613602	2.39	611739	—	22.8	611856	613856
1.43	611603	613603	2.4	611740	—	23	611633	613633
1.44	611604	613604	2.41	611741	—	23.5	611663	613663
1.45	611605	613605	2.42	611742	—	24	611634	613634
1.46	611606	613606	2.43	611743	—	24.5	611664	613664
1.47	611607	613607	2.44	611744	—	25	611635	613635
1.48	611608	613608	2.45	611745	—	25.25	611754	613754
1.49	611609	613609	2.46	611746	—	30	611673	613673
1.5	611641	613641	2.47	611747	—	35	611755	613755
1.6	611516	613516	2.48	611748	—	40	611674	613674
1.7	611517	613517	2.49	611749	—	41.3	611857	613857
1.8	611518	613518	2.5	611642	613642	45	611756	613756
1.9	611519	613519	2.6	611750	—	50	611675	613675
2	611612	613612	2.7	611751	—	60	611676	613676
2.0005	611690	—	2.8	611752	—	70	611677	613677
2.001	611691	—	2.9	611753	—	75	611801	613801
2.002	611692	—	3	611613	613613	80	611678	613678
2.003	611693	—	3.5	611643	613643	90	611679	613679
2.004	611694	—	4	611614	613614	100	611681	613681
2.005	611695	—	4.5	611644	613644	125	611802	613802
2.006	611696	—	5	611615	613615	131.4	611858	613858
2.007	611697	—	5.1	611850	613850	150	611803	613803
2.008	611698	—	5.5	611645	613645	175	611804	613804
2.009	611699	—	6	611616	613616	200	611682	613682
2.01	611701	—	6.5	611646	613646	250	611805	613805
2.02	611702	—	7	611617	613617	300	611683	613683
2.03	611703	—	7.5	611647	613647	400	611684	613684
2.04	611704	—	7.7	611851	613851	500	611685	613685
2.05	611705	—	8	611618	613618	600	611840	—
2.06	611706	—	8.5	611648	613648	700	611841	—
2.07	611707	—	9	611619	613619	750	611842	—
2.08	611708	—	9.5	611649	613649	800	611843	—
2.09	611709	—	10	611671	613671	900	611844	—
2.1	611710	—	10.3	611852	613852	1000	611845	—
2.11	611711	—	10.5	611650	613650			
2.12	611712	—	11	611621	613621			
2.13	611713	—	11.5	611651	613651			
2.14	611714	—	12	611622	613622			
2.15	611715	—	12.5	611652	613652			
2.16	611716	—	12.9	611853	613853			

Metric Wear Block	
Length (mm)	Order No.
	Tungsten carbide
1	612611
2	612612

## DIMENSIONS



## Suffix Number for Selecting Standard and Certificate Provided

ASME	Steel, CERA
K	-516**
00	-521*
0	-531*
AS-1	-541*
AS-2	-551*

\* provided with Inspection Certificate  
 \*\* provided with Calibration Certificate and Inspection Certificate

Example: 611310-521

.1" gage block in grade 00.

We make custom length gage block length:

.004 - 20"

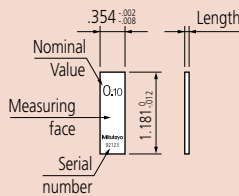


Inspection Certificate

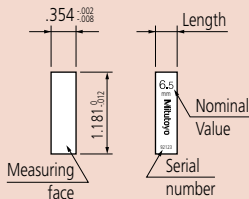
## DIMENSIONS

Unit: Inch

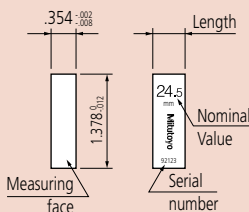
Nominal length:  
.004 - .25"



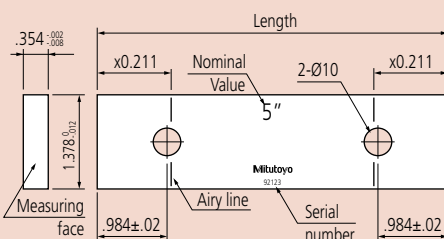
Nominal length:  
.3 - 4"



Nominal length:  
.45 - 4"



Nominal length 5 - 20"



# Individual Inch Rectangular Gage Block

## SPECIFICATIONS

### Inch Block

Length (inch)	Order No.	
	Steel	CERA
.004	611304	—
.005	611305	—
.006	611306	—
.007	611307	—
.008	611308	—
.009	611309	—
.01	611310	—
.011	611311	—
.012	611312	—
.013	611313	—
.014	611314	—
.015	611315	—
.016	611316	—
.017	611317	—
.018	611318	—
.019	611319	—
.02	611320	—
.02005	611240	—
.0201	611231	—
.0202	611232	—
.0203	611233	—
.0204	611234	—
.0205	611235	—
.0206	611236	—
.0207	611237	—
.0208	611238	—
.0209	611239	—
.021	611321	—
.022	611322	—
.023	611323	—
.024	611324	—
.025	611325	—
.026	611326	—
.027	611327	—
.028	611328	—
.029	611329	—
.03	611330	—
.031	611331	—
.03125 (1/32)	611101	613103
.032	611332	—
.033	611333	—
.034	611334	—
.035	611335	—
.036	611336	—
.037	611337	—
.038	611338	—
.039	611339	—
.04	611340	—
.041	611341	—
.042	611342	—
.043	611343	—
.044	611344	—
.045	611345	—
.046	611346	—
.046875 (3/64)	611102	613104
.047	611347	—
.048	611348	—
.049	611349	—
.05	611105	613105

Length (inch)	Order No.	
	Steel	CERA
.06	611106	—
.0625	611303	613303
.07	611107	—
.078125 (5/64)	611103	613100
.08	611108	—
.09	611109	—
.09375 (3/32)	611104	613101
.1	611191	613191
.100025	611111	613110
.10005	611135	613135
.100075	611112	613111
.1001	611121	613121
.1002	611122	613122
.1003	611123	613123
.1004	611124	613124
.1005	611125	613125
.1006	611126	613126
.1007	611127	613127
.1008	611128	613128
.1009	611129	613129
.101	611141	613141
.102	611142	613142
.103	611143	613143
.104	611144	613144
.105	611145	613145
.106	611146	613146
.107	611147	613147
.108	611148	613148
.109	611149	613149
.109375 (7/64)	611110	613102
.11	611150	613150
.111	611151	613151
.112	611152	613152
.113	611153	613153
.114	611154	613154
.115	611155	613155
.116	611156	613156
.117	611157	613157
.118	611158	613158
.119	611159	613159
.12	611160	613160
.121	611161	613161
.122	611162	613162
.123	611163	613163
.124	611164	613164
.125	611165	613165
.126	611166	613166
.127	611167	613167
.128	611168	613168
.129	611169	613169
.13	611170	613170
.131	611171	613171
.132	611172	613172
.133	611173	613173
.134	611174	613174
.135	611175	613175
.136	611176	613176
.137	611177	613177
.138	611178	613178

Length (inch)	Order No.	
	Steel	CERA
.139	611179	613179
.14	611180	613180
.141	611181	613181
.142	611182	613182
.143	611183	613183
.144	611184	613184
.145	611185	613185
.146	611186	613186
.147	611187	613187
.148	611188	613188
.149	611189	613189
.15	611115	613115
.16	611116	613116
.17	611117	613117
.18	611118	613118
.19	611119	613119
.2	611192	613192
.21	611221	613221
.25	611212	613212
.3	611193	613193
.315	611209	613209
.35	611213	613213
.375 (3/8)	611113	613112
.4	611194	613194
.420	611210	613210
.45	611214	613214
.5	611195	613195
.55	611215	613215
.6	611196	613196
.605	611211	613211
.65	611216	613216
.7	611197	613197
.710	611220	613220
.75	611217	613217
.8	611198	613198
.815	611226	613226
.85	611218	613218
.9	611199	613199
.920	611227	613227
.95	611219	613219
1	611201	613201
2	611202	613202
3	611203	613203
4	611204	613204
5	611205	613205
6	611206	613206
7	611207	613207
8	611208	613208
10	611222	613222
12	611223	613223
16	611224	613224
20	611225	613225

### Inch Wear Block

Length (inch)	Order No.
	Tungsten carbide
.05	612105
.1	612191

# Rectangular Gage Block with CTE

## Gage Blocks with Thermal Expansion Coefficient Data

### FEATURES

- Mitutoyo offers top-level gage blocks (steel and ceramic) which are superior to the K class blocks, with their quality supported by Mitutoyo's best technologies.
- Comes with a highly accurate thermal expansion coefficient measured with a high accuracy double-faced interferometer (DFI).
- The high accuracy gage block interferometer (GBI) guarantees a high dimensional accuracy.
- Mitutoyo offers rectangular gage blocks, having nominal values from 100 to 500mm Grade: K class in ASME  
 Uncertainty of thermal expansion coefficient:  $0.035 \times 10^{-6}/K$  ( $k = 2$ )  
 Uncertainty of dimension measurement: 30nm ( $k = 2$ ), for 100mm block



double-faced interferometer (DFI)

### SPECIFICATIONS

Metric Block with CTE		
Length (mm)	Order No. Steel	Order No. CERA
100	611681-51B	613681-51B
125	611802-51B	613802-51B
150	611803-51B	613803-51B
175	611804-51B	613804-51B
200	611682-51B	613682-51B
250	611805-51B	613805-51B
300	611683-51B	613683-51B
400	611684-51B	613684-51B
500	611685-51B	613685-51B

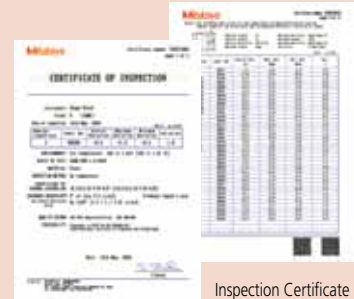
Inch Block with CTE		
Length (inch)	Order No. Steel	Order No. CERA
4	611204-51B	613204-51B
5	611205-51B	613205-51B
6	611206-51B	613206-51B
7	611207-51B	613207-51B
8	611208-51B	613208-51B
10	611222-51B	613222-51B
12	611223-51B	613223-51B
16	611224-51B	613224-51B
20	611225-51B	613225-51B



\* Suffix Number for Selecting Standard and Certificate Provided

ASME	
Grade K	Steel, CERA
	-51B

-51B: provided with JCSS Calibration Certificate and Inspection Certificate



Inspection Certificate





# Rectangular Gage Block Accessories

## SERIES 516 – For Gage Blocks over 100mm

Specially designed for the long gage blocks over 100mm which have two holes on the body for coupling.

### SPECIFICATIONS

#### Accessories for gage blocks over 100mm

Order No. 516-605	Included in set
1 pc.	Holder A (619031)
1 pc.	Holder B (619032)
1 pc.	Holder C (619033)
1 pc.	Holder D (619034)
1 pc.	Holder E (619035)
3 pcs.	Adaptor (619036)
1 pc.	Holder base 35mm (619009)
2 pcs.	Half round jaw 12mm (619013)
2 pcs.	Plain jaw (619018)
1 pc.	Scriber point (619019)

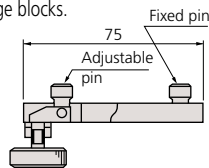
Note: These accessories can be used for inch rectangular gage blocks.



516-605

#### Holder A: 619031

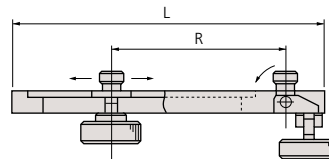
Used for coupling two long gage blocks.



#### Holder B and C:

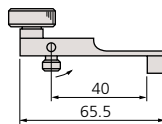
Used for coupling two long gage blocks together with other gage blocks up to 35mm (Holder B) or 140mm (Holder C). Also used for attaching jaws with two adaptors.

	Order No.	R (max.)	L
Holder B	619032	90mm	126mm
Holder C	619033	200mm	236mm



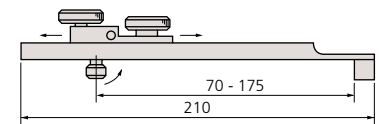
#### Holder D: 619034

Used for attaching to the holder base.



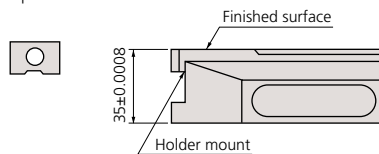
#### Holder E: 619035

Used for attaching to the holder base together with other gage blocks up to 125mm. Used for attaching jaws with one adaptor.

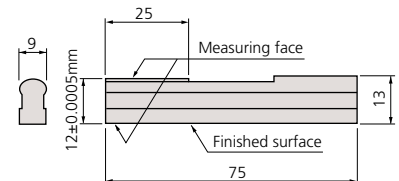


#### Holder base: 619009

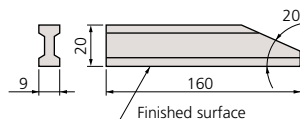
Adaptor: 619036



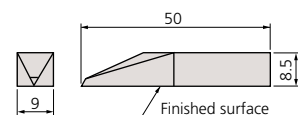
#### Half round jaw: 619013



#### Plain jaw: 619018



#### Scriber point: 619019



# Rectangular Gage Block Accessories

## SERIES 516

To expand the variety of rectangular gage block (steel and CERA) applications, Mitutoyo offers the gage block accessories set. By assembling the items in the set, you can easily and quickly build up a precision measuring instrument.



516-601



516-602



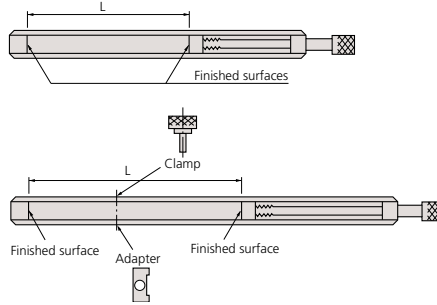
## SPECIFICATIONS

### Assortment of Accessories

Order No.	Accessories	Inch Set Order No.		Metric Set Order No.		Accessory (s) included in a set
		516-603	516-604	516-601	516-602	
619102	Holder 2.24"	•				1 pc.
619103	Holder 4"	•	•			1 pc.
619104	Holder 6"	•	•			1 pc.
619105	Holder 10"	•	•			1 pc.
619002	Holder 60mm				•	1 pc.
619003	Holder 100mm			•	•	1 pc.
619004	Holder 160mm			•	•	1 pc.
619005	Holder 250mm			•	•	1 pc.
619109	Holder Base 1.375"	•	•			1 pc.
619009	Holder Base 35mm			•	•	2 pcs.
619110	Half round jaw .100"	•	•			2 pcs.
619010	Half round jaw 2mm			•	•	2 pcs.
619111	Half round jaw .200"	•	•			2 pcs.
619011	Half round jaw 5mm			•	•	2 pcs.
619112	Half round jaw .250"	•	•			2 pcs.
619012	Half round jaw 8mm			•	•	2 pcs.
619113	Half round jaw .500"		•			2 pcs.
619013	Half round jaw 12mm			•		2 pcs.
619114	Half round jaw .750"		•			2 pcs.
619014	Half round jaw 20mm			•		2 pcs.
619118	Plain jaw 6"		•			2 pcs.
619018	Plain jaw 160mm			•		2 pcs.
619019	Scriber point	•	•	•	•	1 pc.
619020	Center point	•	•	•	•	1 pc.
619021	Tram point		•	•		2 pcs.
619122	Triangular straightness edge 4"	•	•			1 pc.
619022	Triangular straightness edge 100mm			•	•	1 pc.
619123	Triangular straight edge 6"		•			1 pc.
619023	Triangular straight edge 160mm			•		1 pc.
	<b>Total Qty. in set</b>	14 pcs.	22 pcs.	22 pcs.	14 pcs.	

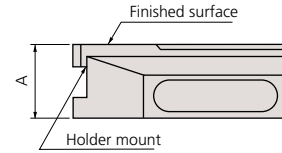
# Rectangular Gage Block Accessories

Holder:  
Used as a clamp if using plain jaws, scriber point, etc.



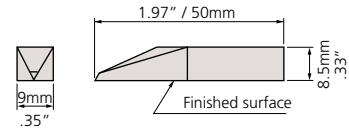
Order No.	L
619102	.59 - 2.40"
619002	15 - 61mm
619103	.16 - 4.17"
619003	4 - 106mm
619104	2.44 - 6.50"
619004	62 - 165mm
619105	6.02 - 10.08"
619005	153 - 256mm

Holder base 35mm: **619009**  
Measures a height on the surface plate and scribes a workpiece if used with the holder.

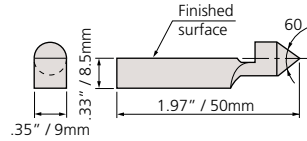


Order No.	A
619009	35±0.005mm
619109	1.375±.0002"

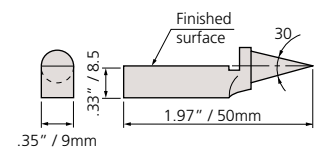
Scriber point: **619019**  
Scribes a workpiece if used with the holder and holder base.



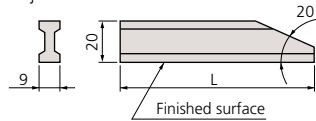
Center point: **619020**  
Scribes a workpiece if used with the holder and holder base.



Tram point: **619021**  
Inspects the scale of the height gage, etc., if used with the holder and holder base.

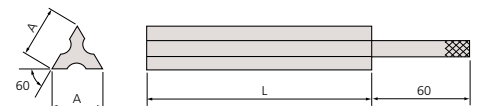


Plain jaw: **619018**  
Measures an outside or inside diameter if used with a pair of jaws and the holder.



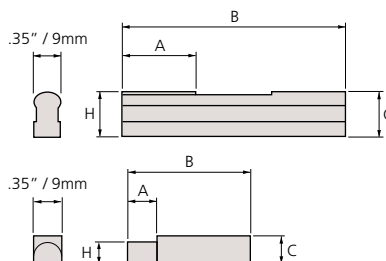
Order No.	L
619018	160mm
619118	6"

Triangular straight edge: Measures parallelism.



Order No.	L
619022	100mm
619023	160mm
619122	4"
619123	6"

Half round jaw:  
Measures an outside or inside diameter if used with a pair of jaws and the holder.



Order No.	H	A	B	C
619010	2±0.0005mm	6mm	40mm	8mm
619011	5±0.0005mm	6mm	50mm	8mm
619012	8±0.0005mm	12mm	60mm	8mm
619013	12±0.0005mm	25mm	75mm	13mm
619014	20±0.0005mm	25mm	125mm	20.5mm
619110	.1±.000028"	.24"	1.57"	.31"
619111	.2±.000028"	.24"	1.97"	.31"
619112	.25±.000028"	.47"	2.36"	.31"
619113	.5±.000028"	.98"	2.95"	.51"
619114	.75±.000028"	.98"	4.92"	.81"

# Metric Square Gage Block Set

**SERIES 516 — Metric Block Set, Long Block Set, Wear Block Set**

A Square Gage Block can retain stable orientation both longitudinally and laterally. A wide range of application measurements can be made, including cutting tool positioning, angle measurement with a sine bar, taper measurement with a roller, and inspection of depth micrometers.



Steel 32-block set



Steel 76-block set



Steel 103-block set



Steel 112-block set

## SPECIFICATIONS

### Metric Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>112</b>	516-437-26	—	00	1.005	—	1
	516-438-26	—	0	1.001 - 1.009	0.001	9
	516-439-26	—	AS-1	1.01 - 1.49	0.01	49
	516-440-26	—	AS-2	0.5 - 24.5	0.5	49
	—	—	—	25 - 100	25	4
<b>103</b>	516-441-26	—	00	1.005	—	1
	516-442-26	—	0	1.01 - 1.49	0.01	49
	516-443-26	—	AS-1	0.5 - 24.5	0.5	49
	516-444-26	—	AS-2	25 - 100	25	4
	—	—	—	—	—	—
<b>76</b>	516-449-26	—	00	1.005	—	1
	516-450-26	—	0	1.01 - 1.49	0.01	49
	516-451-26	—	AS-1	0.5 - 9.5	0.5	19
	516-452-26	—	AS-2	10 - 40	10	4
	—	—	—	50 - 100	25	3
<b>47</b>	516-457-26	—	00	1.005	—	1
	516-458-26	—	0	1.01 - 1.09	0.01	9
	516-459-26	—	AS-1	1.1 - 1.9	0.1	9
	516-460-26	—	AS-2	1 - 24	1	24
	—	—	—	25 - 100	25	4
<b>32</b>	516-465-26	—	00	1.005	—	1
	516-466-26	—	0	1.01 - 1.09	0.01	9
	516-467-26	—	AS-1	1.1 - 1.9	0.1	9
	516-468-26	—	AS-2	1 - 9	1	9
	—	—	—	10 - 30	10	3
	—	—	—	60	—	1

### Metric Long Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>8</b>	516-751-26	—	00	125, 150, 175	25	3
	516-752-26	—	0	200, 250	50	2
	516-753-26	—	AS-1	300, 400, 500	100	3
	516-754-26	—	AS-2	—	—	—

### Metric Wear Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>2</b>	516-820-26	—	0	1	—	2
	516-821-26	—	AS-1	—	—	—
<b>2</b>	516-822-26	—	0	2	—	2
	516-823-26	—	AS-1	—	—	—

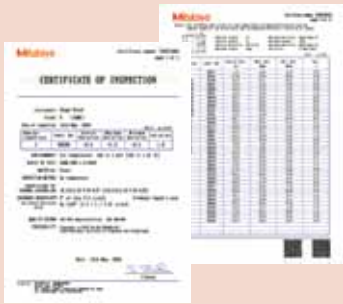
Provided with Inspection Certificate



Provided with Inspection Certificate

# Inch Square Gage Block Set

**SERIES 516 — Inch Block Set, Long Block Set, Wear Block Set**



## SPECIFICATIONS

### Inch Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>81</b>	516-401-26	516-201-26	00	.1001 - .1009	.0001	9
	516-402-26	516-202-26	0	.101 - .149	.001	49
	516-403-26	516-203-26	AS-1	.05 - .95	.05	19
	516-404-26	516-204-26	AS-2	1 - 4	1	4
<b>36</b>	516-421-26	516-221-26	00	.05"		1
	516-422-26	516-222-26	0	.1001 - .1009	.0001	10
	516-423-26	516-223-26	AS-1	.101 - .109	.001	9
	516-424-26	516-224-26	AS-2	.11 - .19	.01	9
				.1 - .5	.1	5
1, 2, 4	1	3				
<b>28</b>	516-417-26	—	00	.02005"		1
	516-418-26	—	0	.0201 - .0209"	.0001	9
	516-419-26	—	AS-1	.021 - .029"	.001	9
	516-420-26	—	AS-2	.021 - .029"	.01	9
				.10 - .090"		



Steel 47-block set

### Inch Long Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Steel	CERA		Size	Step	Qty.
<b>8</b>	516-762-26	—	0	5 - 7	1	3
	516-763-26	—	AS-1	8, 10, 12	2	3
				16, 20	4	2



Steel 8-block set

### Inch Wear Block Set

Blocks per set	Order No.		Grade	Blocks included in set		
	Carbide	CERA		Size	Step	Qty.
<b>2</b>	516-824-26	516-846-26	0	.05	—	2
	516-825-26	516-847-26	AS-1			
<b>2</b>	516-826-26	516-844-26	0	.1	—	2
	516-827-26	516-845-26	AS-1			



Carbide 2-block set

### 92 pcs. Gage Blocks with accessories set in wooden box

Blocks in set	Order No.	Grade	Blocks included in set			Individual No.	Description	Qty.
			Size	Step	Qty.			
<b>92</b>	516-405-26	0	.0625	.0001	1	619052	Plain Jaw .500"	2
			.078125		1	619051	Half round jaw .250"	2
			.09375		1	619055	Holder base .500"	1
			.100025		1	619057	Flat head screw 1 1/4"	2
			.10005		1	619058	Flat head screw 5/8"	2
			.100075		1	619056	Stud	2
			.109375		1	619066	Knurled head screw	2
			.1001 - .1009		9	619059	Slotted head nut	2
			.101 - .149		49	619062	Tie rod 3"	1
			.05 - .95		4	619063	Tie rod 2 1/4"	1
			.16 - .19		19	619064	Tie rod 1 1/2"	1
			1 - 4		4	619065	3/4"	1

# Individual Metric Square Gage Block



## SPECIFICATIONS

### Metric Block

Length (mm)	Order No.		Length (mm)	Order No.		Length (mm)	Order No.	
	Steel	CERA		Steel	CERA		Steel	CERA
0.5	614506	—	1.33	614593	—	13	614623	—
1	614611	—	1.34	614594	—	13.5	614653	—
1.0005	614520	—	1.35	614595	—	14	614624	—
1.001	614521	—	1.36	614596	—	14.5	614654	—
1.002	614522	—	1.37	614597	—	15	614625	—
1.003	614523	—	1.38	614598	—	15.5	614655	—
1.004	614524	—	1.39	614599	—	16	614626	—
1.005	614525	—	1.4	614600	—	16.5	614656	—
1.006	614526	—	1.41	614601	—	17	614627	—
1.007	614527	—	1.42	614602	—	17.5	614657	—
1.008	614528	—	1.43	614603	—	18	614628	—
1.009	614529	—	1.44	614604	—	18.5	614658	—
1.01	614561	—	1.45	614605	—	19	614629	—
1.02	614562	—	1.46	614606	—	19.5	614659	—
1.03	614563	—	1.47	614607	—	20	614672	—
1.04	614564	—	1.48	614608	—	20.5	614660	—
1.05	614565	—	1.49	614609	—	21	614631	—
1.06	614566	—	1.5	614641	—	21.5	614661	—
1.07	614567	—	1.6	614516	—	22	614632	—
1.08	614568	—	1.7	614517	—	22.5	614662	—
1.09	614569	—	1.8	614518	—	23	614633	—
1.1	614570	—	1.9	614519	—	23.5	614663	—
1.11	614571	—	2	614612	—	24	614634	—
1.12	614572	—	2.5	614642	—	24.5	614664	—
1.13	614573	—	3	614613	—	25	614635	—
1.14	614574	—	3.5	614643	—	30	614673	—
1.15	614575	—	4	614614	—	40	614674	—
1.16	614576	—	4.5	614644	—	50	614675	—
1.17	614577	—	5	614615	—	60	614676	—
1.18	614578	—	5.5	614645	—	75	614801	—
1.19	614579	—	6	614616	—	100	614681	—
1.2	614580	—	6.5	614646	—	125	614802	—
1.21	614581	—	7	614617	—	150	614803	—
1.22	614582	—	7.5	614647	—	175	614804	—
1.23	614583	—	8	614618	—	200	614682	—
1.24	614584	—	8.5	614648	—	250	614805	—
1.25	614585	—	9	614619	—	300	614683	—
1.26	614586	—	9.5	614649	—	400	614684	—
1.27	614587	—	10	614671	—	500	614685	—
1.28	614588	—	10.5	614650	—			
1.29	614589	—	11	614621	—			
1.3	614590	—	11.5	614651	—			
1.31	614591	—	12	614622	—			
1.32	614592	—	12.5	614652	—			

### Metric Wear Block

Length (mm)	Order No. Tungsten carbide
1	615611
2	615612

Suffix Number for Selecting Standard and Certificate Provided

### ASME

Grade	Steel
K	—
00	-521*
0	-531*
AS-1	-541*
AS-2	-551*

\* provided with Inspection Certificate

Example: 614611-521  
1mm gage block in grade 00.

We make custom length gage block length:  
0.5 - 500mm.



Inspection Certificate



# Individual Inch Square Gage Block

## Suffix Number for Selecting Standard and Certificate Provided

ASME	
Grade	Steel, CERA
K	—
00	-521*
0	-531*
AS-1	-541*
AS-2	-551*

\* provided with Inspection Certificate

Example: 614310-521  
.01" gage block in grade 00.

We make custom length gage block length:  
.01 - 20"

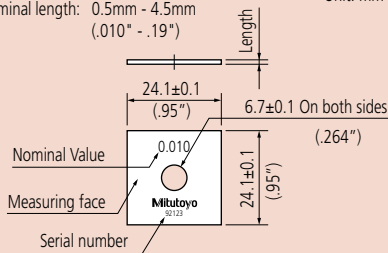


Inspection Certificate

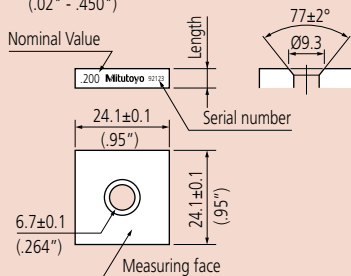
## DIMENSIONS

Nominal length: 0.5mm - 4.5mm  
(.010" - .19")

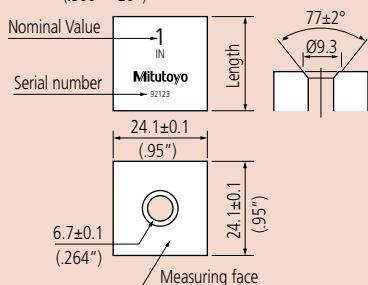
Unit: mm



Nominal length: 5mm - 14.5mm  
(.02" - .450")



Nominal length: 15mm - 500mm  
(.500" - 20")



## SPECIFICATIONS

### Inch Block

Length (inch)	Order No.		Length (inch)	Order No.		Length (inch)	Order No.	
	Steel	CERA		Steel	CERA		Steel	CERA
.01	614310	—	.106	614146	616146	.25	614212	616212
.02005	614240	—	.107	614147	616147	.3	614193	616193
.0201	614231	—	.108	614148	616148	.35	614213	616213
.0202	614232	—	.109	614149	616149	.375 (3/8)	614309	—
.0203	614233	—	.109375 (7/64)	614306	—	.4	614194	616194
.0204	614234	—	.11	614150	616150	.45	614214	616214
.0205	614235	—	.111	614151	616151	.5	614195	616195
.0206	614236	—	.112	614152	616152	.55	614215	616215
.0207	614237	—	.113	614153	616153	.6	614196	616196
.0208	614238	—	.114	614154	616154	.65	614216	616216
.0209	614239	—	.115	614155	616155	.7	614197	616197
.02	614320	—	.116	614156	616156	.75	614217	616217
.021	614321	—	.117	614157	616157	.8	614198	616198
.022	614322	—	.118	614158	616158	.85	614218	616218
.023	614323	—	.119	614159	616159	.9	614199	616199
.024	614324	—	.12	614160	616160	.95	614219	616219
.025	614325	—	.121	614161	616161	1	614201	616201
.026	614326	—	.122	614162	616162	2	614202	616202
.027	614327	—	.123	614163	616163	3	614203	616203
.028	614328	—	.124	614164	616164	4	614204	616204
.029	614329	—	.125	614165	616165	5	614205	—
.03	614330	—	.126	614166	616166	6	614206	—
.03125 (1/32)	614301	—	.127	614167	616167	7	614207	—
.04	614340	—	.128	614168	616168	8	614208	—
.046875 (3/64)	614302	—	.129	614169	616169	10	614222	—
.05	614105	616105	.13	614170	616170	12	614223	—
.06	614106	—	.131	614171	616171	16	614224	—
.0625	614303	616303	.132	614172	616172	20	614225	—
.07	614107	—	.133	614173	616173			
.078125 (5/64)	614304	—	.134	614174	616174			
.08	614108	—	.135	614175	616175			
.09	614109	—	.136	614176	616176			
.09375 (3/32)	614305	—	.137	614177	616177			
.1	614191	616191	.138	614178	616178			
.100025	614307	—	.139	614179	616179			
.10005	614135	616135	.14	614180	616180			
.100075	614308	—	.141	614181	616181			
.1001	614121	616121	.142	614182	616182			
.1002	614122	616122	.143	614183	616183			
.1003	614123	616123	.144	614184	616184			
.1004	614124	616124	.145	614185	616185			
.1005	614125	616125	.146	614186	616186			
.1006	614126	616126	.147	614187	616187			
.1007	614127	616127	.148	614188	616188			
.1008	614128	616128	.149	614189	616189			
.1009	614129	616129	.15	614115	616115			
.101	614141	616141	.16	614116	616116			
.102	614142	616142	.17	614117	616117			
.103	614143	616143	.18	614118	616118			
.104	614144	616144	.19	614119	616119			
.105	614145	616145	.2	614192	616192			

### Inch Wear Block

Length (inch)	Order No. Tungsten carbide
.05	615105
.1	615191

# Square Gage Block Accessories

## SERIES 516

To expand the variety of Square Gage Block applications, Mitutoyo offers the Gage Block Accessories Set. By assembling the items in the set, you can easily and quickly build up a precision measuring instrument.



516-611

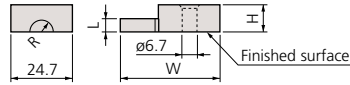
### SPECIFICATIONS

Metric	
Order No. 516-611	Included in set
2 pcs.	Half round jaw 2mm (619070)
2 pcs.	Half round jaw 5mm (619071)
2 pcs.	Plain jaw (619072)
1 pc.	Center point (619073)
1 pc.	Scriber point (619054)
1 pc.	Block base (619074)
2 pcs.	Flat head screw 1-1/4" (619057)
2 pcs.	Flat head screw 5/8" (619058)
2 pcs.	Slotted head nut (619059)
2 pcs.	Adjustable tie rod 6" (619060)
2 pcs.	Adjustable tie rod 4-1/2" (619061)
1 pc.	Tie rod 3" (619062)
1 pc.	Tie rod 2-1/4" (619063)
1 pc.	Tie rod 1-1/2" (619064)
1 pc.	Tie rod 3/4" (619065)
2 pcs.	Stud (619056)
2 pcs.	Knurled head screw (619066)

Inch	
Order No. 516-612	Included in set
2 pcs.	Half round jaw .125" (619050)
2 pcs.	Half round jaw .25" (619051)
2 pcs.	Plain jaw (619052)
1 pc.	Center point (619053)
1 pc.	Scriber point (619054)
1 pc.	Block base (619055)
2 pcs.	Flat head screw 1-1/4" (619057)
2 pcs.	Flat head screw 5/8" (619058)
2 pcs.	Slotted head nut (619059)
2 pcs.	Adjustable tie rod 6" (619060)
2 pcs.	Adjustable tie rod 4-1/2" (619061)
1 pc.	Tie rod 3" (619062)
1 pc.	Tie rod 2-1/4" (619063)
1 pc.	Tie rod 1-1/2" (619064)
1 pc.	Tie rod 3/4" (619065)
2 pcs.	Stud (619056)
2 pcs.	Knurled head screw (619066)

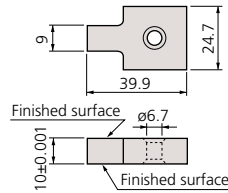


Half round jaw:  
Used to measure an inside or outside diameter.

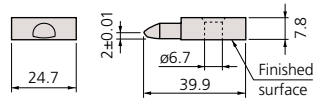


Order No.	R	L	W	H
619070	1.95mm	2mm	33.6mm	5.3mm
619071	4.95mm	5mm	39.9mm	10.3mm
619050	.123"	.125"	33.6mm	5.3mm
619051	.248"	.25"	39.9mm	10.3mm

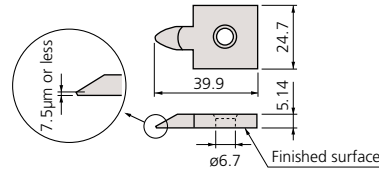
Plain jaw: 619072 (10mm), 619052 (.5")  
Used to measure an inside or outside diameter.



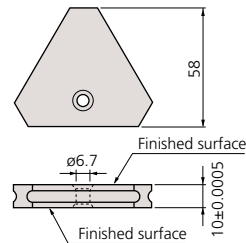
Center point: 619073 (2mm), 619053 (.1")  
Used to scribe a workpiece.



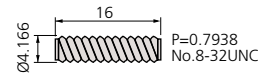
Scriber point: 619054  
Used to scribe a workpiece.



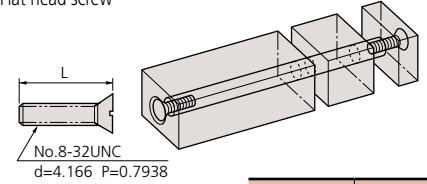
Base: 619074 (10mm), 619054 (.5")  
Used as clamps by inserting them into the center hole of a square gage block.



Stud: 619056

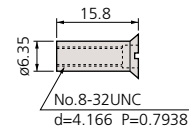


Flat head screw

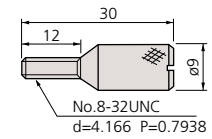


Order No.	L
619057	31.6mm
619058	15.8mm

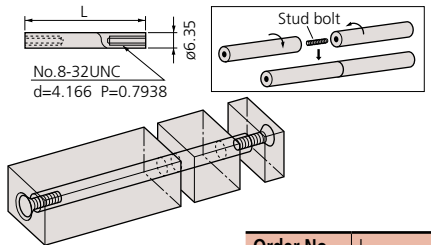
Slotted head nut: 619059



Knurled head screw: 619066

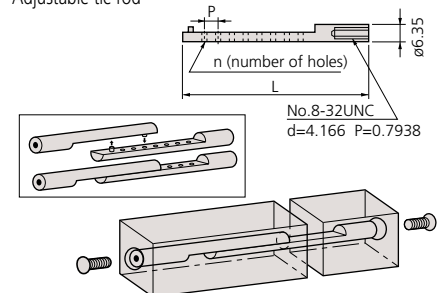


Tie rod



Order No.	L
619065	19mm
619064	38mm
619063	57mm
619062	76mm

Adjustable tie rod



Order No.	L	P	n
619060	124.5mm	6.35mm	14
619061	86.5mm	6.35mm	8

# Ceraston

## Accessory for Gage Blocks

### FEATURES

- Alumina-ceramic grinding stone for removing burrs from hard materials such as ceramics that ordinary grinding stones cannot handle.
- Can be used both for steel gage blocks and CERA Blocks.



### SPECIFICATIONS

Order No.	Dimensions (W x D x H)	Mass
601645	100 x 25 x 12mm	110g
601644	150 x 50 x 20mm	530g

# Maintenance Kit for Gage Block

## SERIES 516

### FEATURES

- Includes all necessary maintenance tools for daily care and storage of gage blocks.
- Supplied in a fitted wooden case for portable use.



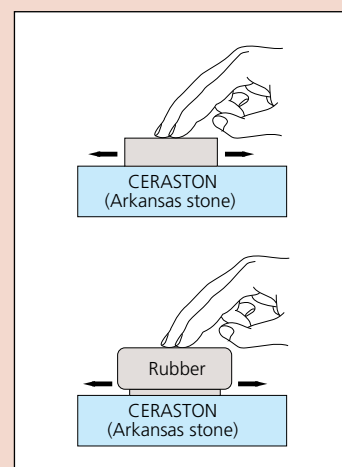
### SPECIFICATIONS

Order No.	Assortment of tools and accessories
516-650E	Ceraston (601645): Used for removing burrs on the measuring surface
	Optical flat (600003): Used for checking whether burrs exist.
	Tweezers (600004): Used for handling thin gage blocks.
	Blower brush (600005): Used for blowing out dust on the measuring surface.
	Cleaning paper (600006): Used for wiping off rust preventive oil and contamination.
	Artificial leather mat (600007): Used as a gage block mat.
	Reagent bottle (600008): Bottle of wiping solution (100mL)
	Gloves



### Removing burrs

- (1) Wipe any dust and oil films from the gage block and the Ceraston (or Arkansas stone) using a solvent.
- (2) Place the gage 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 gage block to and fro about ten times (Fig. 1). Use a block rubber for thin gage 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 a grinding stone. If so, discard the gage block.



Note: The abrasive surface of a Ceraston must be made flat by lapping it from time to time. After lapping the Ceraston, the lapping powder must be completely removed from the surface to prevent the surface of the gage block from being scratched. Mitutoyo does not handle the Arkansas stone.



# Step Master

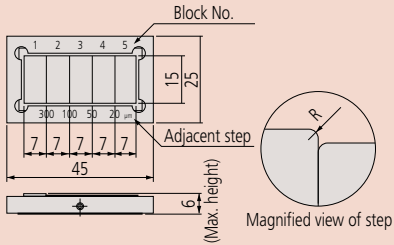
**SERIES 516**

## FEATURES

Step master is a master gage used for the z-axis (vertical direction) calibration of optical instruments.

- Each adjacent step is measured down to 0.01 $\mu$ m by using an interferometer within  $\pm 0.20\mu$ m allowance.
- Steel and ceramic types are available.

## Dimension



**516-498**  
Ceramic type



**516-199**  
Steel type



## SPECIFICATIONS

### Metric

Order No.	Step value between adjacent blocks				Remarks
	No. 1 - No. 2	No. 2 - No. 3	No. 3 - No. 4	No. 4 - No. 5	
<b>516-198</b>	10 $\mu$ m	5 $\mu$ m	2 $\mu$ m	1 $\mu$ m	Steel type
<b>516-199</b>	300 $\mu$ m	100 $\mu$ m	50 $\mu$ m	20 $\mu$ m	Steel type
<b>516-498</b>	10 $\mu$ m	5 $\mu$ m	2 $\mu$ m	1 $\mu$ m	Ceramic type
<b>516-499</b>	300 $\mu$ m	100 $\mu$ m	50 $\mu$ m	20 $\mu$ m	Ceramic type

# Made-to-order Block & Reference

## Available Dimension

Nominal size: .004 to 20" / 0.1 to 1000mm (steel)  
.1 to 20" / 0.5 to 500mm (ceramic)

Nominal pitch: 0.0005mm (up to 100mm)  
0.001mm (over 100mm)

Minimum section dimension:  
Approx. .24 x .24" / 6 x 6mm

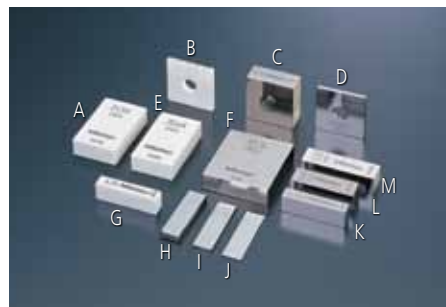
Maximum section dimension:  
Approx. 5.5 x 5.5" / 140 x 140mm (steel)  
Approx. 6.3" Dia. /  $\phi$ 160mm (steel, cylindrical)  
Approx. 3.94 x 1.97" / 100 x 50mm (ceramic)  
Approx. .24" Dia. /  $\phi$ 60mm (ceramic, cylindrical)

Accuracy: Gage Block Grade level

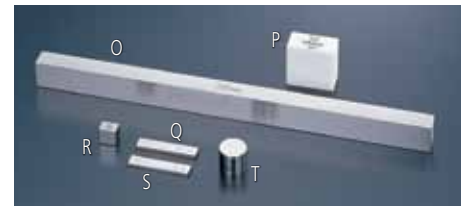
Special materials of low expansion glass and low expansion ceramic are available.

## FEATURES

- Mitutoyo can provide Gage Blocks and reference gages to you size and design.



- A: Ceramic rectangular gage block (21.94mm)
- B: Ceramic square gage block (2.1005mm)
- C: Steel square gage block (10.72mm)
- D: Steel square gage block (2.2065mm)
- E: Ceramic rectangular gage block (20.64mm)
- F: Steel rectangular gage block (31.5mm)
- G: Ceramic rectangular gage block (6.34mm)
- H: Steel rectangular gage block (3.603mm)
- I: Steel rectangular gage block (1.1505mm)
- J: Steel rectangular gage block (0.555mm)
- K: Steel rectangular gage block (6.156mm)
- L: Steel rectangular gage block (9.694mm)
- M: Steel rectangular gage block (10.02mm)



- O: Steel Long rectangular block (15 x 10 x 200mm)
- P: Ceramic square block (24.1 x 24.1 x 12.3mm)
- Q: Steel thin rectangular block (30 x 6 x 1.9mm)
- R: Steel square block (9 x 9 x 6mm)
- S: Steel thin rectangular block (30 x 6 x 2.1mm)
- T: Steel cylindrical block ( $\phi$ 13.08 x 12mm)



- U: Cylindrical reference block for depth micrometer ( $\phi$ 60 x 150mm)
- V: Ceramic reference plate (50 x 50 x 50mm, flatness 0.3 $\mu$ m)
- W: Ceramic stepped block (30 x 18 x 5mm, step: 0.15mm)



# Gage Block Comparator GBCD-250

**SERIES 565 — Manual Type Comparator with Dual Gage Heads**

## FEATURES

- Gage blocks between 0.1mm and 250mm can be easily compared with the standard gage block on the GBCD-250.
- The differential dual gaging heads assure the operator of a high-accuracy measurement with ease of use.

## SPECIFICATIONS

Inch/Metric	
Model No.	GBCD-250
Order No.	565-150A
Range	0.1mm - 250mm / .004 - 10"
Resolution	0.00001mm (0.01μm) / .000001"
Accuracy in narrow range (20°C)	$\pm(0.03+0.3L/1000)\mu\text{m}^*$ L = Gage block length (mm)
Measuring units	Laser Hologage (upper), Mu-checker (lower)
Operating condition	Temperature: 20°C $\pm$ 1°C Humidity: 58%RH $\pm$ 15%RH
Data output	Via SPC output port
Dimensions (W x D x H)	Main unit: 455 x 318 x 691mm Display unit: 345 x 397 x 187mm
Mass	Main unit: Approx. 50kg Display unit: Approx. 9kg

\*Uncertainty of measurement is 95% (not including the calibration error of the standard gage block).



## Optional Accessories

- 962723:** Gage head calibration kit  
**02ASD130:** Square gage block holder kit  
**02ASF040:** Heat protection shield  
**02ASD100:** Gage block set for accuracy inspection PC System  
**02ASG610A:** GBPAK-M\*  
 \* Included: Software  
 Foot Switch (**937179T**)  
 MUX-10F (**264-002A**)  
 Connecting cable (**936937**)

# Gage Block Comparator GBCD-100A

**SERIES 565 — Automatic Type Comparator with Dual Gage Heads**

## SPECIFICATIONS

Model No.	GBCD-100A
Order No.	565-111A
Resolution	0.00001mm (0.01μm) / .000001"
Range	0.5mm - 100mm / .02 - 4"
Measuring unit	Differential (dual-head) type Mu-Checker
Accuracy in narrow range (20°C)	$\pm(0.03+0.3L/1000)\mu\text{m}^*$ L = Gage block length (mm) *Uncertainty of measurement is 95% (not including the calibration error of the standard gage block).
Measuring force	Upper gage head: 1N (100gf) Lower gage head: 0.6N (60gf)
Air requirement	400kPa (4kgf/cm <sup>2</sup> )
Operating condition	Temperature: 20°C $\pm$ 1°C Humidity: 58%RH $\pm$ 15%RH
Dimensions (W x D x H)	Main unit: 710 x 366 x 783mm Electronic unit: 160 x 410 x 382mm
Mass	Main unit: 120kg Electronic unit: 14kg



## Standard Accessories

GBPAK-A (software)

## Optional Accessories

- 962723:** Gage block set for probe calibration  
**962764:** Gage block holder for probe calibration  
**611615-02:** 5mm gage block (glade 0) for origin setting  
**243989:** Auxiliary stage (size: 360 x 253mm)  
**218-007:** Work bench  
 PC System

The GBCD-100A Automatic Gage Block Comparator is an easy-to-operate dual-head type gage block inspecting system. It automatically compares workpieces with a standard gage block and determines accuracies of such as central length, maximum length, minimum length, and parallelism through the operation of an optional personal computer.





### Technical Data

Graduation: .00001" or 0.001mm  
 Counter resolution: .001" or 0.01mm  
 Character Height: .16" / 4mm  
 Micrometer Head  
 Travel stroke: 1" or 20mm  
 Pitch: .025"/rev or 0.5mm/rev  
 Hysteresis: .00004" or 1µm  
 Provided with inspection certificate.

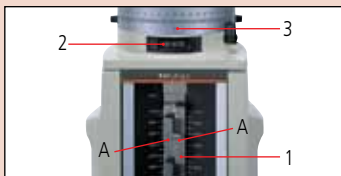
### Standard Accessories

Reference Block: 11mm for 515-322  
 Reference Block: .3" for 515-310, 515-311

### Optional Accessories

515-112: Auxiliary block kit for bore gage (mm)  
 515-119: Auxiliary block kit for bore gage (for 515-310)  
 515-121: Auxiliary block kit for bore gage (for 515-311)  
 ———: Riser block

### Reading



#### Height A

1. Scale	280	mm
2. Counter	5.67	mm
3. Thimble	0.000	mm
<hr/>		
	285.670	mm



# Height Master

## SERIES 515

### FEATURES

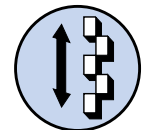
- Models with staggered arrangement of block stack have two measuring faces on the same level, one facing up and the other down (except for 515-310).
- Each Height Master is supplied with a gage block for zero-setting.
- Supplied in fitted wooden case.



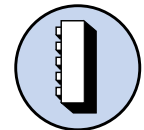
515-322



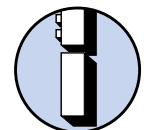
515-310



Staggered 20mm blocks (movable)



Vertical orientation



Riser block

### SPECIFICATIONS

#### Metric

Range (H)	Order No.	Block step	Graduation	Block Pitch Accuracy	Parallelism of Block	Micrometer Head Accuracy	Mass (kg)
5 < H ≤ 310mm	515-322	20mm (staggered)	0.001mm	±1.5µm	1µm	±1µm	23

#### Inch

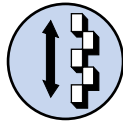
Range (H)	Order No.	Block step	Graduation	Block Pitch Accuracy	Parallelism of Block	Micrometer Head Accuracy	Mass (kg)
.2" < H ≤ 12.2"	515-310	.5" (straight)	.00001"	±.00005"	.00004"	±.00005"	23
.2" < H ≤ 12.2"	515-311	1" (staggered)	.00001"	±.00005"	.00004"	±.00005"	23

# Digital Height Master

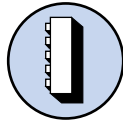
## SERIES 515

### FEATURES

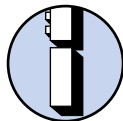
- Standard model with a digital display, featuring all essential specifications required for versatile height standard.
- With SPC output.
- Each Height Master is supplied with a gage block for zero setting.



Staggered 20mm blocks (movable)



Vertical orientation



Riser block

515-354



### Technical Data

Resolution (LCD): .0001" or 0.001mm  
 Graduation: .0001" or 0.002mm  
 Character Height .21" / 5.4mm

### Micrometer Head

Travel Stroke: 1" or 20mm  
 Pitch: .025"/rev or 0.5mm/rev  
 Hysteresis: .0001" For all inch models  
 0.002mm for 300mm models  
 0.0025mm for 450 & 600mm models  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: Approx. 1.8 years under normal use

### Function

Zero-setting, Presetting, ABS/INC switching, Data hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error

### Standard Accessories

Reference Block: 11mm for Metric Height Master  
 Reference Block: .6" for for Inch Height Master  
 Provided with inspection certificate.

### Optional Accessories

- 515-111:** Auxiliary block kit for bore gage (mm)
- 515-120:** Auxiliary block kit for bore gage (inch)
- : Riser block (see page E-27.)
- 937387:** SPC cable (40" / 1m)
- 965013:** SPC cable (80" / 2m)
- 050019:** Fitted Mohogany case for 12" / 300mm model
- 050059:** Fitted Mohogany case for 18" / 450mm model  
 24" / 600mm model

### SPECIFICATIONS

#### Metric

Range (H)	Order No.	Block step	Resolution	Block Pitch Accuracy	Parallelism	Micrometer Head Accuracy	Mass (kg)
10 < H ≤ 310mm	<b>515-354</b>	20mm (staggered)	0.001mm	±1.5µm	2µm	±2µm	9.5
10 < H ≤ 460mm	<b>515-356</b>	20mm (staggered)	0.001mm	±2.5µm	2.5µm	±2µm	13.6
10 < H ≤ 610mm	<b>515-358</b>	20mm (staggered)	0.001mm	±3.5µm	2.5µm	±2.5µm	16.0

#### Inch/Metric

Range (H)	Order No.	Block step	Resolution	Block Pitch Accuracy	Parallelism	Micrometer Head Accuracy	Mass (kg)
.5" < H ≤ 12"	<b>515-355</b>	1" (staggered)	.0001" / 0.001mm	±.0001"	.00005"	±.0001"	9.5
.5" < H ≤ 18"	<b>515-357</b>	1" (staggered)	.0001" / 0.001mm	±.0001"	.0001"	±.0001"	13.6
.5" < H ≤ 24"	<b>515-359</b>	1" (staggered)	.0001" / 0.001mm	±.0001"	.0001"	±.0001"	16.0



### Technical Data

Graduation: .00001"  
 Counter resolution: .001"  
 Character Height: .098"

### Micrometer Head

Travel stroke: 1"  
 Pitch: .025"/rev  
 Hysteresis: .0001"

### Standard Accessories

Reference Block: .6"  
 Provided with inspection certificate.

### Optional Accessories

**515-119:** Auxiliary block kit for bore gage  
**050019:** Fitted mohogany case  
 —: Riser block

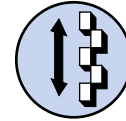
# Height Master E-Type

## SERIES 515

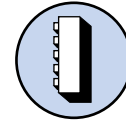


### FEATURES

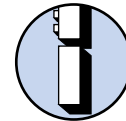
- Models with staggered arrangement of block stack have two measuring faces on the same level, one facing up and the other down.



Staggered 20mm blocks (movable)



Vertical orientation



Riser block

### SPECIFICATIONS

Inch							
Range (H)	Order No.	Block step	Graduation	Block Pitch Accuracy	Parallelism of Block	Micrometer Head Accuracy	Mass (kg)
5 < H ≤ 12"	<b>515-319</b>	1" (staggered)	.0001"	±.0001"	.00005"	±.0001"	9

# Auxiliary Block Kit

## SERIES 515 — for Bore Gage

### FEATURES

- Used for efficient zero-setting of dial bore gages and tubular inside micrometers (18 - 150mm) on a Height Master.



515-112

Bore gage zero-setting



### SPECIFICATIONS

Metric	
Order No.	Applicable height master
<b>515-110</b>	Universal Height Master
<b>515-111</b>	Digimatic Height Master
<b>515-112</b>	Height Master

Inch	
Order No.	Applicable height master
<b>515-119</b>	Universal Height Master, Height Master (515-311)
<b>515-120</b>	Digimatic Height Master
<b>515-121</b>	Height Master (515-310)

# Riser Blocks

## SERIES 515

### FEATURES

- These riser blocks are specially designed for standard/Digimatic height masters.



515-113

515-114

515-115

### SPECIFICATIONS

Metric			
Height	Order No.	Accuracy of height	Mass (kg)
150mm	<b>515-113</b>	±0.6µm	5.7
300mm	<b>515-114</b>	±1.0µm	11.3
600mm	<b>515-115</b>	±2.0µm	31

Inch			
Height	Order No.	Accuracy of height	Mass (kg)
6"	<b>515-116</b>	±20µin	5.7
12"	<b>515-117</b>	±40µin	11.3
24"	<b>515-118</b>	±80µin	31

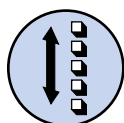


# Universal Height Master

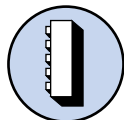
**SERIES 515 — Usable in Vertical and Horizontal Orientations**

## FEATURES

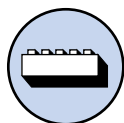
- The Universal Height Master is designed for both vertical and horizontal orientations, providing a wide range of applications such as accuracy checking of machine tool table movements.
- Fitted wooden case supplied.



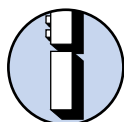
Single-row 10mm blocks (movable)



Vertical orientation



Horizontal orientation



Riser block

515-520

## SPECIFICATIONS

### Metric

Range (R)	Order No.	Block step	Graduation	Block Pitch Accuracy	Parallelism of Block	Micrometer Head Accuracy	Mass (kg)
$5 < R \leq 610\text{mm}$	<b>515-520</b>	10mm (straight)	0.001mm	$\pm 1.5\mu\text{m}$	$1.0\mu\text{m}$	$\pm 1.2\mu\text{m}$	42
$5 < R \leq 1010\text{mm}$	<b>515-523</b>	10mm (straight)	0.001mm	$\pm 3.5\mu\text{m}$	$2.5\mu\text{m}$	$\pm 1.5\mu\text{m}$	63.5

### Inch

Range (R)	Order No.	Block step	Graduation	Block Pitch Accuracy	Parallelism of Block	Micrometer Head Accuracy	Mass (kg)
$.2" < R \leq 18.2"$	<b>515-512</b>	.5" (straight)	.00001"	$\pm .00005"$	.00006"	$\pm .00004"$	42
$.2" < R \leq 24.2"$	<b>515-510</b>	.5" (straight)	.00001"	$\pm .0001"$	.00006"	$\pm .00004"$	50
$.2" < R \leq 40.2"$	<b>515-513</b>	.5" (straight)	.00001"	$\pm .00015"$	.00008"	$\pm .00006"$	63.5



## Technical Data

Graduation: 0.001mm or .00001"  
 Counter Resolution: .001" or 0.01mm  
 Character Height: .16" / 4mm  
 Block arrangement: Straight arrangement

### Micrometer Head

Travel stroke: 1" or 20mm  
 Pitch: .025"/rev or 0.5mm/rev  
 Hysteresis: .00004" / 1.2 $\mu\text{m}$  up to 24.2" / 610mm  
 .00006" / 1.5 $\mu\text{m}$  for 40.2" / 1010mm

Block pitch accuracy:  $\pm 1.5\mu\text{m}$  ( $0 < R \leq 310\text{mm}$ )  
 $\pm 2.5\mu\text{m}$  ( $310 < R \leq 610\text{mm}$ )  
 $\pm 3.5\mu\text{m}$  ( $610 < R \leq 1010\text{mm}$ )  
 Parallelism of blocks:  $1.0\mu\text{m}$  ( $0 < R \leq 310\text{mm}$ )  
 $2.5\mu\text{m}$  ( $310 < R \leq 1010\text{mm}$ )

Provided with inspection certificate.

## Optional Accessories

- 900574:** Supporting base for vertical operation  
 Mass: 3kg  
 (\*supplied as a standard for **515-523** and **515-513**)
- 515-112:** Auxiliary block kit for bore gage (mm)  
**515-119:** Auxiliary block kit for bore gage (inch)



Using in horizontal orientation



Supporting base



# High Accuracy Check Master HMC-H

## SERIES 515

### Technical Data

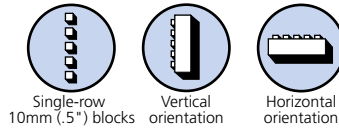
Measuring range (R): Refer to the list of specifications.  
 Block pitch accuracy:  $\pm 1.2\mu\text{m}$  ( $0 < R \leq 310\text{mm}$ )  
 $\pm 1.8\mu\text{m}$  ( $310 < R \leq 610\text{mm}$ )  
 $\pm 2.5\mu\text{m}$  ( $610 < R \leq 1010\text{mm}$ )  
 $\pm 4.0\mu\text{m}$  ( $1010 < R \leq 1510\text{mm}$ )  
 Parallelism of blocks:  $1.0\mu\text{m}$  ( $0 < R \leq 450\text{mm}$ )  
 $1.5\mu\text{m}$  ( $450 < R \leq 1010\text{mm}$ )  
 $2.0\mu\text{m}$  ( $1010 < R \leq 1510\text{mm}$ )  
 Provided with inspection certificate.

### FEATURES

- Designed to check the accuracy of table movements of machine tools and calibrate CMMs. Permanently wrung stack of gage blocks is housed in a rigid frame.
- Can be used in either vertical and horizontal orientation.
- Fitted wooden case supplied.

### Specifications for Ceramic Check Master:

- Each measuring block is made of zirconia-based ceramic that requires no anti-corrosion treatment for measuring faces.
- Free from deterioration and dimensional changes over time.



### SPECIFICATIONS

Range (R)	Order No.		Pitch		Accuracy of block pitch for the range shown below as measured from the bottom block				Length	Parallelism	Mass (kg)
	Steel	Ceramic	P	P	up to 300mm	300-600mm	600-1000mm	1000-1500mm			
300mm	515-740	515-760	20mm	10mm	$\pm 1.2\mu\text{m}$	—	—	—	331mm	$1\mu\text{m}$	3.6
450mm	515-741	515-761	20mm	10mm	$\pm 1.2\mu\text{m}$	$\pm 1.8\mu\text{m}$	—	—	482mm	$1\mu\text{m}$	5.4
600mm	515-742	515-762	20mm	10mm	$\pm 1.2\mu\text{m}$	$\pm 1.8\mu\text{m}$	—	—	631mm	$1.5\mu\text{m}$	7.2
1000mm	515-743	515-763	20mm	10mm	$\pm 1.2\mu\text{m}$	$\pm 1.8\mu\text{m}$	$\pm 2.5\mu\text{m}$	—	1037mm	$1.5\mu\text{m}$	12.0
1500mm	515-744	515-764	20mm	10mm	$\pm 1.2\mu\text{m}$	$\pm 1.8\mu\text{m}$	$\pm 2.5\mu\text{m}$	$\pm 4.0\mu\text{m}$	1546mm	$2\mu\text{m}$	18.0

### Inch

Range (R)	Order No.		Pitch		Accuracy of block pitch for the range shown below as measured from the bottom block				Length	Parallelism	Mass (kg)
	Steel	Ceramic	P	P	up to 12"	12-24"	24-40"	40-60"			
12"	515-730	515-750	1"	.5"	$\pm 50\mu\text{in}$	—	—	—	13.0"	$40\mu\text{in}$	3.4
18"	515-731	515-751	1"	.5"	$\pm 50\mu\text{in}$	$\pm 70\mu\text{in}$	—	—	19.0"	$40\mu\text{in}$	5.2
24"	515-732	515-752	1"	.5"	$\pm 50\mu\text{in}$	$\pm 70\mu\text{in}$	—	—	25.0"	$60\mu\text{in}$	6.9
40"	515-733	515-753	1"	.5"	$\pm 50\mu\text{in}$	$\pm 70\mu\text{in}$	$\pm 100\mu\text{in}$	—	41.0"	$60\mu\text{in}$	11.5
60"	515-734	515-754	1"	.5"	$\pm 50\mu\text{in}$	$\pm 70\mu\text{in}$	$\pm 100\mu\text{in}$	$\pm 158\mu\text{in}$	61.5"	$80\mu\text{in}$	17.3

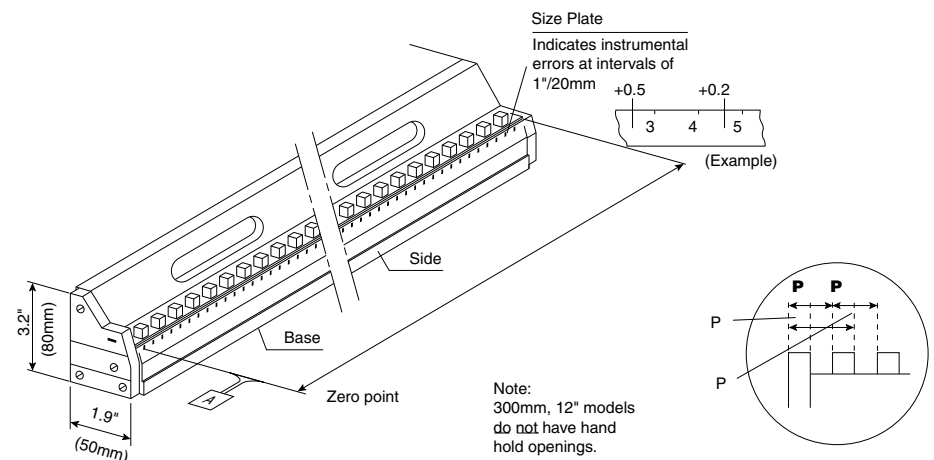
### Optional Accessories

**601167:** Supporting base for vertical operation  
 (\*supplied as a standard for 515-523 and 515-513)

Dimensions: 14.2"(W) x 8.7"(D) x 8.3"(H)  
 360mm(W) x 220mm(D) x 210mm(H)  
 Mass: 3kg



Supporting base



# CERA Straight Master SM-C

## SERIES 311 — Straightness Measuring Instrument

### FEATURES

CERA Straight master is a master gage used for the straightness inspection of each axis movement such as a CMM, machine tool, semiconductor related equipment and form measuring machine.

- Made from Alumina ceramic
- 50mm/2" pitch gradation scales
- Precision lapped measuring surface
- Double faced type is lapping the double face which can be used for straightness in horizontal and vertical as a reference square.
- Lightweight
- Supplied with fitted wooden case.



### SPECIFICATIONS

Metric		Inch		High accuracy model		
Nominal length	Order No.*	Nominal length	Order No.*	Straightness	Size (L x H x W)	Mass
400mm	311-302-33	16"	311-322-33	0.3μm	440 x 35 x 50mm	1.8kg
700mm	311-305-33	28"	311-325-33	0.5μm	740 x 35 x 50mm	3kg
1000mm	311-307-33	40"	311-327-33	1.0μm	1040 x 45 x 80mm	8kg
1300mm	311-309-33	52"	311-329-33	1.5μm	1340 x 45 x 80mm	10kg

Metric		Inch		Ultra high accuracy model		
Nominal length	Order No.*	Nominal length	Order No.*	Straightness	Size (L x H x W)	Mass
400mm	311-332-33	16"	311-342-33	0.2μm	440 x 35 x 50mm	1.8kg
700mm	311-335-33	28"	311-345-33	0.4μm	740 x 35 x 50mm	3kg
1000mm	311-337-33	40"	311-347-33	0.5μm	1040 x 45 x 80mm	8kg
1300mm	311-339-33	52"	311-349-33	0.7μm	1340 x 45 x 80mm	10kg

Double faced type



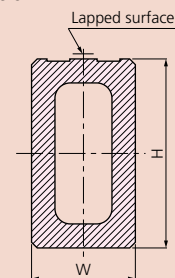
### SPECIFICATIONS

Metric		Inch		Double faced model		
Nominal length	Order No.*	Nominal length	Order No.*	Straightness	Size (L x H x W)	Mass
400mm	311-352-33	16"	311-362-33	0.3μm	440 x 45 x 80mm	3.2kg
700mm	311-355-33	28"	311-365-33	0.5μm	740 x 45 x 80mm	5.5kg
1000mm	311-357-33	40"	311-367-33	1.0μm	1040 x 45 x 80mm	8kg
1300mm	311-359-33	52"	311-369-33	1.5μm	1340 x 45 x 80mm	10kg

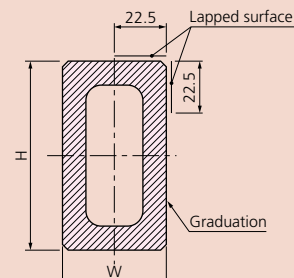
### Technical Data

Provided with inspection certificate.

### Cross section



### Double faced type







### Technical Data

Range: .8 - 12.8" / 20 - 320mm  
 Resolution: .00001" / .0001" or 0.0001 / 0.001mm  
 Block travel stroke: 4" / 100mm  
 Block pitch accuracy: ±.00004" / ±0.001mm  
 Parallelism of blocks\*: .00004" / 0.001mm (\*between the anvil block and the 1st measuring block)  
 Block feeding error: ±.00008" / ±0.002mm  
 Power supply: Via AC adaptor  
 Mass: 12.5kg

### Function

Data output

### Optional Accessories

**936937:** SPC cable (40" / 1m)  
**965014:** SPC cable (80" / 2m)  
**990554:** Workpiece rest

# Snap Gage Checker

## SERIES 515

### FEATURES

- Capable of inspecting the snap gage quickly and accurately with resolution down to 0.0001mm.
- The digital display and constant-force measurement capability allow skill-free operation.
- Ceramic zirconia measuring blocks ensure a long service life with minimized maintenance service.
- With an SPC output.

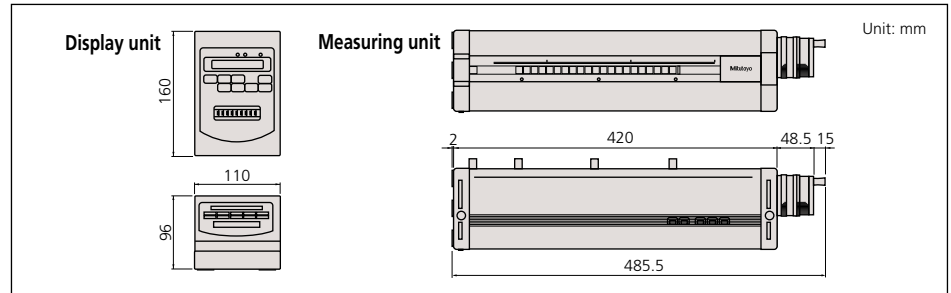


### SPECIFICATIONS

Metric		
Range	Order No.	Block step
20 - 320mm	<b>515-611A</b>	20mm (staggered)

Inch		
Range	Order No.	Block step
.8" - 12.8"	<b>515-612A</b>	1" (staggered)

### DIMENSIONS



# High Precision Square

## SERIES 311

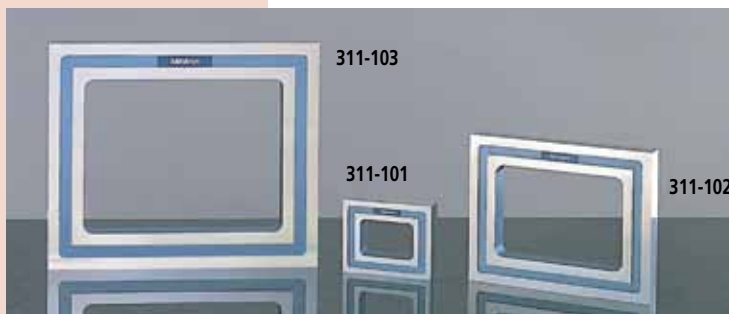
### FEATURES

High precision square is a master gage used for the straightness and perpendicularity inspection of each axis movement such as a CMM and machine tool.

- Precision lapped 4 measuring surfaces
- Less than 1µm/300mm straightness and perpendicularity.

### SPECIFICATIONS

Metric		
Order No.	Dimension (W x L x T)	Mass
<b>311-101</b>	80 x 100 x 25mm	1.1kg
<b>311-102</b>	160 x 200 x 25mm	3.5kg
<b>311-103</b>	250 x 300 x 30mm	8.6kg



# Square Master

## SERIES 311 — Squareness / Straightness Measuring Instrument

### FEATURES

- Squareness (perpendicularity) and straightness measurements can be performed accurately and efficiently by moving a lever.
- With a dial test indicator for reading displacements.
- Its own squareness is adjustable for high accuracy measurement.



311-215



311-225



311-245

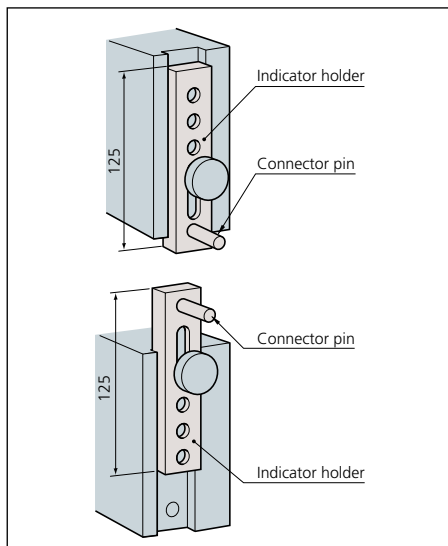
### SPECIFICATIONS

#### Metric

Vertical travel	Order No.	Squareness	Straightness	Mass (kg)
150mm	311-215	3µm	2µm	13.7
250mm	311-225	6µm	2.5µm	16.2
450mm	311-245	9µm	3.5µm	24

#### Inch

Vertical travel	Order No.	Squareness	Straightness	Mass (kg)
6"	311-216	.00012"	.00008"	13.7
10"	311-226	.00024"	.0001"	16.2
18"	311-246	.00036"	.00014"	24



### Technical Data

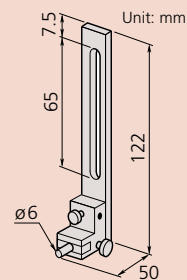
Squareness: Refer to the list of specifications  
 Straightness: Refer to the list of specifications  
 Dial test indicator provided  
 Range: 0.2mm or .008"  
 Graduation: 0.002mm or .0001"  
 Accuracy: 3µm or ±.0001"  
 Dial reading: 0-100-0 (metric) or 0-4-0 (inch)

### Optional Accessory

—: Riser blocks (see page E-27.)\*  
**517-665:** Granite square, 45 (W) x 140 (D) x 280 (H) mm  
**900571:** Adjustable holder  
**900551:** Extension holder  
**900565:** Feeler\*\*  
 \*Not available for 450mm (18") model.  
 \*\*Adapter (**902803**) is required for metric model.

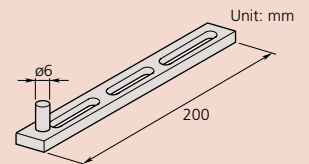
### Adjustable holder

No.900571



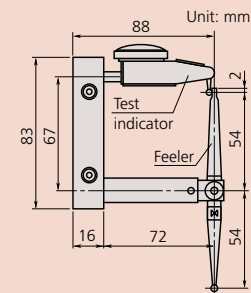
### Extension holder

No.900551



### Feeler

No.900565





### Technical Data

Accuracy (at 20°C):  $(0.5+L/1000)\mu\text{m}$ ,  
 L = Measured length (mm)  
 Glass material: Low expansion glass  
 Thermal expansion coefficient:  $8 \times 10^{-6}/\text{K}$   
 Graduation: 1mm  
 Graduation thickness:  $4\mu\text{m}$   
 Mass: 0.75kg (250mm), 1.8kg (500mm)

### SPECIFICATIONS

#### Metric

Range	Order No.	L	W	T
250mm	<b>182-501-50</b>	280mm	20mm	10mm
250mm	<b>182-501-60*</b>	280mm	20mm	10mm
500mm	<b>182-502-50</b>	530mm	30mm	20mm
500mm	<b>182-502-60*</b>	530mm	30mm	20mm

\*with English JCSS certificate.

# Standard Scales

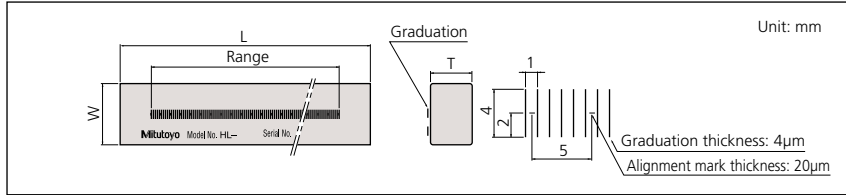
## SERIES 182 — Made of Low Expansion Glass

### FEATURES

- High precision glass scales manufactured under Mitutoyo's leading-edge Linear Scale production technology.
- High accuracy is guaranteed to be used as a standard for calibrating graduated scales.



### DIMENSIONS

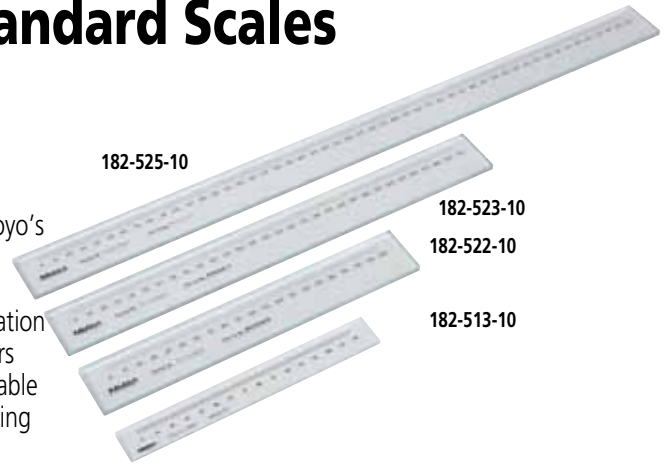


# Working Standard Scales

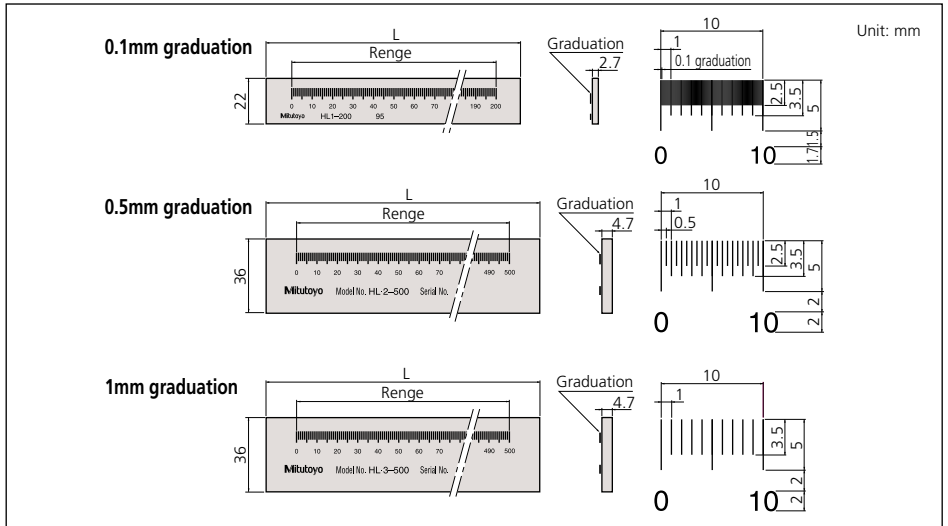
## SERIES 182

### FEATURES

- High precision glass scales manufactured under Mitutoyo's leading-edge Linear Scale production technology.
- Ideal for checking magnification accuracy of profile projectors and microscopes, and the table feeding accuracy of measuring equipment.



### DIMENSIONS



### SPECIFICATIONS

#### Metric

Range	Order No.	Graduation	L	Mass
50mm	<b>182-511-10</b>	0.1mm	75mm	0.23kg
100mm	<b>182-512-10</b>	0.1mm	125mm	0.24kg
150mm	<b>182-513-10</b>	0.1mm	175mm	0.35kg
200mm	<b>182-514-10</b>	0.1mm	225mm	0.36kg
100mm	<b>182-521-10</b>	0.5mm	130mm	0.27kg
200mm	<b>182-522-10</b>	0.5mm	230mm	0.32kg
300mm	<b>182-523-10</b>	0.5mm	330mm	0.57kg
400mm	<b>182-524-10</b>	0.5mm	430mm	0.71kg
500mm	<b>182-525-10</b>	0.5mm	530mm	0.86kg
250mm	<b>182-531-10</b>	1mm	280mm	0.55kg
500mm	<b>182-532-10</b>	1mm	530mm	0.86kg
750mm	<b>182-533-10</b>	1mm	780mm	1.22kg
1000mm	<b>182-534-10</b>	1mm	1030mm	1.54kg

# Steel Squares

## SERIES 916

Regular type and beveled-edge type steel squares.

All edges are hardened and precision ground. (Only blade is hardened on engineers Square)

### SPECIFICATIONS

#### Beveled Edge Squares

Inch

Size	Order No.	Outside Dim.	Squareness
2"	916-100	2 x 1.6"	.00010"
3"	916-101	3 x 2"	.00011"
4"	916-102	4 x 2.75"	.00012"
6"	916-103	6 x 4"	.00014"
8"	916-104	8 x 5"	.00018"

#### Regular Squares

Inch

Size	Order No.	Outside Dim.	Squareness
3"	916-401	2.9 x 1.9"	.00026"
4"	916-402	3.9 x 2.7"	.00028"
6"	916-403	5.9 x 3.9"	.00032"
8"	916-404	7.8 x 5.1"	.00036"
10"	916-405	9.8 x 6.5"	.00040"
12"	916-406	11.8 x 7.8"	.00044"
16"	916-407	15.7 x 9.8"	.00052"
20"	916-408	19.6 x 11.8"	.00059"
30"	916-409	29.7 x 15.7"	.00080"
40"	916-410	39.3 x 19.6"	.00116"

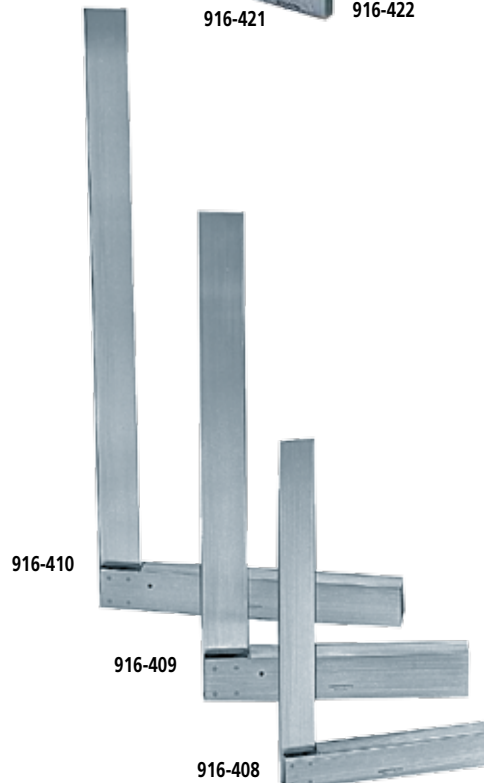
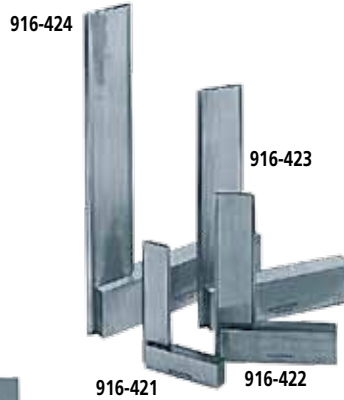
#### Regular Squares "Engineers Square"

Size	Order No.	Outside Dim.	Squareness
2"	916-590	2.70 x 1.98"	.00063"
3"	916-591	3.73 x 2.38"	.00063"
4"	916-592	4.65 x 2.97"	.00063"
6"	916-593	6.85 x 3.93"	.00063"
9"	916-594	10.50 x 6.30"	.0008"
12"	916-595	13.63 x 8.25"	.001"
18"	916-596	20.25 x 10.50"	.0012"
24"	916-597	26.83 x 13.35"	.0015"
2, 3, 4, 6" Set	916-598		
4, 6, 9, 12" Set	916-599		

#### Beveled Edge Squares with Beam

Inch

Size	Order No.	Outside Dim.	Squareness
3"	916-421	3 x 2"	.000091"
4"	916-422	4 x 2.75"	.000094"
6"	916-423	6 x 4"	.00010"
8"	916-424	8 x 5"	.00011"



# Knife Edge Straight Edge

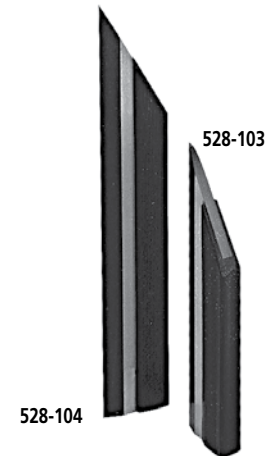
## SERIES 528

The test edge is approximately .004" in thickness, a cross section of which has radius to provide a straight line contact with the work surface. Straightness is  $\pm .00005"$ .

For ease of inspection, the blade is dyed in black, and the upper edge is covered with a grip plate. The acute angle is 30 degrees.

### SPECIFICATIONS

Length	Order No.	Remarks
4"	528-102	with protective cover
6"	528-103	with protective cover
8"	528-104	with protective cover
10"	528-105	with protective cover



# Precision Dial Square

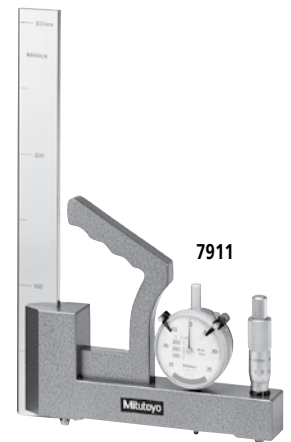
## SERIES 7

### FEATURES

- Regular type and beveled-edge type blades are interchangeable.
- Dial indicator shows squareness directly.

### SPECIFICATIONS

Size	Order No.	Range	Squareness
300mm	7911	$\pm 0.17\text{mm}$	$\pm 2.5\mu\text{m}/300\text{mm}$
600mm	7912	$\pm 0.24\text{mm}$	$\pm 5\mu\text{m}/600\text{mm}$

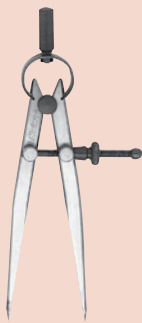


# Spring Dividers and Calipers

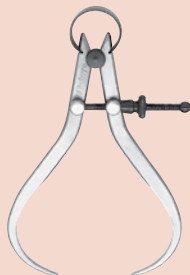
## SERIES 950

### FEATURES

- Spring Divider — Fully hardened and tempered joints, spring, washers and divider points.
- Outside Spring Caliper — Contact ends fully rounded to give accurate dimensions.
- Inside Spring Caliper — Ends fully rounded to give accurate contact with a workpiece.



950-211  
Spring divider



950-221  
Outside spring calipers



950-231  
Inside spring calipers



950-241  
Hermaphrodite calipers

### SPECIFICATIONS

Range	Order No.			
	Spring divider	Outside spring calipers	Inside spring calipers	Hermaphrodite calipers
4" (100mm)	950-211	950-221	950-231	950-241
6" (150mm)	950-212	950-222	950-232	950-242
8" (200mm)	950-213	950-223	950-233	
10" (250mm)	950-214	950-224	950-234	
12" (300mm)	950-215	950-225	950-235	
6" (150mm)	—	—	950-236*	—

\* Quick nut model.

# Combination Square Set

## SERIES 180

### FEATURES

- Measuring head are attached to the graduated steel rule (blade), allowing versatile measurements on various types of workpieces
- The measuring head come hardened or cast iron-not-hardened
- Economy sets not including a protractor head are also available

### Technical Data

- Square head: Used to set the rule at 90 degrees or 45 degrees to an edge of a workpiece.
- Center head: Used to locate centers of round workpieces
- Protractor head: Used to set the rule at a desired angle to an edge of a workpiece. Also used for measuring angles.

### SPECIFICATIONS

#### Head Only Hardened

Order No.	Description
180-102U	Square Head for 12"/300mm to 24"/600mm
180-202U	Center Head for 12"/300mm to 24"/600mm

#### Head Only Cast iron-not hardened

Order No.	Description
180-112U	Square Head for 12"/300mm to 24"/600mm
180-212U	Center Head for 12"/300mm to 24"/600mm
180-301U	Protractor Head for 12"/300mm to 24"/600mm
180-113U	Double Square Head for 4"/100mm and 6"/150mm

#### Inch/Metric Hardened Combination Square Sets

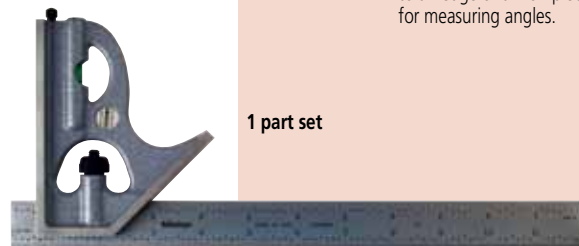
Set No.	Blade		Square Head	Center Head	Protractor Head	
	Size	Type				
180-903U	12"	4R	180-501U	180-102U	180-202U	-
180-904U	12"	16R	180-502U	180-102U	180-202U	-
180-905U	12"	4R	180-501U	180-102U	180-202U	180-301U*
180-906U	12"	16R	180-502U	180-102U	180-202U	180-301U*
180-907U	12"/300mm	E/M	180-503U	180-102U	180-202U	180-301U*
180-910U	300mm	Metric	180-505U	180-102U	180-202U	180-301U*
180-931U	12"	4R	180-501U	180-102U	-	-
180-932U	12"	16R	180-502U	180-102U	-	-
180-933U	12"/300mm	E/M	180-503U	180-102U	-	-
180-934U	300mm	Metric	180-505U	180-102U	-	-

\*Cast iron-not hardened

#### Inch/Metric Cast iron-not hardened Combination Square Sets

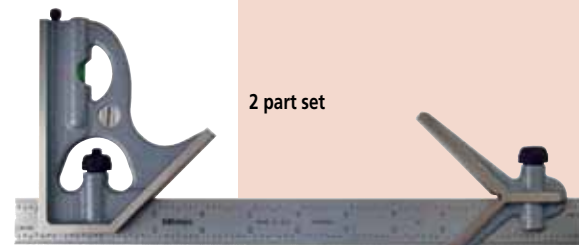
Set No.	Blade		Square Head	Center Head	Protractor Head	
	Size	Type				
180-803U	12"	4R	180-501U	180-112U	180-212U	-
180-804U	12"	16R	180-502U	180-112U	180-212U	-
180-805U	12"	4R	180-501U	180-112U	180-212U	180-301U
180-806U	12"	16R	180-502U	180-112U	180-212U	180-301U
180-807U	12"/300mm	E/M	180-503U	180-112U	180-212U	180-301U
180-810U	300mm	Metric	180-505U	180-112U	180-212U	180-301U
180-831U	12"	4R	180-501U	180-112U	-	-
180-832U	12"	16R	180-502U	180-112U	-	-
180-833U	12"/300mm	E/M	180-503U	180-112U	-	-
180-834U	300mm	Metric	180-505U	180-112U	-	-

\*Cast iron-not hardened



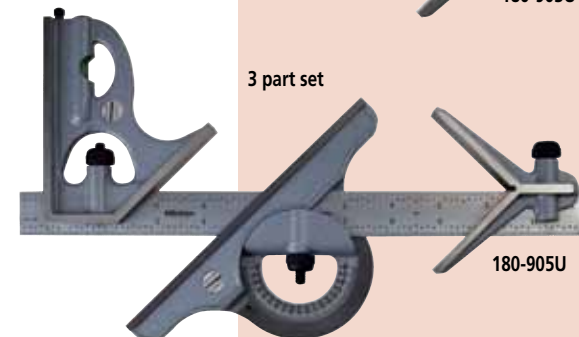
1 part set

180-931U



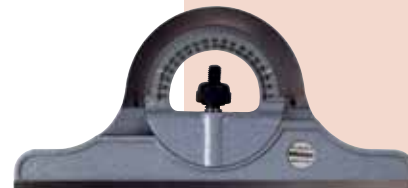
2 part set

180-903U

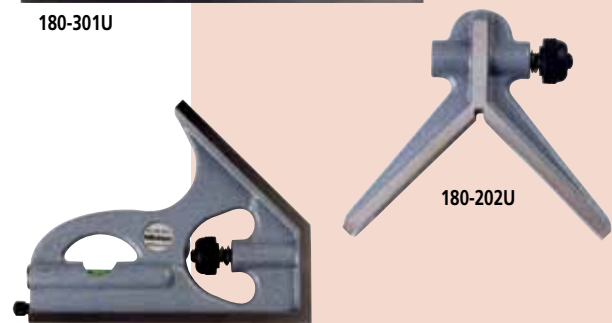


3 part set

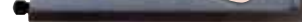
180-905U



180-301U



180-202U



180-102U



# Combination Square Set

## SERIES 180

### Technical Data

Square head: Used to set the rule at 90 degrees or 45 degrees to an edge of a workpiece.  
 Center head: Used to locate centers of round workpieces.  
 Protractor head: Used to set the rule at a desired angle to an edge of a workpiece. Also used for measuring angles.

### FEATURES

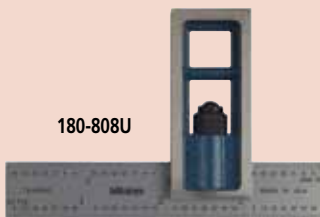
- Three measuring heads are attached to the stainless steel rule (blade), allowing versatile measurements on various types of workpieces.
- The measuring heads are hardened.
- Economy sets not including a protractor head are also available.

### SPECIFICATIONS

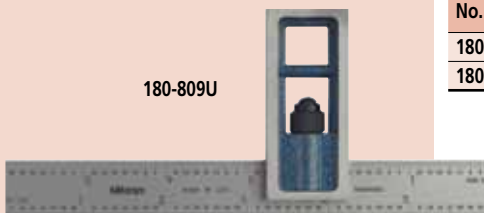
Inch / Metric		Blades only	
Order No.	Length	Graduations	Accuracy (length)
180-406U	4"	8, 16, 32, 64ths (4R)	+0.004" (+0.1mm) -0.0035" (-0.09mm)
180-407U	4"	32, 64, 50, 100ths (16R)	
180-408U	4" x 100mm	32, 64ths, 1, 0.5mm	
180-409U	100mm	1, .5, 1, 0.5mm	
180-401U	6"	8, 16, 32, 64ths (4R)	
180-402U	6"	32, 64, 50, 100ths (16R)	
180-403U	6" x 150mm	32, 64ths, 1, 0.5mm	+0.005" (+0.13mm) -0.0035" (-0.09mm)
180-405U	150mm	1, .5, 1, 0.5mm	
180-501U	12"	8, 16, 32, 64ths (4R)	
180-502U	12"	32, 64, 50, 100ths (16R)	
180-503U	12" x 300mm	32, 64ths, 1, 0.5mm	
180-505U	300mm	1, .5, 1, 0.5mm	
180-701U	18"	8, 16, 32, 64ths (4R)	+0.006" (+0.15mm) -0.0035" (-0.09mm)
180-702U	18"	32, 64, 50, 100ths (16R)	
180-703U	18" x 450mm	32, 64ths, 1, 0.5mm	
180-705U	450mm	1, .5, 1, 0.5mm	
180-601U	24"	8, 16, 32, 64ths (4R)	
180-602U	24"	32, 64, 50, 100ths (16R)	
180-603U	24" x 600mm	32, 64ths, 1, 0.5mm	+0.007" (+0.18mm) -0.0035" (-0.09mm)
180-605U	600mm	1, .5, 1, 0.5mm	



180-501U



180-808U



180-809U

# Double Square Set

## SERIES 180

Inch Cast iron-not hardened square sets

Set Order No.	Blade		Double Square Head	
	Size	Type		
180-808U	4"	4R	180-406U	180-113U
180-809U	6"	4R	180-401U	180-113U

# Steel Rules

## SERIES 182

### FEATURES

- Clear graduations on satin-chrome finish.
- Stainless tempered.



182-125



182-110

### SPECIFICATIONS

#### Wide Rigid Rules (thickness 3/64")

Order No.	Black Chrome Rule Order No.	Size	Graduations				Width	Accuracy (Length)	
			1/8	1/16	1/32	1/64th			
182-101	182-109	6"(4R)	1/8	1/16	1/32	1/64th	3/4"	+ .004" / - .0035" (+0.1mm / -0.09mm)	
182-102	182-112	6"(16R)	1/32	1/64	1/50	1/100th	3/4"		
182-103	182-110	6"(5R)	1/32	1/64	1/10	1/100th	3/4"		
182-104	182-113	6"(3R)	1/32	1/64	1/10	1/50th	3/4"		
182-105	182-114	6" x 150mm	1/32	1/64	1mm	0.5mm	3/4"		
182-106	—	6" x 150mm	1/50	1/100	1mm	0.5mm	3/4"		
182-107	—	6" x 150mm	1/10	1/100	1mm	0.5mm	3/4"		
182-108	—	6" x 150mm	1/10	1/50	1mm	0.5mm	3/4"		
182-111	182-115	150mm	1mm	0.5mm	1mm	0.5mm	19mm	+ .005" / - .0035" (+0.13mm / -0.09mm)	
182-121	182-127	12"(4R)	1/8	1/16	1/32	1/64th	1"		
182-122	182-129	12"(16R)	1/32	1/64	1/50	1/100th	1"		
182-123	182-128	12"(5R)	1/32	1/64	1/10	1/100th	1"		
182-124	—	12"(3R)	1/32	1/64	1/10	1/50th	1"		
182-125	182-130	12" x 300mm	1/32	1/64	1mm	0.5mm	1"		
182-126	—	12" x 300mm	1/50	1/100	1mm	0.5mm	1"		
182-131	182-132	300mm	1mm	0.5mm	1mm	0.5mm	25mm		
182-241	182-146	18"(4R)	1/8	1/16	1/32	1/64	13/16"	+ .006" / - .035" (+0.15mm / -0.09mm)	
182-142	182-148	18"(16R)	1/32	1/64	1/50	1/100th	13/16"		
182-143	182-147	18"(5R)	1/32	1/64	1/10	1/100th	13/16"		
182-144	—	18"(3R)	1/32	1/64	1/10	1/100th	13/16"		
182-145	—	18" x 450mm	1/32	1/64	1mm	0.5mm	13/16"		
182-151	—	450mm	1mm	0.5mm	1mm	0.5mm	30mm		
182-161	182-166	24"(4R)	1/8	1/16	1/32	1/64	13/16"		+ .007" / - .0035" (+0.18mm / -0.09mm)
182-162	182-168	24"(16R)	1/32	1/64	1/50	1/100th	13/16"		
182-163	182-167	24"(5R)	1/32	1/64	1/10	1/100th	13/16"		
182-164	—	24"(3R)	1/32	1/64	1/10	1/50th	13/16"		
182-165	—	24" x 600mm	1/32	1/64	1mm	0.5mm	13/16"		
182-171	—	600mm	1mm	0.5mm	1mm	0.5mm	30mm		
182-401	—	36"(4R)	1/8	1/16	1/32	1/64	11/4"	+ .008" / - .004" (+0.2mm / -0.1mm)	
182-403	—	36"(16R)	1/32	1/64	1/50	1/100th	11/4"		
182-405	—	36"(5R)	1/32	1/64	1/10	1/100th	11/4"		
182-406	—	36" x 900mm	1/32	1/64	1mm	0.5mm	11/4"		
182-402	—	48"(4R)	1/8	1/16	1/32	1/64	11/4"		
182-404	—	48"(16R)	1/32	1/64	1/50	1/100th	11/4"		
182-407	—	48" x 1219.2mm	1/32	1/64	1mm	0.5mm	11/4"		

# Steel Rules

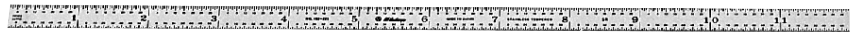
## SERIES 182

### FEATURES

- Clear graduations on satin-chrome finish.
- Stainless tempered.



182-265



182-223

### SPECIFICATIONS

#### Full-Flexible Rules (thickness 1/64")

Order No.	Black Chrome Rule Order No.	Size	Graduations				Width	Accuracy (Length)
182-201	182-212	6"(4R)	1/8	1/16	1/32	1/64th	1/2"	+0.004" / -0.0035" (+0.1mm / -0.09mm)
182-202	182-214	6"(16R)	1/32	1/64	1/50	1/100th	1/2"	
182-203	182-213	6"(5R)	1/32	1/64	1/10	1/100th	1/2"	
182-204	182-215	6"(3R)	1/32	1/64	1/10	1/50th	1/2"	
182-205	182-216	6" x 150mm	1/32	1/64	1mm	0.5mm	1/2"	
182-206	—	6" x 150mm	1/50	1/100	1mm	0.5mm	1/2"	
182-207	—	6" x 150mm	1/10	1/100	1mm	0.5mm	1/2"	
182-208	—	6" x 150mm	1/10	1/50	1mm	0.5mm	1/2"	
182-211	182-209	150mm	1mm	0.5mm	1mm	0.5mm	12mm	+0.005" / -0.0035" (+0.13mm / -0.09mm)
182-221	182-217	12"(4R)	1/8	1/16	1/32	1/64th	1/2"	
182-222	182-219	12"(16R)	1/32	1/64	1/50	1/100th	1/2"	
182-223	182-218	12"(5R)	1/32	1/64	1/10	1/100th	1/2"	
182-224	—	12"(3R)	1/32	1/64	1/10	1/50th	1/2"	
182-225	182-220	12" x 300mm	1/32	1/64	1mm	0.5mm	1/2"	
182-226	—	12" x 300mm	1/50	1/100	1mm	0.5mm	1/2"	
182-231	182-210	300mm	1mm	0.5mm	1mm	0.5mm	12mm	
182-141	182-246	18"(4R)	1/8	1/16	1/32	1/64	3/4"	+0.006" / -0.0035" (+0.15mm / -0.09mm)
182-242	182-248	18"(16R)	1/32	1/64	1/50	1/100th	3/4"	
182-243	182-247	18"(5R)	1/32	1/64	1/10	1/100th	3/4"	
182-244	—	18"(3R)	1/32	1/64	1/10	1/50th	3/4"	
182-245	—	18" x 450mm	1/32	1/64	1mm	0.5mm	3/4"	
182-251	—	450mm	1mm	0.5mm	1mm	0.5mm	18mm	
182-261	182-266	24"(4R)	1/8	1/16	1/32	1/64	3/4"	+0.007" / -0.0035" (+0.18mm / -0.09mm)
182-262	182-268	24"(16R)	1/32	1/64	1/50	1/100th	3/4"	
182-263	182-267	24"(5R)	1/32	1/64	1/10	1/100th	3/4"	
182-264	—	24"(3R)	1/32	1/64	1/10	1/50th	3/4"	
182-265	—	24" x 600mm	1/32	1/64	1mm	0.5mm	3/4"	
182-271	—	600mm	1mm	0.5mm	1mm	0.5mm	18mm	

#### Flexible Rules

182-411	—	36"(4R)	1/8	1/16	1/32	1/64	3/4"	+0.007" / -0.0035" (+0.18mm / -0.09mm)
182-413	—	36"(16R)	1/32	1/64	1/50	1/100th	3/4"	
182-415	—	36"(5R)	1/32	1/64	1/10	1/100th	3/4"	
182-416	—	36" x 900mm	1/32	1/64	1mm	0.5mm	3/4"	+0.008" / -0.004" (+0.2mm / -0.1mm)
182-412	—	48"(4R)	1/8	1/16	1/32	1/64	3/4"	
182-414	—	48"(16R)	1/32	1/64	1/50	1/100th	3/4"	

# Semi-Flexible Rules

## SERIES 182

### FEATURES

- Engraved on frontside only



182-304

### SPECIFICATIONS

Inch/Metric								
Order No.	Size	Graduations					Width	Accuracy (Length)
182-301	4" x 100mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	+0.004" / -0.0035" (+0.1mm / -0.09mm)
182-302	6" x 150mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	
182-303	8" x 200mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	
182-304	10" x 250mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	+0.005" / -0.0035" (+0.13mm / -0.09mm)
182-305	12" x 300mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	
182-307	20" x 500mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	+0.007" / -0.0035" (+0.18mm / -0.09mm)
182-309	40" x 1000mm	1/2mm	1mm	1/32	1/64	1/16th	5/8"	+0.008" / -0.004" (+0.2mm / -0.1mm)

# Hook Rules

## SERIES 182

### FEATURES

- Hardened and tempered tool steel.
- Hard chrome finish.
- Furnished with adjustable hook.



182-421

### SPECIFICATIONS

Order No.	Size	Graduations					Width	Accuracy (Length)
182-421	6" (4R)	1/8	1/16	1/32	1/64	3/4"	+0.004" / -0.0035"	
182-422	12" (4R)	1/8	1/16	1/32	1/64	1"	+0.005" / -0.0035"	
182-423	18" (4R)	1/8	1/16	1/32	1/64	1-1/8"	+0.006" / -0.0035"	
182-424	24" (4R)	1/8	1/16	1/32	1/64	1-1/8"	+0.007" / -0.0035"	

# Pocket Steel Rule

## SERIES 950

### FEATURES

- Engraved on frontside only.
- Backside: Inch/Metric equivalents



950-300

### SPECIFICATIONS

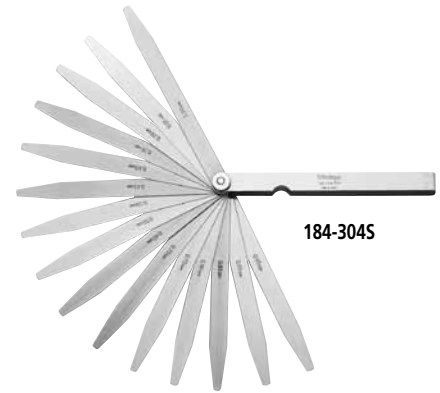
Order No.	Size	Graduation		Width	Accuracy (Length)
950-300	6" x 150mm	1mm	1/64ths	1/2"	+0.004" / -0.0035" (+0.1mm / -0.09mm)
950-301	6"	1/32nds	1/64ths	1/2"	+0.004" / -0.0035"

# Thickness Gages

## SERIES 950, 184

### FEATURES

- Metric thickness gages are available with tapered leaves.
- Each leaf is marked with its thickness.
- Each leaf is detachable if necessary.



184-304S

### Technical Data

Accuracy of Leaves Thickness

#### Nominal Thickness

Metric

0.01mm to less than 0.06mm:	±0.003mm
0.06mm to less than 0.10mm:	±0.004mm
0.10mm to less than 0.35mm:	±0.005mm
0.35mm to less than 0.65mm:	±0.008mm
0.65mm to less than 3.0mm:	±0.01mm

Inch

.0015 to less than .007":	±.0002"
.007 to less than .015":	±.0003"
.015 to less than .025":	±.0004"
.026 to less than .030":	±.00045"
.031 to less than .040":	±.0005"
.041 to less than .075":	±.00055"
.076 to less than .100":	±.0006"
.101 to less than .200":	±.00065"
.200" and over :	±.00075"

#### Tolerance

### SPECIFICATIONS

#### Inch

Range	Order No.	Type of Blade	Blade Length	Composition of leaves
.002" - .035" (26 leaves)	<b>950-251</b>	Straight 1/2" width	3"	.002 thru .018" by .001" step plus .022, .024, .025, .028, .030, .032, .035"
.0015" - .025" (26 leaves)	<b>950-252</b>	Tapered 1/4" width at tip	3"	.002 thru .025" by .001" step plus .0015, .0025"
.0015" - .200" (15 leaves)	<b>950-254</b>	Straight 1/2" width	3"	.0015, .002, .003, .004, .006, .008, .010, .012, .015, .020, .030, .040, .075, .100, .200"
.0015" - .200" (13 leaves)	<b>950-255</b>	Straight 1/2" width	4.5"	.0015, .002, .003, .004, .006, .008, .010, .020, .030, .040, .075, .100, .200"
.0015" - .015" (8 leaves)	<b>950-256</b>	Straight 1/2" width	6"	.0015, .002, .003, .004, .008, .010, .012, .015"

#### Metric

Range	Order No.	Type of Blade	Blade Length	Composition of leaves
0.05 - 1mm	<b>184-313S</b>	Straight 13mm width	100mm	28 leaves: 0.05 - 0.15mm by 0.01mm, 0.2 - 1mm by 0.05mm
	<b>184-303S</b>	Straight 13mm width	150mm	28 leaves: 0.05 - 0.15mm by 0.01mm, 0.2 - 1mm by 0.05mm
0.05 - 1mm	<b>184-305S</b>	Straight 13mm width	100mm	20 leaves: 0.05 - 1mm by 0.05mm
	<b>184-301S</b>	Straight 13mm width	150mm	13 leaves: 0.05 - 0.3mm by 0.05mm, 0.4 - 1mm by 0.1mm
0.05 - 0.8mm	<b>184-306S</b>	Straight 13mm width	100mm	10 leaves: 0.05 - 0.2mm by 0.05mm, 0.3 - 0.8mm by 0.1mm
	<b>184-308S</b>	Straight 13mm width	150mm	10 leaves: 0.05 - 0.2mm by 0.05mm, 0.3 - 0.8mm by 0.1mm
0.03 - 0.5mm	<b>184-307S</b>	Straight 13mm width	100mm	13 leaves: 0.03 - 0.1mm by 0.01mm, 0.2 - 0.5mm by 0.1mm, 0.15mm
	<b>184-302S</b>	Straight 13mm width	150mm	13 leaves: 0.03 - 0.1mm by 0.01mm, 0.2 - 0.5mm by 0.1mm, 0.15mm

# Precision Levels

## SERIES 960

### FEATURES

- High precision longitudinal and transverse vials make it possible to check or level surfaces.

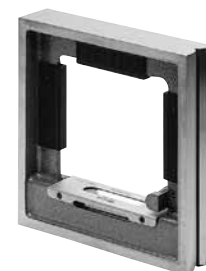
### SPECIFICATIONS

Order No.	Sensitivity	Accuracy	Dimensions (W x D x H)
<b>960-703</b>	0.02mm/m	±0.006mm	200 x 44 x 200mm

Order No.	Sensitivity	Accuracy	Dimensions		
			W	D	H
<b>960-111</b>	.0012"/12"	±.0006"	7.87"	1.73"	1.50"
<b>960-112</b>	.0006"/12"	±.0003"	7.87"	1.73"	1.50"
<b>960-613</b>	.00024"/12"	±.00017"	7.87"	1.73"	1.50"



960-111



960-703

# Digital Universal Protractor

## SERIES 187

### FEATURES

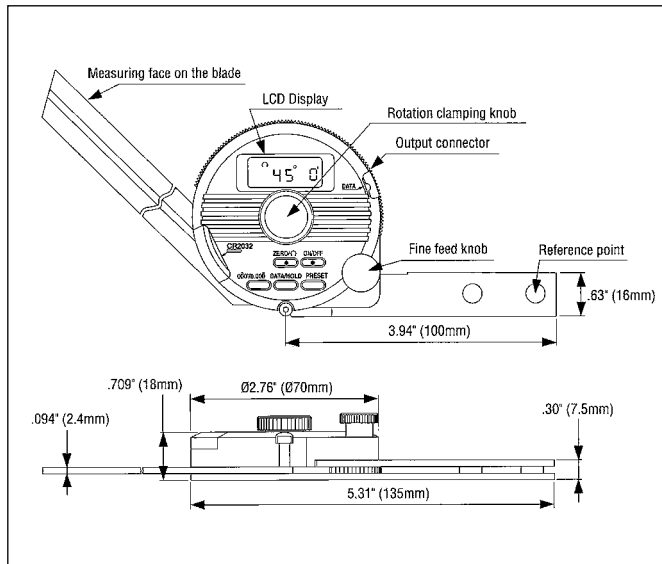
- Data output function make it easy to see the statistical data.
- Can be attached to height gages. gage holder (950750, metric)
- Setting preset value.
- Removable blade.



### SPECIFICATIONS

Code No.	187-552
Model	BP-D300E
Blade	12" (187-103)
Display	LCD - 5 digit, (-) sign, character height 6.5mm
Measuring range	-360° ~ +360°
Resolution	1' (0.01°)
Accuracy	± 2' (±0.03°)
Repeatability	1' (0.01°)
Mass	1.45 lbs (659g)
Dust / Water protection level	IP40
Function	Zero, Direction select, Data output / Data hold, Preset, Switchable Seagesimal or Decimal Natation
Max. response speed	3 rps
Battery	Lithium battery (CR2032) 1 pc. (Part No. 055AA217)
Battery life	2,000 hours
Alarm	Battery voltage low, Over speed error (Err)
Temperature	Operation temperature: 0 to 40°C Storage temperature: -10 to 60°C

### DIMENSIONS



### Technical Data

Range:	-360° to +360°
Tolerance:	±2' (±0.03°)
Repeatability:	1'
Resolution:	1' (0.01°)
Battery:	Lithium Battery
Battery life:	2,000 hours

### Function

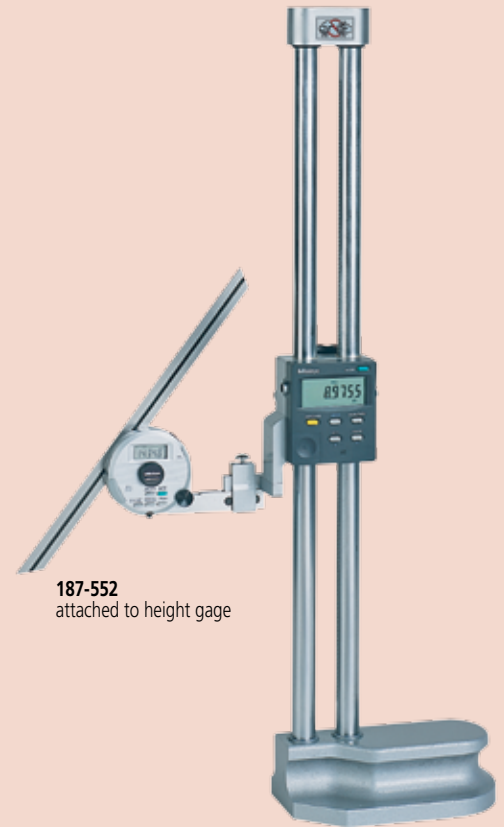
Presetting

### Standard Accessories

- 12" Blade (Code No. 187-103)
- Battery (CR2032) (Part No. 055AA217)
- Clamp box for Inch Height Gage (Part No. 950749)
- Plastic Case

### Optional Accessories

- 187-104 6" blade
- 187-105 Acute angle attachment
- 950750 Clamp box for Metric Height Gage
- 905338 Connecting cable (40" / 1m)
- 905409 Connecting cable (80" / 2m)



187-552  
attached to height gage



# Universal Bevel Protractor

## SERIES 187

### Technical Data

Graduation:	5min. (0° - 90° - 0°)
Accuracy	
Vernier	±5'
Straightness	[.00016" + (.00005xL/2)]"
Parallelism	[.00016" + (.00005xL/2)]"
L = Length in inch	
Diameter:	2.56" / 70mm

### FEATURES

- High-precision angle gage for accurate angle measurement of machines, molds, and jigs.
- Can be attached to height gages.



187-904



### SPECIFICATIONS

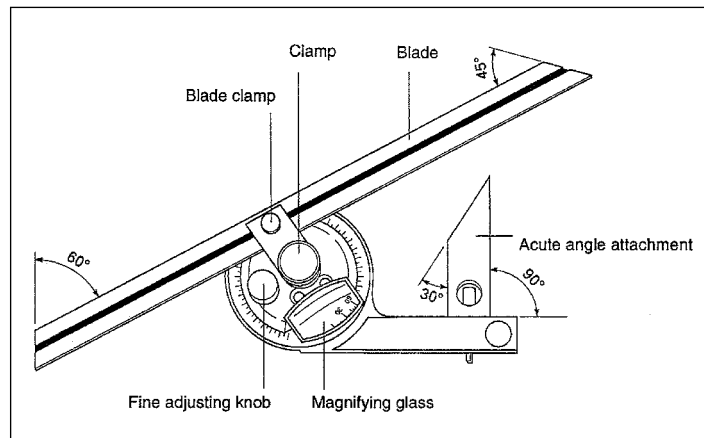
#### Universal Bevel Protractors

Order No.	Dial	Vernier	Graduation
			Remarks
187-904	1°	5 min	with 6" blade (187-104) and Clamp box for Inch Height Gages (950749)
187-906	1°	5min	with 12" blade (187-103) and Clamp box for Inch Height Gages (950749)

#### Universal Bevel Protractor Accessories and Parts

Order No.	Remarks
187-103	12" Blade.
187-104	6" Blade.
187-105	Acute angle attachment
950749	Clamp box for Inch Height Gages
950750	Clamp box for Metric Height Gages

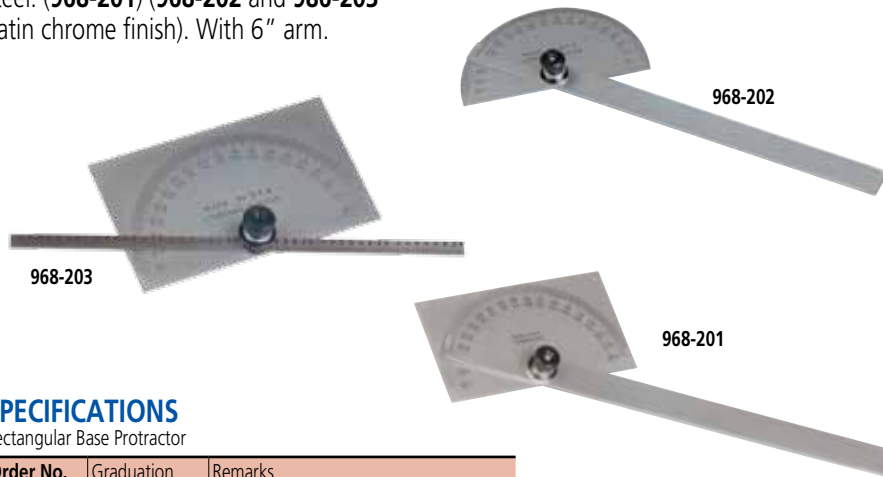
### DIMENSIONS



# Protractor

## SERIES 968

Basegular Base Protractor's scale plate and indicator blade are made entirely of stainless steel. (968-201) (968-202 and 986-203 Satin chrome finish). With 6" arm.



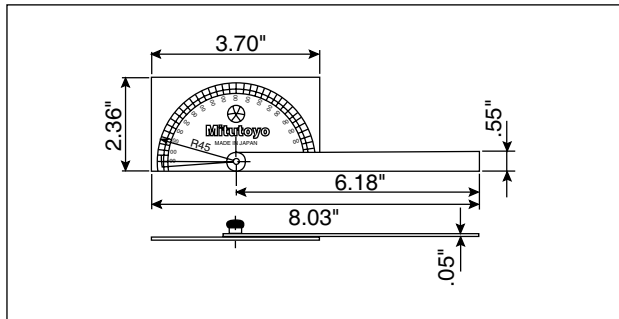
### SPECIFICATIONS

Rectangular Base Protractor

Order No.	Graduation	Remarks
968-201	1°	Protractor Graduation: 0°-90°, 90°-180°, 180°-90°, 90°-0°
968-202	1°	Semi-Circle: 0°-180°, 180°-0°
968-203*		Rectangle: 0°-180°, 180°-0°

\*6" Arm with graduation rule.

### DIMENSIONS



# Bevel Protractor

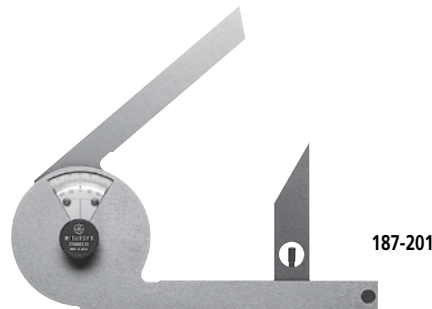
## SERIES 187

### FEATURES

- Consists of three sheets of stainless steel, the middle one of which is made for angle measurements.

### SPECIFICATIONS

Order No.	Graduation	Remarks
187-201	1° / 5 min	Center black knob locks the blade position Protractor Graduation: 0°-90°, 90°-0°



### Technical Data

Graduation: 5 min. (0° - 90° - 0°)  
Blade edge angle: 30° and 60°  
Diameter: 2.56" / 70mm

# Depth Gage, Adjustable Angle

## SERIES 950

### FEATURES

- Head made of hardened steel.
- Base surface measures 2-1/2" x 1/8" thick.
- Includes 6" rule: 7/32" wide and .041" thick.
- Includes 6" rod: 3/32" diameter.

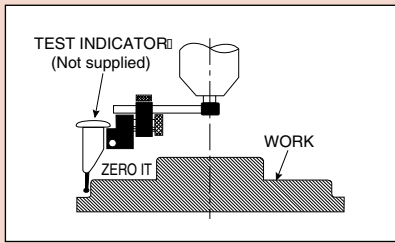


### SPECIFICATIONS

Order No.	Protractor Graduation	Rule Graduation
950-271	30°, 45°, 60°	1/32", 1/64"

# Zero-It

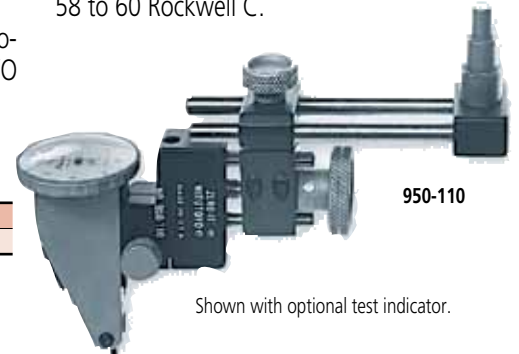
## SERIES 950



"Zero-It" is specially designed for MITUTOYO Test Indicators with Dovetails, and functions as a quick and practical work positioning device.

Attach "Zero-It" directly to the collet, then zero in the work position by reading MITUTOYO

Test Indicator. The hardened clamping post consists of three ODs, from top, 1/4", 3/8" and 1/2", and has hardness of approximately 58 to 60 Rockwell C.



### SPECIFICATIONS

Order No.	Coarse	Fine
950-110	10°	3/8"

# Zero-Setter

## SERIES 950

Fast and sure establishment of "0" reference point with built-in indicator.

Spring loaded setting face to safe guard against damage from over run.

Body dia. 1.44" (36.5mm)

Wooden case included.



### SPECIFICATIONS

Order No.	Height	Graduation
950-111	1"	.0005"
950-112	25mm	0.01mm

# Angle Gages

**SERIES 186**

## FEATURES

- Manufactured from stainless steel, satin finished.
- 18 individual gages for easy use.
- Eight gaging surfaces per gage.
- Precision finished edges for accurate checking.
- Each gage checks primary, 1/2 primary and complementary angles.
- Sharp cornered workpieces can be checked at all 8 angles except below 50° on primary angle 2.
- Quick and accurate inspection of angles and I.D. or O.D. chamfers—in or out of the machine.
- Positioning of lathe tools for chamfers.
- Inspecting angles on ground form tools and cutters.
- Fast set-ups and fixturing of workpieces.
- Eliminates time consuming measuring set-ups.



186-910

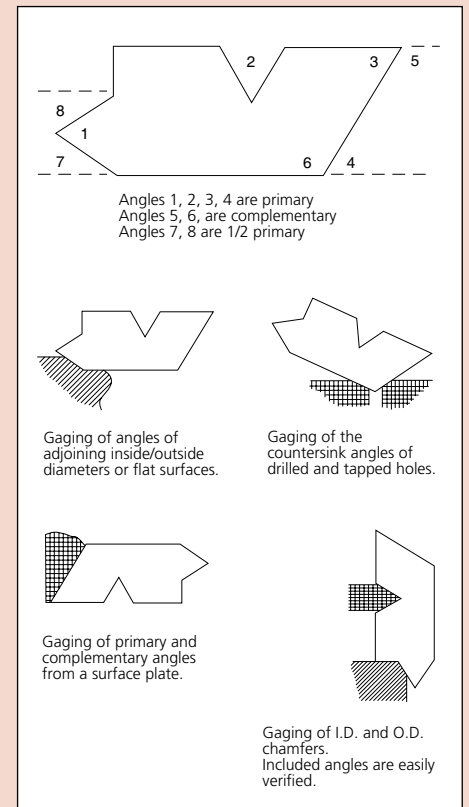
## SPECIFICATIONS

Set Order No.	Description	No. of Leaves
186-910	Angle Gage Set w/case	18

### Individual Part No.

Inch				
Part No.	Primary Angle	1/2 Primary Angle	Accuracy	Complementary Angle
051000*	5°	2° 30'	±5'	175°
051001*	10°	5°	±5'	170°
051002*	15°	7° 30'	±5'	165°
051003	20°	10°	±5'	160°
051004	35°	12° 30'	±5'	155°
051005	30°	15°	±5'	150°
051006	35°	17° 30'	±5'	145°
051007	40°	20°	±5'	140°
051008	45°	22° 30'	±5'	135°
051009	50°	25°	±5'	130°
051010	55°	27° 30'	±5'	125°
051011	60°	30°	±5'	120°
051012	65°	32° 30'	±5'	115°
051013	70°	35°	±5'	110°
051014	75°	37° 30'	±5'	105°
051015	80°	40°	±5'	100°
051016	85°	42° 30'	±5'	95°
051017	90°	45°	±5'	90°
051018	Vinyl Case			

\* Angle 2 omitted



# Angle Blocks

## SERIES 981

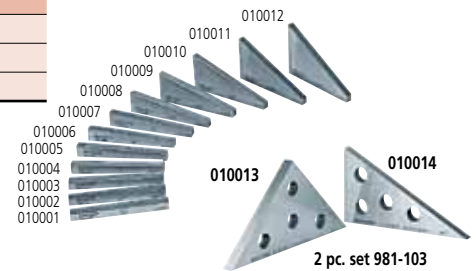
### SPECIFICATIONS

Order No.	Angle	Accuracy	Remarks
010001	1/4°	±20 sec	Hardened steel over HRC 55 Precision ground throughout
010002	1/2°		
010003	1°		
010004	2°		
010005	3°		
010006	4°		
010007	5°		
010008	10°		
010009	15°		
010010	20°		
010011	25°		
010012	30°		
010013	45°, 45°, 90°	± 40 sec	
010014	30°, 60°, 90°		



981-102

Set Order No.	Remarks
981-101	10 pc. Set (Order No. 010003-010012)
981-102	12 pc. Set (Order No. 010001-010012)
981-103	2 pc. Set (Order No. 010013-010014)



2 pc. set 981-103

# Adjustable Parallels

## SERIES 985

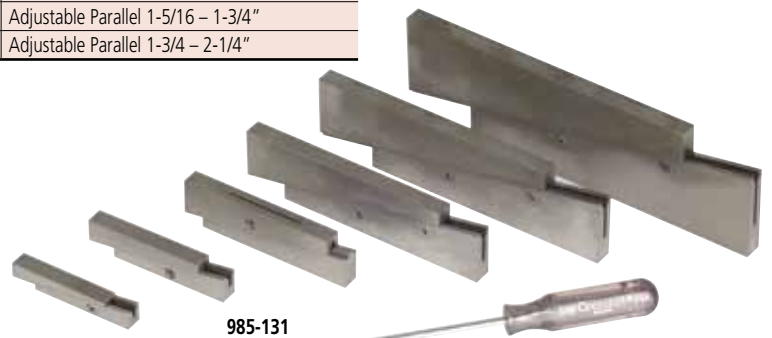
### FEATURES

- Consists of two precision ground pieces which slide smoothly on each other.

- Locked into position by set screws.
- Can be quickly inserted into openings and expanded to exact size, then measured with a micrometer.

### SPECIFICATIONS

Order No.	Remarks
985-130	4 pcs. Adjustable Parallel Set 3/8 – 1-15/16"
985-131	6 pcs. Adjustable Parallel Set 3/8 – 2-1/4"
985-132	Adjustable Parallel 3/8 – 1/2"
985-133	Adjustable Parallel 1/2 – 11/16"
985-134	Adjustable Parallel 11/16 – 15/16"
985-135	Adjustable Parallel 15/16 – 1-5/16"
985-136	Adjustable Parallel 1-5/16 – 1-3/4"
985-137	Adjustable Parallel 1-3/4 – 2-1/4"



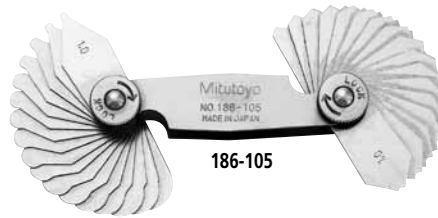
985-131

# Radius Gages

## SERIES 186

### FEATURES

- Radius size is stamped on each gage.
- Both concave and convex radius gages become a pair.
- With a locking clamp.



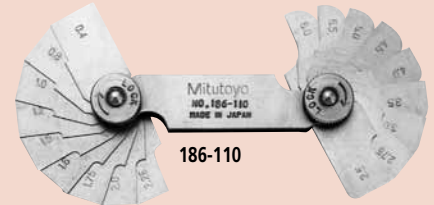
### SPECIFICATIONS

#### Metric

Range	Order No.	Composition of leaves	Remarks
0.4 - 6mm	<b>186-110</b>	18 leaves: 0.4, 0.8, 1, 1.2, 1.5, 1.6mm, 1.75 - 3mm by 0.25mm, 3.5 - 6mm by 0.5mm	90° arc
0.5 - 13mm	<b>186-902</b>	26 leaves: 0.5 - 13mm by 0.5mm	90° arc
1 - 7mm	<b>186-105</b>	34 pairs: 1 - 3mm by 0.25mm 3.5 - 7mm by 0.5mm	180° arc
7.5 - 15mm	<b>186-106</b>	32 pairs: 7.5 - 15mm by 0.5mm	180° arc
15.5 - 25mm	<b>186-107</b>	15 pairs: 15.5 - 20mm by 0.5mm, 21 - 25mm by 1mm	180° arc

#### Inch

Range	Order No.	Composition of leaves	Remarks
1/32" - 17/64"	<b>186-103</b>	16 leaves: 1/32" - 17/64" by 64ths	90° arc
1/32" - 1/4"	<b>186-101</b>	15 pairs: 1/32" - 1/4" by 64ths	180° arc
17/64" - 1/2"	<b>186-102</b>	16 pairs: 17/64" - 1/2" by 64ths	180° arc
9/32" - 33/64"	<b>186-104</b>	16 leaves: 9/32" - 33/64" by 64ths	90° arc

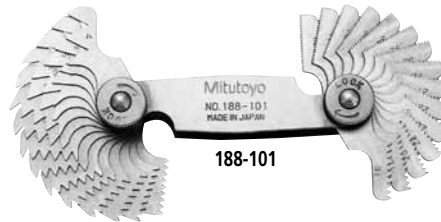


# Pitch Gages

## SERIES 188, 950

### FEATURES

- Thread pitch size is stamped on each gage.
- Metric, Unified, and Whitworth screw pitch gages.



### SPECIFICATIONS

#### Metric Screw Pitch Gages (60°)

Range	Order No.	Composition of leaves
0.25 - 2.5mm	<b>188-153</b>	28 leaves: 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 1.00, 1.10, 1.20, 1.25, 1.30, 1.40, 1.50, 1.60, 1.70, 1.75, 1.80, 1.90, 2.00, 2.50 mm
0.35 - 6mm	<b>188-130</b>	22 leaves: 0.35, 0.4, 0.45, 0.5, 0.6, 0.7, 0.75, 0.8, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6mm and 60° angle gage
0.4 - 7mm	<b>188-122</b>	21 leaves: 0.4, 0.5, 0.7, 0.75, 0.8, 0.9, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm
0.4 - 7mm	<b>188-121</b>	18 leaves: 0.4, 0.5, 0.75, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm

#### Unified Screw Pitch Gages (60°)

Range	Order No.	Composition of leaves
4 - 42 TPI	<b>188-111</b>	30 leaves: 4, 4 1/2, 5, 5 1/2, 6, 7, 8, 9, 10, 11, 11 1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI
4 - 84 TPI	<b>950-253</b>	51 leaves: 4, 4 1/2, 5, 5 1/2, 6, 7, 8, 9, 10, 11, 11 1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84 TPI

Note: Metric and Unified Pitch Gage Set (**188-151**) is available. It consists of **188-122** (Metric) and **188-111** (Unified).

#### Metric and Unified Screw Pitch Gage Set (60°)

Range	Order No.	Composition of leaves
0.4 - 7mm / 4 - 42 TPI	<b>188-151</b>	51 leaves: Set of 188-122 and 188-111
0.5 - 6mm / 4 - 56 TPI	<b>188-152</b>	28 leaves: 4, 6, 8, 10, 11, 11-1/2, 12, 13, 16, 20, 28, 32, 40, 56 TPI 0.50, 0.75, 1.00, 1.23, 1.50, 1.75, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 6.00 mm

#### Whitworth Screw Pitch Gages (55°)

Range	Order No.	Composition of leaves
4 - 42 TPI	<b>188-101</b>	30 leaves: 4, 4 1/2, 5, 5 1/2, 6, 7, 8, 9, 10, 11, 11 1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI
4 - 60 TPI	<b>188-102</b>	28 leaves: 4, 4 1/2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 34, 36, 40, 48, 60 TPI



# Radius Gages-Sets

## SERIES 186

### FEATURES

#### Decimal Radius Gages to 1" Fractional Radius Gages to 1"

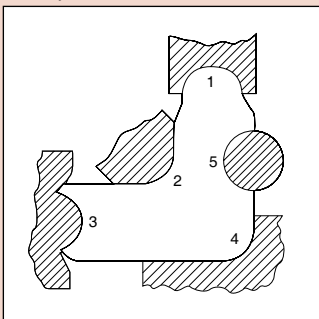
MITUTOYO Radius Gages are recommended for checking or laying out concave or convex radii. An individual gage for each dimension makes it possible to verify radius or fillet dimensions easier, faster and more accurately in machining, layout, inspection and pattern-making work. The measuring surfaces are precisely finished with smooth, accurate edges. The Radius Gages are available separately or in six handy sets. Each Radius Gage has five measuring locations, and it is identified with its particular radius dimensions. The gages have a satin or dull-chrome finish.

The Holding Cases, provided to protect the sets of Radius Gages, have indexed pockets to facilitate the selection of the proper size gage. A 4" long holder is furnished with Set No. 186-901 to make it possible to check radii in confined or hard-to-reach locations.



186-901

Accuracy:  $\pm 0.016'' / 0.04\text{mm}$



5 concave and convex radii per each leaf.

### SPECIFICATIONS

Order No.	No. of Leaves	Sizes	Remarks
186-901	25	1/64"–17/64" by 64ths and 9/32"–1/2" by 32nds	Holder
186-903	17	1/64"–17/64" by 64ths	
186-904	8	9/32"–1/2" by 32nds	
186-905	8	9/16"–1" by 16ths	Holder
186-906	26	.010–.030" by .005" .040–.100" by .010" .120–.300" by .020" .350–.500" by .050"	Holder
186-907	10	.550–1" by .050"	

#### Decimal

Radius	Part No.	Radius	Part No.
.010"	211798	.240"	211816
.015"	211799	.260"	211817
.020"	211800	.280"	211818
.025"	211801	.300"	211819
.030"	211802	.350"	211820
.040"	211803	.400"	211821
.050"	211804	.450"	211822
.060"	211805	.500"	211823
.070"	211806	.550"	211824
.080"	211807	.600"	211825
.090"	211808	.650"	211826
.100"	211809	.700"	211827
.120"	211810	.750"	211828
.140"	211811	.800"	211829
.160"	211812	.850"	211830
.180"	211813	.900"	211831
.200"	211814	.950"	211832
.220"	211815	1.000"	211833

#### Fraction

Radius	Part No.	Radius	Part No.
1/64"	201441	5/16"	201459
1/32"	201442	11/32"	201460
3/64"	201443	3/8"	201461
1/16"	201444	13/32"	201462
5/64"	201445	7/16"	201463
3/32"	201446	15/32"	201464
7/64"	201447	1/2"	201465
1/8"	201448	9/16"	211790
9/64"	201449	5/8"	211791
5/32"	201450	11/16"	211792
11/64"	201451	3/4"	211793
3/16"	201452	13/16"	211794
13/64"	201453	7/8"	211795
7/32"	201454	15/16"	211796
15/64"	201455	1"	211797
1/4"	201456		
17/64"	201457		
9/32"	201458		

# Standard Gages

## SERIES 950

### FEATURES

- Made of high quality steel.
- Satin chrome finish.

### SPECIFICATIONS

Inch		
Order No.	Type	Size
950-202	American Standard Wire Gage	Gage Range 0–36
950-203	U.S. Standard Wire Gage	Gage Range 0–36



950-202



950-203

# Tap and Drill Gage

## SERIES 950

### FEATURES

- Each drill gage is marked with drill size in fractions and decimals.
- Satin chrome finish.
- Tap and drill gage shows the correct tap drill for National Fine or National Coarse thread series.
- Approximate plate size is 6-3/8" x 2-1/2" x 5/64".

### SPECIFICATIONS

Inch/Metric		
Order No.	Type	Size
950-200	Twist Drill and Drill Rod Gage	61-80 Twist Drill and Drill Rod
950-204	Drill Gage / Mach. Screw Gage	Tap Size 2–56 to 1/4–28
950-206	Fractional Drill Gage	Drill Size 1/16" to 1/2"
950-207	Metric Drill Gage	1.5 to 12.5mm 30 holes
950-208	Metric Drill Gage	1.0 to 5.9mm 57 holes
950-209	A to Z Alphabet Drill Gage	Drill size A to Z
950-276	Twist Drill and Drill Rod Gage	1-60 Twist Drill and Drill Rod



950-209



950-204

# Drill Point Gage

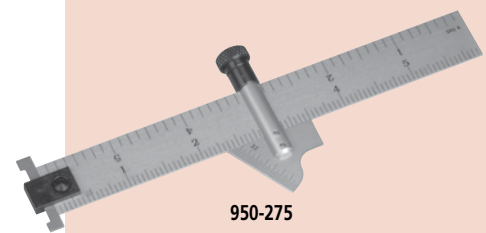
## SERIES 950

### FEATURES

- For measuring properly grounded 59° drill tips.
- Rule and slide made of steel.
- Satin chrome finish.
- Slide graduated in 32nds.
- End clip is adjustable and removable.
- Versatile - Can be used as Rule, Hook Rule, Try Square, Depth Gage or Caliper, and for Layout

### SPECIFICATIONS

Order No.	Size	Rule Graduation
950-275	6"	1/8, 1/16, 1/32, 1/64



950-275

# Thread Gage

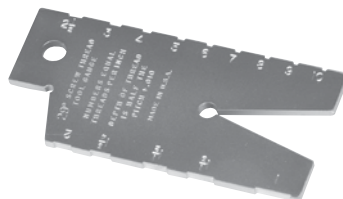
## SERIES 950

### FEATURES

Used for grinding and setting tools when cutting acme threads whose side have an inclination of 14-1/2° (29° included angle)

### SPECIFICATIONS

Order No.	Description
950-257	29° Acme screw thread gage



950-257

# Center Gage

## SERIES 950

### FEATURES

- Hardened with lapped edges and notches.
- Meets requirements of the American

National and US 60° Standards.

- Scales with 14ths and 20ths graduations provided on one side, 24ths and 32nds on reverse side.

### SPECIFICATIONS

Inch	
Order No.	Type
950-201	Center Gage



# Tap Wrench

## SERIES 985

### FEATURES

#### T-Handle Cam Lock Tap Wrenches

- Widest Range Available for Tap Size (1/8 - 1/2") (M3-M12)
- Patented Revolutionary Cam Lock System
- Quick Action Clamping for Easy Replacement
- Tap will Never Release During Use
- Heavy Duty Design for Extra Long Life
- Capable of Handling Extreme Torque
- Can Also be Used as a Hand Drill for Sizes 1/16 - 5/16"



### SPECIFICATIONS

Order No.	Clamping Capacity	Remarks
985-148	1/8" - 1/2" (M3-M12)	Cam Lock Type

Patent No. 6,945,145



# Scribers

## SERIES 985

MITUTOYO provides a full line of scribers to accommodate every shop need. All the scribers, with the exception of the **985-105**, have tungsten-carbide tips. The **985-105** has a diamond tip.

### SPECIFICATIONS

Order No.	Length	Replacement Point
985-101	6.75"	No. 050561
985-102	6.12"	—
985-103	8.87"	—
985-104*	5.75"	No. 050562
985-105*	5.12"	No. 050563

\* Retractable



# Center Punches

## SERIES 985

### SPECIFICATIONS

Order No.	Length	Replacement Point	Remarks
985-112	5.25"	No. 050565	.68" (DIA), Plastic housing
985-113	6.0"	No. 050566	1.0" (DIA), Plastic housing
985-114	3.0"	—	.31" (DIA)
985-115	4.0"	—	.39" (DIA)
985-116	4.3"	—	.59" (DIA)
985-117	5.0"	—	.67" (DIA)
885-138	4.0", 1/16" dia. punch is 3"	—	5 pcs set 1/16", 5/64", 3/32", 9/64", 5/32"

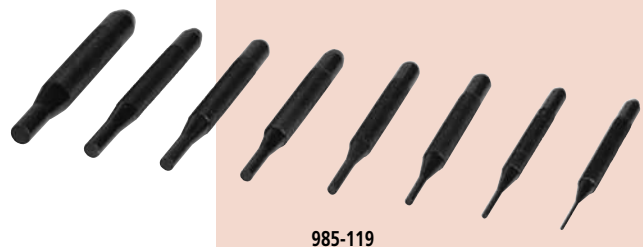


# Drive Pin Punches

## SERIES 985

### SPECIFICATIONS

Order No.	Length	Remarks
985-118	8"	5pcs. Extra long Drive Pin Punch Set 1/8, 3/16, 1/4, 5/16, 3/8"
985-119	4"	8pcs. Drive Pin Punch Set 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 5/16"
985-120	4"	8pcs. Brass Drive Pin Punch Set 1/16, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 5/16"





985-144

# Center Finder

## SERIES 985

### FEATURES

- Accurately and quickly locates center on round workpieces.
- Satin chrome finish

- Place tool in drill chuck or collet and line up pointer with line scribed on shaft.

### SPECIFICATIONS

Order No.	Remarks
985-144	Center finder



985-143

# Pin Vises

## SERIES 985

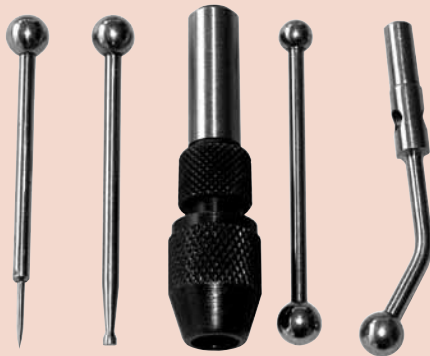
### FEATURES

- Made of alloy steel, black oxide finish
- Collets grip firmly when chuck is tightened
- Knurled finger grip
- Range of Set 0 - .188"

- Supplied in plastic punch
- Ideal for holding small tools, rods, wires, taps, etc.

### SPECIFICATIONS

Order No.	Remarks
985-143	4 pcs. pin vise set



985-142

# Wiggler

## SERIES 985

### FEATURES

- Made from precision ground tool steel
- Includes offset indicator holder and improved chuck design for holding attachments
- Attachments readily interchangeable

- Tool adapts to countless applications
- Attachments snap into chuck and clamp to ball swivel joint which permits adjustments to angular positions or true concentricity

### SPECIFICATIONS

Order No.	Remarks
985-142	5 pcs. set

# Optical Center Punch

## SERIES 985

### FEATURES

- Efficient, precision punching of hole centers
- Center dot & circle for targeting the punch
- Magnifies without distortion or parallax



985-139

### SPECIFICATIONS

Order No.	Remarks
985-139	9X Acrylic Lens

# Edge & Center Finders

## FEATURES

The Edge and Center Finders are hardened and ground on all surfaces.

## SPECIFICATIONS

Order No.	Shank (DIA)	Tip (DIA)	Remarks
050101	3/8" (.375")	.20"	Edge Type
050102	1/2" (.50")	.20"	Edge Type
050103	3/8" (.375")	.20"	Center Type
050104	1/2" (.50")	.20"	Center Type
050105	.375"/10mm	10mm	Edge Type
050106	10mm	10mm	Edge Type
050109	1/2" (.50")	.50"	Edge Type
050110	1/2" (.50")	.20", .50"	Double Edge Finder



# Surface Gage

## SERIES 156

## FEATURES

This Surface Gage has a coarse-adjusting clamp for upright post, fine-adjusting knob and baked-enamel-finished, hardened-steel base. The two gage pins provided are held tightly against the base.

The rocker runs the entire length of the base and pivots against a heavy spring, allowing a wide range of fine adjustment, yet holding the tip of the scriber firmly.

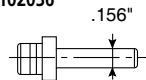
Use of a test indicator along with this Surface Gage is recommended.

In addition to the above stems for test indicators, the **156-502** Surface Gage accepts  $\varnothing 3/8"$ ,  $5/32"$  (9.5mm, 4mm) stems.

- Bottom surface, Vee and parallel side edges are ground.
- A pair of gage pins for linear work.
- Fine adjusting knob.
- Suitable as a small transfer stand with MITUTOYO test indicator.

Stems for test indicators (optional)

Stem **102036**



Stem **190318** and Nut **190322**



156-502

## SPECIFICATIONS

Order No.	Dimension of Scriber	Remarks
156-502	Length: 6.9"	Base Dimension: 3.4"(W) x 2.4"(D) x 1.3"(H)
	(DIA): .157" (4mm)	Post Dimension: Length: 10.2", .44" (DIA)



# Bench Comparator

## SERIES 162

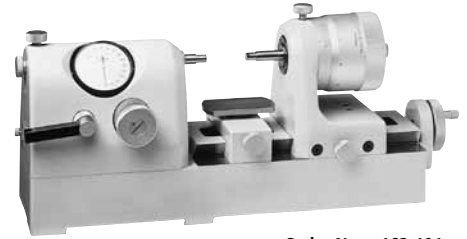
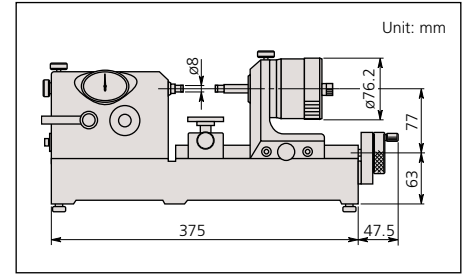
### Technical Data

Micrometer head stroke:	25mm or 1"
Graduation:	0.001mm or .0001"
Dial indicator range:	±0.1mm or ±.005"
Maximum workpiece length:	100mm or 4"
Mass:	15kg

### FEATURES

- 25mm/1" stroke micrometer head (Graduation: 0.001mm/.0001") is provided.
- Retractable anvil with dial indicator for high accuracy inspection of mass-produced parts.
- Anvil pressure is variable.
- Adjustable workpiece stage height.
- Dial Indicator is shockproof.
- ø8mm (or 3/8") probe of Mitutoyo Mu-Checker can be attached for higher precision measurement if required.

### DIMENSIONS



Order No.: 162-101

### SPECIFICATIONS

Order No.	Overall Range	Micrometer Head Range	Micrometer Head Grad.	Dial Indicator Grad.	Accuracy		Variable Pressure	Attachment Diameter
					Micro-Head	Indicator		
162-101	0-100mm	0-25mm	0.001mm	0.001mm (0-50-0)	±2µm	within 1/3 graduations	200, 400, 1000 gf	ø8mm
162-102	0-4"	0-1"	.0001"	.0001" (0-5-0)	±.0001"		0.5, 1, 1.5, 2, 2.5, 3lbs.	ø3/8"

# Bench Center

## SERIES 967

### Technical Data

Maximum workpiece dia.:	300mm
Maximum workpiece height:	150mm
Mass:	13kg

### Optional Accessories:

**56AAJ988** Special attachment for mounting **967-201-10** in vertical position.

**56AAJ987** Special attachment for mounting **967-203-10** in vertical position.

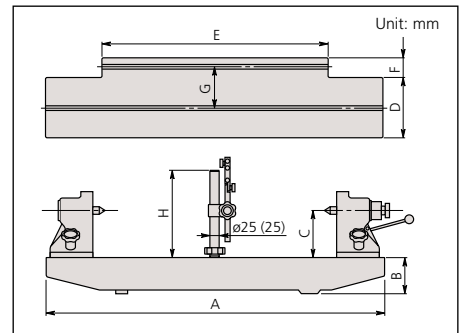
### FEATURES

- Used with a dial test indicator (optional), the Bench Center provides precision measurement of concentricity verification on cylindrical workpieces.
- With an indicator clamp. (Holding stem diameter: 9.53mm / .375")

Order No.: 967-201M



### DIMENSIONS



Order No.	A	B	C	D	E	F	G	H
967-203-10	310	40	50	70	178	41	60	134.5
967-201-10	500	45	75	80	370	36	60	194.5
967-204-10	700	80	100	140	500	65	110	194.5
967-202-10	900	100	125	160	600	50	104	230

### SPECIFICATIONS

Order No.	Center-to-Center	Workpiece Capacity Diameter	Max. Weight Hold	Parallelism of Centers	Flatness of Surface	Attachment Diameter	Mass (kg)
967-203-10	5.9" / 150mm	3.8"	17.5 lbs. (8kg)	.0002"	.0004"	ø3/8"	7
967-201-10	11.8" / 300mm	5.8"	35 lbs. (16kg)	.0002"	.0006"	ø3/8"	13
967-204-10	17.7" / 450mm	7.8"	44 lbs. (20kg)	.0002"	.0007"	ø3/8"	60
967-202-10	23.6" / 600mm	9.8"	66 lbs. (30kg)	.00024"	.0008"	ø3/8"	70

# Digital Protractor

## SERIES 950

### FEATURES

These Digital Protractors present inclination values on an easy-to-read liquid crystal display. The measurements are generated by an electronic gravity sensor and processed by the latest low-power electronic circuit technology.

- Full 360° range (90° x 4).
- Machined aluminum frame.
- Alternate reference (zero).
- Reading hold.
- Simple calibration requiring no special fixtures.
- Display remains upright to view at all angles. (950-315, Pro 360 Model).
- RS232C output. (950-316 Pro 3600 Model).
- Supplied in fitted carrying case.



Front View



950-315 Back View



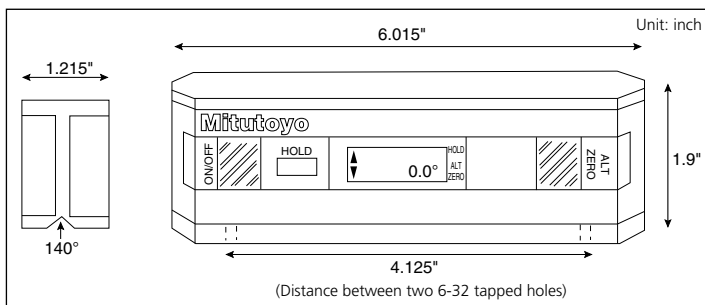
950-316 Back View

### SPECIFICATIONS

Order No.	950-315	950-316
Model	Pro 360	Pro 3600
Range	360° (90°x4)	360° (90°x4)
Resolution	0.1°	0.01° (0° to 9.99°) 0.1° (10° to 90°)
Accuracy	±0.1° Level ±10°, Plumb ±10° ±0.2° Maximum error	±0.05° (0° to 10°) ±0.1° (80° to 90°) ±0.2° (10° to 80°)
Repeatability	±0.1°	±0.05°
Cross Axis Error	Minimal	Minimal
Battery Life	500 Hrs. Standard 9-Volt Battery	500 Hrs. Standard 9-Volt Battery
Temperature Operation	-5°C to 50°C (23° to 122°F)	-5°C to 50°C (23° to 122°F)
Storage	-20°C to 65°C (-4°F to 149°F)	-20°C to 65°C (-4°F to 149°F)
Weight	289g (10.2oz.)	295g (10.4oz.)
Output	N/A	RS-232C Compatible
Standard Accessories	Plastic Case	Plastic Case

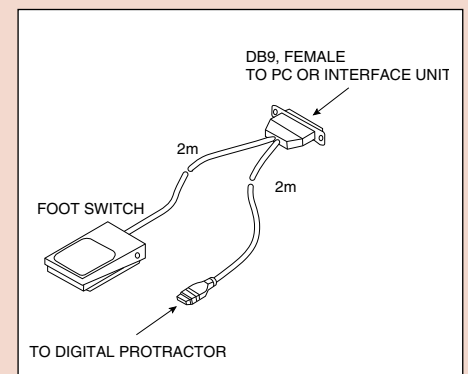
±Represents clockwise or counter-clockwise slope.

### DIMENSIONS



### Optional Accessories

- 64PPP794 Magnetic base
- 50AAA983A RS-232C Output cable w/foot switch



50AAA983A RS-232C Output cable w/foot switch 10P-25P

# Digital Hand Tachometers

## SERIES 982

### FEATURES

- New Digital Hand Tachometers are compact and easy to handle.
- NIST Certification is supplied with each Digital Hand Tachometer.
- Model PH-200LC (982-552) has laser Diode Detection and a combination of Contact and Non-Contacts measurement.
- Supplied with plastic carrying case.

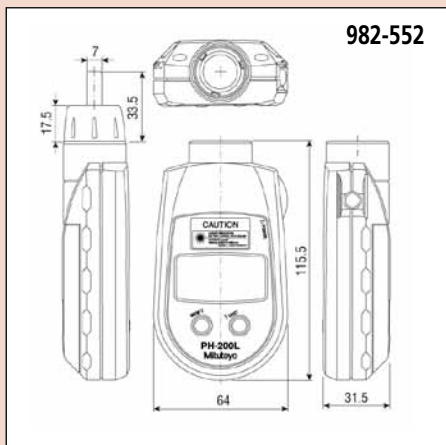
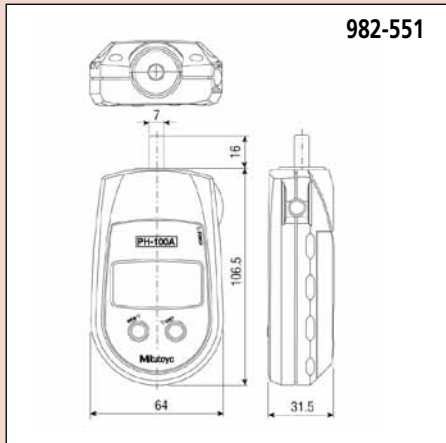


982-551



982-552

### DIMENSIONS



### SPECIFICATIONS

Order No.	982-551	982-552
Model No.	PH-100A	PH-200LC
Revolution per minute	1.0 – 25,000 rpm	—
Rotation speed	—	Non-contact: 6.0 – 99,999 rpm; Contact: 6.0 – 25,000 rpm
Measuring accuracy Revolution Surface, Speed, Length	1.0 – 599.9rpm: ±1rpm, 600.0 – 25,000 rpm: ±0.006% and ±0.5 digit ±0.4% and 1 digit	6.0 – 599.9 rpm: ±1rpm, 600.0 – 99,999 rpm ±0.006% and ±0.5 digit ±0.4% and ±1 digit
Detection	Optical coupler, 20 pulses per revolution	Laser diode
Outside dimensions	4.83" L x 2.52" W x 1.24" H (122.5mm x 64mm x 31.5mm)	4.55" L x 2.52" W x 1.24" H Overall length with contact adapter: 149mm
Mass	170 g	160 g
Power	Battery: AA 3 pcs.	Battery: AA 3 pcs.

### Optional Accessories For Digital Hand Tachometers

Order No.	Description	Dimension	Drawing
010049	Cone Adapter, Standard	D = 1/2"	
010050	Cone Adapter, 5/8"	D = 5/8"	
010051	Cone Adapter, 3/4"	D = 3/4"	
010052	Cone Adapter, 1-1/4"	D = 1-1/4" d = 1/2"	
010053	Funnel Adapter, Standard	D = 1/2"	
010054	Funnel Adapter, 3/4"	D = 3/4"	
010055	Measuring Wheel FPM (6" cir), Standard	D = 1.91"	
010056	Measuring Wheel FPM (12" cir)	D = 3.82"	
010057	Measuring Wheel YPM (0.1 yard cir)	D = 1.15"	
010058	Measuring Wheel MPM (0.1 meter cir)	D = 1.25"	
010059	Reflective Tabs 1/2" square (35 pcs)		
010060	Extension Shaft (3" length)		

# Datatorq

## SERIES 983

### Digital Torque Wrenches with SPC output

#### FEATURES

- Programmable torque tolerance (high/low limits)
- Peak Hold mode
- Track mode
- Red and Green Go/No Go lights
- Analog auto scaling bar-graph display
- Audible buzzer
- Memory for up to 4000 torque data
- Batteries:  
A 9V alkaline battery  
Battery life 60 hours of operation  
A "Lo Bat" indication on display signals for replacement.
- All calibration data is stored in the microprocessor.



#### Accuracy

±1% from 20-100% of range  
±1%, Plus 5 increments, from 10-20% of range

A Certificate of Accuracy, traceable to the NIST, is furnished with each Datatorq.

#### Optional Accessories:

50AAA620

SPC cable

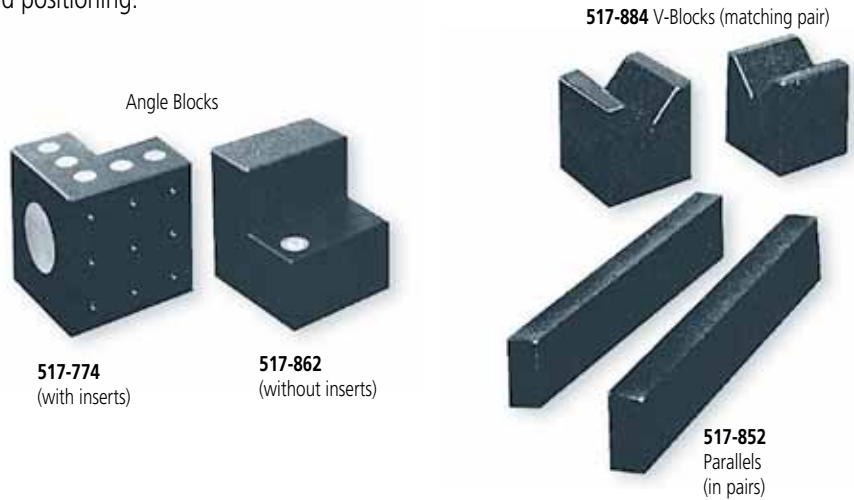
#### SPECIFICATIONS

Order No.	Range	Increments	Drive	Length	Mass
983-210	5-50 in.lb	.01 in. lb.	1/4"	13.5"	1.5 lb
	5.6-56 dNm	.01 dNm			
	5.7-57 cmkg	.01cmkg			
	80-800 in.oz.	.1 in. oz.			
983-211	25-250 in. lb	.1 in. lb.	3/8"	14.9"	2.0 lb.
	28-282 dNm	.1 dNm			
	29-288 cmkg	.1 cmkg			
983-212	5-50 ft. lb.	.01 ft. lb.	3/8"	14.9"	2.0 lb.
	68-677 dNm	.1 dNm			
	69-691 cmkg	.1 cmkg			
	60-600 in. lb.	.1 in. lb.			
983-213	25-250 ft. lb.	.1 ft. lb.	1/2"	21.5"	3.2 lb.
	34-338 Nm	.1 Nm			
	3.4-34 mkg	.01 mkg			
983-214	60-600 ft. lb.	.1ft. lb.	3/4"	46.5"	9.5 lb.
	81-813 Nm	.1 Nm			
	8.3-83 mkg	.01 mkg			
983-215	100-1000 ft. lb.	1 ft. lb.	1"	74.0"	19.0 lb.
	135-1355 Nm	1 Nm			
	14-138 mkg	1 mkg			

# Granite Surface Plate Accessories

## SERIES 517

These accessories made from the same high quality black granite as Mitutoyo surface plates, allow extra flexibility in work holding and positioning.



## SPECIFICATIONS

### Angle Blocks with or without inserts

Grade	Laboratory*			Master**			Case
	2 Face	4 Face		2 Face	4 Face		
no inserts		w/ inserts	no inserts		w/ inserts		
4 x 4 x 4"	517-767	517-761	517-773	517-867	517-861	517-873	050021
6 x 6 x 6"	517-768	517-762	517-774	517-868	517-862	517-874	050022

\*Laboratory overall accuracy: .000025" per 6".

\*\*Master overall accuracy: .000050" per 6".

### Parallels Pair

Grade	Accuracy	Laboratory		Master			Case
		2 Face	4 Face	Accuracy	2 Face	4 Face	
.75 x 1 x 6"	.00003"	517-755	517-750	.00006"	517-855	517-850	050027
.75 x 1.5 x 9"	.00004"	517-756	517-751	.00008"	517-856	517-851	050028
1 x 2 x 12"	.00006"	517-757	517-752	.0001"	517-857	517-852	050029

### V-Blocks Matching Pair

V-1 type have matching accuracy on "V" from the bottom face only.

V-5 type have four face matching accuracy plus "V".

Grade	Laboratory*		Master**		Case
	V-1	V-5	V-1	V-5	
2 x 2 x 2.5"	517-787	517-783	517-887	517-883	050039
3 x 3 x 3"	517-788	517-784	517-888	517-884	050040
6 x 6 x 6"	517-789	517-785	517-889	517-885	050022X2

\*Laboratory overall accuracy: .00005" per 6".

\*\*Master overall accuracy: .0001" per 6"

# Black Granite Surface Plate

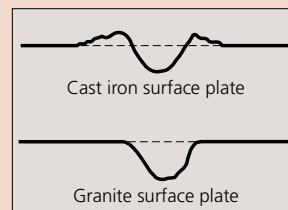
**SERIES 517**

## FEATURES

- Natural granite seasoned for thousands of years is free from deterioration or dimensional change over time.
- Granite surface plate has many advantages over cast iron surface plates:  
Twice as hard as cast iron.  
Minimal changes in dimension due to temperature changes.  
Free from wringing, so there is no interruption of work.  
Free from burrs or protrusions because of the fine grain structure and insignificant stickiness; this ensures a high degree of flatness over a long service life and causes no damage to other parts or instruments.
- Trouble-free operation for use with magnetic materials.
- Long life and rust-free, resulting in low maintenance costs.
- MITUTOYO Granite Surface Plates meet or exceed Federal Specification GGG-P-463c. Each Surface Plate is shipped with a

Certificate of Accuracy which guarantees its accuracy and verifies its traceability to the National Institute of Standards and Technology.

- All plates from 48"x108" and larger are Machine Base Gray Granite. Smaller plates are Black Granite.
- Surface Plates, to size of specifications other than standard, available on special order.
- Surface Plates, with the bolt screws, available on special order.
- All MITUTOYO Surface Plates shipped F.O.B. Escondido, California.

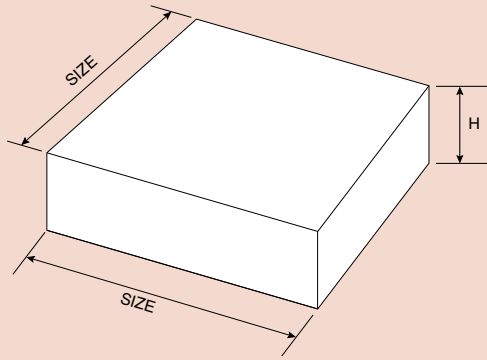


## SPECIFICATIONS

**Inch** 100 lbs.-Load / sq. ft. no ledge

Size	AA Laboratory Grade				A Inspection Grade				B Shop Grade			
	H	Acc.	Order No.	Wt.	H	Acc.	Order No.	Wt.	H	Acc.	Order No.	Wt.
8 x 12"	3"	50	517-700	30	2"	100	517-800	25	2"	200	517-900	25
9 x 12"	3"	50	517-701	40	3"	100	517-801	40	2"	200	517-901	30
12 x 12"	3"	50	517-702	50	3"	100	517-802	50	3"	200	517-902	50
12 x 18"	4"	50	517-703	100	4"	100	517-803	100	4"	200	517-903	100
18 x 18"	4"	50	517-704	150	4"	100	517-804	150	3"	200	517-904	100
18 x 24"	4"	65	517-705	200	4"	130	517-805	200	4"	260	517-905	200
24 x 24"	5"	70	517-706	310	4"	140	517-806	259	3"	280	517-906	200
24 x 30"	5"	75	517-707	400	5"	150	517-807	400	4"	300	517-907	300
24 x 36"	6"	85	517-708	600	5"	170	517-808	500	4"	340	517-908	400
24 x 48"	8"	150	517-709	1000	6"	300	517-809	800	5"	600	517-909	650
30 x 36"	6"	100	517-710	800	5"	200	517-810	600	5"	400	517-910	600
30 x 48"	8"	150	517-711	1300	6"	300	517-811	1000	6"	600	517-911	1000
30 x 60"	12"	200	517-712	1900	10"	500	517-812	1535	8"	1000	517-912	1150
36 x 36"	6"	100	517-713	900	5"	200	517-813	780	5"	400	517-913	700
36 x 48"	8"	150	517-714	1500	6"	300	517-814	1200	6"	600	517-914	1200
36 x 60"	12"	200	517-715	2850	10"	400	517-815	2350	8"	800	517-915	1900
36 x 72"	12"	250	517-716	3400	10"	500	517-816	2850	8"	1000	517-916	2300
48 x 48"	8"	200	517-717	2025	6"	400	517-817	1525	6"	800	517-917	1500
48 x 60"	12"	250	517-718	3800	10"	500	517-818	3150	8"	1000	517-918	2525
48 x 72"	12"	300	517-719	4500	10"	600	517-819	3800	8"	1200	517-919	3050
48 x 84"	14"	350	517-720	6150	12"	700	517-820	5325	10"	1400	517-920	4450
48 x 96"	14"	400	517-721	7000	12"	800	517-821	6050	10"	1600	517-921	5150
48 x 108"	14"	500	517-722	7900	12"	1000	517-822	6830	10"	2000	517-922	5700
48 x 120"	18"	700	517-723	11300	16"	1400	517-823	10160	14"	2800	517-923	8800
48 x 144"	18"	800	517-724	13500	16"	1600	517-824	12200	14"	3200	517-924	10500
60 x 60"	14"	250	517-725	5500	12"	500	517-825	4800	10"	1000	517-925	4000
60 x 72"	14"	350	517-726	6600	12"	700	517-826	5750	10"	1400	517-926	4900
60 x 96"	14"	500	517-727	8800	12"	1000	517-827	7600	10"	2000	517-927	6500
60 x 120"	16"	700	517-728	11050	14"	1400	517-828	11100	12"	2800	517-928	9800
60 x 144"	18"	900	517-729	16950	16"	1800	517-829	15100	14"	3600	517-929	14200
72 x 72"	14"	400	517-730	8000	12"	800	517-830	7000	10"	1600	517-930	5700
72 x 96"	16"	500	517-731	12025	14"	1000	517-831	10800	12"	2000	517-931	9200
72 x 120"	16"	700	517-732	15070	14"	1400	517-832	13400	12"	2800	517-932	11400
72 x 144"	18"	1000	517-733	20300	16"	2000	517-833	18100	14"	4000	517-933	15900





**Inch** 50 lbs.-Load / sq. ft. no ledge

Size	AA Laboratory Grade				A Inspection Grade				B Shop Grade			
	H	Acc.	Order No.	Wt.	H	Acc.	Order No.	Wt.	H	Acc.	Order No.	Wt.
8 x 12"	2"	50	<b>517-740</b>	25	2"	100	<b>517-840</b>	25	2"	200	<b>517-940</b>	25
12 x 18"	3"	50	<b>517-741</b>	80	3"	100	<b>517-841</b>	80	2"	200	<b>517-941</b>	60
18 x 24"	4"	65	<b>517-742</b>	200	3"	130	<b>517-842</b>	165	2"	260	<b>517-942</b>	100
24 x 36"	5"	85	<b>517-743</b>	500	4"	170	<b>517-843</b>	400	3"	340	<b>517-943</b>	300
36 x 48"	6"	150	<b>517-746</b>	1200	5"	300	<b>517-846</b>	1000	4"	600	<b>517-946</b>	800

## Steel Stands

Steel Stands for supporting Black Granite Surface Plates, at working levels, are available either stationary or with casters. Sizes and weights are given below.



### SPECIFICATIONS

Size	Stationary		With Casters	
	Order No.	Wt.	Order No.	Wt.
12 x 18"	<b>517-950</b>	42lbs	<b>517-950-1</b>	46lbs
18 x 18"	<b>517-951</b>	46lbs	<b>517-951-1</b>	50lbs
18 x 24"	<b>517-952</b>	50lbs	<b>517-952-1</b>	56lbs
24 x 24"	<b>517-954</b>	65lbs	<b>517-954-1</b>	69lbs
24 x 30"	<b>517-955</b>	70lbs	<b>517-955-1</b>	74lbs
24 x 36"	<b>517-956</b>	73lbs	<b>517-956-1</b>	77lbs
24 x 48"	<b>517-957</b>	90lbs	<b>517-957-1</b>	94lbs
30 x 36"	<b>517-960</b>	85lbs	<b>517-960-1</b>	89lbs
30 x 48"	<b>517-961</b>	95lbs	<b>517-961-1</b>	99lbs
30 x 60"	<b>517-962</b>	105lbs	<b>517-962-1</b>	109lbs
36 x 36"	<b>517-963</b>	95lbs	<b>517-963-1</b>	99lbs
36 x 48"	<b>517-964</b>	105lbs	<b>517-964-1</b>	109lbs
36 x 60"	<b>517-965</b>	160lbs	<b>517-965-1</b>	164lbs
36 x 72"	<b>517-966</b>	180lbs	<b>517-966-1</b>	184lbs
48 x 48"	<b>517-967</b>	190lbs	<b>517-967-1</b>	194lbs
48 x 60"	<b>517-968</b>	200lbs	<b>517-968-1</b>	204lbs
48 x 72"	<b>517-969</b>	205lbs	<b>517-969-1</b>	209lbs
48 x 84"	<b>517-970</b>	320lbs	<b>517-970-1</b>	324lbs
48 x 96"	<b>517-971</b>	335lbs	<b>517-971-1</b>	339lbs
48 x 108"	<b>517-972</b>	350lbs	<b>517-972-1</b>	354lbs
48 x 120"	<b>517-973</b>	365lbs	<b>517-973-1</b>	369lbs
48 x 144"	<b>517-974</b>	430lbs	<b>517-974-1</b>	434lbs
60 x 60"	<b>517-975</b>	245lbs		
60 x 72"	<b>517-976</b>	340lbs		
60 x 96"	<b>517-977</b>	375lbs		
60 x 120"	<b>517-978</b>	455lbs		
60 x 144"	<b>517-979</b>	480lbs		
72 x 72"	<b>517-980</b>	380lbs		
72 x 96"	<b>517-981</b>	465lbs		
72 x 120"	<b>517-982</b>	510lbs		
72 x 144"	<b>517-983</b>	530lbs		

Note: The total height of stand and granite plate is 36". If ordering only stand, stand height will be made according to a Grade A granite plate thickness.



### Digimatic Indicators



### Dial Indicators



### Dial Test Indicators



### Dial Indicator Applications and Stands



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# ABSOLUTE Digimatic Indicator ID-S

**SERIES 543 — with Simple Design**

## FEATURES

- As compact as standard Series 2 dial indicators.
- After the initial zero-setting with the ORIGIN button, the repeated absolute positioning is no longer necessary over the entire battery life.
- Employing the ABSOLUTE linear encoder, the ID-S always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- SPC data output.



543-683B



543-690



## SPECIFICATIONS

**Inch/Metric** Stem dia. 3/8", #4-48 UNF Thread  ISO/JIS type  ANSI/AGD type

Resolution	Range	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
.00005"/0.001mm	.5" / 12.7mm	<b>543-692</b>	<b>543-692B</b>	ID-S112E	.00012"	2.0N	—
.00005"/0.001mm	.5" / 12.7mm	<b>543-696</b>	<b>543-696B</b>	ID-S112PE	.00012"	2.5N	Dust-proof
.0001"/0.001mm	.5" / 12.7mm	<b>543-693</b>	<b>543-693B</b>	ID-S112T	.00012"	2.0N	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-683</b>	<b>543-683B</b>	ID-S1012E	.0008"	2.0N	—

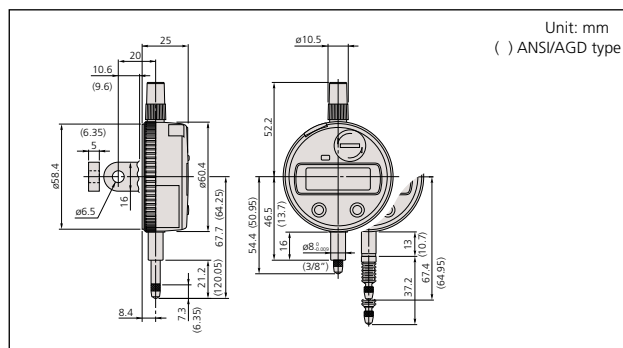
**Inch/Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
.00005"/0.001mm	.5" / 12.7mm	<b>543-691</b>	<b>543-691B</b>	ID-S112M	.00012"	2.0N or less	—
.00005"/0.001mm	.5" / 12.7mm	<b>543-695</b>	<b>543-695B</b>	ID-S112PM	.00012"	2.5N or less	Dust-proof
.0005"/0.01mm	.5" / 12.7mm	<b>543-682</b>	<b>543-682B</b>	ID-S1012M	.0008"	2.0N or less	—

**Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.		Model	Accuracy	Measuring force	Remarks
		w/ lug back	w/ flat-back				
0.001mm	12.7mm	<b>543-690</b>	<b>543-690B</b>	ID-S112	0.003mm	2.0N or less	—
0.001mm	12.7mm	<b>543-694</b>	<b>543-694B</b>	ID-S112P	0.003mm	2.5N or less	Dust-proof
0.01mm	12.7mm	<b>543-681</b>	<b>543-681B</b>	ID-S1012	0.02mm	2.0N or less	—

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm, 0.001mm, .0005"/0.01mm, .0001"/0.001mm or .00005"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: Refer to the list of specifications  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 20,000 hours under normal use  
 Dust/Water protection level: IP42 (IP53: **543-694**, **543-695**, **543-696**)

## Function

Origin-set, Zeraset, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error

## Optional Accessories

- 905338:** SPC cable (40" / 1m)
- 905409:** SPC cable (80" / 2m)
- 903424:** Spindle lifting lever (ISO/JIS type)
- 903425:** Spindle lifting lever (ANSI/AGD type)
- 540774:** Spindle lifting cable (stroke: .4" / 10mm)
- 125317:** Spare rubber boot (for dust-proof type)
- 02ACB420:** Lug-on-center back for ISO/JIS type
- 02ACB430:** Lug-on-center back for AGD type
- 02ACB440:** Flat back
- 02ACB610:** Back with post
- 02ACB620:** Adjustable back for AGD type
- 02ACB630:** Adjustable back (ISO/JIS type)
- 02ACB640:** Back with offset lug
- 02ACB650:** Magnetic back
- 02ACB660:** Back with screw mount for AGD type
- 02ACB670:** Back with screw mount (ISO/JIS type)
- 02ACB680:** Back with adjustable bracket
- : Contact points (See page F-33.)





**ABSOLUTE**<sup>®</sup>

Absolute System Patented by MITUTOYO

### Technical Data

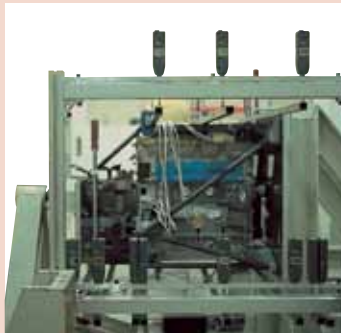
Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm or .0005"/0.01mm,  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: Refer to the list of specifications  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 20,000 hours under normal use  
 Dust/Water protection level: IP42

### Function

Origin-set, Zeroset, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error

### Optional Accessories

**905338**: SPC cable (40" / 1m)  
**905409**: SPC cable (80" / 2m)  
**540774**: Spindle lifting cable (stroke: .4" / 10mm)  
 \_\_\_\_\_: Contact points (See page F-33.)



Application example

# ABSOLUTE Digimatic Indicator ID-U

**SERIES 575 — with Slim and Simple Design**

### FEATURES

- Slim type digital indicator with low price.
- Large LCD and simple key operation.
- After the initial origin setting, the ID-U no longer needs absolute positioning over the entire battery life; the origin is remembered even after power-off.
- Ideal for installation into measuring devices because of its compact design and long battery life.
- Employing the ABSOLUTE linear encoder, the ID-U always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- Flat back type only no option for backs.
- SPC data output.



### SPECIFICATIONS

**Inch/Metric** Stem dia. 3/8", #4-48 UNF Thread  ISO/JIS type  ANSI/AGD type

Resolution	Range	Order No.	Model	Accuracy	Measuring force
.0005"/0.01mm	1" / 25.4mm	<b>575-123</b>	ID-U1025E	.0008"	1.8N or less

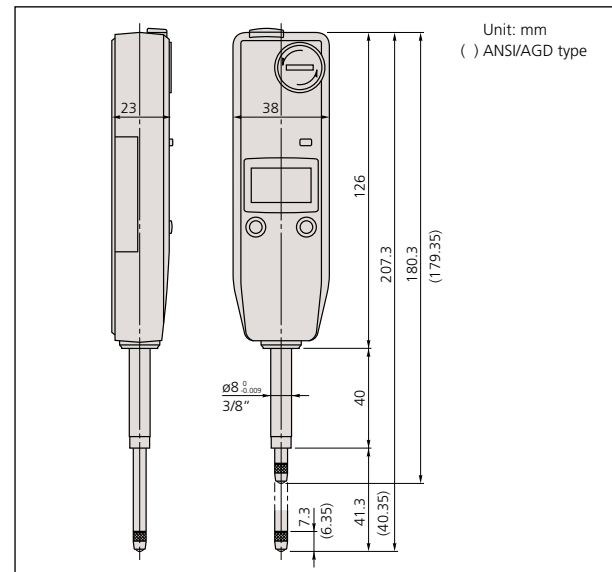
**Inch/Metric** Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.	Model	Accuracy	Measuring force
.0005"/0.01mm	1" / 25.4mm	<b>575-122</b>	ID-U1025M	.0008"	1.8N or less

**Metric** Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.	Model	Accuracy	Measuring force
0.01mm	25.4mm	<b>575-121</b>	ID-U1025	0.02mm	1.8N or less

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Standard Type

### FEATURES

- As compact as standard Series 2 dial indicators.
- Large, easy-to-read LCD.
- GO/±NG judgment can be performed by setting upper and lower tolerance limits. The judgment result (GO/±NG) can be displayed in full-size characters.
- The positive/negative count resulting from the spindle's up/down movement can be toggled.
- Internal calculations using the simple formula of  $[F(x) = Ax]$  are available.
- Employing the ABSOLUTE linear encoder, the ID-C always displays the spindle "Absolute Position" from the origin at power-on. Also unlimited response speed eliminates over-speed errors.
- The ID-C indicator face can be rotated 330° to an appropriate angle for easy reading.
- With SPC data output.



543-392



543-402



543-472B



543-492B



### Technical Data

Accuracy: Refer to the list of specifications

Resolution:	0.01mm type	0.01mm
	0.001mm type*	0.001mm/0.01mm
	.0005"/0.01mm type	.0005"/0.01mm
	.00005"/0.001mm type*	.0005"/0.001"/.00005"/0.01mm/0.001mm

\* Switchable resolution

Display: LCD

Length standard: ABSOLUTE electrostatic capacitance type linear encoder

Max. response speed: Unlimited

Measuring force: Refer to the list of specifications

Battery: SR44 (1 pc.), **938882**

Battery life: Approx. 5,000 hours under normal use

Dust/Water protection level: IP42 or IP53 (dust-proof type)

### Function

Origin-set/Presets, Zeroset, GO/±NG judgment, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)

Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

Internal calculations using the simple formula of  $[F(x) = Ax]$  are available.

### Optional Accessories

**905338:** SPC cable (40" / 1m)

**905409:** SPC cable (80" / 2m)

**21EZA198:** Spindle lifting lever (ISO/JIS type)\*

**21EZA199:** Spindle lifting lever (ANSI/AGD type)\*

**21EZA105:** Spindle lifting knob (12.7mm/.5" ISO/JIS type)\*\*

**21EZA150:** Spindle lifting knob (12.7mm/.5" ANSI/AGD type)\*\*

**21EZA197:** Spindle lifting knob (25.4mm/1", 50.8mm/2" models)

**21EZA200:** Spindle lifting knob (50.8mm/2")

**540774:** Spindle lifting cable (stroke: (1" / 25.4mm)

**02ACA571:** Auxiliary spindle spring for 25mm/1" models\*\*\*

**02ACA773:** Auxiliary spindle spring for 50mm/2" models\*\*\*

——: Backs (See page F-32.)

——: Contact points (See page F-33.)

\* Can be used on 12mm/.5" models only.

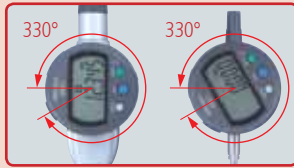
\*\* Not available for low measuring force models.

\*\*\* Required when orienting gage upside down.



### 330° Rotary display

The display can be rotated 330°, allowing use at a position where you can easily read the measurement value.



### Calculation: $f(x) = Ax$

Mounting the ID-C on a measuring jig and setting the multiplying factor 'A' (to any value) allows direct measurement without using a conversion table and improves measurement efficiency.



Application example

### Function locking

Ensures reliability of measurement by locking the settings to prevent preset function settings from being changed by mistake.



### Setting measuring force on low measuring force models

#### •543-404/404B/405/405B/406/406B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.5N
	Yes	No	0.4N
	No	Yes	0.3N
	No	No	0.2N
Horizontal	Yes	No	0.2N

Note) Operation using configurations other than shown above is not guaranteed.

#### •543-394/394B/395/395B/396/396B

Spindle orientation	Spring	Weight (approximately 0.1N)	Maximum measuring force
Pointing vertically downward	Yes	Yes	0.7N
	Yes	No	0.6N
	No	Yes	0.4N
	No	No	Not guaranteed
Horizontal	Not guaranteed		

Note) Operation using configurations other than shown above is not guaranteed.

## SPECIFICATIONS

Inch/Metric		Stem dia. 3/8", #4-48 UNF Thread		ISO/JIS type	ANSI/AGD type		
Resolution	Range	Order No. (w/lug, flat-back)		Model	Accuracy	Measuring force	Remarks
.00005"/0.001mm*	.5" / 12.7mm	<b>543-392</b>	<b>543-392B</b>	ID-C112EXB	.0001"	1.5N or less	—
.00005"/0.001mm*	.5" / 12.7mm	<b>543-396</b>	<b>543-396B</b>	ID-C112CEX	.0001"	0.4N - 0.7N	Low measuring force
.00005"/0.001mm*	1" / 25.4mm	—	<b>543-472B</b>	ID-C125EXB	.0001"	1.8N or less	—
.00005"/0.001mm*	2" / 50.8mm	—	<b>543-492B</b>	ID-C150EXB	.0002"	2.3N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-402</b>	<b>543-402B</b>	ID-C1012EX	.001"	0.9N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-406</b>	<b>543-406B</b>	ID-C1012CEX	.001"	0.2N - 0.5N	Low measuring force
.0005"/0.01mm	1" / 25.4mm	—	<b>543-476B</b>	ID-C1025EXB	.001"	1.8N or less	—
.0005"/0.01mm	2" / 50.8mm	—	<b>543-496B</b>	ID-C112CEXB	.0016"	2.3N or less	—

\* Switchable Resolution Type

### Inch/Metric Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No. (w/lug, flat-back)		Model	Accuracy	Measuring force	Remarks
.00005"/0.001mm*	.5" / 12.7mm	<b>543-391</b>	<b>543-391B</b>	ID-C112MX	.0001"	1.5N or less	—
.00005"/0.001mm*	.5" / 12.7mm	<b>543-395</b>	<b>543-395B</b>	ID-C112CMX	.0001"	0.4N - 0.7N	Low measuring force
.00005"/0.001mm*	1" / 25.4mm	—	<b>543-471B</b>	ID-C125MXB	.0001"	1.8N or less	—
.00005"/0.001mm*	2" / 50.8mm	—	<b>543-491B</b>	ID-C150MXB	.0002"	2.3N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-401</b>	<b>543-401B</b>	ID-C1012MX	.001"	0.9N or less	—
.0005"/0.01mm	.5" / 12.7mm	<b>543-405</b>	<b>543-405B</b>	ID-C1012CMX	.001"	0.2N - 0.5N	Low measuring force
.0005"/0.01mm	1" / 25.4mm	—	<b>543-475B</b>	ID-C1025MXB	.001"	1.8N or less	—
.0005"/0.01mm	2" / 50.8mm	—	<b>543-495B</b>	ID-C1050MXB	.0016"	2.3N or less	—

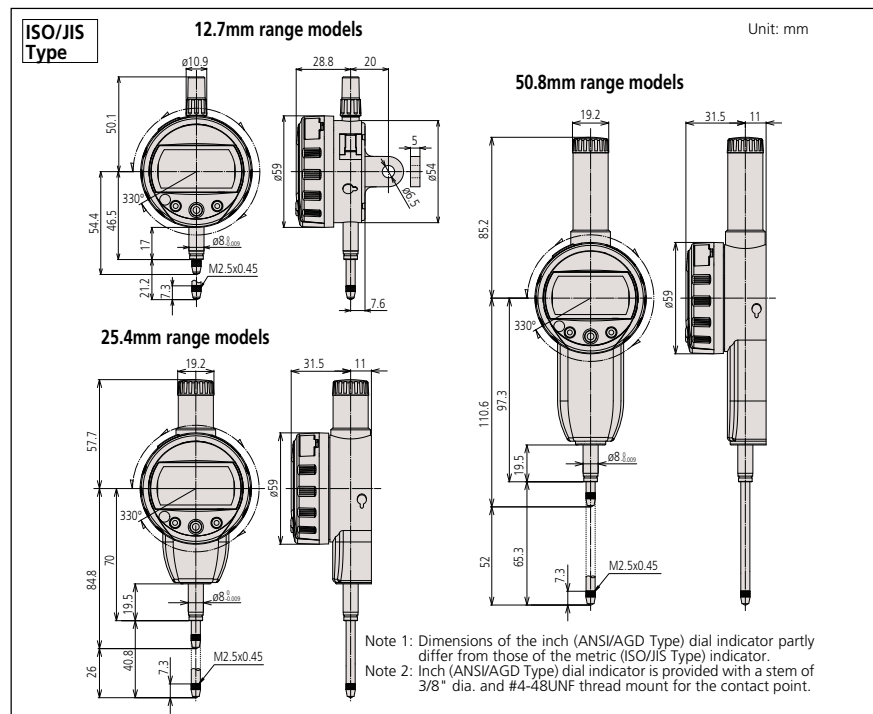
\* Switchable Resolution Type

### Metric Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No. (w/lug, flat-back)		Model	Accuracy	Measuring force	Remarks
0.001mm*	12.7mm	<b>543-390</b>	<b>543-390B</b>	ID-C112X	0.003mm	1.5N or less	—
0.001mm*	12.7mm	<b>543-394</b>	<b>543-394B</b>	ID-C112CX	0.003mm	0.4N - 0.7N	Low measuring force
0.001mm*	25.4mm	—	<b>543-470B</b>	ID-C125XB	0.003mm	1.8N or less	—
0.001mm*	50.8mm	—	<b>543-490B</b>	ID-C150XB	0.006mm	2.3N or less	—
0.01mm	12.7mm	<b>543-400</b>	<b>543-400B</b>	ID-C1012X	0.02mm	0.9N or less	—
0.01mm	12.7mm	<b>543-404</b>	<b>543-404B</b>	ID-C1012CX	0.02mm	0.2N - 0.5N	Low measuring force
0.01mm	25.4mm	—	<b>543-474B</b>	ID-C1025XB	0.03mm	1.8N or less	—

\* Switchable Resolution Type

## DIMENSIONS





# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Calculation Type

### FEATURES

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

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



543-287B

### SPECIFICATIONS

ISO/JIS type    ANSI/AGD type

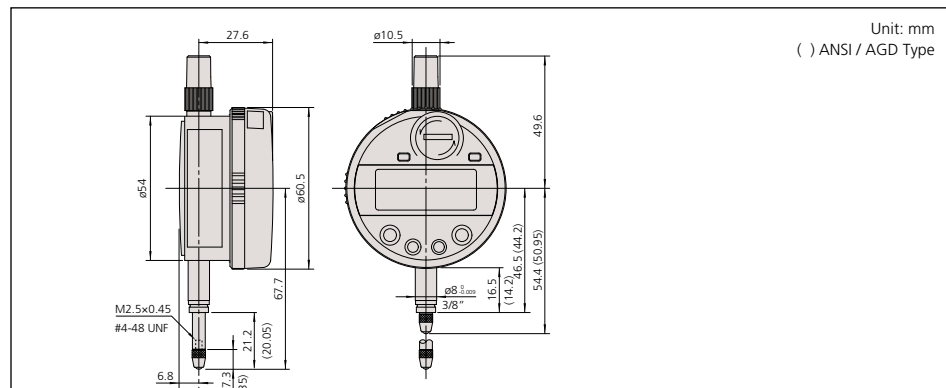
Inch/Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
.00001" - .05"/ 0.0002 - 1mm (switchable)	.5" / 12.7mm	<b>543-287B</b>	ID-C112REB	.00012"	1.5N or less
	1" / 25.4mm	<b>543-482B</b>	ID-C125REB	.00012"	2.0N or less
	2" / 50.8mm	<b>543-487B</b>	ID-C150REB	.00025"	2.3N or less

Inch/Metric		Stem $\varnothing$ 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
.00001" - .05"/ 0.0002 - 1mm (switchable)	.5" / 12.7mm	<b>543-286B</b>	ID-C112RMB	.00012"	1.5N or less
	1" / 25.4mm	<b>543-481B</b>	ID-C125RMB	.00012"	2.0N or less
	2" / 50.8mm	<b>543-486B</b>	ID-C150RMB	.00025"	2.3N or less

Metric		Stem $\varnothing$ 8mm, M2.5 x 0.45 Thread			
Resolution	Range	Order No.*	Model	Accuracy	Measuring Force
0.0002 - 1mm (switchable)	12.7mm	<b>543-285B</b>	ID-C112RB	0.003mm	1.5N or less
	25.4mm	<b>543-480B</b>	ID-C125RB	0.003mm	2.0N or less
	50.8mm	<b>543-485B</b>	ID-C150RB	0.006mm	2.3N or less

\*Flat back

### DIMENSIONS



Unit: mm  
( ) ANSI / AGD Type



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.0002mm - 1mm or  
 .00001" - .05"/0.0002mm - 1mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type  
 linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 12 months under normal use

### Function

Origin-set/Pre-set, Zeroset, GO/NG judgment, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

- 905338:** SPC cable (40" / 1m)
- 905409:** SPC cable (80" / 2m)
- 902011:** Spindle lifting lever (ISO/JIS type)
- 540774:** Spindle lifting cable (Stroke: .4" / 10mm)
- \_\_\_\_\_: Backs (See page F-32.)
- \_\_\_\_\_: Contact points (See page F-33.)

### APPLICATIONS



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



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm, .00005"/0.001mm or .0001"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 2.0N or less  
 Power supply: DC 12 - 24V±10%  
 Dust/Water protection level: IP54

### Function

Data output (-NG/OK/NG signal, NPN open collector), Remote control (hold-preset, preset-recall, zero-set), Origin-set/Preset, Zero-set, GO/±NG judgment, Max/Min/Runout value holding, Counting direction switching, Power ON/OFF, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

- 902011: Spindle lifting lever\* (ISO/JIS type)
- 902794: Spindle lifting lever\* (ANSI/AGD type)
- 540774: Spindle lifting cable\* (Stroke: .4" / 10mm)
- 125317: Rubber boot
- : Backs (See page F-32.)
- : Contact points (See page F-33.)

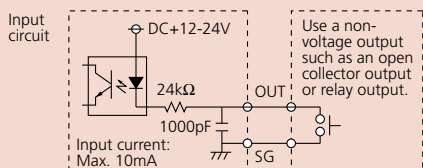
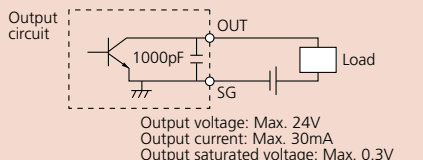
\*When using the spindle lifting lever/cable, IP54 is not guaranteed.

### Output pattern

Wire	- NG	OK	+ NG	Composition error
Orange (- NG)	Low	High	High	High
Green (OK)	High	Low	High	High
Brown (+ NG)	High	High	Low	High
LED	Red	Green	Red	Red (blinking)
LCD	<	O	>	"x.xx"E" indication

### I/O Specifications

Wire	Signal	I/O	Description
Black	- V (GND)	—	Connected to minus (-) terminal
Red	+ V (GND)	I	Power supply (12 - 24VDC)
Orange	- NG	O	Tolerance judgment result output: Only the terminal corresponding to a judgment result is set to the below level.
Green	OK	O	
Brown	+ NG	O	
Yellow	PRESET_RECALL ZERO	I	External input terminal: If the relevant terminal is set to the low level, its signal becomes true.
Blue	HOLD_RESET	I	
Shield	FG	—	Connected to GND



# ABSOLUTE Digimatic Indicator ID-C

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

### FEATURES

- With the max./min. value holding function, the signal ID-C can output the signal of the GO/±NG judgment result against the peak values set. Substitute for the mechanical/electrical contact, the judgment is carried out by calculating the measurement data obtained. This provides high reliability with no deterioration of the contact point and volume adjustment.
- The signal can be output to an external device like a sequencer through the NPN open-collector.
- The GO/±NG judgment result is also indicated by the green/red LED and the "<, O, >" signs on LCD.
- Employing the ABSOLUTE linear encoder, the Signal ID-C always displays the spindle "Absolute Position" from the origin at power-on.
- The Signal ID-C achieves the IP54 protection level to resist dust and contaminants for safe operation in harsh machine shop environments.



543-282

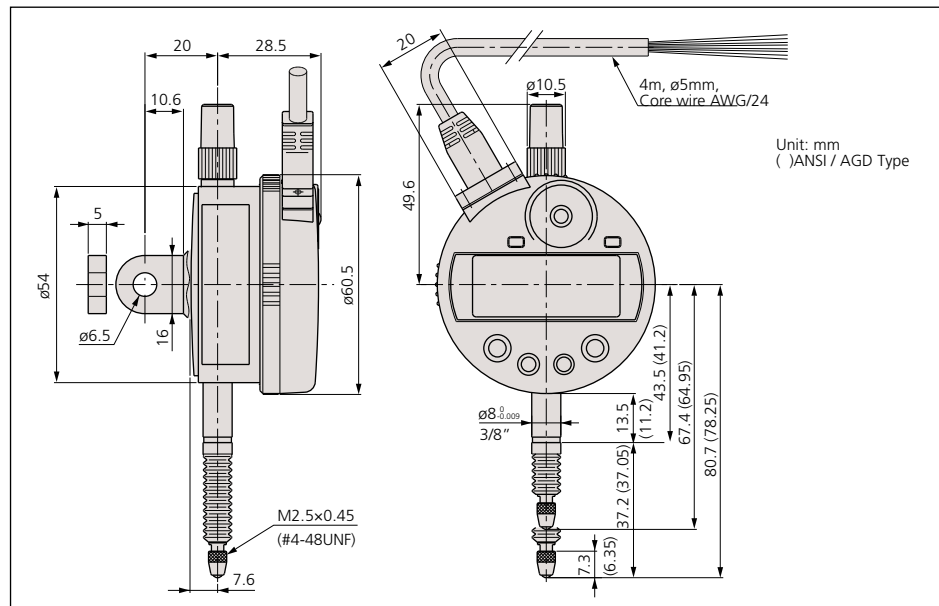
### SPECIFICATIONS

Inch/Metric	Stem dia. 3/8" #4-48 UNF Thread	ISO/JIS type	ANSI/AGD type		
Resolution	Range	Order No. (w lug, flat-back)	Model	Accuracy	Measuring force
.00005"/0.001mm	.5" / 12.7mm	543-282	543-282B	ID-C112JE	.00012" / 2.0N or less
.0005"/0.01mm	.5" / 12.7mm	543-283	543-283B	ID-C112JT	.00012" / 2.0N or less

Inch/Metric	Stem ø 8mm, M2.5 x 0.45 Thread				
Resolution	Range	Order No. (w lug, flat-back)	Model	Accuracy	Measuring force
.00005"/0.001mm	.5" / 12.7mm	543-281	543-281B	ID-C112JM	.00012" / 2.0N or less

Metric	Stem ø 8mm, M2. x 0.45 Thread				
Resolution	Range	Order No. (w lug, flat-back)	Model	Accuracy	Measuring force
0.001mm	12.7mm	543-280	543-280B	ID-C112J	0.003mm / 2.0N or less

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-C

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

With max./min. value holding function model of the ID-C Series Digimatic Indicators.

## FEATURES

- The maximum, minimum, or runout value can be displayed during measurement.
- GO/±NG judgment is performed by setting the upper and lower tolerances for max., min. and runout values.
- High speed sampling ratio of 50 times/s.
- Employing the ABSOLUTE linear encoder, the Signal ID-C always displays the spindle "Absolute Position" from the origin at power-on.



543-260

## SPECIFICATIONS

ISO/JIS type    ANSI/AGD type

Inch/Metric		Stem dia. 3/8" #4-48 UNF Thread		
Resolution	Range	Order No.*	Model	Accuracy
.00005"/0.001mm	.5" / 12.7mm	543-262	ID-C112AE	.00012"
.0001"/0.001mm	.5" / 12.7mm	543-263	ID-C112AT	.00012"

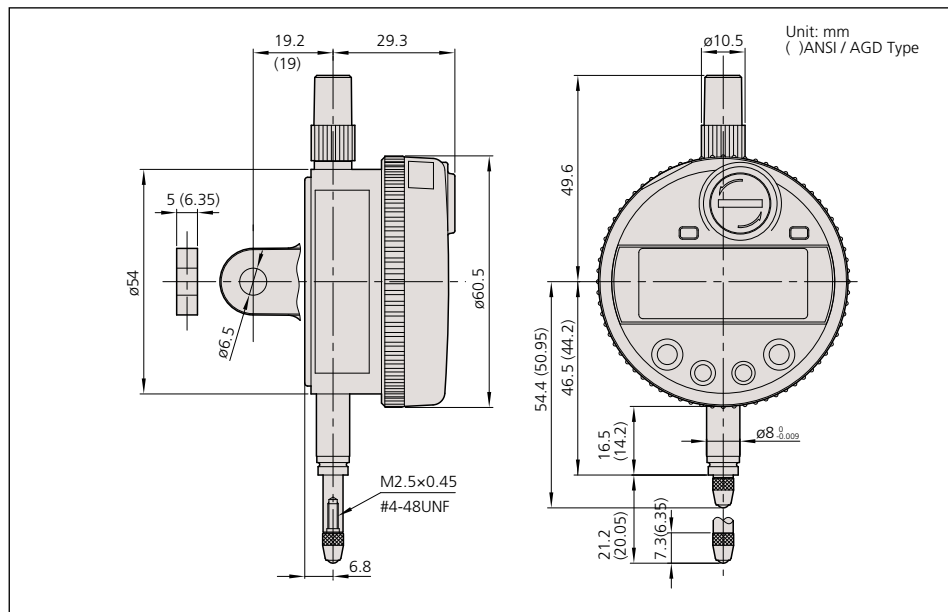
Inch/Metric		Stem ø 8mm, M2.5 x 0.45 Thread		
Resolution	Range	Order No.*	Model	Accuracy
.00005"/0.001mm	.5" / 12.7mm	543-261	ID-C112AM	.00012"

\*Back with lug

Metric		Stem ø 8mm, M2.5 x 0.45 Thread		
Resolution	Range	Order No.*	Model	Accuracy
0.001mm	12.7mm	543-260	ID-C112A	0.003mm

\*Back with lug

## DIMENSIONS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm, .00005"/0.001mm or .0001"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: SR44 (2 pcs.), 938882  
 Battery life: Approx. 800 - 1300 hours under normal use  
 Dust/Water protection level: IP42

## Function

Origin-set/Preset, Zeroset, GO/±NG judgment, Max/Min/Runout value holding, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

## Optional Accessories

- 905338: SPC cable (40" / 1m)
- 905409: SPC cable (80" / 2m)
- 902011: Spindle lifting lever (ISO/JIS type)
- 902794: Spindle lifting lever (ANSI/AGD type)
- 540774: Spindle lifting cable (stroke: .4" / 10mm)
- : Backs (See page F-32.)
- : Contact points (See page F-33.)



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.001mm or .00005"/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.5N or less  
 Battery: SR44 (2 pcs.), **938882**  
 Battery life: Approx. 2000 hours under normal use  
 Dust/Water protection level: IP42

### Function

Origin-set/Pre-set, Zero-set, GO/±NG judgment, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Optional Accessories

**905338:** SPC cable (40" / 1m)  
**905409:** SPC cable (80" / 2m)  
 Applicable Gages Series 511 and 526



Installed on bore gage probe (511-127)

# ABSOLUTE Digimatic Indicator ID-C

## SERIES 543 — Specially Designed for Bore Gage Application

This ID-C Series Digimatic Indicators are exclusively designed for ID measurement.

### FEATURES

- The minimum value holding function provides the easy of detection of hole diameter.
- An analog bar indicator is integrated to enhance the intuition in reading.
- GO/±NG judgment is performed by setting the upper and lower tolerances.
- Up to three sets of master value and upper/lower tolerance value can be memorized.
- Employing the ABSOLUTE linear encoder, the Signal ID-C always displays the spindle "Absolute Position" from the origin at power-on.



### SPECIFICATIONS

ISO/JIS type    ANSI/AGD type

**Inch/Metric**    Stem dia. 3/8" #4-48 UNF Thread

Resolution	Range	Order No.*	Model	Accuracy
.00005"/0.001mm	.5" / 12.7mm	<b>543-266B</b>	ID-C112GE	.00012"
.0001"/0.001mm	.5" / 12.7mm	<b>543-267B</b>	ID-C112G	.00012"

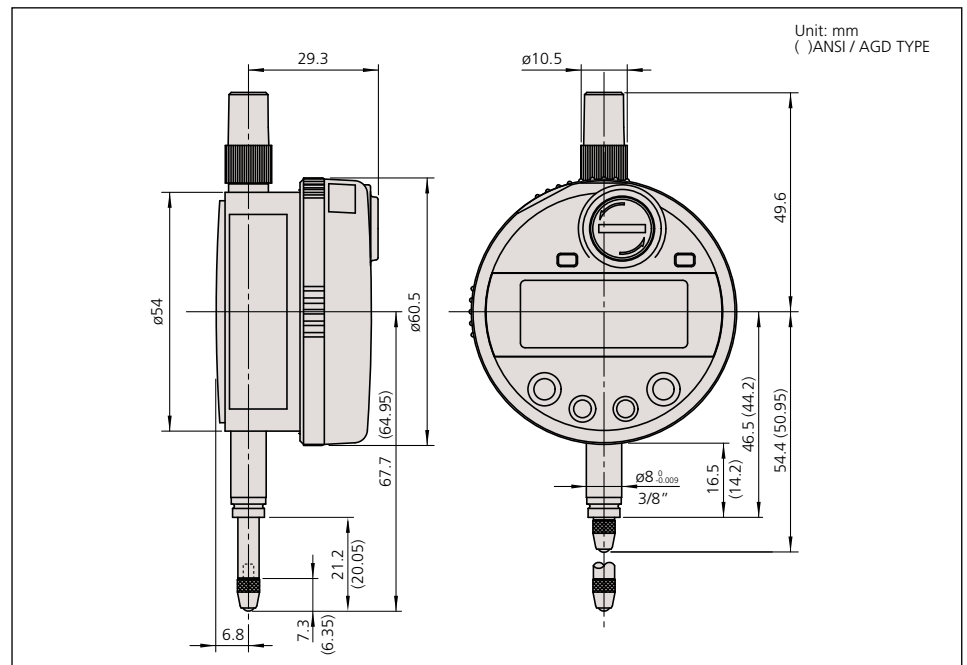
\*Back with lug

**Metric**    Stem ø 8mm, M2.5 x 0.45 Thread

Resolution	Range	Order No.*	Model	Accuracy
0.001mm	12.7mm	<b>543-264B</b>	ID-C112G	0.003mm

\*Back with lug

### DIMENSIONS



# ABSOLUTE Digimatic Indicator ID-H

**SERIES 543 — High Accuracy and High Functional Type**



## FEATURES

- This new-generation digital indicator offers the excellent accuracy and functionality expected from this class of indicator. Take advantage of its high accuracy backed up by 0.5 $\mu$ m / .00002" resolution, remote control functionality via a handheld controller (or an RS-232C interface) and easy runout measurements with the well-established analog bar display.
- The maximum, minimum, or runout value can be displayed during measurement.
- GO/ $\pm$ NG judgment is performed by setting the upper and lower tolerances. If a judgment result is out of tolerance, the display backlighting changes from green to red, so tolerance judgment can be made at a glance.
- With SPC data output.
- With RS-232C input/output



**21EZA099**  
Remote controller (optional)



## SPECIFICATIONS

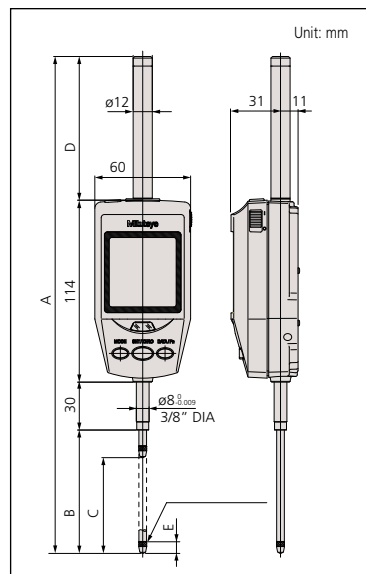
**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread

Resolution	Range	Order No.*	Model	Accuracy
.00002", .00005"	1.2" / 30.4mm	<b>543-562A</b>	ID-H530E	0.0015mm
.0001", 0.0005mm, 0.001mm	2.4" / 60.9mm	<b>543-564A</b>	ID-H560E	0.0025mm

**Metric** Stem  $\phi$  8mm M2.5 X 0.45 Thread

Resolution	Range	Order No.*	Model	Accuracy
0.0005mm, 0.001mm	30.4mm	<b>543-561A</b>	ID-H530	0.0015mm
	60.9mm	<b>543-563A</b>	ID-H560	0.0025mm

## DIMENSIONS



Tolerance judgment



Analog bar display



Max/Min value measurement



Runout measurement



Resolution switching



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.0005mm/0.001mm or .00002"/.00005" / .0001"/0.0005mm/0.001mm  
 Display: LCD  
 Length standard: Linear encoder  
 Max. response speed: 1000mm/s  
 Measuring force: 2.0N/2.5N\* or less (\*60mm range models)  
 Power supply: 6V DC (via AC adaptor)

## Function

Origin-set/Preset, Zeroset, GO/ $\pm$ NG judgment, Max/Min value hold, Runout measurement, Resolution switching, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

## Standard Accessories

**09EAA119A:** AC Adapter 120V  
**137693:** Lifting Lever

## Optional Accessories

**936937:** SPC cable (40" / 1m)  
**965014:** SPC cable (80" / 2m)  
**21EAA131:** RS-232C cable (80" / 2m)  
**21EZA099:** Remote controller  
**540774:** Spindle lifting cable (stroke: .4" / 10mm)  
**21EZA101:** Spindle lifting knob  
**264-504-5A:** Digimatic Min-processor DP-1VR  
**543-004A:** Digimatic presetter  
**21EZA152A:** FREE PARAMETER SETTING SOFTWARE  
 —: Backs (See page F-32.)  
 —: Contact points (See page F-33.)

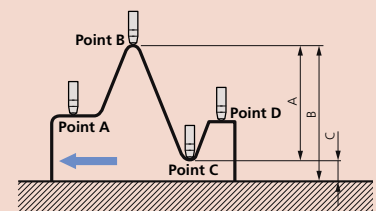
\*Required when orienting the indicator upside down.

## Application

### 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.



Order No.	A	B	C	D	E
<b>543-561A</b>	251.3	47.3	30.48	60	7.3
<b>543-562A</b>	250.35	46.35	30.48	60	6.35
<b>543-563A</b>	311.3	77.3	60.96	90	7.3
<b>543-564A</b>	310.35	76.35	60.96	90	6.35



### Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm/0.001mm or .00005"/.0001"/.0005"  
 /.001"/0.001mm/0.01mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type  
 linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 1.8N/2.3N\* or less (\*50mm range models)  
 Power supply: 9V DC (via AC adaptor)

### Function

Origin-set/Preset, Zeroset, GO/±NG judgment, Max/Min value hold, Runout measurement, Resolution switching, Counting direction switching, Power ON/OFF, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

### Standard Accessories

526688A: AC Adapter 120V  
 137693: Lifting Lever

### Optional Accessories

936937: SPC cable (40" / 1m)  
 965014: SPC cable (80" / 2m)  
 540774: Spindle lifting cable (stroke: .4" / 10mm)  
 02ACA571: Auxiliary spindle spring for 25mm/1" models\*  
 02ACA773: Auxiliary spindle spring for 50mm/2" models\*  
 264-504-5A: Digimatic Min-processor DP-1VR  
 543-004-1: Digimatic presetter  
 —: Backs (See page F-32.)  
 —: Contact points (See page F-33.)

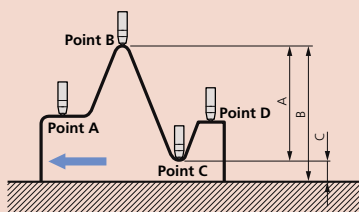
\*Required when orienting the indicator upside down.

### Application

#### 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.



# ABSOLUTE Digimatic Indicator ID-F

## SERIES 543 — with Back-lit LCD Screen

### FEATURES

- With the ABSOLUTE Linear Encoder technology, once the measurement reference point has been preset it will not be lost when the power is turned on.
- GO/±NG judgment is performed by setting the upper and lower tolerances. If a judgment result is out of tolerance, the display backlighting changes from green to red, so tolerance judgment can be made at a glance.
- An analog bar indicator has been integrated to handle upper/lower limit approaching and zero approaching. It enhances the ease of operation in the same manner as a dial indicator. The display range of the analog bar can be changed.
- With SPC data output.



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



### SPECIFICATIONS

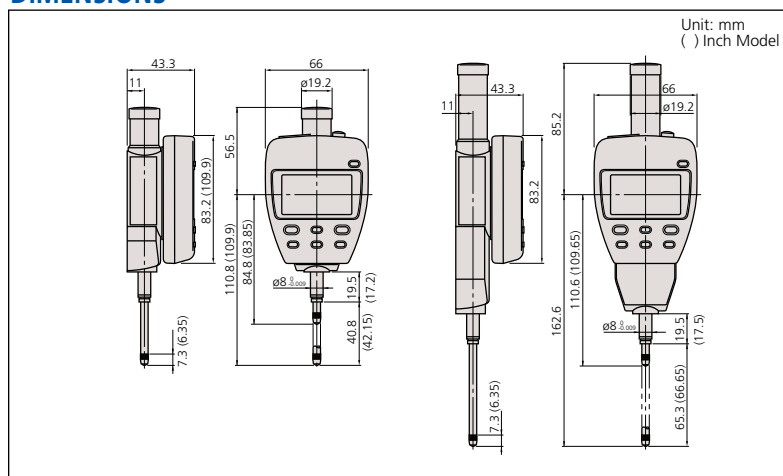
**Inch/Metric** Stem dia. 3/8" #4-48 UNF Thread

Resolution	Range	Order No.*	Model	Accuracy
.00005", .0001", .0005", .001", 0.001mm, 0.01mm	1" / 25.4mm	543-552A	ID-F125E	.00012"
	2" / 50.8mm	543-558A	ID-F150HE	.00012"

**Metric** Stem ø 8mm M2.5 X 0.45 Thread

Resolution	Range	Order No.*	Model	Accuracy
0.001mm, 0.01mm	25mm	543-551A	ID-F125	0.003mm
	50mm	543-557A	ID-F150H	0.003mm

### DIMENSIONS





# ABSOLUTE Digimatic Indicator ID-N / B

SERIES 543 — with Dust/Water Protection Conforming to IP66

## FEATURES

- Proven ABSOLUTE sensor.
- Rated to IP66 water- and dust-proofing standard and oil resistance improved.
- Slim body design is advantageous for multi-point measurements.
- Improvement in workability with the LCD readout-rotation function.
- Back plunger design (ID-B).
- Built-in tolerance judgment function.
- Switchable resolution.
- Waterproof data output connector.
- Built-in hold/preset function



Slim type ID-N  
543-576

Back plunger type ID-B  
543-586

## ID-B Digimatic Indicators

### SPECIFICATIONS

Metric		Stem $\varnothing$ 8mm M2.5 X 0.45 Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
0.01mm	5.0mm	543-580	ID-B1005	0.02mm	2.0N or less
0.001mm	5.0mm	543-585	ID-B105	0.003mm	2.0N or less

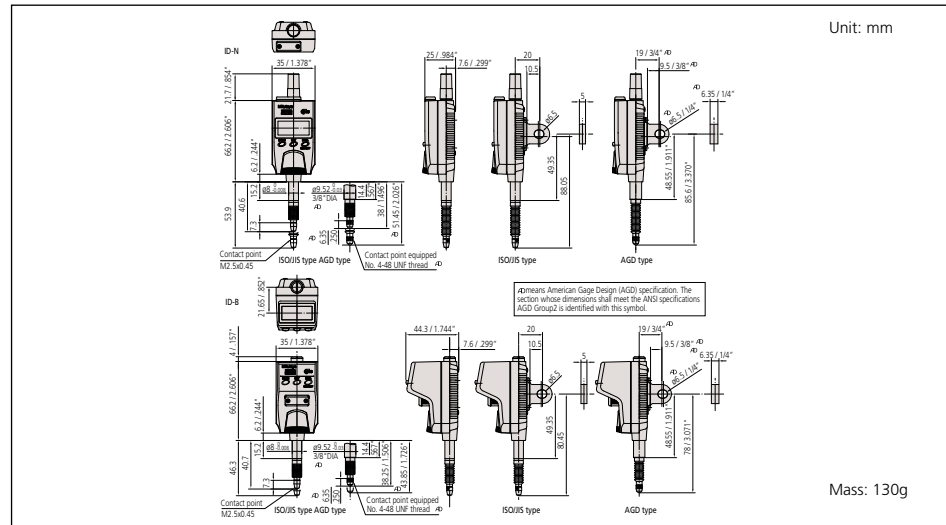
Inch / Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
.0005" / 0.01mm	.22" / 5.6mm	543-581	ID-B1005E	.0008" / 0.02mm	2.0N or less
.0005" / 0.01mm	.22" / 5.6mm	543-586	ID-B105E	.00012" / 0.003mm	2.0N or less

## ID-N Digimatic Indicators

Metric		Stem $\varnothing$ 8mm M2.5 X 0.45 Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
0.01mm	5.0mm	543-570	ID-N1012	0.02mm	2.0N or less
0.001mm / 0.01mm	5.0mm	543-575	ID-N112	0.003mm	2.0N or less

Inch / Metric		Stem dia. 3/8" #4-48 UNF Thread			
Resolution	Range	Order No.	Model No.	Accuracy	Measuring Force
.0008" / 0.02mm	.5" / 12.7mm	543-571	ID-N1012E	.0008" / 0.02mm	2.0N or less
.00012" / 0.003mm	.5" / 12.7mm	543-576	ID-N112E	.00012" / 0.003mm	2.0N or less

## DIMENSIONS AND MASS



## Technical Data

Accuracy: Refer to the list of specifications  
 Resolution: 0.01mm, 0.01mm/0.001mm, .0005"/0.01mm or .0005"/0.0005"/0.01mm/0.001mm  
 Display: LCD  
 Length standard: ABSOLUTE electrostatic capacitance type linear encoder  
 Max. response speed: Unlimited  
 Measuring force: 2.5N (2.0N: Back plunger type)  
 Battery: SR44 (1 pc.), 938882  
 Battery life: Approx. 7000 hours under normal use  
 Dust/Water protection level: IP66

## Function

Zero-setting, Presetting, Direction switching, Tolerance judgment, Display hold, Data output, inch/mm conversion (on inch/metric models only)  
 Alarm: Low voltage, Counting value composition error, Over-flow error, Tolerance limit setting error

## Optional Accessories

- 21EZA105: Lifting knob (for ISO/JIS model)
- 21EZA150: Lifting knob (for AGD model)
- 21EZA145: Lug (for JIS/ISO model)
- 21EZA146: Lug (for AGD model)
- 02ACA376: Rubber boot (for ID-N, NBR)
- 238774: Rubber boot (for ID-N, silicon)
- 125317: Rubber boot (for ID-B, NBR)
- 21EAA212: Rubber boot (for ID-B, silicon)
- 21EAA194: SPC cable (40" / 1m)
- 21EAA190: SPC cable (80" / 2m)
- 21EAA210: Bifurcated connecting cable with zero-setting terminal (40" / 1m)
- 21EAA211: Bifurcated connecting cable with zero-setting terminal (80" / 2m)



# EC Counter

**SERIES 542 — Low-cost, Assembly, Type Display Unit**

## FEATURES

- Employed the DIN size (96 X 48mm) and mount-on-panel configuration, which greatly facilitates the incorporation into a system.
- Possible to produce either tolerance judgment output or Digimatic output.



542-007A

## EC Counter

### Technical Data

Applicable gage: LGD, LGS, All SPC output gages

Resolution: 0.001mm, 0.01mm

No. of gage input: 1

Display: 6-digit LED and a negative [-] sign

Function: Preset

GO/±NG judgment

Output (open-collector): 3-step limit signal, Normal signal

External control: Preset, Data hold

Power supply: Via AC adaptor

Dimensions (W x D x H): 96 x 48 x 84.6mm

Mass: 500g

### Standard Accessories

**526688A:** AC Adapter

**936937:** SPC cable (40"/1m)

**965014:** SPC cable (80"/1m)

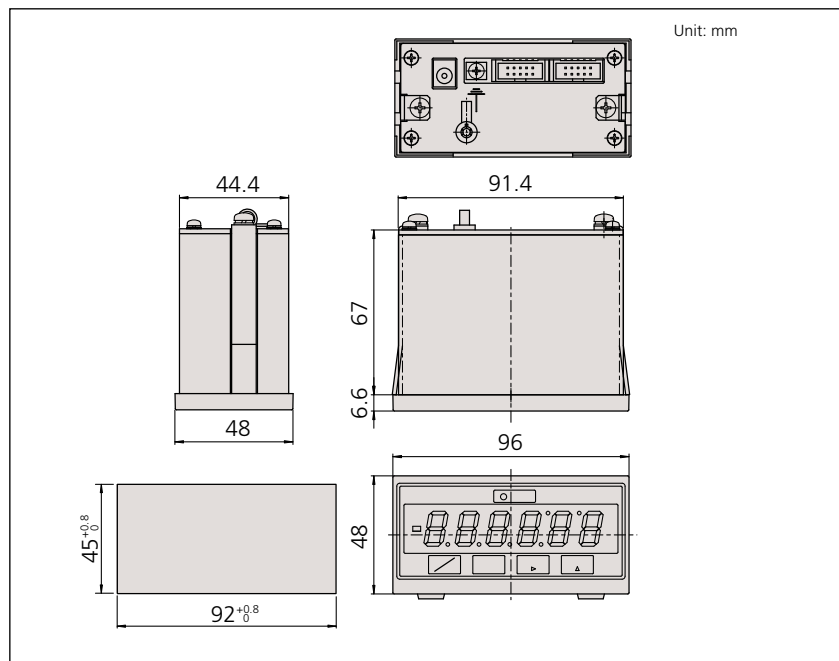
**214938:** PJ-2 (DC Plug)

**C162-155:** GO/±NG judgement cable

## SPECIFICATIONS

Order No.	Description
542-007A	EC Counter

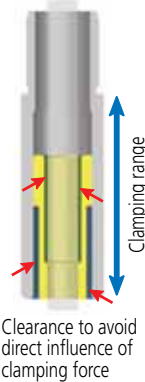
## DIMENSIONS



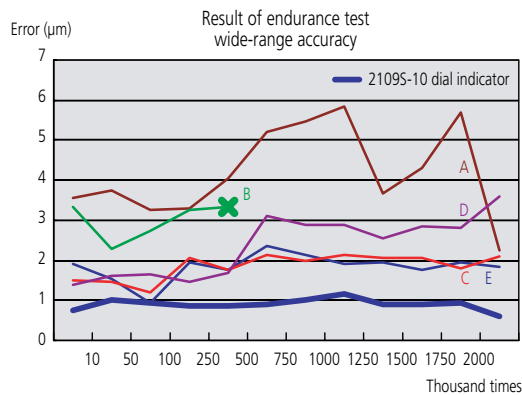
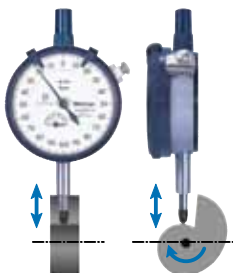
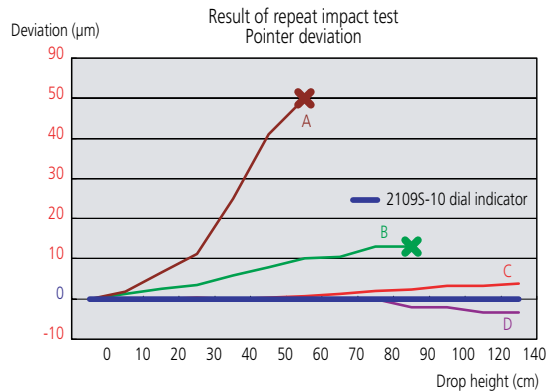
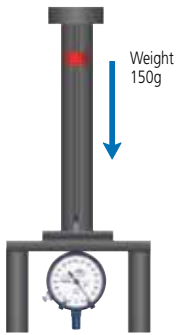
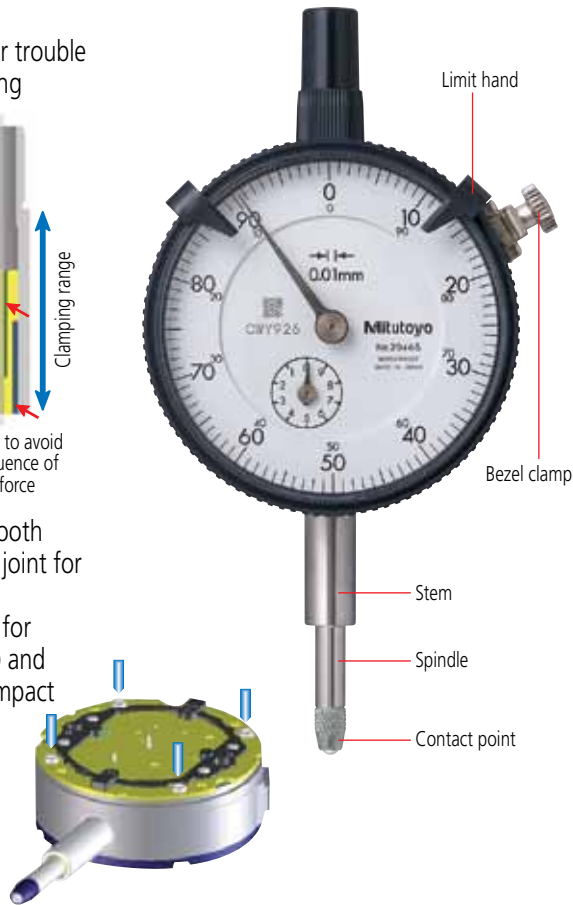
# Dial Indicators

## FEATURES: S Series

- Revolutionary stem-bush design for trouble free stem clamping (longer clamping range).
- No through screw-hole on the frame for high dust-resistance.



- Involute curved lifting lever for smooth movement of spindle and dovetail joint for tool-less connection.
- Greater rigidity in the bearing plate for reducing the retracing error (20%) and 4-screw mounting for increasing impact resistance.



## Description of Icon

Icon	Description
	Reverse reading type suitable for depth and step measurement.
	One revolution type for easy and error-free reading
	Double scale spacing type, easy-on-the-eyes
	Shockproof type
	Waterproof type
	With damper at lowest rest point
	Jeweled bearing type
	Peak retaining type
	Long stem type
	Dustproof type
	With coaxial revolution counter
	Back plunger type
	Adjustable hand type
	Double-face type

# Dial Indicators

## SERIES 0 - Compact type



1911



1913-10



1911



1923

### SPECIFICATIONS

**Inch** Stem dia. 3/8", #4-48 UNF Thread □ ANSI/AGD type

Graduation	Range	Range/rev	Dial reading	Order No.		Accuracy		Measuring force	
				w/ lug	Flat-back	First 2.5 Rev	Overall Accuracy		
.0001"	.01"	.004"	0-2-0	<b>1927-10</b>	<b>1927B-10</b>	±.0002"	±.0002"	1.4N or less	✓
.0001"	.025"	.01"	0-5-0	<b>1925-10</b>	<b>1925B-10</b>	±.0002"	±.0002"	1.4N or less	✓
.0005"	.05"	.02"	0-10-0	<b>1923</b>	<b>1923B</b>	±.0005"	±.0005"	1.4N or less	—
.001"	.1"	.04"	0-20-0	<b>1921</b>	<b>1921B</b>	±.001"	±.001"	1.4N or less	—

**Metric** Stem ø 8mm, M2.5 x 0.45 Thread □ ISO/JIS type

Graduation	Range	Range/Rev	Dial reading	Order No.		Accuracy		Measuring force	
				w/ lug	Flat-back	First 2.5 Rev	Overall Accuracy		
0.002mm	0.5mm	0.2mm	0-100-0	<b>1913-10</b>	<b>1913B-10</b>	±0.011mm	±0.011mm	1.4N or less	✓
0.01mm	2.5mm	1mm	0-50-0	<b>1911</b>	<b>1911B</b>	±0.011mm	±0.011mm	1.4N or less	—

Jeweled bearing type

### DIMENSIONS

**Inch Model** Unit: Inch

Order Number	A	B
<b>1927-10</b>	1.46"	.26"
<b>1925-10</b>	1.48"	.28"
<b>1923</b>	1.51"	.31"
<b>1921</b>	1.58"	.37"

**Metric Model** Unit: mm

Order Number	A	B
<b>1911</b>	42	11.5
<b>1913-10</b>	39.5	9

# Dial Indicators

## SERIES 1

### SPECIFICATIONS

**Inch** Stem dia. 3/8" #4-48 UNF Thread □ ANS/AGD type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force	Shockproof type	Jeweled bearing type
				(W/Lug)	(Flat-back)	First 2.5 Rev	Overall Accuracy			
.0001"	.025"	.01"	0-10	<b>1802S-10</b>	<b>1802SB-10</b>	±.0001"	±.0001"	1.4N or less	✓	✓
.0001"	.025"	.01"	0-5-0	<b>1803S-10</b>	<b>1803SB-10</b>	±.0001"	±.0001"	1.4N or less	✓	✓
.0005"	.1"	.04"	0-40	<b>1670S</b>	<b>1670SB</b>	±.0005"	±.0005"	1.4N or less		
.0005"	.1"	.04"	0-20-0	<b>1671S</b>	<b>1671SB</b>	±.0005"	±.0005"	1.4N or less		
.0005"	.125"	.05"	0-50	<b>1506S</b>	<b>1506SB</b>	±.0005"	±.0005"	1.4N or less		
.0005"	.125"	.05"	0-25-0	<b>1507S</b>	<b>1507SB</b>	±.0005"	±.0005"	1.4N or less		
.001"	.125"	.05"	0-50	<b>1780S</b>	<b>1780SB</b>	±.001"	±.001"	1.4N or less		
.001"	.125"	.025"	0-25-0	<b>1781S</b>	<b>1781SB</b>	±.001"	±.001"	1.4N or less		
.001"	.25"	.1"	0-100	<b>1410S</b>	<b>1410SB</b>	±.001"	±.001"	1.4N or less		
.001"	.25"	.1"	0-100	<b>1410S-10</b>	<b>1410SB-10</b>	±.001"	±.001"	1.4N or less		✓
.001"	.25"	.1"	0-50-0	<b>1411S</b>	<b>1411SB</b>	±.001"	±.001"	1.4N or less		

 Shockproof type  Jeweled bearing type



1803S-10

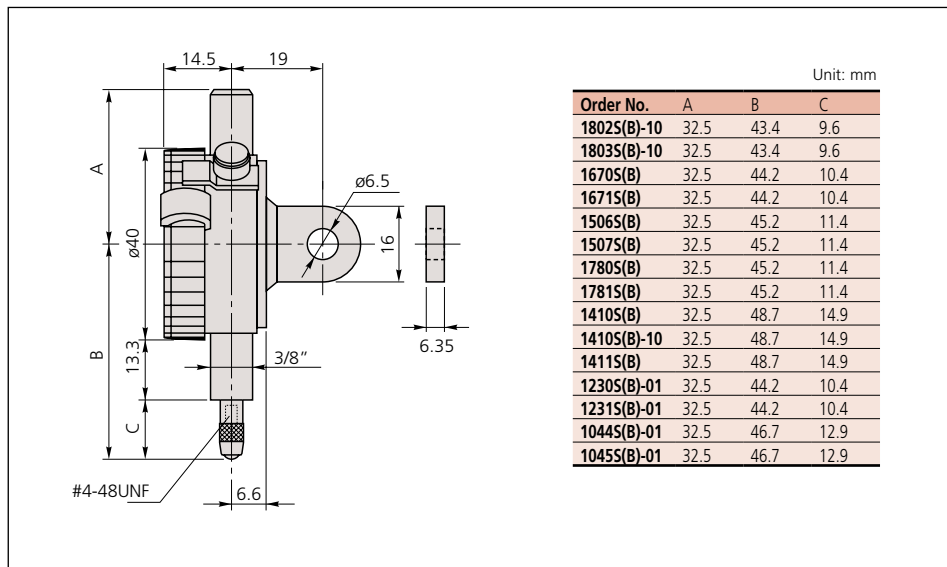
**Metric** Metric - ANSI Standard Stem dia. 3/8" #4-48 UNF Thread yellow dial face □ ANS/AGD type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force
				(W/Lug)	(Flat-back)	First 2.5 Rev	Overall Accuracy	
0.01mm	2.5mm	1mm	0-100	<b>1230S-01</b>	<b>1230SB-01</b>	±0.01mm	-	1.4N or less
0.01mm	2.5mm	1mm	0-50-0	<b>1231S-01</b>	<b>1231SB-01</b>	±0.01mm	-	1.4N or less
0.01mm	5mm	1mm	0-100	<b>1044S-01</b>	<b>1044SB-01</b>	±0.01mm	±0.013mm	1.4N or less
0.01mm	5mm	1mm	0-50-0	<b>1045S-01</b>	<b>1045SB-01</b>	±0.01mm	±0.013mm	1.4N or less



1411S

### DIMENSIONS



1506S



# Dial Indicators

## SERIES 1



1109S-10



1040S



1013S



1045S



1003



1044S

**Metric** Stem  $\phi$  8mm M2.5 X 0.45 Thread ISO/JIS type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force	Shockproof type	Waterproof type	Jeweled bearing type
				(W/Lug)	(Flat-back)	First 2.5 Rev	Overall Accuracy				
0.001mm	1mm	0.2mm	0-100-0	<b>1109S-10</b>	<b>1109SB-10</b>	$\pm 0.001$ mm	$\pm 0.007$ mm	1.5N or less	✓		✓
0.002mm	1mm	0.2mm	0-100-0	<b>1013S-10</b>	<b>1013SB-10</b>	$\pm 0.002$ mm	$\pm 0.01$ mm	1.5N or less	✓		✓
0.005mm	3.5mm	0.5mm	0-50	<b>1124S</b>	<b>1124SB</b>	$\pm 0.005$ mm	$\pm 0.013$ mm	1.4N or less			✓
0.01mm	3.5mm	0.5mm	0-50-0	<b>1040S</b>	<b>1040SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	3.5mm	0.5mm	0-25-0	<b>1041S</b>	<b>1041SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	4mm	1mm	0-50-0	<b>1003</b>	<b>1003B</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	5mm	1mm	0-100	<b>1044S</b>	<b>1044SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.5N or less			
0.01mm	5mm	1mm	0-100	<b>1044S-60</b>	<b>1044SB-60</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	2N or less		✓	
0.01mm	5mm	1mm	0-100	<b>1044S-10</b>	<b>1044SB-10</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	.4N or less	✓		
0.01mm	5mm	1mm	0-50	<b>1045S</b>	<b>1045SB</b>	$\pm 0.01$ mm	$\pm 0.013$ mm	1.4N or less			



Shockproof type

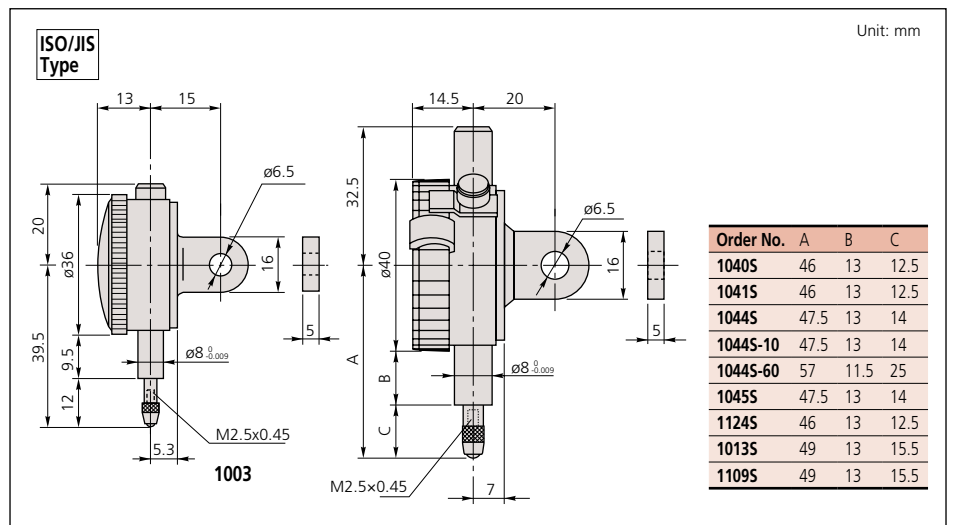


Waterproof type



Jeweled bearing type

## DIMENSIONS





# Dial Indicators

## SERIES 1 — Compact One Revolution Type for Error-free Reading



One revolution type



1929S

Unlike many other dial indicators, the one-revolution dial indicator literally shows the entire spindle travel or range as one sweep of the hand, eliminating the possibility of reading errors due to miscounting the multiple revolutions. With one-revolution dial indicators, "within tolerance" and "out-of-tolerance" can never be misinterpreted. An unique shock-proof mechanism is incorporated, providing improved immunity to shock due to sudden spindle retraction caused by high impact.



Shockproof type



Dustproof type



Waterproof type



Jeweled bearing type

### SPECIFICATIONS

**Inch** Stem dia. 3/8", #4-48 UNF Thread □ ANSI/AGD type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force				
			w/lug	Flat-back						
.0001"	.006" / .0079"	3-0-3	<b>1910S-72</b>	<b>1910SB-72</b>	±.0001"	1.4N or less	✓	✓	—	—
.0005"	.04" / .055"	20-0-20	<b>1909S-62</b>	<b>1909SB-62</b>	±.0005"	1.4N or less	✓	✓	—	—



1929S  
1929S-60  
1929S-62

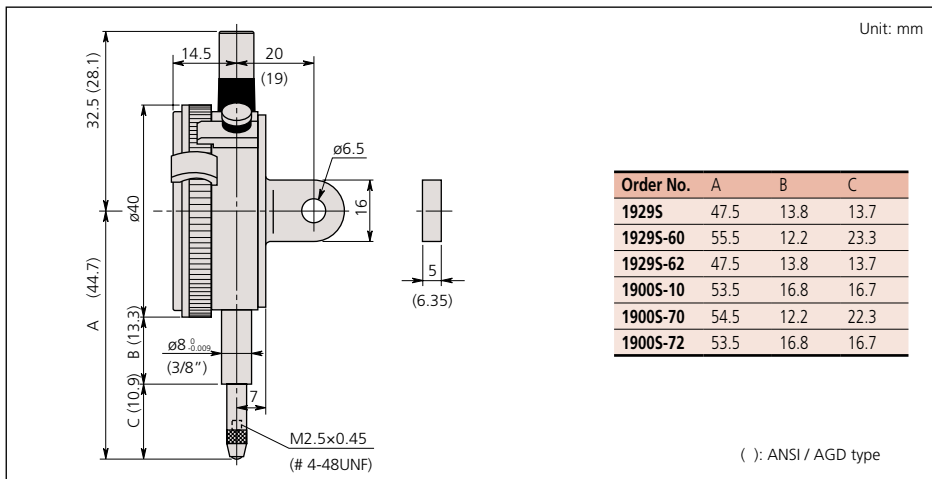


1900S-10  
1900S-70  
1900S-72

**Metric** Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread □ ISO/JIS type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force				
			w/lug	Flat-back						
0.001mm	0.1mm / 0.14mm	50-0-50	<b>1900S-10</b>	<b>1900SB-10</b>	±0.005mm	1.5N or less	✓	—	—	✓
0.001mm	0.1mm / 0.14mm	50-0-50	<b>1900S-70</b>	<b>1900SB-70</b>	±0.006mm	1.5N or less	✓	—	✓	✓
0.001mm	0.1mm / 0.14mm	50-0-50	<b>1900S-72</b>	<b>1900SB-72</b>	±0.006mm	1.5N or less	✓	✓	—	✓
0.01mm	1mm / 1.4mm	50-0-50	<b>1929S</b>	<b>1929SB</b>	±0.011mm	1.4N or less	✓	—	—	—
0.01mm	1mm / 1.4mm	50-0-50	<b>1929S-60</b>	<b>1929SB-60</b>	±0.011mm	1.4N or less	✓	—	✓	—
0.01mm	1mm / 1.4mm	50-0-50	<b>1929S-62</b>	<b>1929SB-62</b>	±0.011mm	1.4N or less	✓	✓	—	—

### DIMENSIONS



### Optional Accessories

- : Backs (See page F-32.)
- : Contact points (See page F-33.)

# Dial Indicators

## SERIES 2 — Standard One Revolution Type for Error-free Reading



One revolution type.



Shockproof type



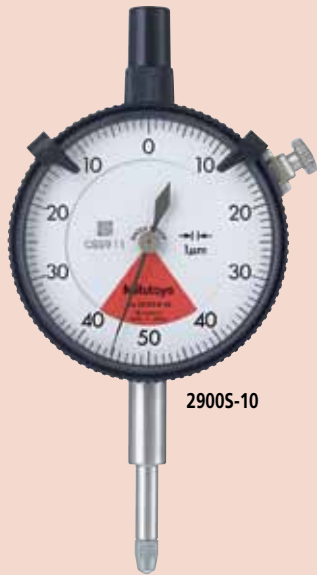
Waterproof type



Dustproof type



Jeweled bearing type



29005-10



29295  
29295-60  
29295-62



29595



29005-10  
29005-70  
29005-72



29015-10

### SPECIFICATIONS

Metric

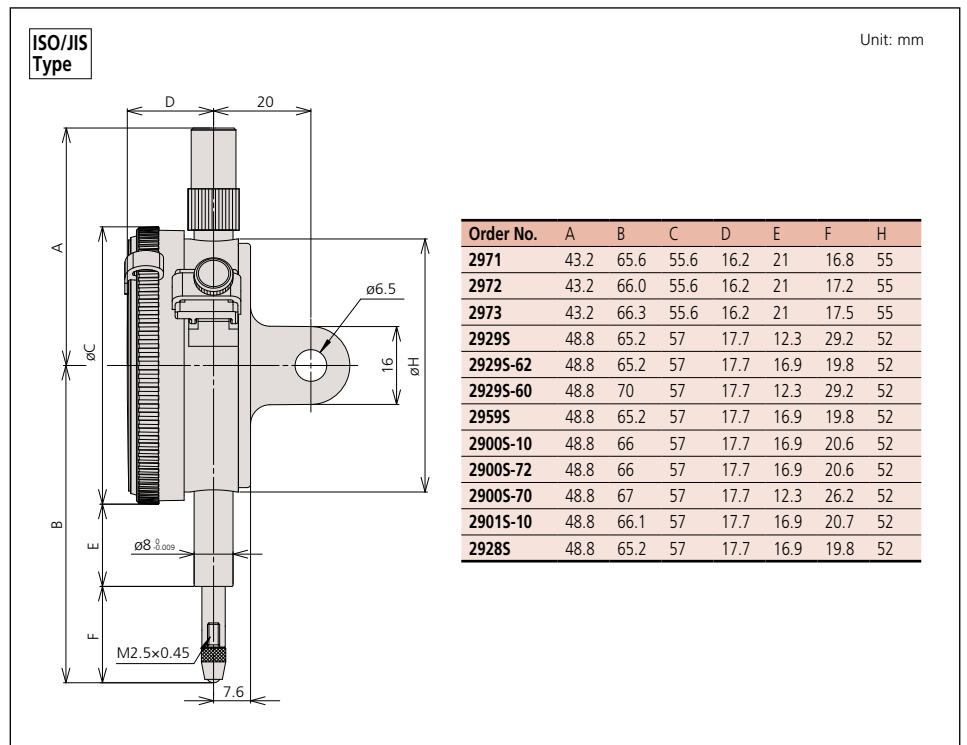
Stem  $\varnothing$  8mm, M2.5 x 0.45 Thread

ISO/JIS type

Graduation	Range (range/full stroke)	Dial reading	Order No.		Accuracy	Measuring force				
			w/ lug	Flat-back						
0.001mm	0.08mm / 0.1mm	40-0-40	29005-10	29005B-10	$\pm 0.003$ mm	1.4N or less	✓	—	—	✓
0.001mm	0.08mm / 0.1mm	40-0-40	29005-70	29005B-70	$\pm 0.003$ mm	2.0N or less	✓	✓	—	✓
0.001mm	0.08mm / 0.1mm	40-0-40	29005-72	29005B-72	$\pm 0.003$ mm	2.0N or less	✓	—	✓	✓
0.001mm	0.16mm / 0.2mm	80-0-80	29015-10	29015B-10	$\pm 0.004$ mm	1.4N or less	✓	—	—	✓
0.01mm	0.8mm / 1mm	40-0-40	29295	29295B	$\pm 0.009$ mm	2.0N or less	✓	—	—	—
0.01mm	0.8mm / 1mm	40-0-40	29295-60	29295B-60	$\pm 0.009$ mm	2.0N or less	✓	✓	—	—
0.01mm	0.8mm / 1mm	40-0-40	29295-62	29295B-62	$\pm 0.009$ mm	2.0N or less	✓	—	✓	—
0.01mm	1.6mm / 2mm	80-0-80	29595	29595B	$\pm 0.013$ mm	1.4N or less	✓	—	—	—
0.01mm	0.5mm / 0.7mm	25-0-25	—	2971*	$\pm 0.010$ mm	1.4N or less	✓	—	✓	—
0.01mm	1mm / 1.4mm	50-0-50	—	2972*	$\pm 0.012$ mm	1.4N or less	✓	—	✓	—
0.02mm	1.6mm / 2mm	80-0-80	—	2973*	$\pm 0.016$ mm	1.4N or less	✓	—	✓	—
0.1mm	4mm / 10mm	2-0-2	29285	29285B	$\pm 0.040$ mm	1.4N or less	✓	—	—	—

\* Flat back type only. (Lug-on-center back is not available.)

### DIMENSIONS



### Optional Accessories

- : Backs (See page F-32.)
- : Contact points (See page F-33.)

# Dial Indicators

## SERIES 2 — Standard One Revolution Type for Error-free Reading

### FEATURES

- An unique shock-proof mechanism is incorporated, providing improved immunity to shock due to sudden spindle retraction caused by high impact.
- The crystal is hard coated for durability and scratch resistance.
- Approximately 40% lighter than the conventional dial indicator.
- Provided with an improved resistance to shop floor contaminants such as water and dust.
- Due to the spindle bushing being offset from the stem, spindle movement will not be hindered or jammed when clamping along the stem.
- A pair of limit hands are provided for quick and easy tolerance judgment (GO/±NG).



One revolution type.

### SPECIFICATIONS

**Inch** Stem 3/8" dia. , #4-48 UNF Thread

ANSI/AGD type

Graduation	Range	Range/full stroke	Dial reading	Order No.		Accuracy	Measuring force			
				w/ lug	Flat-back					
.0001"	.008"	.01"	4-0-4	<b>2910S-10</b>	<b>2910SB-10</b>	±.0001"	1.8N or less	✓	✓	✓
.0001"	.008"	.01"	4-0-4	<b>2910S-72</b>	<b>2910SB-72</b>	±.0001"	2.5N or less	✓	✓	✓
.0005"	.04"	.05"	20-0-20	<b>2909S-62</b>	<b>2909SB-62</b>	±.0005"	2.5N or less	✓	✓	✓
.0005"	.02"	.028"	10-0-10	—	<b>2976*</b>	±.0005"	1.4N or less	✓	✓	✓
.0005"	.04"	.055"	20-0-20	—	<b>2977*</b>	±.0005"	1.4N or less	✓	✓	✓
.001"	.06"	.079"	30-0-30	—	<b>2978*</b>	±.001"	1.4N or less	✓	✓	✓

\*Flat back type only. (Lug-on-center back is not available.)

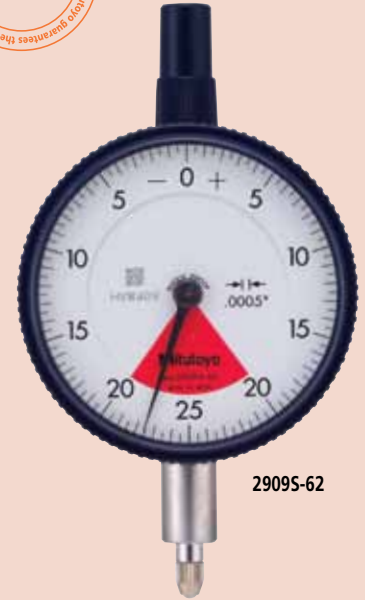
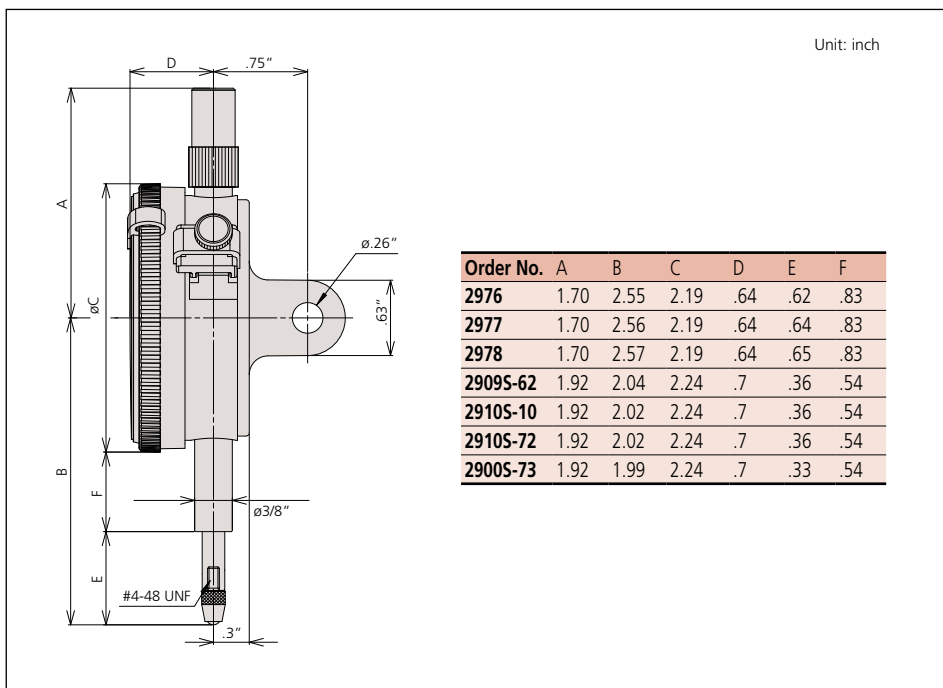
**Metric** Stem 3/8" dia. , #4-48 UNF Thread Yellow Dial Face

ANSI/AGD type

Graduation	Range	Range/full stroke	Dial reading	Order No.		Accuracy	Measuring force			
				w/ lug	Flat-back					
0.001mm	0.08mm	0.1mm	40-0-40	<b>2900S-73</b>	<b>2900SB-73</b>	±0.003mm	2.0N or less	✓	✓	✓

\*Flat back type only. (Lug-on-center back is not available.)

### DIMENSIONS



2909S-62



2978



# Special Dial Indicators

## SERIES 2



Adjustable hand



20485-10

### Adjustable hand dial gauge

The hand position can be adjusted independently of the vertical movement of the spindle by rotating the top knob.



Peak hold



20465-80

### Peak hold type dial gauge

A mechanism that stops the pointer and the spindle at the depressed position where the spindle is depressed makes the pointer stop and display the maximum value.



Double-face type



29405

### Double-face type dial gauge

The displacement of the spindle can be read from either the front or rear face.

## SPECIFICATIONS

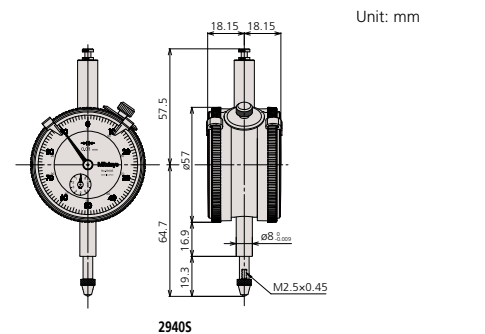
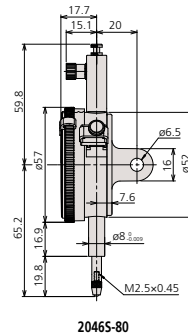
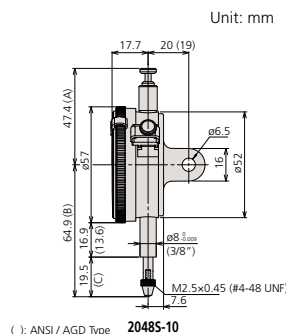
Inch		Stem dia. 3/8" #4-48 UNF Thread						ANSI/AGD type			
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force	Diamond	Adjustable hand	Peak hold
				w/lug	Flat-back	First 2.5 Rev	Overall Accuracy				
.001"	.5"	.1"	0-100	29155-10	29155B-10	±.001"	±.001"	1.8N or less	✓	✓	✓
.001"	.5"	.1"	0-50-0	29185-10	29185B-10	±.001"	±.001"	1.8N or less	✓	✓	✓

Metric		Stem dia. 3/8" #4-48 UNF Thread, Yellow Dial Face						ANSI/AGD type			
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force	Diamond	Adjustable hand	Peak hold
				w/lug	Flat-back	First 2.5 Rev	Overall				
0.01mm	10mm	1mm	0-100	20485-11	20485B-11	±13µm	±0.013mm	1.4N or less	✓	✓	✓

Metric		Stem ø 8mm, M2.5 x 0.45 Thread						ISO/JIS type				
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy	Measuring force	Diamond	Adjustable hand	Peak hold	STOP	Double-face
				w/lug	Flat-back							
0.01mm	10mm	1mm	0-100	20485-10	20485B-10	±0.015mm	1.4N or less	✓	✓	✓		
0.01mm	10mm	1mm	0-100	20465-80	20465B-80	±0.015mm	5.0N or less				✓	
0.01mm	10mm	1mm	0-100	29405	—	±0.015mm	3.0N or less					✓

## DIMENSIONS

Order No.	A	B	C
29155-10, 29185-10	52.2	64.1	22
20485-11	47.7	59.5	17.4



# Dial Indicators

## SERIES 2 — Standard Type, Inch Reading

### SPECIFICATIONS

**Inch** Stem 3/8" dia. ø8mm #4-48 UNF Thread  ANSI/AGD type

Graduation	Range	Range /Rev	Dial Reading	Order No.		Accuracy		Measuring force	Shockproof	Reverse	Jeweled
				w/lug	Flat-back	First 2.5 Rev	Overall				
.0001"	.025"	.01"	0-10	<b>2802S-10</b>	<b>2802SB-10</b>	±.0001"	±.0001"	2.5N or less	✓		✓
.0001"	.025"	.01"	0-5-0	<b>2803S-10</b>	<b>2803SB-10</b>	±.0001"	±.0001"	2.5N or less	✓		✓
.0001"	.05"	.01"	0-10	<b>2804S-10</b>	<b>2804SB-10</b>	±.0001"	±.0002"	2.0N or less	✓		✓
.0001"	.05"	.01"	0-5-0	<b>2805S-10</b>	<b>2805SB-10</b>	±.0001"	±.0002"	2.0N or less	✓		✓
.0001"	.05"	.01"	10-0	<b>2905S-10</b>	<b>2905SB-10</b>	±.0001"	±.0002"	2.0N or less	✓	✓	✓
.0001"	.05"	.01"	0-5-0	<b>2923S-10</b>	<b>2923SB-10</b>	±.0001"	±.0002"	2.0N or less	✓		✓
.0001"	.25"	.01"	0-10	<b>2356S-10</b>	<b>2356SB-10</b>	±.0001"	±.0005"	2.0N or less			✓
.0001"	.5"	.01"	0-10	<b>2358S-10</b>	<b>2358SB-10</b>	±.0001"	±.0008"	2.0N or less			✓
.0005"	.125"	.05"	0-50	<b>2506S</b>	<b>2506SB</b>	±.0005"	±.0005"	1.8N or less			
.0005"	.125"	.05"	0-25-0	<b>2507S</b>	<b>2507SB</b>	±.0005"	±.0005"	1.8N or less			
.0005"	.125"	.05"	0-25-0	<b>2922S</b>	<b>2922SB</b>	±.0005"	±.0005"	1.8N or less			
.0005"	.4"	.04"	0-20-0	<b>2675S</b>	<b>2675SB</b>	±.0005"	±.0015"	1.8N or less			
.0005"	.5"	.05"	0-50	<b>2514S</b>	<b>2514SB</b>	±.0005"	±.0015"	1.8N or less			
.0005"	1"	.05"	0-50	<b>2776S</b>	<b>2776SB</b>	±.0005"	±.002"	1.8N or less			
.001"	.5"	.1"	0-100	<b>2414S</b>	<b>2414SB</b>	±.001"	±.001"	1.8N or less			
.001"	.5"	.1"	0-50-0	<b>2415S</b>	<b>2415SB</b>	±.001"	±.001"	1.8N or less			
.001"	1"	.1"	0-100	<b>2416S</b>	<b>2416SB</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	0-100	<b>2416S-06*</b>	<b>2416SB-06*</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	0-100	<b>2416S-10</b>	<b>2416SB-10</b>	±.001"	±.002"	1.8N or less			✓
.001"	1"	.1"	0-50-0	<b>2417S</b>	<b>2417SB</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	100-0	<b>2904S</b>	<b>2904SB</b>	±.001"	±.002"	1.8N or less		✓	
.001"	2"	1"	0-100	<b>2424S-19</b>	<b>2424SB-19</b>	±.001"	±.003"	2.5N or less	✓		✓

\* Black Face



Shockproof type



Reverse reading type



Jeweled bearing type



2416S



2803S-10

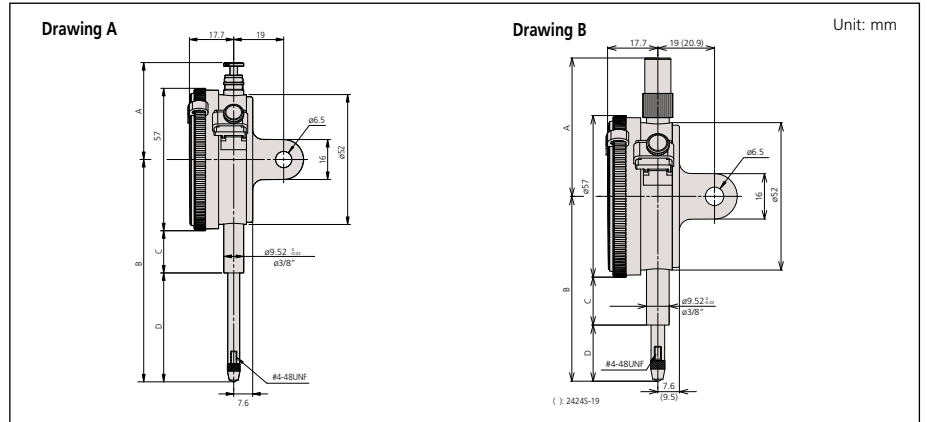
### Optional Accessories

- : Backs (See page F-32.)
- : Contact points (See page F-33.)

# Dial Indicators

## SERIES 2 — Standard Type, Inch Reading

### DIMENSIONS



### 2 Group Inch

Order No.	A	B	C	D	Drawing
2356S(B)-10	48.8	57.2	13.6	15.1	B
2358S(B)-10	38.9	63.6	13.6	21.5	A
2414S(B)	38.9	64.1	13.6	22	A
2415S(B)	38.9	64.1	13.6	22	A
2416S(B)	38.9	76.8	13.6	34.7	A
2416S(B)-06	38.9	76.8	13.6	34.7	A
2416S(B)-10	38.9	76.8	13.6	34.7	A
2417S(B)	38.9	76.8	13.6	34.7	A
2424S(B)-19	118.5	142.5	54.3	59.7	B
2506S(B)	48.8	54.3	13.6	12.2	B
2507S(B)	48.8	54.3	13.6	12.2	B
2514S(B)	38.9	64.1	13.6	22	A

Order No.	A	B	C	D	Drawing
2576S(B)-70	48.8	63.5	10.6	24.4	B
2675S(B)	48.8	61.2	13.6	19.1	B
2776S(B)	38.9	76.8	13.6	34.7	A
2802S(B)-10	48.8	51.4	13.6	9.3	B
2803S(B)-10	48.8	51.4	13.6	9.3	B
2804S(B)-10	48.8	51.7	13.6	9.6	B
2805S(B)-10	48.8	51.7	13.6	9.6	B
2904S(B)	38.9	76.8	13.6	34.7	A
2905S(B)-10	48.8	51.7	13.6	9.6	B
2914S(B)	38.9	64.1	13.6	22	A
2915S(B)-10	52.2	63.3	13.6	21.2	A
2918S(B)-10	52.2	63.3	13.6	21.2	A
2922S(B)	48.8	54.3	13.6	12.2	B
2923S(B)-10	48.8	51.7	13.6	9.6	B




# Dial Indicators

## SERIES 2 — Metric Standard Type

Series 2 dial indicators are Mitutoyo's most popular, and have the widest application.

### FEATURES

- Standard 0.01mm graduation dial gauges having an outer frame with an outside diameter of 57mm. All types come with limit pins and an outer frame clamp as standard.
- The outer clamp and lifting lever (optional) can be attached to either the right or left side. These parts can be easily installed and removed without tools.
- Secured adhesion between the outer frame and crystal as well as the use of an O-ring ensure countermeasures against water and oil permeation via the front face.
- The stem spindle is made of high-strength quench-hardened stainless steel which resists strenuous use.
- A carbide contact point is used.
- The grand gear uses stainless steel that is resistant to wear and deformation.
- Application of a hard coating on the surface of the crystal makes the gauge highly scratch- and chemical-resistant.

-  Shockproof type
-  Waterproof type
-  Long stem type
-  Jeweled bearing type
-  Double scale spacing type
-  w/ coaxial revolution counter
-  Reverse reading type
-  w/ damper at lowest rest point

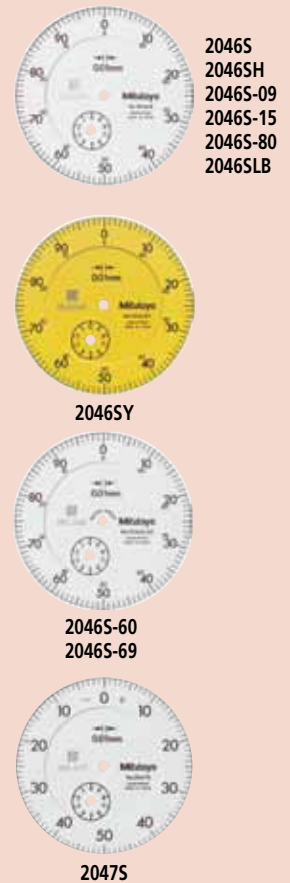


### SPECIFICATIONS

**Metric** Stem dia. ø8mm M2.5 x 0.45 Thread ISO/JIS type

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy	Measuring force	Features									
				w/ lug	Flat-back			Shockproof	Waterproof	Long stem	Jeweled bearing	Double scale	Coaxial counter	Reverse reading	Damper		
0.001mm	1mm	(0.1mm)	0-100	2110S-10	2110SB-10	±0.005mm	1.5N or less	✓				✓	✓				
0.001mm	1mm	(0.1mm)	0-100	2110S-70	2110SB-70	±0.005mm	2.0N or less		✓			✓	✓				
0.001mm	1mm	(0.2mm)	0-100-0	2109S-10	2109SB-10	±0.005mm	1.5N or less	✓				✓	✓				
0.001mm	1mm	(0.2mm)	0-100-0	2109SH-10	2109SHB-10	±0.003mm	1.5N or less	✓				✓	✓				
0.001mm	1mm	(0.2mm)	0-100-0	—	2109SLB-10	±0.005mm	1.5N or less	✓		✓		✓	✓				
0.001mm	1mm	(0.2mm)	0-100-0	2109S-70	2109SB-70	±0.005mm	2.0N or less	✓	✓			✓	✓				
0.001mm	2mm	(0.2mm)	0-100-0	2113S-10	2113SB-10	±0.007mm	1.5N or less	✓				✓	✓				
0.001mm	5mm	(0.2mm)	0-100-100	2118S-10	2118SB-10	±0.010mm	1.5N or less					✓	✓				
0.001mm	5mm	(0.2mm)	0-100-0	2119S-10	2119SB-10	±0.010mm	1.5N or less					✓	✓				
0.005mm	5mm	(0.5mm)	0-50	2124S-10	2124SB-10	±0.012mm	1.5N or less					✓	✓				
0.01mm	5mm	(1mm)	0-100	2044S	2044SB	±0.012mm	1.4N or less										
0.01mm	5mm	(1mm)	0-100	2044S-09	2044SB-09	±0.013mm	1.4N or less	✓									
0.01mm	5mm	(1mm)	0-100	2044S-60	2044SB-60	±0.012mm	2.5N or less		✓								
0.01mm	5mm	(1mm)	0-50-0	2045S	2045SB	±0.012mm	1.4N or less									✓	
0.01mm	10mm	(1mm)	0-100	2046S	2046SB	±0.013mm	1.4N or less										
0.01mm	10mm	(1mm)	0-100	2046SY	2046SYB	±0.013mm	1.4N or less										
0.01mm	10mm	(1mm)	0-100	2046SH	2046SHB	±0.08mm	1.4N or less										
0.01mm	10mm	(1mm)	0-100	—	2046SLB	±0.013mm	1.4N or less					✓					
0.01mm	10mm	(1mm)	0-100	2046S-09	2046SB-09	±0.015mm	1.4N or less	✓									
0.01mm	10mm	(1mm)	0-100	2046S-60	2046SB-60	±0.013mm	2.5N or less		✓								
0.01mm	10mm	(1mm)	0-100	2046S-69	2046SB-69	±0.015mm	2.5N or less	✓	✓								
0.01mm	10mm	(1mm)	0-100	2046S-15	2046SB-15	±0.013mm	0.8N or less*					✓					
0.01mm	10mm	(1mm)	0-100	2310S-10	2310SB-10	±0.015mm	1.4N or less					✓		✓			
0.01mm	10mm	(1mm)	100-0	2902S	2902SB	±0.013mm	1.4N or less									✓	
0.01mm	10mm	(1mm)	0-50-0	2047S	2047SB	±0.013mm	1.4N or less										
0.01mm	20mm	(1mm)	0-100	2050S	2050SB	±0.020mm	2.0N or less										✓
0.01mm	20mm	(1mm)	0-100	2050S-60	2050SB-60	±0.020mm	2.5N or less		✓								
0.01mm	20mm	(1mm)	0-100	2050S-19	2050SB-19	±0.020mm	2.0N or less	✓				✓					✓
0.01mm	20mm	(1mm)	0-100	2320S-10	2320SB-10	±0.020mm	2.0N or less					✓		✓			✓
0.01mm	30mm	(1mm)	0-100	2052S	2052SB	±0.025mm	2.5N or less					✓					✓
0.01mm	30mm	(1mm)	0-100	2052S-19	2052SB-19	±0.025mm	2.5N or less	✓				✓					✓
0.01mm	30mm	(1mm)	0-100	2330S-10	2330SB-10	±0.025mm	2.5N or less					✓		✓			✓
0.01mm	30mm	(1mm)	100-0	2952S	2952SB	±0.025mm	2.5N or less								✓		✓

\*Use in a vertical position only (contact point downward).





# Dial Indicators

## SERIES 2 — Metric Standard Type

### DIMENSIONS

Unit: mm



2902S



2310S-10



2044S  
2044S-60  
2044S-09

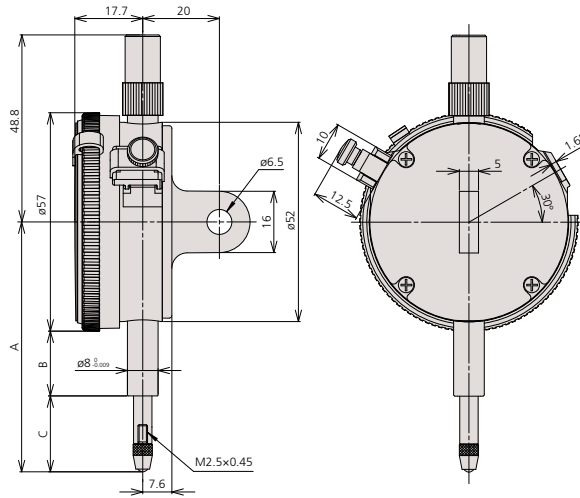


2045S

#### Optional Accessories

- : Backs (See page F-32.)
- : Contact points (See page F-33.)

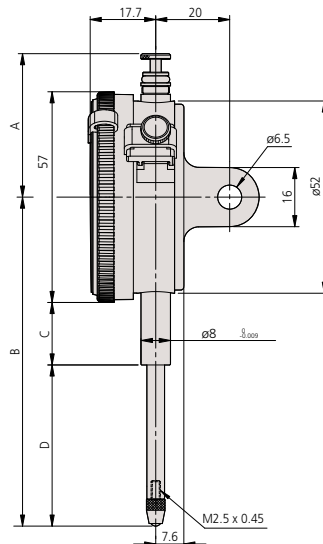
ISO/JIS  
Type



Order No.	A	B	C
2124S-10	60.3	16.9	14.9
2110S-10	66.5	16.9	21.1
2110S-70	67.5	12.3	26.7
2109S-10	60.5	16.9	15.1
2109SH-10	60.5	16.9	15.1
2109SLB-10	80.5	36.9	15.1
2109S-70	65.3	12.3	24.5
2113S-10	61	16.9	15.6
2118S-10	60.3	16.9	14.9
2119S-10	60.3	16.9	14.9
2044S	65.2	16.9	19.8
2044S-09	65.2	16.9	19.8
2044S-60	70	12.3	29.2
2045S	65.2	16.9	19.8
2046S	65.2	16.9	19.8
2046SH	65.2	16.9	19.8
2046SLB	85.2	36.9	19.8
2046S-09	65.2	16.9	19.8
2046S-60	70	12.3	29.2
2046S-69	70	12.3	29.2
2046S-15	65.2	16.9	19.8
2310S-10	65.2	16.9	19.8
2902S	65.2	16.9	19.8
2047S	65.2	16.9	19.8

ISO/JIS  
Type

Unit: mm



Order No.	A	B	C	D
2050S	38.8	75.2	16.9	29.8
2050S-60	59.8	87.2	12.3	46.4
2050S-19	38.8	75.2	16.9	29.8
2320S-10	38.8	75.2	16.9	29.8
2052S	38.8	88.7	16.9	43.3
2052S-19	38.8	88.7	16.9	43.3
2330S-10	38.8	88.7	16.9	43.3
2952S	38.8	88.7	16.9	43.3

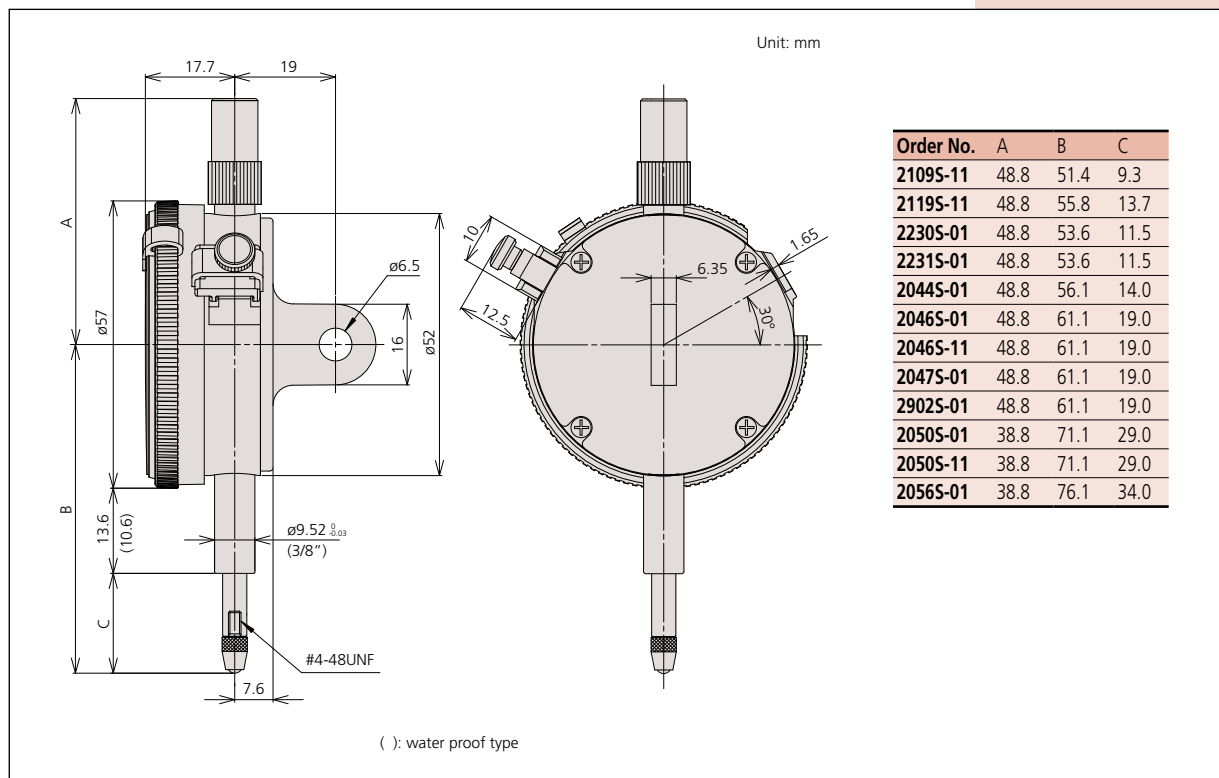
# Dial Indicators

## SERIES 2 — ANSI / AGD Type Metric Dial Indicator

### SPECIFICATIONS

Graduation	Range	Range / Rev	Dial reading	Order No.		Accuracy		Measuring force				
				w/ lug	Flat-back	First 2.5 Rev	Overall					
0.001mm	1mm	0.2mm	0-10-0	<b>2109S-11</b>	<b>2109SB-11</b>	±0.003mm	±0.004mm	1.5N or less	✓	✓		
0.001mm	5mm	0.2mm	0-10-0	<b>2119S-11</b>	<b>2119SB-11</b>	±0.007mm	±0.01mm	1.5N or less	✓			
0.01mm	2.5mm	1mm	0-100	<b>2230S-01</b>	<b>2230SB-01</b>	±0.01mm	±0.01mm	1.4N or less				
0.01mm	2.5mm	1mm	0-50-0	<b>2231S-01</b>	<b>2231SB-01</b>	±0.01mm	±0.01mm	1.4N or less				
0.01mm	5mm	1mm	0-100	<b>2044S-01</b>	<b>2044SB-01</b>	±0.01mm	±0.01mm	1.4N or less				
0.01mm	10mm	1mm	0-100	<b>2046S-01</b>	<b>2046SB-01</b>	±0.01mm	±0.013mm	1.4N or less				
0.01mm	10mm	1mm	0-100	<b>2046S-11</b>	<b>2046SB-11</b>	±0.01mm	±0.013mm	1.4N or less	✓			
0.01mm	10mm	1mm	0-50-0	<b>2047S-01</b>	<b>2047SB-01</b>	±0.01mm	±0.013mm	1.4N or less				
0.01mm	10mm	1mm	0-50-0	<b>2047S-11</b>	<b>2047SB-11</b>	±0.01mm	±0.013mm	1.4N or less	✓			
0.01mm	10mm	1mm	100-0	<b>2902S-01</b>	<b>2902SB-01</b>	±0.01mm	±0.013mm	1.4N or less				
0.01mm	20mm	1mm	0-100	<b>2050S-01</b>	<b>2050SB-01</b>	±0.01mm	±0.02mm	2.0N or less				
0.01mm	20mm	1mm	0-100	<b>2050S-11</b>	<b>2050SB-11</b>	±0.01mm	±0.02mm	2.0N or less	✓			
0.01mm	25mm	1mm	0-100	<b>2056S-01</b>	<b>2056SB-01</b>	±0.01mm	±0.025mm	2.5N or less				

### DIMENSIONS





# Dial Indicators

## SERIES 3 — Large Dial Face and Long Stroke Type

- Dial gages with a large-diameter (78mm / 3.07") graduation face to ease reading.
- All types come with limit pins and an outer frame clamp as standard.



3046S



3047S



3050S



3052S-19



3109S-10



3416S



3058S-19

### DIMENSIONS

Unit: mm

Order No.	A	B	C	D
3052S(B)-11	72.9	102.4	25.9	37.5
3058S(B)-11	81.9	147.1	50.6	57.5
3414S(B)	51.3	73.4	12.6	21.8
3415S(B)	51.3	73.4	12.6	21.8
3416S(B)	51.3	86.1	12.6	34.5
3417S(B)	51.3	86.1	12.6	34.5
3424S(B)-19	84	149.3	50.6	59.7
3426S(B)-19	120.9	198.1	73.9	85.2
3428S(B)-19	141.9	243.9	94.9	110.0
3802S(B)-10	61.2	59.7	12.6	8.1
3803S(B)-10	61.2	59.7	12.6	8.1
3046S(B)	61.2	75.5	15.9	20.6
3047S(B)	61.2	75.5	15.9	20.6
3050S(B)	52.6	94.0	25.9	29.1
3060S(B)-19	120.9	202.3	73.9	89.4
3062S(B)-19	141.9	243.3	94.9	109.4
3109S(B)-10	61.2	79.3	25.9	14.1




( ): ANSI / AGD Type

# Dial Indicators




## SERIES 3 — Large Dial Face

### SPECIFICATIONS






**Inch** Stem 3/8" DIA. #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force			
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy				
.0001"	.025"	.01"	0-10	<b>3802S-10</b>	<b>3802SB-10</b>	±.0001"	±.0001"	2.0N or less	✓	✓	
.0001"	.025"	.01"	0-5-0	<b>3803S-10</b>	<b>3803SB-10</b>	±.0001"	±.0001"	2.0N or less	✓	✓	
.001"	.5"	.1"	±0-100	<b>3414S</b>	<b>3414SB</b>	±.001"	±.001"	1.8N or less			
.001"	.5"	.1"	0-50-0	<b>3415S</b>	<b>3415SB</b>	±.001"	±.001"	1.8N or less			
.001"	1"	.1"	±0-100	<b>3416S</b>	<b>3416SB</b>	±.001"	±.002"	1.8N or less			
.001"	1"	.1"	0-50-0	<b>3417S</b>	<b>3417SB</b>	±.001"	±.002"	1.8N or less			
.001"	2"	.1"	±0-100	<b>3424S-19</b>	<b>3424SB-19</b>	±.001"	±.003"	3.0N or less	✓	✓	✓
.001"	3"	.1"	±0-100	<b>3426S-19</b>	<b>3426SB-19</b>	±.001"	±.005"	3.0N or less	✓	✓	✓
.001"	4"	.1"	±0-100	<b>3428S-19</b>	<b>3428SB-19</b>	±.001"	±.005"	3.2N or less	✓	✓	✓

**Metric** Stem 3/8" DIA. #4-48 UNF Thread, Yellow dial face ANSI/AGD type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring Force			
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy				
0.01mm	30mm	1mm	±0-100	<b>3052S-11</b>	<b>3052SB-11</b>	±0.01mm	±0.03mm	2.5N or less	✓	✓	✓
0.01mm	50mm	1mm	±0-100	<b>3058S-11</b>	<b>3058SB-11</b>	±0.01mm	±0.04mm	3.0N or less	✓	✓	✓

**Metric** Stem ø 8mm M2.5x0.45 Thread ISO/JIS type

Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy	Measuring Force				
				W/ lug	Flat-back						
0.001mm	1mm	0.2mm	0-10-0	<b>3109S-10</b>	<b>3109SB-10</b>	±0.004mm	1.5N or less	✓	✓		
0.01mm	10mm	1mm	0-100	<b>3046S</b>	<b>3046SB</b>	±0.015mm	1.4N or less				
0.01mm	10mm	1mm	0-50-0	<b>3047S</b>	<b>3047SB</b>	±0.015mm	1.4N or less				
0.01mm	20mm	1mm	0-100	<b>3050S</b>	<b>3050SB</b>	±0.020mm	2.0N or less				✓
0.01mm	30mm	1mm	0-100	<b>3052S-19</b>	<b>3052SB-19</b>	±0.025mm	2.5N or less	✓	✓	✓	
0.01mm	50mm	1mm	0-100	<b>3058S-19</b>	<b>3058SB-19</b>	±0.035mm	3.0N or less	✓	✓	✓	
0.01mm	80mm	1mm	0-100	<b>3060S-19*</b>	<b>3060SB-19*</b>	±0.045mm	3.0N or less	✓	✓	✓	
0.01mm	100mm	1mm	0-100	<b>3062S-19*</b>	<b>3062SB-19*</b>	±0.050mm	3.2N or less	✓	✓	✓	

\*use in a vertical position only



Shockproof type



w/ coaxial revolution counter



w/ damper at lowest rest point



Jeweled bearing type

# Dial Indicators

## SERIES 4 — Large Dial Face







- Dial gauges with a large-diameter (92mm / 3.62") graduation face to ease reading.
- All types come with limit pins and an outer frame clamp as standard.







4887S-19

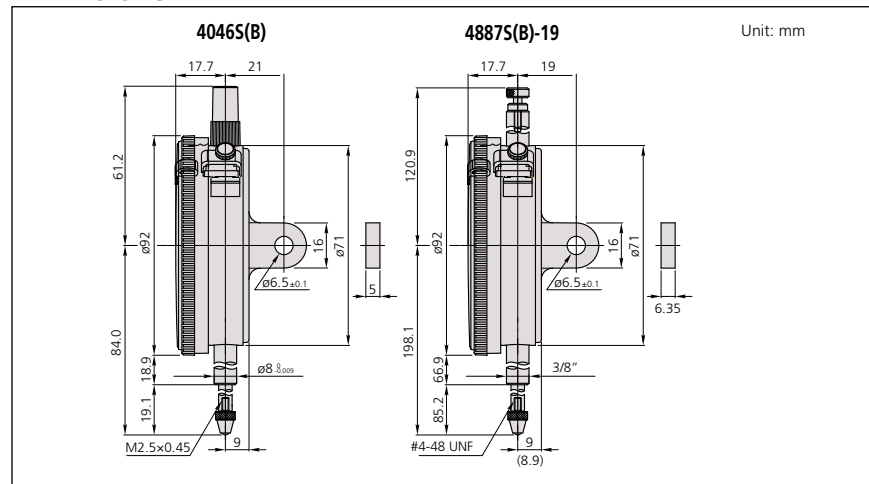


4046S

Inch						Stem 3/8" DIA. #4-48 UNF Thread		ANSI/AGD type		
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring Force	  	
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy			
.001"	3"	.1"	±0-100	<b>4887S-19</b>	<b>4887SB-19</b>	±.001"	±.005"	3.0N or less	  	

Metric						Stem ø 8mm M2.5x0.45 Thread		ISO/JIS type		
Graduation	Range	Range /rev	Dial reading	Order No.		Accuracy		Measuring force	 	
				W/ lug	Flat-back	First 2.5 Rev	Overall accuracy			
0.01mm	10mm	1mm	0-100	<b>4046S</b>	<b>4046SB</b>	± 0.01mm	± 0.015mm	1.4N or less	 	

## DIMENSIONS





# Back Plunger Type Dial Indicators

## SERIES 1 and 2



Mitutoyo's back plunger type dial indicators are built with the measuring spindles on the back of the units. This type of indicator offers the same precision and durability as all other Mitutoyo dial indicators, and operates very effectively with optional holding bars.

- Back plunger type dial gauges are suitable for mounting onto leveling machine tool tables or inspection jigs, and for use in small spaces where the graduations of standard dial gauges are difficult to see.
- Model No. 1960, which uses Mitutoyo's proprietary shock-proofing mechanism, has excellent durability and shock resistance.



One revolution type



Shockproof type



Jeweled bearing type

## SPECIFICATIONS

**Inch** Series 1 Stem 3/8" dia., #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range / Rev	Dial reading	Order No.	Accuracy	Measuring force			
.001"	.04"	.05"*	20-0-20	<b>1961</b>	±.001"	1.4N or less	✓	✓	
.001"	.2"	.05"	0-50	<b>1166</b>	±.001"	1.4N or less			
.001"	.2"	.05"	0-25-0	<b>1167</b>	±.001"	1.4N or less			
.001"	.2"	.05"	50-0	<b>1168</b>	±.001"	1.4N or less			✓

\*Full stroke

**Metric** Series 1 Stem ø8mm, M2.5x0.45 Thread ISO/JIS type

Graduation	Range	Range / Rev	Dial reading	Order No.	Accuracy	Measuring force				Remarks
0.01mm	1mm	1.27mm*	50-0-50	<b>1960</b>	±0.014mm	1.4N or less	✓	✓		—
0.01mm	5mm	1mm	0-100	<b>1160</b>	±0.016mm	1.4N or less				—
0.01mm	5mm	1mm	100-0	<b>1162</b>	±0.016mm	1.4N or less			✓	—
0.01mm	5mm	1mm	0-100	<b>1180-6</b>	±0.016mm	1.5N or less				with arm (ø6x42mm)
0.01mm	5mm	1mm	0-100	<b>1180-7</b>	±0.016mm	1.5N or less				with arm (ø6.35x42mm)
0.01mm	5mm	1mm	0-100	<b>1180-8</b>	±0.016mm	1.5N or less				with arm (ø8x42mm)

**Inch** Series 2 Stem 3/8" dia., #4-48 UNF Thread ANSI/AGD type

Graduation	Range	Range/full stroke	Dial reading	Order No.	Accuracy	Measuring force			
.0001"	.008"	.01"	4-0-4	<b>2991</b>	±.0002"	1.5N or less	✓	✓	✓
.0005"	.04"	.05"	20-0-20	<b>2961</b>	±.0005"	1.8N or less	✓	✓	

**Metric** Series 2 Stem ø8mm, M2.5x0.45 Thread ISO/JIS type

Graduation	Range	Range/full stroke	Dial reading	Order No.	Accuracy	Measuring force			
0.001mm	0.1mm	0.14mm	50-0-50	<b>2990</b>	±0.0065mm	1.5N or less	✓	✓	✓
0.01mm	1mm	1.27mm	50-0-50	<b>2960F</b>	±0.014mm	1.4N or less	✓	✓	

## Optional Accessories

- 136567:** Holding bar (ø6mm, L=81mm)  
**21AAA166:** Holding bar (ø6mm, L=42mm) (Standard with 1180-6)  
**136568:** Holding bar (ø8mm, L=81mm)  
**21AAA168:** Holding bar (ø8mm, L=42mm) (Standard with 1180-8)  
**124625:** Holding bar (.25" DIA, L=3.19")  
**21AAA167:** Holding bar (.25" DIA, L=1.65") (Standard with 1180-7)

—: Backs (See page F-32.)

—: Contact points (See page F-33.)

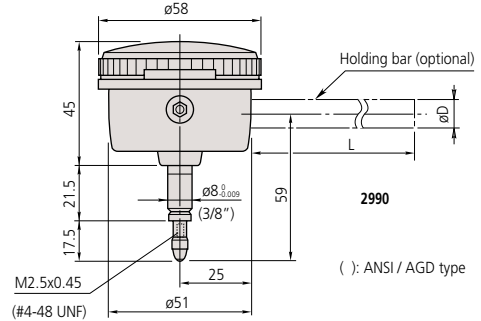
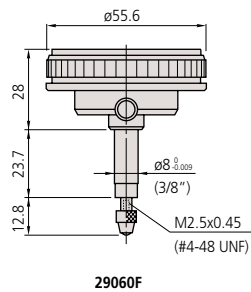
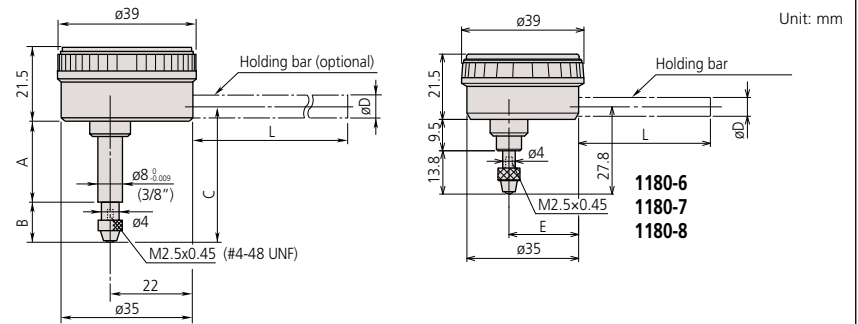
# Back Plunger Type Dial Indicators

SERIES 1 and 2



## DIMENSIONS




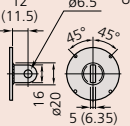

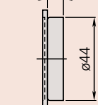

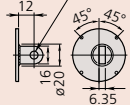

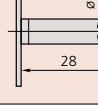

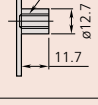

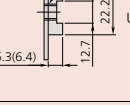
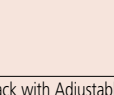
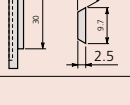

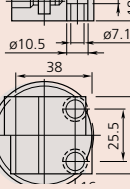
Order No.	A	B	C
1160	25.0	13.8	43.3
1162	25.0	13.8	43.3
1166	25.0	13.0	42.5
1167	25.0	13.0	42.5
1168	25.0	13.0	42.5
1960	28.7	12.8	46.0
1961	25.0	10.9	40.4



# Backs

## Optional Accessory for Digimatic and Dial Indicators

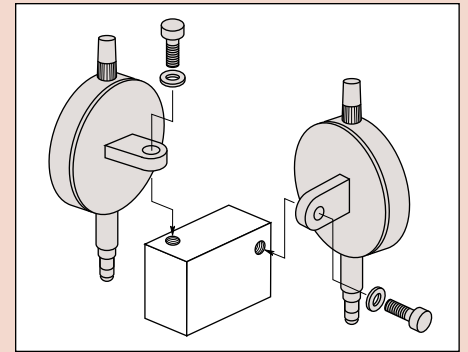
### SPECIFICATIONS

Description		Order No.			
		Series 0 ( $\phi$ 31mm) 1003 ( $\phi$ 36mm)	Series 1 ( $\phi$ 41mm)	Series 2 ( $\phi$ 57mm)	Series 3, 4 ( $\phi$ 77, 91mm)
Flat Back 	 Unit: mm	<b>191559:</b> a=1.0 <b>137906:</b> for 1003 a=1.0	<b>101211:</b> a=2.2 <b>136872:</b> for water-proof type <b>191559:</b> for 1911, 1913-10	<b>101039:</b> a=2.5 <b>21AZB231:</b> for water-proof of S type	<b>100836:</b> a=3.0
Lug-on-Center Back 	 Unit: mm	<b>190561:</b> Metric type <b>190139:</b> Inch type <b>137905:</b> for 1003	<b>101210:</b> metric type <b>101307:</b> inch type <b>190561:</b> for 1911, 1913-10	<b>101040:</b> metric type <b>101306:</b> inch type <b>21AZB230:</b> for water-proof of S type	<b>100691:</b> metric type <b>100797:</b> inch type
Magnetic Back 	 Unit: mm	—	<b>Special order</b>	<b>900928</b>	<b>900929</b>
Back with Offset Lug 	 Unit: mm	—	<b>Special order</b>	<b>101167</b>	<b>100837</b>
Back with Post 	 Unit: mm	—	<b>193172</b>	<b>101169</b>	<b>100839</b>
Back with Screw Mount 	 Unit: mm	—	<b>193173:</b> M6x1, <b>193174:</b> #1/4-28UNF,	<b>136023:</b> M6x1 <b>101170:</b> #1/4-28UNF	<b>136024:</b> M6x1 <b>100840:</b> #1/4-28UNF
Adjustable Back 	 Unit: mm	—	<b>136025:</b> M6x1 <b>129721:</b> #1/4-28UNF	<b>136026:</b> M6x1 <b>101168:</b> 1/4-28UNF	<b>136027:</b> M6x1 <b>100838:</b> #1/4-28UNF
Back with Dovetail 	 Unit: mm	—	—	<b>900008</b>	<b>Special order</b>
Back with Adjustable Bracket 	 Unit: mm	—	—	<b>901963:</b> Set No. <b>129902:</b> Dovetail Rack Back <b>901964:</b> Dovetail bracket for rack back	—

( ) : ANSI / AGD Type

There are two ways to support Digimatic and dial indicators; by either holding the stem or the lug on the back of the indicator. The back of the indicator may need to be replaced for special applications. A wide variety of backs are available for Mitutoyo Digimatic and dial indicators.

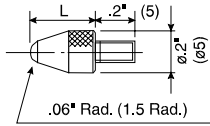
### Application



# Contact Points

Optional Accessories for Digimatic and Dial Indicators and Linear Gages

## ø.118" (ø3mm) Ball Point



4-48UNF

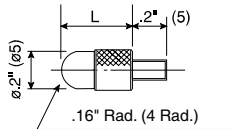
L	Carbide	Sapphire	Ruby	Plastic
.28"	—	—	—	902018
.3"	131262	131263	131264	—
.6"	131265	131266	131267	—
1"	131268	131269	131270	—

M2.5 x 0.45mm

L	Carbide	Sapphire	Ruby	Plastic
7.3mm	901312*	—	—	901994
8mm	120045	120046	120047	—
15mm	120049	120050	120051	—
25mm	120053	120054	120055	—

\*Furnished with standard metric dial indicators.

## Shell type point



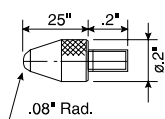
4-48UNF

L	Order No.
3/32" (.094")	193697
5/32" (.156")	101184
1/4" (.25")	21AAA031*
3/8" (.375")	21AAA032
1/2" (.5")	101185
5/8" (.625")	21AAA033
3/4" (.75")	101186
7/8" (.875")	21AAA034
1"	101187
1 1/4" (1.25")	21AAA035
1 1/2" (1.5")	21AAA036
1 3/4" (1.75")	21AAA037
2"	21AAA038
2 1/4" (2.25")	21AAA039
2 1/2" (2.5")	21AAA040
2 3/4" (2.75")	21AAA041
3"	21AAA042

M2.5 x 0.45mm

L	Order No.
5mm	101386
10mm	101118
15mm	137393
20mm	101387
25mm	101388

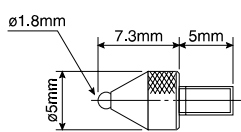
## ø.16 Ball Point



4-48UNF

Order No.
900032

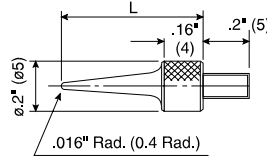
## ø1.8mm Ball Point



M2.5 x 0.45mm

Order No.
101122

## Needle point



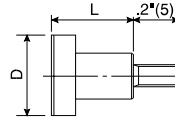
4-48UNF

L	Order No.
.6"	21AAA030
1"	21AAA046
1 1/2"	21AAA047
2"	21AAA048

M2.5 x 0.45mm

L	Order No.
15mm	101121
17mm	137413

## Flat Point



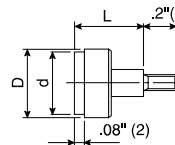
4-48UNF

D	L	Order No.
Ø1/2"	3/8"	101188
Ø3/8"	3/8"	101189

M2.5 x 0.45mm

D	L	Order No.
Ø10mm	10mm	101117

## Flat Point, Carbide Tip



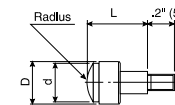
4-48UNF

D	d	L	Order No.
Ø.2"	Ø.17"	.2"	131259
Ø.27"	Ø.25"	.4"	131260
Ø.41"	Ø.37"	.4"	131261

M2.5 x 0.45mm

D	d	L	Order No.
Ø5.2mm	Ø4.3mm	5mm	120041
Ø7mm	Ø6.5mm	10mm	120042
Ø10.5mm	Ø9.5mm	10mm	120043

## Spherical Point, Carbide Tip



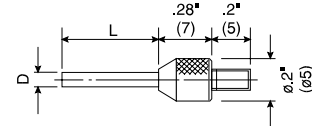
4-48UNF

D	d	Radius	L	Order No.
ø.2"	ø.17"	.2"	.2"	131273
ø.27"	ø.16"	.16"	.4"	131274
ø.41"	ø.37"	.4"	.4"	131275

M2.5 x 0.45mm

D	d	Radius	L	Order No.
ø5.2mm	ø4.3mm	5mm	5mm	120058
ø7mm	ø6.5mm	7mm	10mm	120059
ø10.5mm	ø9.5mm	10mm	10mm	120060

## Needle point, Carbide tipped



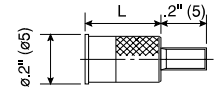
4-48UNF

D	L	Order No.
ø.018"	.12"	131281
ø.04"	.12"	131280
ø.06"	.5"	131279
ø.078"	.04"	131271

M2.5 x 0.45mm

D	L	Order No.
ø0.45mm	2.5mm	120066
ø1mm	2.5mm	120065
ø1.5mm	13mm	120064
ø2mm	1mm	120056
ø2mm	8mm	137257

## ø.2" (ø5mm) Flat Point



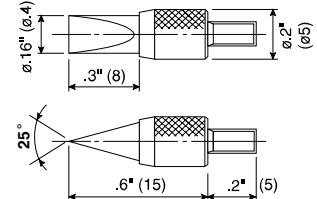
4-48UNF

L	Order No.
5/16"	133017
1/2"	21AAA043
3/4"	21AAA044
1"	21AAA045

M2.5 x 0.45mm

L	Order No.
8mm	131365

## Knife edge point, Carbide tipped



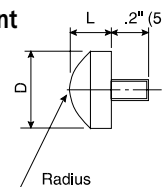
4-48UNF

Order No.
131282

M2.5 x 0.45mm

Order No.
120067

## Spherical point



4-48UNF

D	L	Radius	Order No.
ø.5"	.125"	.28"	101205
ø.375"	.09375"	.35"	101204

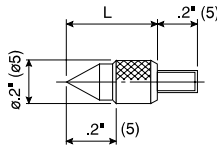
M2.5 x 0.45mm

D	L	Radius	Order No.
ø10mm	5mm	7mm	101119

# Contact Points

Optional Accessories for Digimatic and Dial Indicators and Linear Gages

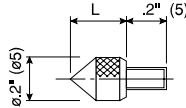
## 60° Conical point



4-48UNF	
L	Order No.
1/2"	101190

M2.5 x 0.45mm	
L	Order No.
10mm	101120

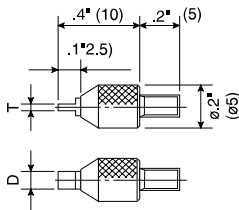
## 90° Conical point



4-48UNF	
L	Order No.
1/4"	101191

M2.5 x 0.45mm	
L	Order No.
5mm	101385

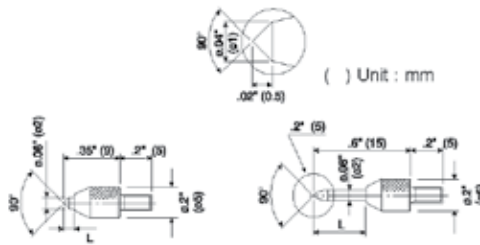
## Blade Point, Carbide Tip



4-48UNF		
D	T	Order No.
.08"	.016"	131276
.08"	.024"	131277
.16"	.04"	131278

M2.5 x 0.45mm		
D	T	Order No.
2mm	0.4mm	120061
2mm	0.6mm	120062
4mm	1mm	120063

## 90° Conical point, Carbide tipped



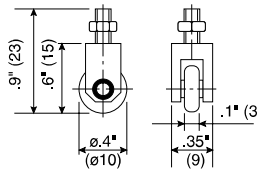
4-48UNF	
L	Order No.
.08"	131272

4-48UNF	
L	Order No.
.3"	131283

M2.5 x 0.45mm	
L	Order No.
2mm	120057

M2.5 x 0.45mm	
L	Order No.
8mm	120068

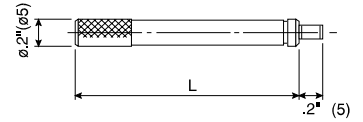
## Roller Point



4-48UNF	
Order No.	Order No.
901991	901954

M2.5 x 0.45mm	
Order No.	Order No.
901991	901954

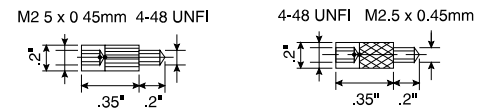
## Extension Rod



4-48UNF	
L	Order No.
1/2"	139167
1"	301655
2"	301657
4"	301659

M2.5 x 0.45mm	
L	Order No.
10mm	303611
20mm	303612
30mm	303613
100mm	303614

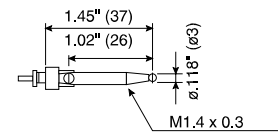
## Point Conversion



Order No.
21AAA011

Order No.
21AAA012

## Lever Point



4-48UNF	
Order No.	Order No.
900393	900391

M2.5 x 0.45mm	
Order No.	Order No.
900393	900391

## Interchangeable Contact Point Set (4-48 UNF)

Set Order No. 21AZA034

Individual No.	Description
101184	Shell Type Point 5/32"
101185	Shell Type Point 1/2"
101186	Shell Type Point 3/4"
101187	Shell Type Point 1"
101188	Flat Point ø1/2"
101189	Flat Point ø3/8"
101190	60° Conical Point
101191	90° Conical Point
101204	Spherical Point ø3/8"
21AAA030	Needle Point .6"

## Interchangeable Carbide Contact Point Set (4-48 UNF)

Set Order No. 21AZA035

Individual No.	Description
131260	Flat Point ø1/4"
131274	Spherical Point ø1/4"
131279	Needle Point ø.06" 1/2" Long
131262	Ballpoint ø.118"
131271	Needle Point ø.078" .04" Long

## Interchangeable Contact Point Set (M2.5x0.45)

Set Order No. 7822

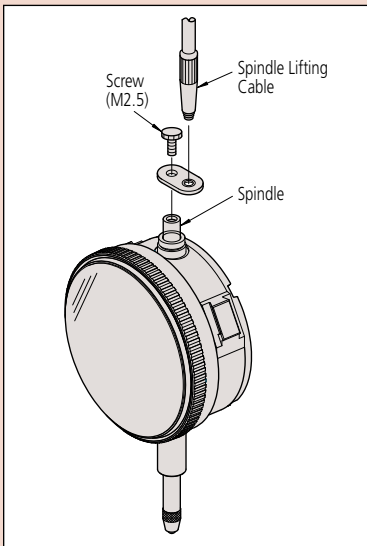
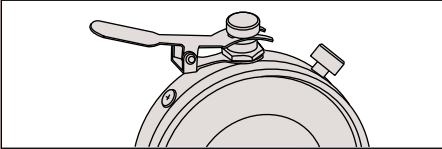
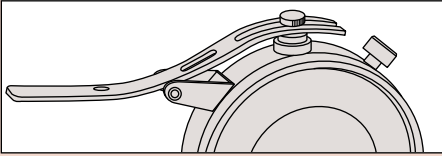


Individual No.	Description
131365	Flat Point (ø5mm)
101117	Flat Point (ø10mm)
101121	Needle Point
101119	Spherical Point
101118	Shell Type Point
101387	Shell Type Point

# Spindle Lifting Lever and Cable

## Optional Accessories for Digimatic and Dial Indicators

### Application



### Spindle Lifting Lever

- 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.

#### Applicable S-Type Gages

Order No.	Description
<b>21AZB149</b>	2,3, and 4 series up to (.5" / 12.7mm)
<b>21AZB150</b>	2,3, and 4 series up to (.5" / 12.7mm up to 1" / 25.4mm)
<b>21AZB151</b>	S-Type thickness gage



#### Dove Tail Type Lever Assy

Order No.	Lever up to .5" / 12.7mm	Screw	Screw Thread
<b>21EZA198</b>	21AZB149	101171	M2.5
<b>21EZA199</b>	21AZB149	101047	4/48 UNF



ANSI Screw **101047**  
JIS Screw **101171**

### Spindle Lifting Cable

- 901975**: with auto-stop function
- 540774**: without auto-stop function
- Lifting range: 1" / 25.4mm
- Cable length: 300mm



### Spindle Lifting Knob

- 137693**
- Applicable spindle diameter; 4.8mm



Use for Series 1 dial indicators.(up 5mm / .25")

Set Order No.	Lever	Screw	Screw Thread
<b>21BZA610</b>	900527	101047	4-48 UNF
<b>21BZA205</b>	900527	101171	M2.5 x 0.45



Use for Series 2 dial indicators (up to 10mm/.4")

Set Order No.	Lever	Screw	Screw Thread
<b>902794</b>	900525	101047	4-48 UNF
<b>902011</b>	900525	101171	M2.5 x 0.45



Use for Series 2 dial indicators (up to 10mm/.4") and 1 Group S-Type

Set Order No.	Lever	Screw	Screw Thread
<b>21BZA613</b>	21BZA612	101047	4-48 UNF
<b>902100</b>	21BZA612	101171	M2.5 x 0.45



Use for Series 2 dial indicators (up to 20mm/.8") and Series 3 and 4 dial indicators (up to 10mm/.4")

Set Order No.	Lever	Screw	Screw Thread
<b>903425</b>	903307	192753	4-48 UNF
<b>903424</b>	903307	192686	M2.5 x 0.45



### Spindle Lifting Knob

Set Order No.	Range
<b>21EZA197</b>	For 1" range
<b>21EZA200</b>	For 2" range

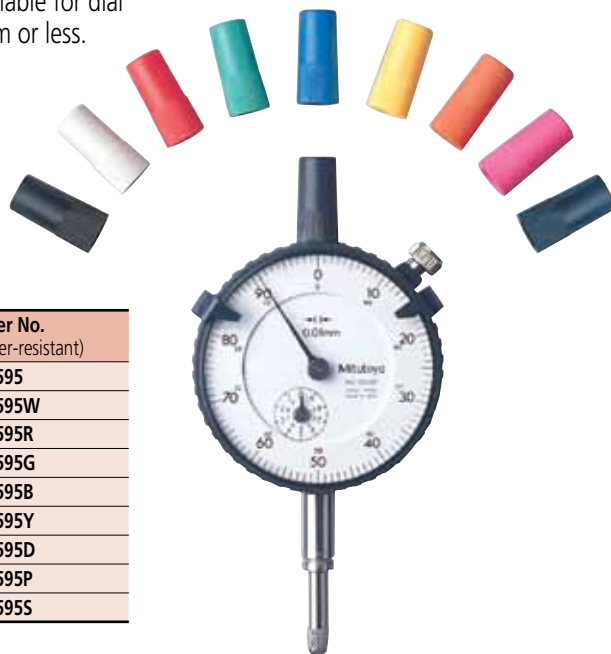




# Color Spindle Caps

## Optional Accessories for Digimatic and Dial Indicators

8 colors of spindle caps are available for dial indicators with a range of 10mm or less.



### SPECIFICATIONS

Color	Order No. (normal)	Order No. (water-resistant)
Black	193051	193595
White	193051W	193595W
Red	193051R	193595R
Green	193051G	193595G
Blue	193051B	193595B
Yellow	193051Y	193595Y
Orange	193051D	193595D
Pink	193051P	193595P
Dark blue	193051S	193595S

# Limit Stickers

## Optional Accessories for Digimatic and Dial Indicators

### FEATURES

- Stuck on the dial face or crystal of a Series 2 dial indicator (55.6mm or 57mm bezel dia.) to indicate tolerance limits.



136420: Red (10-sheet/set)



136421: Green (10-sheet/set)



136422: Yellow (10-sheet/set)

# Dial Indicator Repair Tool Kit

## Optional Accessories for Digimatic and Dial Indicators

Order No. 7823

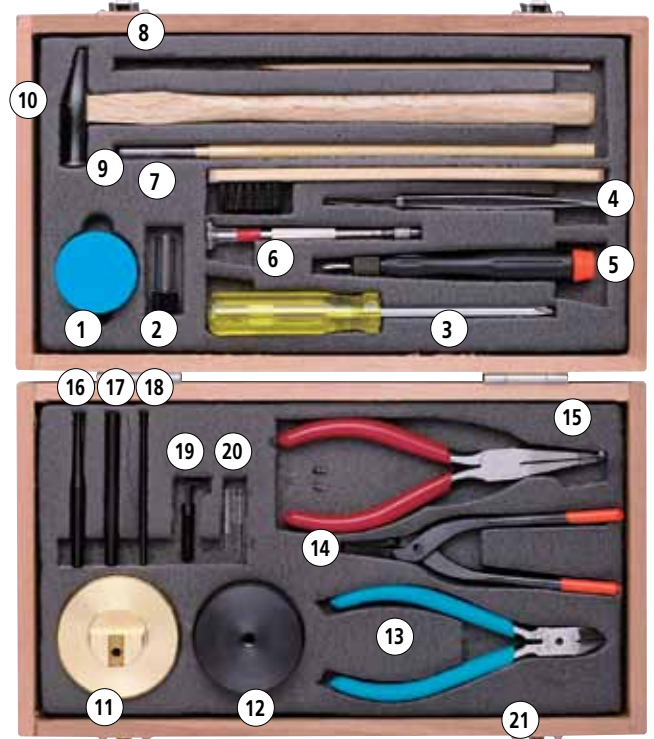
### Set Configuration

- (1) 901171: Molykote (lubricant)
- (2) 21JAA313: Lubricating oil
- (3) 901173: Screwdriver (Phillips)
- (4) 901174: Screwdriver (Phillips/flat blade)
- (5) 129729: Tweezers
- (6) 901175: Pin-vise
- (7) 901176: Brush
- (8) 21JAA314: Stick
- (9) 901177: Brush
- (10) 901178: Hammer
- (11) 129730: Spindle rest
- (12) 129731: Pin rest
- (13) 901179: Nippers
- (14) 901180: Pliers
- (15) 901181: Hand remover
- (16) 129732: Pin remover
- (17) 129733: Punch
- (18) 129734: Bearing adjuster
- (19) 129735: Pinion rest
- (20) 129736: Reamer  $\varnothing 1$
- (21) 193702: Reamer  $\varnothing 0.6$
- (22) 21JAA273: Reamer  $\varnothing 0.5$
- (23) 901182: Case

### Optional Accessories For Hand Remover

- 126630: Interchangeable Pin, 0.8mm DIA.
- 126630B: Interchangeable Pin, 0.5mm DIA.
- 126630C: Interchangeable Pin, 1.6mm DIA.

Mitutoyo offers a tool set designed to let you perform simple repairs to your Mitutoyo dial indicator, and a device that lets you reset the indicator crystals.



7823

### SPECIFICATIONS

Order No.	Description
7823	Dial indicator repair tool kit

# Dial Indicator Crystal Setter

## Optional Accessories for Test and Dial Indicators

### FEATURES

- Used for fitting a crystal on dial indicators, dial test indicators, and dial calipers.



7000

With 8 sizes of crystal setting pads

### SPECIFICATIONS

Order No.	Description
7000	Dial indicator crystal setter

# Dial Test Indicators

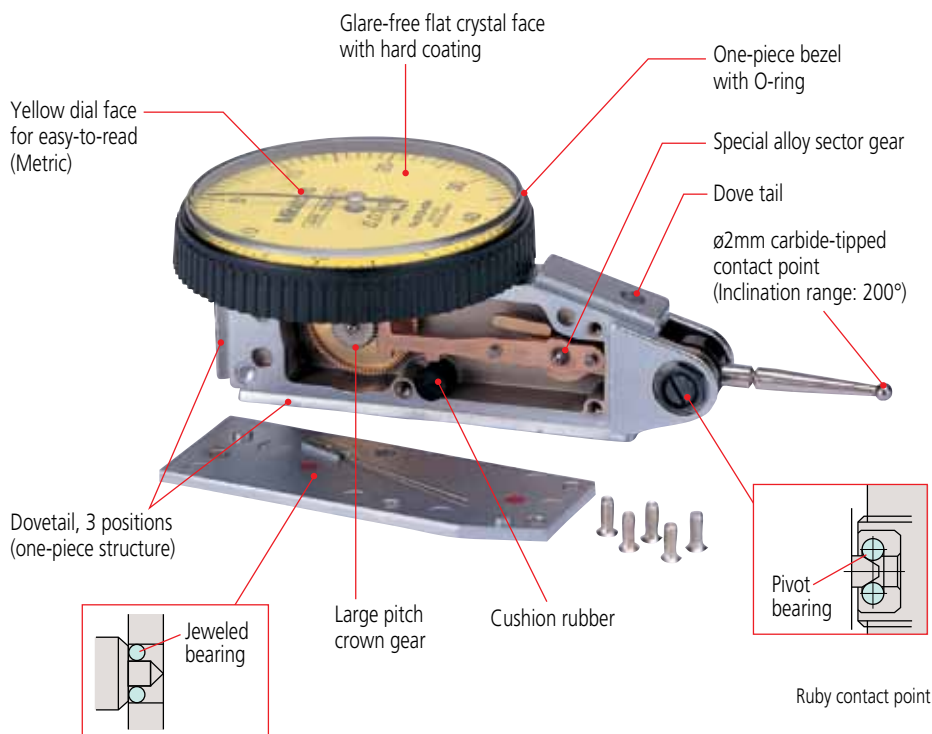
## SERIES 513

### FEATURES

- Narrow or deep places, which cannot be measured with a normal dial gauge, can be easily and accurately measured.
- Mitutoyo's proprietary new structure permits smooth pointer operation.
- Use of a hard frame body provides excellent rigidity and durability.
- Non-magnetic pointer and contact point permit secure operation even in environments with magnetism.
- Use of a clear and concise wide dial face allows excellent visibility.
- The surface of the crystal is hard-coated, to make it scratch-resistant.
- Flat crystal makes gradations easy to read. Moreover, the unified structure of the outer frame prevents oil and water from permeating via the front face.
- Six types are available: vertical, inclined, perpendicular, horizontal, universal, and pocketable, allowing users to select the model most suited to their needs.
- Vertical: Standard
- Inclined: Dial face inclined 20°, compared with the vertical type, allows easy reading.
- Perpendicular: Best suited for centering holes.
- Horizontal: The graduations can be read from the front, with the probe on the tip of the horizontal conical rod abutting the workpiece.
- Universal: The direction of the probe movement can be freely changed.
- Pocketable: Compact type

### Description of Icon

Icon	Description
	With revolution counter type
	Long contact point type
	Jeweled bearing type
	Double scale spacing type, easy-on-the-eyes
	Compact type
	Dustproof type
	Anti-magnetic type



# Dial Test Indicators

## SERIES 513 — Horizontal Type

### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points

### Special Set: No. 513-908 (mm)

- 513-404E: Dial test indicator
- 7014: Mini magnetic stand

### No. 513-907 (inch)

- 513-402: Dial test indicator
- 7014E: Mini magnetic stand



### FEATURES

- Performs easy and accurate measurement of narrow or recessed areas, plus inside and outside diameters that dial indicators cannot access.
- No-clutch structure for automatic reversal of measuring direction.
- Resistant to water and dust thanks to the one-piece bezel and "crystal" design with O-ring.
- The glare-free flat crystal face has a scratch-resistant coating.
- High-sensitivity and quick-response because of jeweled bearings.
- A carbide contact point is provided as standard.



513-424E



513-404E







513-414E



513-403



513-474E

 Anti-magnet type    
  Double scale spacing type    
  Long contact point type    
  Jeweled bearing type

 Compact type    
  With revolution counter type



513-466E



513-464E



513-463






## SPECIFICATIONS

### Metric



Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)						
	Basic set	Full set											
0.01mm	513-424E	513-424T	0.5mm	5μm	0-25-0	0.3N or less	22.3	✓	✓	—	✓	—	—
0.01mm	513-414E	513-414T	0.5mm	10μm	0-25-0	0.2N or less	36.8	✓	✓	✓	✓	—	—
0.01mm	513-466E	—	0.5mm	5μm	0-25-0	0.3N or less	22.3	✓	✓	—	✓	✓	—
0.01mm	513-404E	513-404T	0.8mm	8μm	0-40-0	0.3N or less	20.9	✓	—	—	✓	—	—
0.01mm	513-474E*	—	0.8mm	8μm	0-40-0	0.3N or less	20.9	✓	—	—	✓	—	—
0.01mm	513-464E	—	0.8mm	8μm	0-40-0	0.3N or less	20.9	✓	—	—	✓	✓	—
0.01mm	513-415E	513-415T	1mm	10μm	0-50-0	0.2N or less	44.5	✓	—	✓	✓	—	—
0.01mm	513-426E	—	1.5mm	8μm	0-25-0	0.4N or less	22.3	✓	✓	—	✓	—	✓
0.002mm	513-405E	513-405T	0.2mm	3μm	0-100-0	0.3N or less	14.7	✓	—	—	✓	—	—
0.002mm	513-465E	—	0.2mm	3μm	0-100-0	0.3N or less	14.7	✓	—	—	✓	✓	—
0.002mm	513-425E	—	0.6mm	6μm	0-100-0	0.4N or less	14.7	✓	—	—	✓	—	✓
0.001mm	513-401E	—	0.14mm	3μm	0-70-0	0.3N or less	12.8	✓	—	—	✓	—	—

\*provided with a ø2mm ruby contact point as a substitute for ø2mm carbide contact point.



### Inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)					
	Basic set	Full set										
.0005"	513-402	513-402T	.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	—	—
.0005"	513-412	513-412T	.03"	±.0005"	0-15-0	0.2N or less	33.9	✓	✓	✓	—	—
.0005"	513-462	—	.03"	±.0005"	0-15-0	0.3N or less	19.9	✓	—	✓	✓	—
.0001"	513-403	513-403T	.008"	±.0001"	0-4-0	0.3N or less	15	✓	—	✓	—	—
.0001"	513-463	—	.008"	±.0001"	0-4-0	0.3N or less	15	✓	—	✓	✓	—

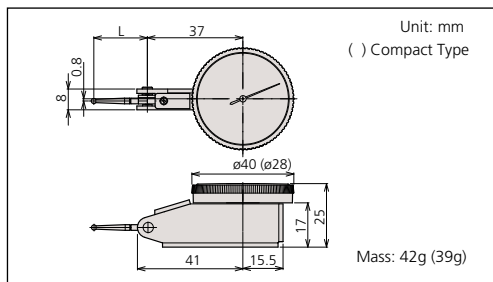
### Metric/inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)		
	Basic set	Full set							
0.002mm, .0001"	513-409	513-409T	0.2mm, .0075"	3μm	0-10-0, 0-38-0	0.3N or less	14.7	✓	✓

### Inch/Metric

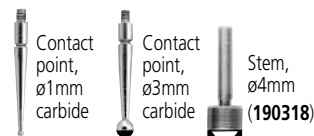
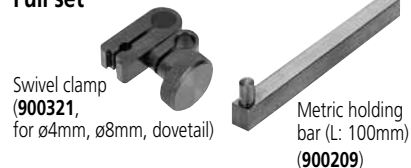
Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)		
	Basic set	Full set							
.0005", 0.01mm	513-406	513-406T	.03", 0.7mm	±.0005"	0-15-0, 0-35-0	0.3N or less	19.9	✓	✓

## DIMENSIONS AND MASS

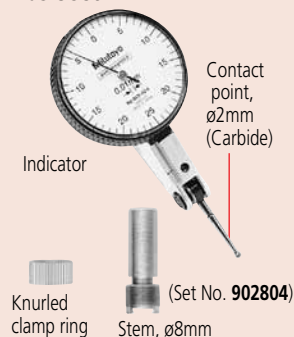


## Set Configuration: Metric Test Indicators

### Full set

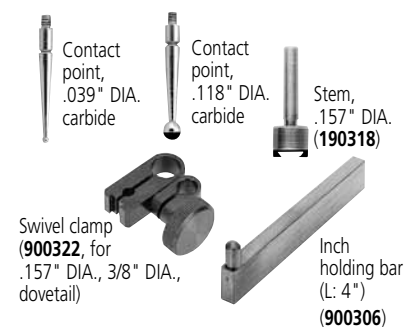


### Basic set

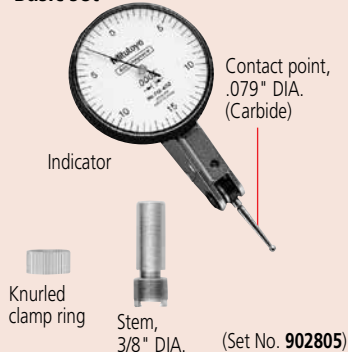


## Set Configuration: Inch Test Indicators

### Full set



### Basic set





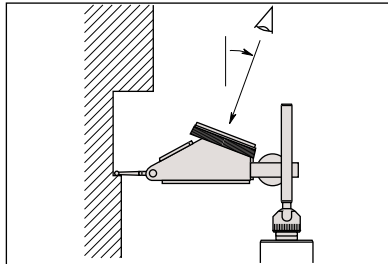
# Dial Test Indicators

**SERIES 513 — Horizontal (20° Tilted Face), Vertical, and Parallel Types**

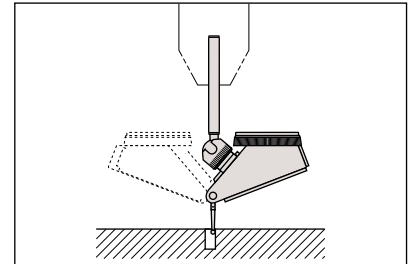


## FEATURES

- Specially designed for easy viewing of measurements.



- The dial face obliquely faces upward, allowing users to read the graduations from the user's side. It is convenient when measuring on the side of a large workpiece and the workbench is high.



- Using the universal holder allows easy hole centering. The dial face always faces upward when the indicator is rotated, which makes reading easy.



513-444E



513-445E



513-454E  
513-284GE



513-455E



513-452



513-282G



513-444E



513-445E



513-284G



513-442



513-446

## Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points





Anti-magnet type



With revolution counter type



Jeweled bearing type



Long contact point type

## SPECIFICATIONS

**Metric** Horizontal (20° tilted face) type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)			
	Basic set	Full set									
0.01mm	<b>513-444E</b>	<b>513-444T</b>	1.6mm	10µm	0-40-0	0.3N or less	48	20.9	✓	✓	✓
0.002mm	<b>513-445E</b>	<b>513-445T</b>	0.4mm	5µm	0-100-0	0.3N or less	48	14.7	✓	✓	✓

**Inch** Horizontal (20° tilted face) type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)					Remarks
	Basic set	Full set											
.0005"	<b>513-442</b>	<b>513-442T</b>	.06"	±.0005"	0-15-0	0.3N or less	48	19.9	✓	✓	✓	—	—
.0005"	<b>513-442-01</b>	<b>513-442T-01</b>	.06"	±.0005"	0-15-0	0.3N or less	48	19.9	✓	✓	✓	—	Blue dial
.0005"	<b>513-442-06</b>	<b>513-442T-06</b>	.06"	±.0005"	0-15-0	0.3N or less	48	19.9	✓	✓	✓	—	Black dial
.0005"	<b>513-446</b>	<b>513-446T</b>	.06"	±.0005"	0-15-0	0.2N or less	48	33.9	✓	✓	✓	✓	—
.0005"	<b>513-446-06</b>	<b>513-446T-06</b>	.06"	±.0005"	0-15-0	0.2N or less	48	33.9	✓	✓	✓	✓	Black dial
.0001"	<b>513-443</b>	<b>513-443T</b>	.016"	±.0002"	0-4-0	0.3N or less	48	15	✓	✓	✓	—	—
.0001"	<b>513-443-06</b>	<b>513-443T-06</b>	.016"	±.0002"	0-4-0	0.3N or less	48	15	✓	✓	✓	—	Black dial

**Metric** Vertical type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
0.01mm	<b>513-454E</b>	<b>513-454T</b>	0.8mm	8µm	0-40-0	0.3N or less	50	20.9	✓	✓
0.002mm	<b>513-455E</b>	<b>513-455T</b>	0.2mm	3µm	0-100-0	0.3N or less	50	14.7	✓	✓

**Inch** Vertical type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
.0005"	<b>513-452</b>	<b>513-452T</b>	.03"	±.0005"	0-15-0	0.3N or less	50	19.9	✓	✓
.0001"	<b>513-453</b>	<b>513-453T</b>	.008"	±.0001"	0-4-0	0.3N or less	50	15	✓	✓

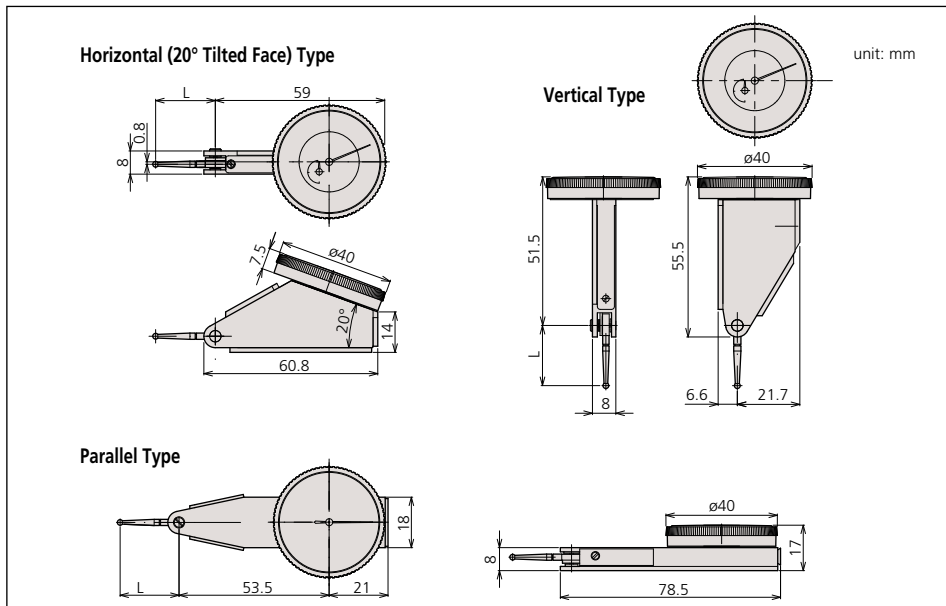
**Metric** Parallel type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
0.01mm	<b>513-284GE</b>	<b>513-284GT</b>	0.8mm	8µm	0-40-0	0.3N or less	68	20.9	✓	✓

**Inch** Parallel type

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Mass (g)	L (mm)		
	Basic set	Full set								
.0005"	<b>513-282G</b>	<b>513-282GT</b>	.03"	±.0005"	0-15-0	0.3N or less	68	20	✓	✓

## DIMENSIONS

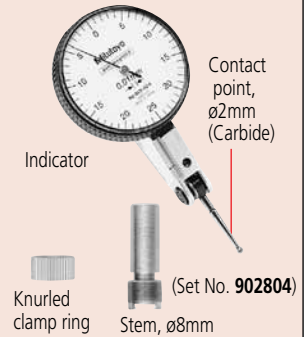


## Set Configuration: Metric

**Full set**

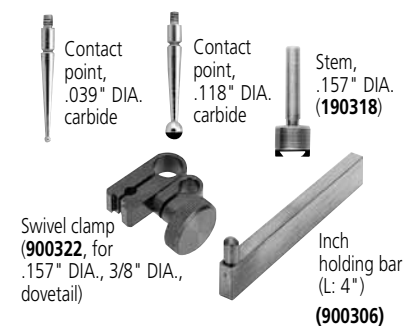


**Basic set**

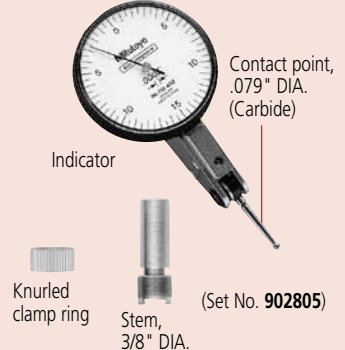


## Set Configuration: Inch

**Full set**



**Basic set**



# Pocket Type Dial Test Indicators

## SERIES 513

### FEATURES

- Jeweled bearings assure higher sensitivity and accuracy.
- Reversible measuring direction.
- Two holding bars are supplied. (Full sets only.)
- Fully adjustable bezel/dial face.
- Contact point is adjustable within 220°.
- Bezel is sealed with an O-ring to keep out water / oil.



513-514E



513-517E  
513-527E



513-515T



513-503E



513-501E



513-517E

513-514E

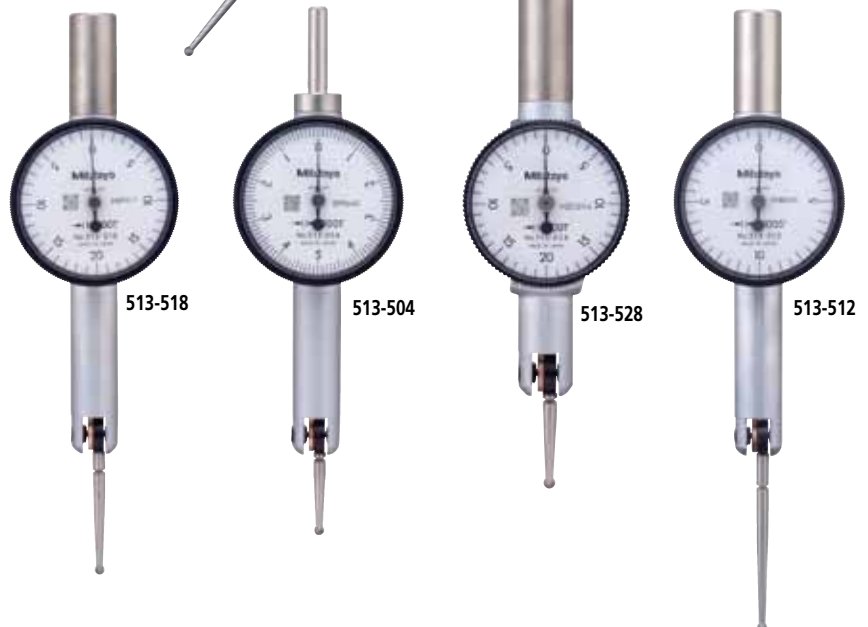
513-527E



513-501E

513-515T

513-503E



513-518

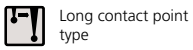
513-504

513-528

513-512

### Optional Accessories

- : Swivel clamp
- : Holding bar
- : Stem
- : Contact points



Long contact point type



Jeweled bearing type



Compact type

## SPECIFICATIONS

### Metric

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)			
	Basic set	Full set								
0.01mm	<b>513-514E</b>	<b>513-514T</b>	0.5mm	10µm	0-25-0	0.3N or less	36.8	✓	✓	—
0.01mm	<b>513-517E</b>	<b>513-517T</b>	0.8mm	8µm	0-40-0	0.3N or less	20.9	—	✓	—
0.01mm	<b>513-527E</b>	<b>513-527T</b>	0.8mm	8µm	0-40-0	0.3N or less	14.7	—	✓	✓
0.01mm	—	<b>513-515T</b>	1mm	10µm	0-50-0	0.3N or less	44.5	✓	✓	—
0.002mm	<b>513-503E</b>	<b>513-503T</b>	0.2mm	3µm	0-100-0	0.3N or less	14.7	—	✓	—
0.001mm	<b>513-501E</b>	<b>513-501T</b>	0.14mm	3µm	0-70-0	0.4N or less	12	—	✓	—

### Inch

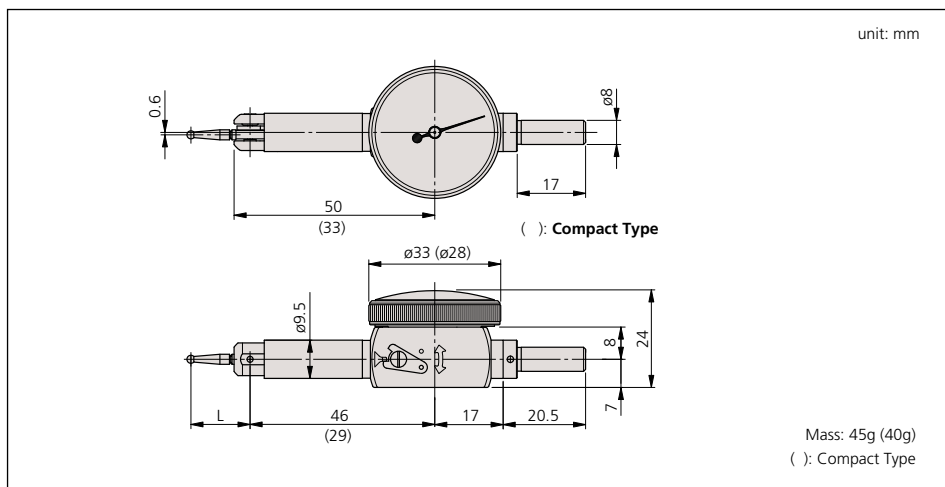
Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	L (mm)			
	Basic set	Full set								
.001"	<b>513-518</b>	<b>513-518T</b>	.04"	±.001"	0-20-0	0.3N or less	26.5	—	✓	—
.001"	<b>513-528</b>	<b>513-528T</b>	.04"	±.001"	0-20-0	0.3N or less	18.7	—	✓	✓
.0005"	<b>513-512</b>	<b>513-512T</b>	.02"	±.0005"	0-10-0	0.3N or less	37.4	✓	✓	—
.0001"	<b>513-504</b>	<b>513-504T</b>	.01"	±.0002"	0-5-0	0.3N or less	18.7	—	✓	—

## Optional Contact Points

### Pocket Type

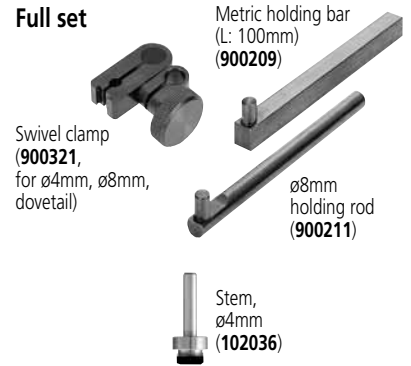
Order No.	1mm	2mm	3mm	0.5mm	0.7mm
<b>513-501E</b>	136756	136104	136758	—	—
<b>513-503E</b> <b>513-527E</b>	103017	103010	103018	190547	190548
<b>513-504</b> <b>513-528</b>	131314	103011	131315	—	—
<b>513-512</b>	131316	131324	131317	—	—
<b>513-514E</b>	137746	129949	137747	—	—
<b>513-515T</b>	136235	136013	136236	190656	190655
<b>513-517E</b>	103013	103006	103014	190549	190550
<b>513-518</b>	103008	103007	103009	—	—

## DIMENSIONS AND MASS

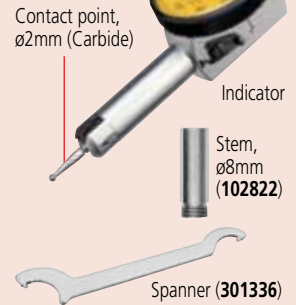


## Set Configuration: Metric

### Full set

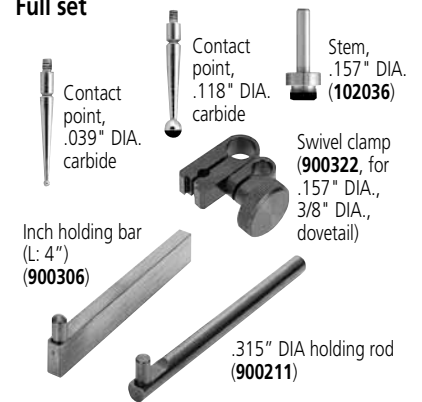


### Basic set

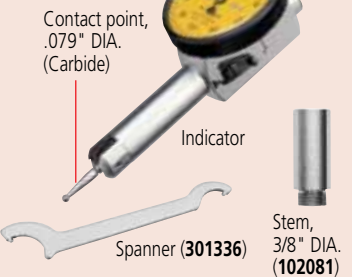


## Set Configuration: Inch

### Full set

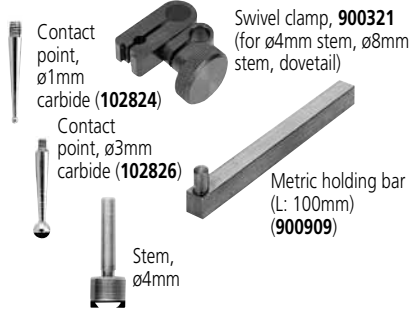


### Basic set

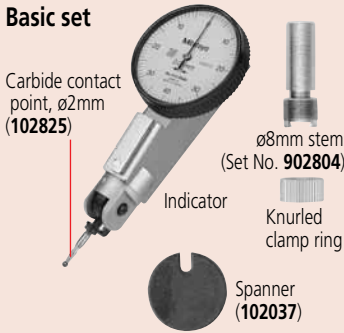


### Set Configuration: Metric

#### Full set

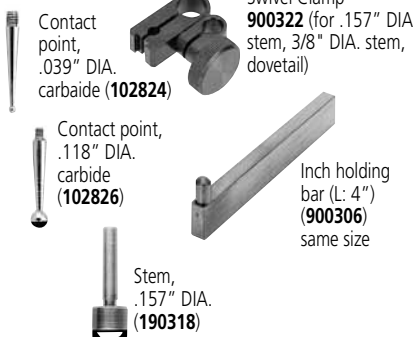


#### Basic set

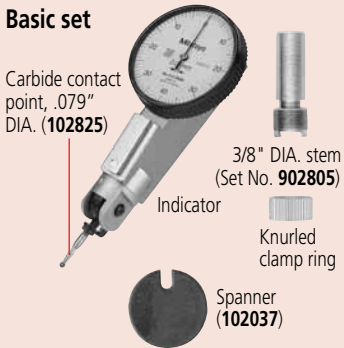


### Set Configuration: Inch

#### Full set



#### Basic set



#### Optional Accessories

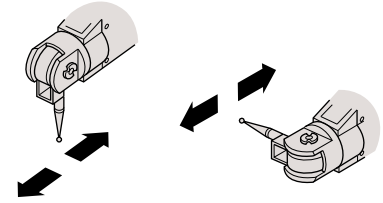
- : Swivel clamp
- : Holding bar
- : Stem

# Dial Test Indicators

## SERIES 513 — Universal Type

### FEATURES

- Universal application to all directions. (Not only the direction of the measuring point, but also the direction of measurement itself can be adjusted 360 degrees without moving the indicator.)



513-304GE

### SPECIFICATIONS



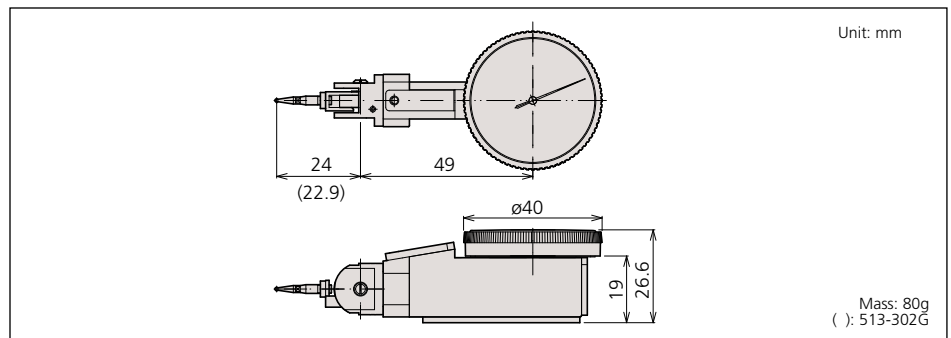
#### Metric

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Jeweled bearing type
	Basic set	Full set					
0.01mm	513-304GE	513-304GT	0.8mm	8µm	0-40-0	0.3N or less	✓

#### Inch

Graduation	Order No.		Range	Accuracy	Dial reading	Measuring force	Jeweled bearing type
	Basic set	Full set					
.0005"	513-302G	513-302GT	.03"	±.0005"	0-15-0	0.3N or less	✓

### DIMENSIONS AND MASS



# Contact Points and Clamp Holders

## Optional Accessories for Dial Test Indicator

### Contact Points

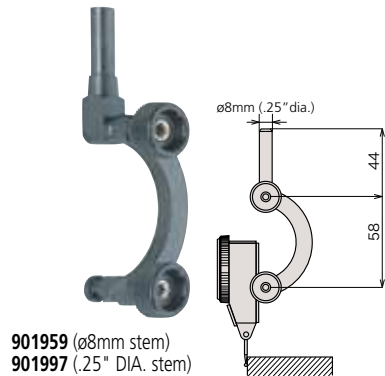
Order No.	1mm	2mm	3mm	0.5mm	0.7mm
513-401E	21CZA044	21CZA036	21CZA045		
513-405E    513-425E	103017	103010	103018	190547	190548
513-465E    513-445E					
513-455E    513-409					
513-404E    513-464E	103013	103006	103014	190549	190550
513-444E    513-454E					
513-284GE					
513-424E    513-466E	137558	137557	137559	190654	190653
513-426E					
513-415E	136235	136013	136236	190656	190655
513-414E	137746	129949	137747		
513-402    513-462	133196	133195	133197		
513-406    513-442					
513-442-01    513-442-06					
513-452    513-282G					
513-403    513-463	136076	136075	136077		
513-443    513-443-06					
513-453					
513-412    513-446	136291	136290	136292		
513-446-06					

### Holding Bars



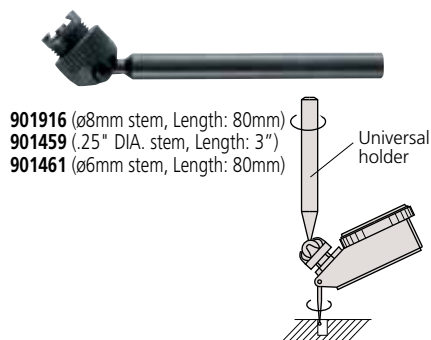
### Centering Holder

- Allows large diameter cylinders or holes to be centered.



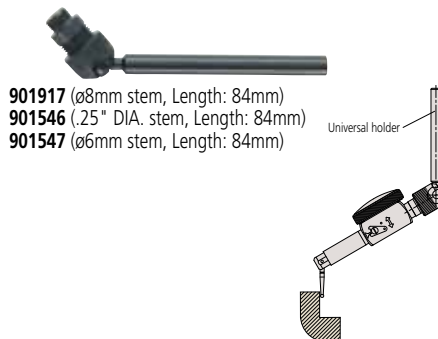
### Universal Holder

- Allows the indicator to be set at a desired position.



### Universal Holder (pocket type)

- Since the Dial Test Indicator can be swiveled to a desired angle, the holder is useful for centering workpieces and installing workpieces on a milling machine.





## Technical Data

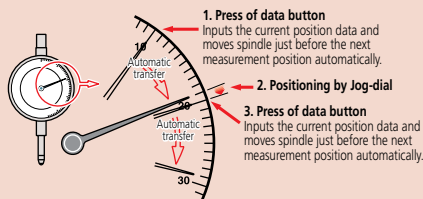
Measuring Range: 100mm/4"  
 Resolution: 0.02µm/1.24µin  
 Accuracy: ±(0.2+L/100)µm in vertical position  
 (at 20°C) ±(0.3+2L/100)µm in lateral position  
 L = arbitrary length (mm)  
 Drive method: Motor drive  
 Measuring Unit: Reflective-type metal linear encoder  
 Thermal expansion coefficient: (8±1)X10<sup>-6</sup>/K  
 Measurement: Semi-automatic measurement  
 Method: Fully automatic measurement\*  
 Dimensions: 184 x 225 x 532mm (W x D x H)  
 Operating temperature range: 20°C±3°C  
 Power supply: 100VAC to 240VAC ±10%, 50/60Hz  
 Mass: 20kg

\* Full automatic measurement requires the SPC cable for indicator connection. Additionally some form of indicator, along with a connecting machine (the optional accessory for indicator as a Digimatic power-supply unit on EF counter) will be needed.

## Function

### Inspect your analog indicator semi-automatically!

The pointer of the analog indicator is positioned just before the measuring point automatically via Mitutoyo's Semi-automatic Measurement function. After that, inspection begins simply by adjusting the pointer position with the jog-dial. Because of this function, measurement time is reduced and user fatigue is practically eliminated. Additionally all functions necessary for inspection are combined in the control box so that the operator need not rely on excessive eye movement to adjust the pointer.



### Fully automatic inspection of digital indicator

The Automatic Measurement function, in tandem with a digital indicator makes the spindle move so that measurement data is acquired automatically. Therefore, manual adjustment to the measurement position is needless and the efficiency of every inspection is enhanced.



### Create and printout a simplified inspection certificate

It is possible to create, edit and print out your own inspection certificate. Further more, that data can be saved as a CSV file.

## Optional Accessories

- 02ASK000:** Test indicator attachment set (ø6mm stem)
- 02ASK180:** Test indicator attachment set (ø8mm stem)
- 02ASK370:** Test indicator holder (ø6mm stem)
- 02ASK380:** Test indicator holder (ø8mm stem)
- 02ASK110:** Bore gage accessory set
- 902803:** ø6mm dovetail grooved stem
- 902804:** ø8mm dovetail grooved stem
- 02ASK040:** Stem bush ø6mm
- 02ASJ856:** Stem bush ø8mm
- 02ASK150:** Stem bush ø8mm, short
- 02ASK050:** Bush ø9.5 (Requires **02ASK070**)
- 02ASK060:** Stem bush ø12mm
- 02ASK070:** Stem bush ø15mm
- 02ASK080:** Stem bush ø20mm
- 02ASK090:** Stem bush 3/8"
- 02ASK130:** Stem bush case
- 02ASK730:** Reflector
- 937179T:** Foot switch  
PC system

# i-Checker

## SERIES 170

## FEATURES

The i-Checker is specially designed to calibrate measuring accuracy of dial indicators, dial test indicators, and other electronic comparison gage heads with a stroke of up to 100mm (4").

- ±(0.2+L/100)µm indication accuracy.
- Directly inspects an indicator with a stroke of up to 100mm (4"). The dial test indicator, bore gage and lever-type inductive head can be inspected with optional accessories.

- Adjustment of the measurement position is very easily accomplished because of semi-automatic measurement and full automatic measurement functions.
- Creates and prints out the simple inspection certificate.
- Saves inspection result as CSV file for reusable inspection result by any kind of software.



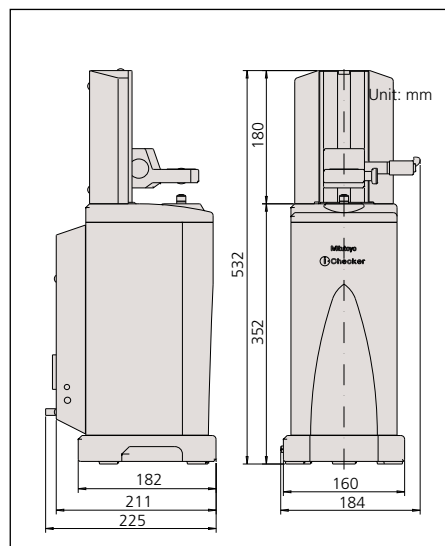
\* PC system is optional

## SPECIFICATIONS

Order No.	Remarks
170-303A	with ø3/8" bush



## DIMENSIONS



## Applicable Indicators

- Dial indicator
  - Hicor
  - Digimatic indicator\*\*\*
  - Test indicator\*
  - Bore gage\*\*
  - Linear gage
- \* requires optional test indicator attachment set  
 \*\* requires optional bore gage accessory  
 \*\*\* requires optional SPC cable for full automatic measurement



Using test indicator attachment set (**02ASK000**)



Using bore gage accessory set (**02ASK110**)



# UDT-2 Dial Gage Testers

## SERIES 170

The UDT-2 Dial Gage Tester consists of a specially designed 0-1" / 0-25mm micrometer head, with a large disc, and rigid holding fixtures. Gage tester to calibrate measuring accuracy of dial indicators, dial test indicators and dial bore gage.

### FEATURES

- Clamping stem diameter—  
170-102-10: 6mm and 8mm,  
170-101-10: .25" and .375"
- With the optional stand (**21AKK824**), inspection of Dial Bore Gages becomes possible to perform.



170-102-10

### SPECIFICATIONS

Metric			
Range	Order No.	Graduation	Accuracy
0 - 25mm	<b>170-102-10</b>	0.001mm	±1µm

Inch			
Range	Order No.	Graduation	Accuracy
0 - 1"	<b>170-101-10</b>	.0001"	±.0001"

# Calibration Testers

## SERIES 521

The Calibration Tester is specially designed to calibrate measuring accuracy of short range dial indicators, dial test indicators, and other electronic comparison gage heads.



521-103

### FEATURES

- Universal bracket accepts any dial indicator, dial test indicator, lever head of Mu-Checker without any additional accessory.
- Clamping capacity: ø4mm - ø10mm / .157" - .394" dia.
- Dual color-indexed directional graduations to facilitate measurements.

### SPECIFICATIONS

Metric			
Range	Order No.	Graduation	Accuracy
0 - 1mm	<b>521-103</b>	0.0002mm	±0.2µm
0 - 5mm	<b>521-105</b>	0.0002mm	±0.8µm

Inch			
Range	Order No.	Graduation	Accuracy
0 - .05"	<b>521-104</b>	.00001"	±.00001"
0 - .2"	<b>521-106</b>	.00001"	±.00003"



### Optional Accessory

**21AKK824:** Stand for bore gage inspection



Calibrating test indicator

### Technical Data

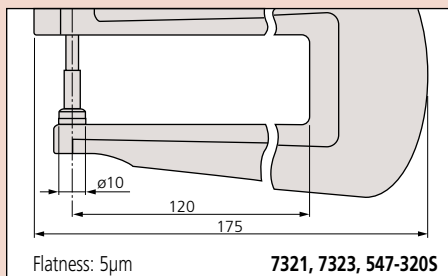
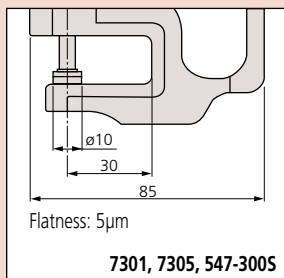
#### Function of Digital Models

- IDS Types
- ON/OFF
  - Inch / mm Conversion
  - Origin
  - $\pm$ Direction Changeover
  - SPC Output
  - Battery Life: 20,000 hrs
  - Power Supply: Silver Oxide Cell (SR-44 1pc.)

#### IDC Types

- ON/OFF
- Inch / mm Conversion
- Zero / ABS
- $\pm$ Direction Changeover
- SPC Output
- Battery Life: 5,000 hrs
- Power Supply: Silver Oxide Cell (SR-44 1pc.)
- Preset
- Provides GO /  $\pm$ NG Judgement
- Face Rotates 330°

### DIMENSIONS



# Thickness Gages

## SERIES 547, 7

The Thickness Gages offer a quick and efficient means of inspection with their convenient grip handle, thumb trigger and spring-loaded spindle. The various models cover a wide range of applications.

### FEATURES

- Wide range of applications with various types of measuring faces (on the spindle and anvil).

- The digital models incorporate Mitutoyo's popular ID-C and ID-S Series Digimatic Indicators to provide error-free LCD readings as well as data output for SPC analysis.
- 547-400S is ideally suited for measuring thicknesses of paper, film, wire, sheet metal and similar materials.

### Flat Anvil Type

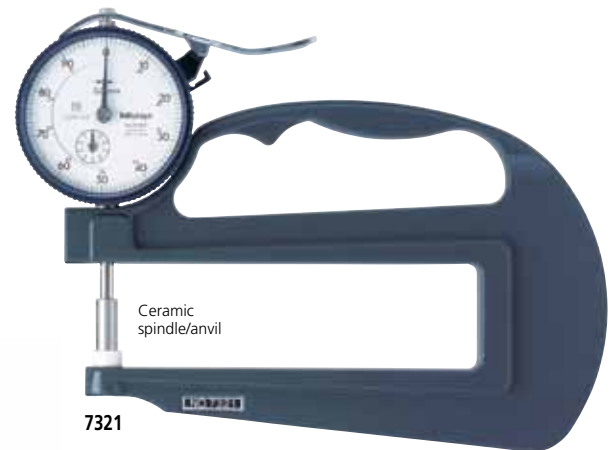
#### Standard Type / Digital



#### Deep Throat Type / Digital



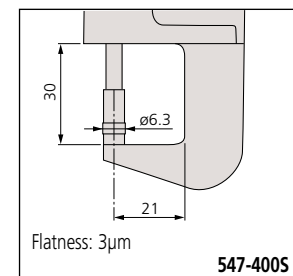
#### Deep Throat Type / Dial



#### High Accuracy Type / Digital



### DIMENSIONS



# Thickness Gages

**SERIES 547, 7**

## Flat Anvil Type

### SPECIFICATIONS

Inch/Metric		Digital Type			
Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	<b>547-500</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	<b>547-520</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	<b>547-526</b>	.0001"/0.001mm	±.0002"	1.5N or less	Digimatic IDS
0 - .4" / 0 - 10mm	<b>547-3005</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC
0 - .4" / 0 - 10mm	<b>547-3205</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC
0 - .47" / 0 - 12mm	<b>547-4005</b>	.00005"/0.001mm	±.00015"	3.5N or less	Digimatic IDC

Inch		Dial Type			
Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .05"	<b>73265</b>	.00005"	±.0002"	1.4N or less	Fine dial reading, ceramic spindle/anvil
0 - .5"	<b>73005</b>	.001"	±.001"	1.4N or less	Standard, ceramic spindle/anvil
0 - 1"	<b>73045</b>	.001"	±.002"	2.0N or less	Standard, ceramic spindle/anvil
0 - 1"	<b>73225</b>	.001"	±.002"	2.0N or less	Deep throat, ceramic spindle/anvil

Metric		Dial Type			
Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 1mm	<b>7327</b>	0.001mm	±5µm	1.4N or less	Fine dial reading, ceramic spindle/anvil
0 - 10mm	<b>7301</b>	0.01mm	±15µm	1.4N or less	Standard, ceramic spindle/anvil
0 - 20mm	<b>7305</b>	0.01mm	±20µm	2.0N or less	Standard, ceramic spindle/anvil
0 - 10mm	<b>7321</b>	0.01mm	±15µm	1.4N or less	Deep throat, ceramic spindle/anvil
0 - 20mm	<b>7323</b>	0.01mm	±22µm	2.0N or less	Deep throat, ceramic spindle/anvil

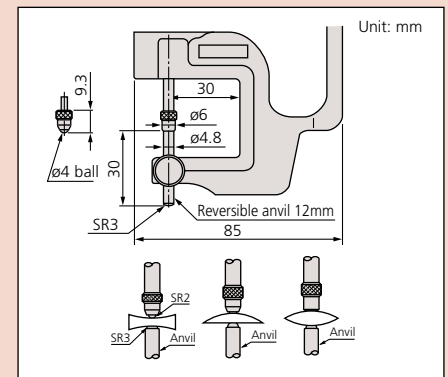
## Lens thickness measurement (reverse anvil)



### Optional Accessories

- 905338:** SPC cable (40" / 1m) for digital type
- 905409:** SPC cable (80" / 2m) for digital type
- 902794:** Spindle lifting lever for IDS digimatic type (stroke .5" / 12.7mm)
- 21AZB149:** Spindle lifting lever for digimatic and dial thickness gage (stroke .5" / 12.7mm)
- 21AZB150:** Spindle lifting lever for dial indicator (stroke 1" / 25.4mm)

### DIMENSIONS



### SPECIFICATIONS

Inch/Metric		Digital Type			
Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	<b>547-512</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	<b>547-312S</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

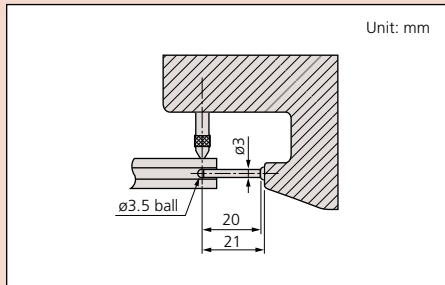
Inch		Dial Type			
Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .5"	<b>7312S</b>	.001"	±.001"	1.4N or less	Lens thickness

Metric		Dial Type			
Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 10mm	<b>7313</b>	0.01mm	±15µm	1.4N or less	Lens thickness

# Thickness Gages

SERIES 547, 7

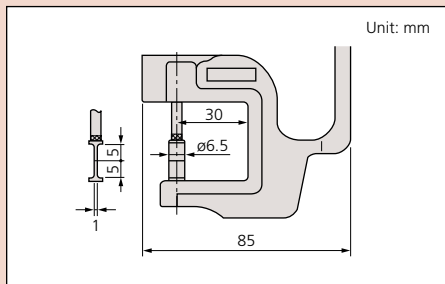
## DIMENSIONS



## Optional Accessories

- 905338: SPC cable (40" / 1m) for digital type
- 905409: SPC cable (80" / 2m) for digital type
- 902794: Spindle lifting lever for IDS digimatic type (stroke .5" / 12.7mm)
- 21AZB149: Spindle lifting lever for digimatic and dial thickness gage (stroke .5" / 12.7mm)
- 21AZB150: Spindle lifting lever for dial indicator (stroke 1" / 25.4mm)

## DIMENSIONS



## Tube thickness measurement



## SPECIFICATIONS

### Inch/Metric Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 10mm	547-561	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 12mm	547-3615	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

### Inch Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .5"	73615	.001"	±.001"	1.4N or less	Tube thickness

### Metric Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 10mm	7360	0.01mm	±15µm	1.4N or less	Tube thickness

## Groove thickness measurement (Blade anvil type)



## SPECIFICATIONS

### Inch/Metric Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	547-516	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS
0 - .47" / 0 - 10mm	547-3165	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDC

### Inch Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .5"	73165	.001"	±.001"	1.4N or less	Groove thickness

### Metric Dial Type

Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - 10mm	7315	0.01mm	±15µm	1.4N or less	Groove thickness

# Thickness Gages

SERIES 547, 7

Universal Type (interchangeable anvils)



547-528

## SPECIFICATIONS

**Inch/Metric** Digital Type

Range	Order No.	Resolution	Accuracy	Measuring force	Indicator
0 - .47" / 0 - 12mm	<b>547-528</b>	.0005"/0.01mm	±.001"	1.5N or less	Digimatic IDS

**Inch** Dial Type

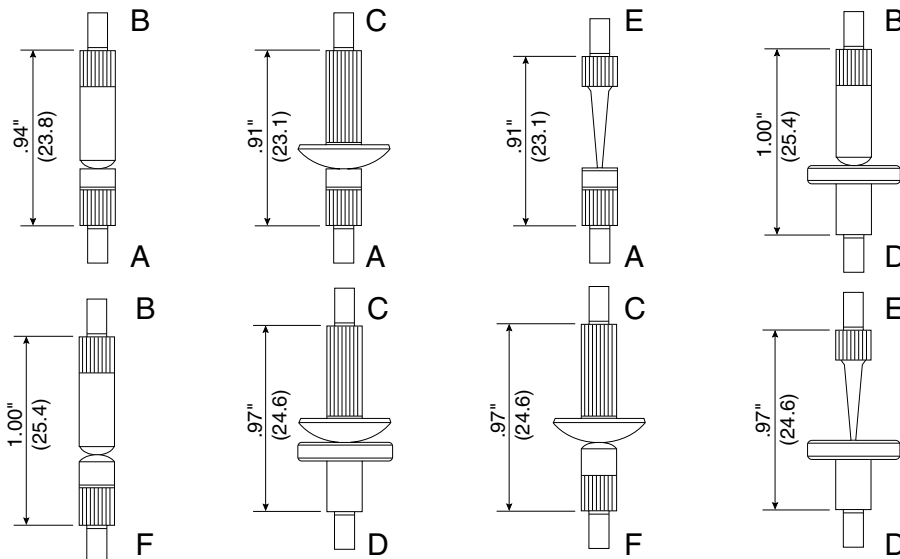
Range	Order No.	Graduation	Accuracy	Measuring force	Remarks
0 - .4"	<b>73285</b>	.001"	±.001"	1.5N or less	Interchangeable anvils

## Optional Accessories

- 905338:** SPC cable (40" / 1m) for digital type
- 905409:** SPC cable (80" / 2m) for digital type
- 902011:** Spindle lifting lever for metric dial type (stroke 10mm)
- 902794:** Spindle lifting lever for digital and inch dial type (stroke .4" / 10mm)

## Standard Accessories

### Recommended Combinations



- A. 133017** Flat Point  $\phi$ .20
- B. 21AAA033** Shell Point .16" Radius
- C. 21BZA767** Spherical Point .36" Radius
- D. 101188** Flat Point  $\phi$ .50
- E. 21AAA030** Needle Point .016" Radius
- F. 21AAA032** Shell Point .16" Radius

# Quick-Mini

## SERIES 700

A compact comparator designed for carrying convenience, it is very suited for quick inspection of paper thickness, leather, wires, plastic parts, etc. The digital display provides error-free reading with 0.01mm / .0005" resolution.

### FEATURES

- Measuring force less than 2N.
- Supplied in fitted plastic case.

### Technical Data

Accuracy: Refer to the list of specifications.  
 Resolution: 0.01mm or .0005"/0.01mm  
 Display: LCD  
 Battery: SR44 (1 pc.), **938882**  
 Battery life: Approx. 2 years under normal use

### Function

Zero-setting, Data hold, Power ON/OFF,  
 inch/mm conversion (on inch/metric models only)



700-118-20

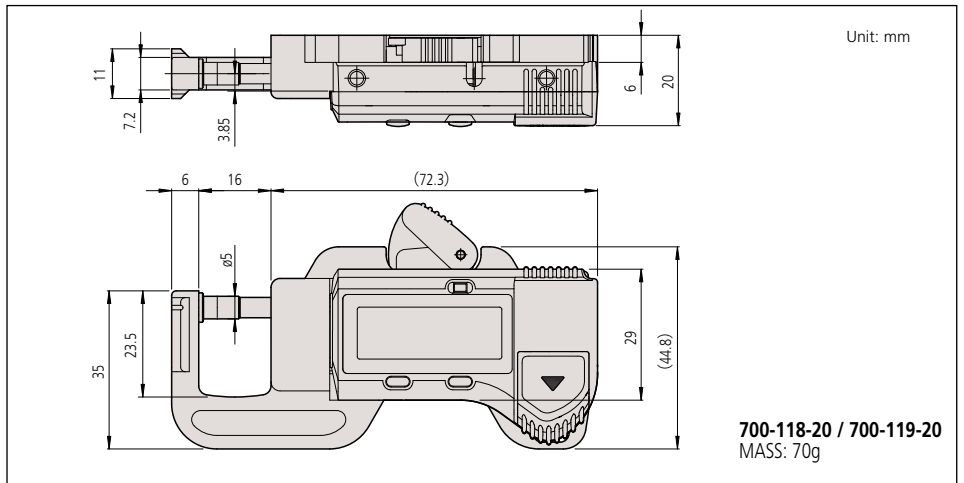
### SPECIFICATIONS

Metric		
Range	Order No.	Accuracy
0 - 12mm	<b>700-119-20</b>	±0.02mm

Inch/Metric		
Range	Order No.	Accuracy
0 - .5"/0 - 12.7mm	<b>700-118-20</b>	±.001"



### DIMENSIONS AND MASS





# Digimatic Caliper Gages

## SERIES 209 — Internal Tube Thickness Measurement Type

Versatile ID measuring gages for holes diameters, groove thickness, tube thickness, and hard-to-reach dimensions. The Digimatic

Caliper Gages provide error-free LCD readings as well as data output for SPC analysis.

### Internal measurement type

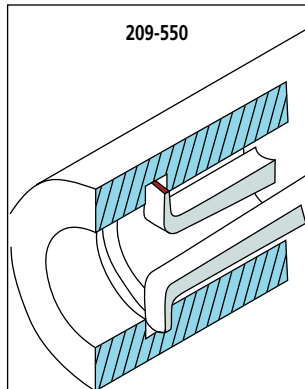
209-552



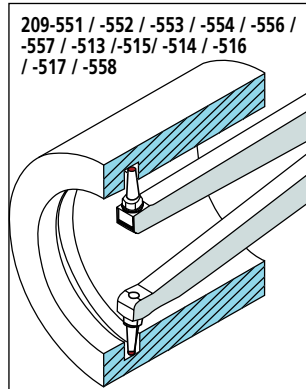
### SPECIFICATIONS

Inch / Metric

Range	Order No.	Resolution	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Type of Measuring Contact	Mass(g)
.10 - .49" / 2.5 - 12.5mm	209-550	.0002" / 0.005mm	.0008" / 0.015mm	.47" / 12mm	.027" / 0.7mm	.023" / 0.5mm	Chisel R .0039" / 0.1mm	225
.20 - .59" / 5 - 15mm	209-551	.0002" / 0.005mm	.0008" / 0.015mm	1.37" / 35mm	.09" / 2.3mm	.032" / 0.8mm	Ball .024" / 0.6mm dia.	230
.39 - 1.18" / 10 - 30mm	209-552	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.19" / 5.2mm	.06" / 1.2mm	Ball .04" / 1mm dia.	250
.79 - 1.58" / 20 - 40mm	209-553	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.26" / 7mm	.06" / 1.2mm	Ball .04" / 1mm dia.	250
1.18 - 1.97" / 30 - 50mm	209-554	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.26" / 7mm	.06" / 1.2mm	Ball .04" / 1mm dia.	255
1.58 - 2.36" / 40 - 60mm	209-555	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	265
1.97 - 2.75" / 50 - 70mm	209-556	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	265
2.36 - 3.15" / 60 - 80mm	209-557	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	270
2.75 - 3.54" / 70 - 90mm	209-558	.0005" / 0.01mm	.0015" / 0.03mm	3.3" / 85mm	.31" / 8.3mm	.06" / 1.2mm	Ball .04" / 1mm dia.	270
.60-2.17" / 15-55mm	209-505	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.177" / 5mm	.10" / 1.8mm	Ball .059" / 1.5mm dia.	360
1.38-2.95" / 35-75mm	209-511	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2.0mm dia.	380
2.17-3.74" / 55-95mm	209-513	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2.0mm dia.	380
2.95-4.52" / 75-115mm	209-514	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2.0mm dia.	380
3.75 - 5.32" / 95 - 135mm	209-515	.001" / 0.02mm	.002" / 0.04mm	4.49" / 115mm	.315" / 8mm	.157" / 2.2mm	Ball .079" / 2mm dia.	380
.60-2.95" / 15-75mm	209-516	.001" / 0.02mm	.003" / 0.06mm	6.89" / 175mm	.196" / 5mm	.07" / 1.8mm	Ball .059" / 1.5mm dia.	440
1.57-3.94" / 40-100mm	209-517	.001" / 0.02mm	.003" / 0.06mm	7.77" / 195mm	.315" / 8mm	.086" / 2.2mm	Ball .079" / 2.0mm dia.	440



Edge R 0.1 mm



Ball  $\phi$  0.6mm,  $\phi$  1mm,  $\phi$  1.5mm and  $\phi$  2mm



### Technical Data

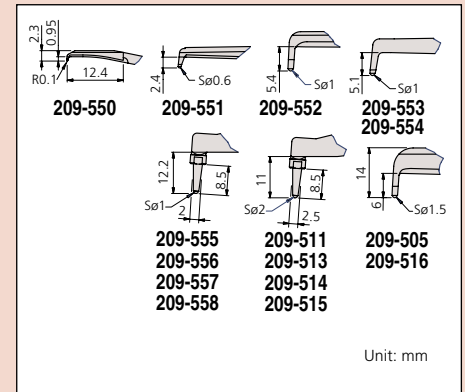
Accuracy: Refer to the list of specifications  
 Resolution: .001", .0005", or .0002"  
 0.01mm, 0.02mm, or 0.005mm  
 Display: LCD Analog / Digital  
 Power Supply: AA Battery (1pc)  
 Battery life: Approx. 350 hours  
 Measuring Force: 0.7 - 1.7N  
 Dust/Water protection level: IP67  
 Provided with inspection certificate.

### Function

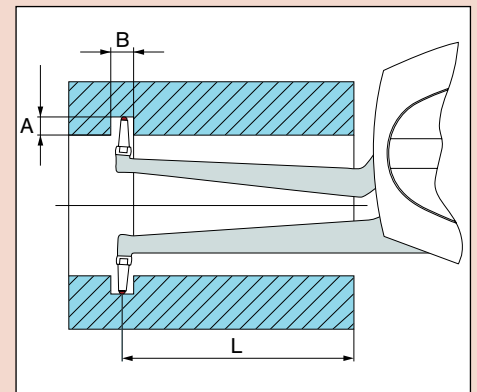
Zeraset, Preset, Auto power OFF, Inch/Metric, conversion  
 Data hold, Max/Min value holding, Data output

### Optional Accessories

21JAA300D: SPC cable kit (80" / 2m)  
 for 209-505, 209-511, 209-513, 209-514, 209-515,  
 209-516, 209-517



Unit: mm





# Digimatic Caliper Gages

## SERIES 209 — External Tube Thickness Measurement Type

Versatile OD measuring gages for holes diameters, groove thickness, tube thickness, and hard-to-reach dimensions. The Digimatic Caliper Gages provide error-free LCD readings as well as data output for SPC analysis.

### Technical Data

Accuracy: Refer to the list of specifications  
Resolution: .001", .0005", or .0002"  
0.01mm, 0.02mm, or 0.005mm  
Display: Analog / Digital  
Power Supply: AA Battery (1pc)  
Battery life: Approx. 350 hours  
Measuring Force: 0.5 - 1.5N  
Dust/Water protection level: IP67  
Provided with inspection certificate.

### Function

Zeraset, Preset, Auto power OFF, Inch/Metric conversion, Data hold, Max/Min value holding, Data output  
\* Contact type 3, 4 does not have max. min. value hold.

### Optional Accessories

21JAA300D: SPC cable kit (80" / 2m)

External measurement type

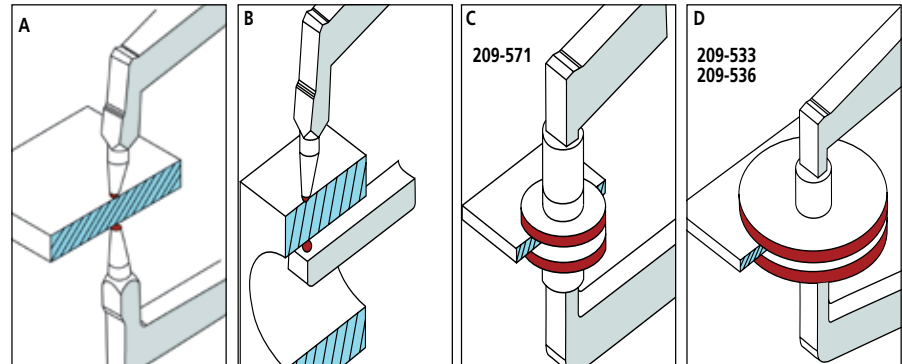
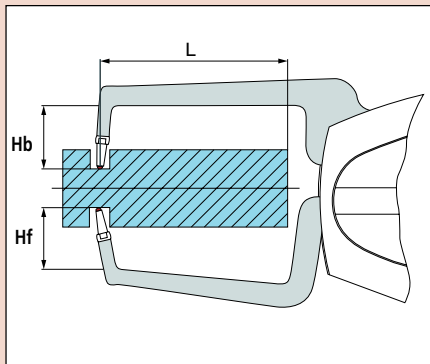
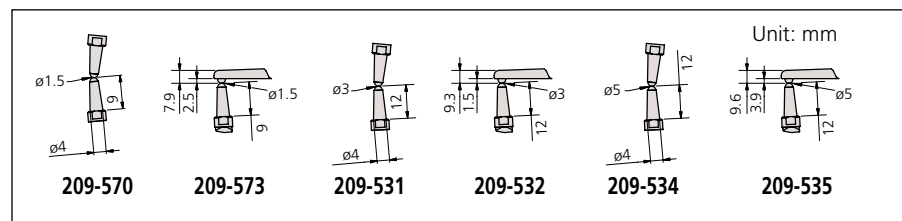
209-572



### SPECIFICATIONS

Inch / Metric

Range	Order No.	Resolution	Accuracy	Max. Measuring Depth L	Measuring Contact length Hb	Measuring Contact length Hf	Type of Measuring Contact/type of set up	Mass(g)
0 - .39" / 0 - 10mm	209-570	.0002" / 0.005mm	.0008" / 0.05mm	1.37" / 35mm	.75" / 19.1mm	.73" / 18.6mm	Ball .059"/1.5mm dia. Both/ A	240
0 - .39" / 0 - 10mm	209-571	.0002" / 0.005mm	.001" / 0.02mm	1.37" / 35mm	.85" / 21.7mm	.58" / 14.8mm	Desc .24" / 6mm dia. Both/ C	175
0 - .78" / 0 - 20mm	209-572	.0005" / 0.01mm	.0015" / 0.03mm	3.2" / 85mm	.97" / 24.7mm	.97" / 24.6mm	Ball .059"/1.5mm dia. Both/ A	280
0 - .78" / 0 - 20mm	209-573	.0005" / 0.01mm	.0015" / 0.03mm	3.2" / 80mm	.97" / 24.7mm	.10" / 2.5mm	Ball .059"/1.5mm dia. Both/ B	270
0-1.57" / 0-40mm	209-531	.001" / 0.02mm	.002" / 0.04mm	4.33" / 115mm	.98" / 24.9mm	.1" / 25.4mm	Ball .118" / 3.0mm dia. Both / A	380
0-1.57" / 0-40mm	209-532	.001" / 0.02mm	.002" / 0.04mm	4.33" / 100mm	.98" / 32mm	.059" / 3.5mm	Ball .118" / 3.0mm dia. Both / B	380
0-1.57" / 0-40mm	209-533	.001" / 0.02mm	.002" / 0.04mm	4.33" / 115mm	1.14" / 30mm	.77" / 19.4mm	Desc 1.97" / 50mm dia. Both / D	380
0-2.36" / 0-60mm	209-534	.001" / 0.02mm	.003" / 0.06mm	7.48" / 190mm	.98" / 25mm	.98" / 25mm	Ball .197" / 5.0mm dia. Both / A	470
0-2.36" / 0-60mm	209-535	.001" / 0.02mm	.003" / 0.06mm	5.9" / 150mm	.98" / 25mm	.13" / 3.5mm	Ball .197" / 5.0mm dia. Both / B	470
0-2.36" / 0-60mm	209-536	.001" / 0.02mm	.004" / 0.08mm	7.48" / 190mm	1.06" / 27mm	.77" / 19.5mm	Desc 1.97" / 50mm dia. Both / D	470



Ball  $\phi$  1.5 and 3mm for wall thickness

Ball  $\phi$  1.5 and 3mm for min. wall thickness  $\phi$ 3mm / 9mm

Disk  $\phi$ 6mm for flat surfaces

Disk  $\phi$ 50mm for flat surfaces



# Dial Caliper Gages

## SERIES 209 — Internal Measurement Type

These Dial Caliper Gages are used only as comparison gages, and should be used along with a Setting Ring or a micrometer.

The caliper is spring loaded and makes point contact at constant measuring pressure.



209-300



209-303



### SPECIFICATIONS

#### Inch

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Measuring Contact Type	Size (mm)	Mass (g)
.10 - .50"	209-350	.0002"	± .0008"	.47"	.027"	.023"	A	R0.1	200
.20 - .60"	209-351	.0002"	± .0008"	1.37"	.09"	.032"	B	ø0.6	200
.40 - 1.2"	209-352	.0005"	± .0015"	3.3"	.19"	.06"	B	ø1	200
.80 - 1.6"	209-354	.0005"	± .0015"	3.3"	.26"	.06"	B	ø1	200
1.2 - 2"	209-355	.0005"	± .0015"	3.3"	.26"	.06"	B	ø1	200
1.6 - 2.4"	209-356	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	200
2 - 2.8"	209-357	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	200
2.4 - 3.2"	209-358	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	250
2.8 - 3.6"	209-359	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	250
3.2 - 4"	209-360	.0005"	± .0015"	3.3"	.31"	.06"	B	ø1	250
2 - 4"	209-361*	.0005"	± .0015"	3.3"	.31"	.06"	C	ø1	250
3.6 - 5.6"	209-362*	.0005"	± .0015"	3.3"	.31"	.06"	C	ø1	250
5.2 - 7.2"	209-363*	.0005"	± .0015"	3.3"	.31"	.06"	C	ø1	250

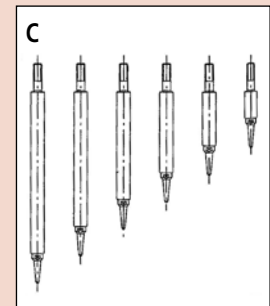
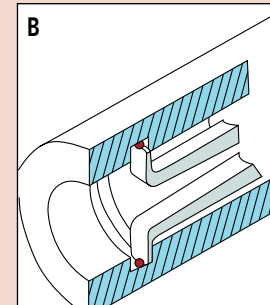
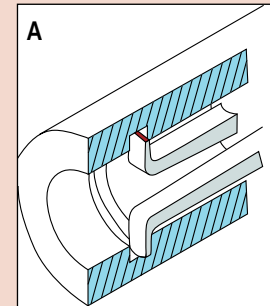
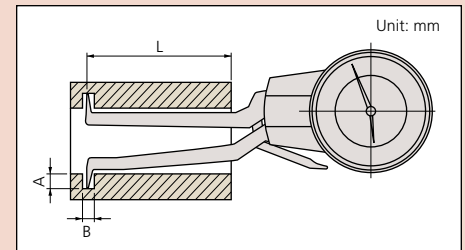
\*Interchangeable contact points (additional anvil 4 pcs.) with ball point .04" dia.

#### Metric

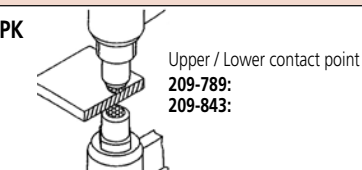
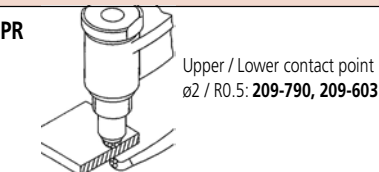
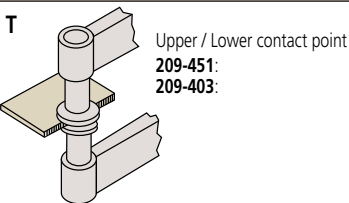
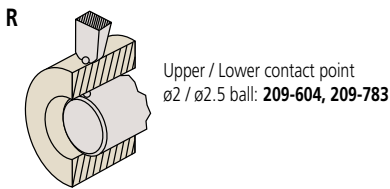
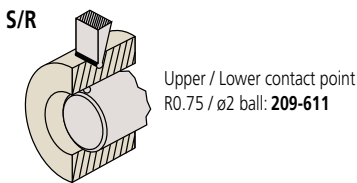
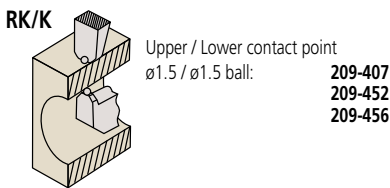
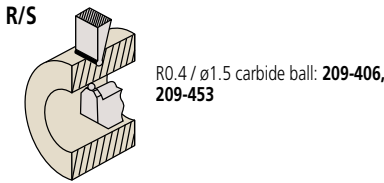
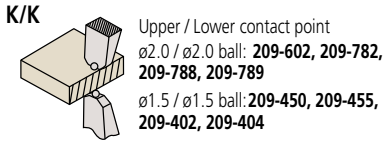
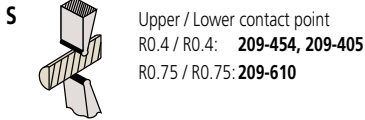
Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Measuring Contact Type	Size (mm)	Mass(g)
2.5 - 12.5mm	209-300	0.005mm	±0.015mm	12mm	0.7mm	0.5mm	A	R0.1	155
5 - 15mm	209-301	0.005mm	±0.015mm	35mm	2.3mm	0.8mm	B	ø0.6	160
10 - 30mm	209-302	0.01mm	±0.03mm	85mm	5.2mm	1.2mm	B	ø1	180
20 - 40mm	209-303	0.01mm	±0.03mm	85mm	7mm	1.2mm	B	ø1	180
30 - 50mm	209-304	0.01mm	±0.03mm	85mm	7mm	1.2mm	B	ø1	185
40 - 60mm	209-305	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	195
50 - 70mm	209-306	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	195
60 - 80mm	209-307	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	200
70 - 90mm	209-308	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	200
80 - 100mm	209-309	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	B	ø1	200
50 - 100mm	209-310*	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	C	ø1	220
90 - 140mm	209-311*	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	C	ø1	230
130 - 180mm	209-312*	0.01mm	±0.03mm	85mm	8.3mm	1.2mm	C	ø1	240
15-65mm	209-896	0.05mm	±0.05mm	175mm	5mm	1.8mm	B	ø1.5	400
40-90mm	209-897	0.05mm	±0.05mm	175mm	8mm	2.2mm	B	ø2	440
70-120mm	209-898	0.05mm	±0.05mm	175mm	8mm	2.2mm	B	ø2	440

\*Interchangeable contact point (additional anvil 5pcs.) with ball point 1mm dia

### DIMENSIONS



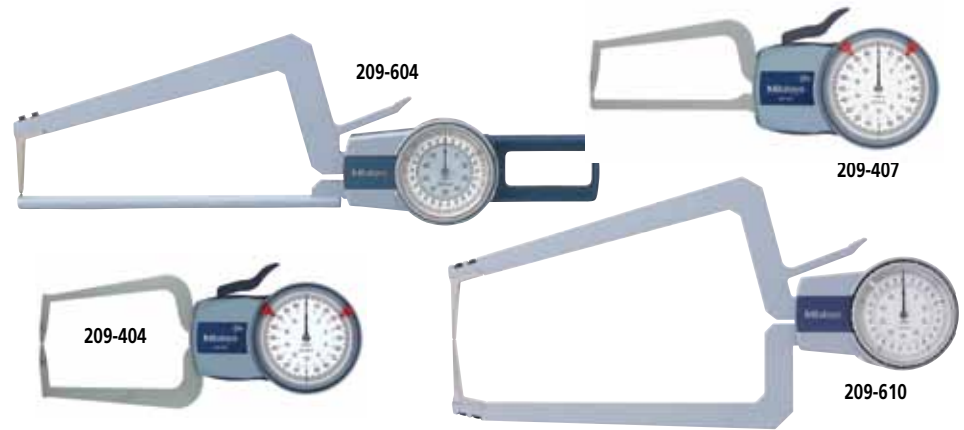
## Type of Contact Points



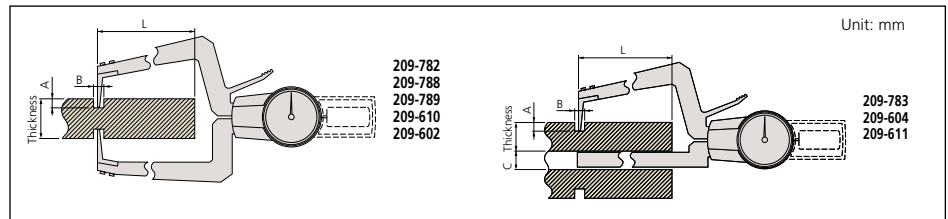
# Dial Caliper Gages

## SERIES 209 — External Measurement Type

IP65



## DIMENSIONS



## SPECIFICATIONS

Inch

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth L	Max. Groove Depth A	Min. Groove Width B	Measuring Contact Type	Size (mm)	Mass (g)
0 - .40"	<b>209-450</b>	.0002"	± .0008"	1.37"	.75"	.75"	K/K	ø1.5	170
0 - .40"	<b>209-451</b>	.0002"	± .001"	1.37"	.85"	.58"	T	ø6	175
0 - .40"	<b>209-452</b>	.0002"	± .0008"	1.37"	.75"	.035"	RK/K	ø1.5	165
0 - .40"	<b>209-453</b>	.0002"	± .0008"	1.37"	.75"	.035"	R/S	Chisel R0.4, ø1.5	165
0 - .50"	<b>209-789</b>	.005"	± .005"	1.38"	-	-	PK	ø2, Chisel R0.5	40
0 - .50"	<b>209-790</b>	.005"	± .005"	1.38"	-	-	PR	ø2	40
0 - .80"	<b>209-454</b>	.0005"	± .0015"	3.2"	.97"	.97"	S	Chisel R0.4	210
0 - .80"	<b>209-455</b>	.0005"	± .0015"	3.2"	.97"	.97"	K/K	ø1.5	210
0 - .80"	<b>209-456</b>	.0005"	± .0015"	3.2"	.97"	.10"	RK/K	ø1.5	200
0 - .80"	<b>209-457</b>	.0005"	± .0015"	3.2"	.97"	.10"	R/S	Chisel R0.4, ø1.5	200
0 - 2.0"	<b>209-782</b>	.001"	± .002"	6.7"	1.26"	.18"	K/K	ø2	560
0 - 2.0"	<b>209-783</b>	.001"	± .002"	6.7"	1.26"	.18"	R	ø2.5	520
2.0 - 4.0"	<b>209-788</b>	.001"	± .003"	6.7"	1.26"	.18"	K/K	ø2	580

Metric

Measuring Range	Order No.	Graduation	Accuracy	Max. Measuring Depth	Max. Groove Depth	Min. Groove Width	Measuring Contact	Size (mm)	Mass (g)
0 - 10mm	<b>209-402</b>	0.005mm	±0.015mm	35mm	19.1mm	18.6mm	K/K	ø1.5	240
0 - 10mm	<b>209-403</b>	0.005mm	±0.02mm	35mm	21.7mm	14.8mm	T	ø6	175
0 - 20mm	<b>209-404</b>	0.01mm	±0.03mm	85mm	7mm	24.6mm	K/K	ø1.5	210
0 - 20mm	<b>209-405</b>	0.01mm	±0.03mm	85mm	7mm	24.6mm	S	R 0.4	210
0 - 20mm	<b>209-406</b>	0.01mm	±0.03mm	80mm	7mm	2.5mm	R/S	Chisel R0.4, ø1.5	200
0 - 20mm	<b>209-407</b>	0.01mm	±0.03mm	80mm	7mm	2.5mm	RK/K	ø1.5	200
0 - 10mm	<b>209-843</b>	0.1mm	±0.1mm	36mm	-	-	PK	ø2, Chisel R0.5	40
0 - 10mm	<b>209-603</b>	0.1mm	±0.1mm	33mm	-	-	PR	ø2	40
0 - 50mm	<b>209-602</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	K/K	ø2	560
0 - 50mm	<b>209-604</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	PR	ø2, Chisel R0.5	520
0 - 50mm	<b>209-610</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	R	ø2.5	560
0 - 50mm	<b>209-611</b>	0.05mm	±0.05mm	170mm	10mm	4.5mm	S/R	ø2, Chisel R0.75	525

Mitutoyo

# Dial Caliper Gages

## SERIES 209 — Internal Measurement Type

These Dial Caliper Gages are used only as comparison gages, and should be used along with a Setting Ring or a micrometer.

The caliper is spring loaded and makes point contact at constant measuring pressure.



209-122



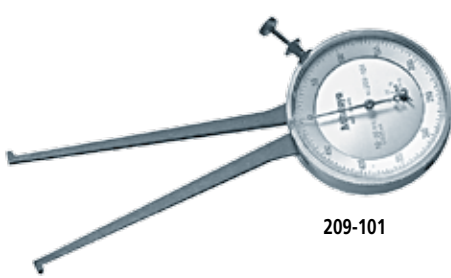
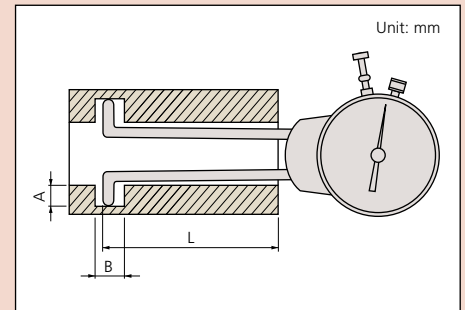
209-152

### SPECIFICATIONS

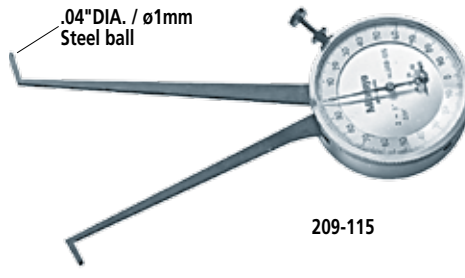
#### Metric

Range	Order No.	Graduation	Dial face	Accuracy	Measuring force	Dimension [L / A (max) / B (min)]		
6 - 18mm	209-122	0.01mm	0-100-100	±40µm	1.2N or less	40mm	1.0mm	2.5mm
10 - 22mm	209-123	0.01mm	0-100-100	±40µm	1.2N or less	40mm	2.0mm	2.5mm
20 - 32mm	209-124	0.01mm	0-100-100	±40µm	1.2N or less	40mm	4.2mm	2.5mm
5 - 15mm	209-152	0.01mm	0-100	±25µm	1.2N or less	30mm	2.0mm	0.7mm
10 - 20mm	209-153	0.01mm	0-100	±25µm	1.2N or less	30mm	5.0mm	0.7mm
10 - 30mm	209-171	0.01mm	0-100-100	±25µm	1.2N or less	65mm	5.2mm	0.7mm
20 - 40mm	209-172	0.01mm	0-100-100	±25µm	1.2N or less	65mm	9.5mm	0.7mm

### DIMENSIONS



209-101



209-115

#### Metric

Order No.	Range	Graduation	Accuracy
209-101	10-35mm	0.025mm	±0.04mm
209-103	30-55mm	0.025mm	±0.04mm
209-105	50-75mm	0.025mm	±0.04mm

#### Inch

Order No.	Range	Graduation	Accuracy
209-111	.4"-1.4"	.001"	±.002"
209-113	1.2"-2.2"	.001"	±.002"
209-115	2.0"-3.0"	.001"	±.002"

### Technical Data

Dial Diameter: 2" / 51mm

### DIMENSIONS

3.15" / 8mm

.37"

Contact Point Dimensions

A

C

.09" / 2.3mm

Range	A	B	C	D
10 - 35mm / .4 - 1.4"	4.8mm	2.3mm	4.8mm	2.3mm
30 - 55mm / 1.2 - 2.2"	6.8mm	4.3mm	17.0mm	14.5mm
50 - 75mm / 2.0 - 3.0"	10.0mm	7.6mm	11.5mm	9.8mm

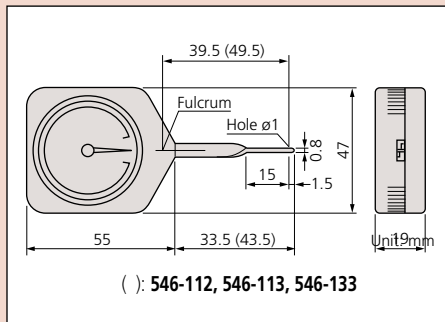


## Application

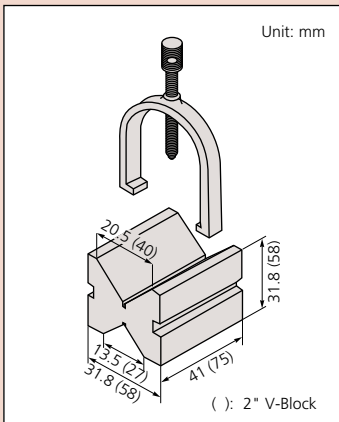
Measuring contact force of relay



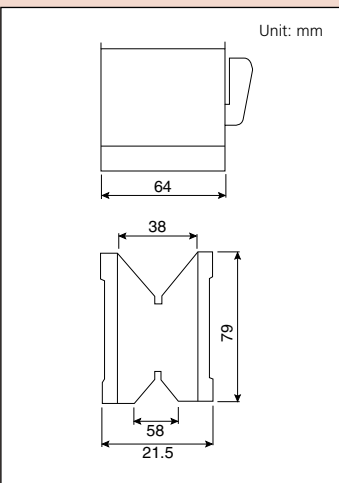
## DIMENSIONS



## DIMENSIONS



## DIMENSIONS



# Dial Tension Gages

## SERIES 546

### FEATURES

- Can measure dynamic tension in Newton (N) units.
- Dial Tension Gages are widely used to determine the contact force of other measuring instruments as well as that of electrical relays, micro-switches, valves and precision springs.
- Convenient peak-hold type gages are also available.



### SPECIFICATIONS

Standard		
Range	Order No.	Minimum reading
6mN - 50mN	546-112	2mN
10mN - 100mN	546-113	5mN
30mN - 300mN	546-114	10mN
0.06N - 0.5N	546-115	0.02N
0.1N - 1N	546-116	0.05N
0.15N - 1.5N	546-117	0.05N
0.3N - 3N	546-118	0.1N
0.6N - 5N	546-119	0.2N

Peak hold		
Range	Order No.	Graduation
10mN - 100mN	546-133	5mN
30mN - 300mN	546-134	10mN
0.06N - 0.5N	546-135	0.02N
0.1N - 1N	546-136	0.05N
0.15N - 1.5N	546-137	0.05N
0.3N - 3N	546-138	0.1N
0.6N - 5N	546-139	0.2N

# V-Block Sets

## SERIES 181

### FEATURES

- Two V-blocks per set.
- Magnetic type is available. (The magnetic type V-block is not provided with a workpiece clamp.)



### SPECIFICATIONS

Metric		
Max. workpiece dia.	Order No.	Remarks
25mm	181-902	With clamp

Inch		
Max. workpiece dia.	Order No.	Remarks
1"	181-901	With clamp
2"	181-904	With clamp

# Magnetic V-Block

## SERIES 181

### SPECIFICATIONS

Metric			
Max. workpiece dia.	Order No.	Magnetic Pull	Remarks
2"	181-146	60 kg	1 Piece



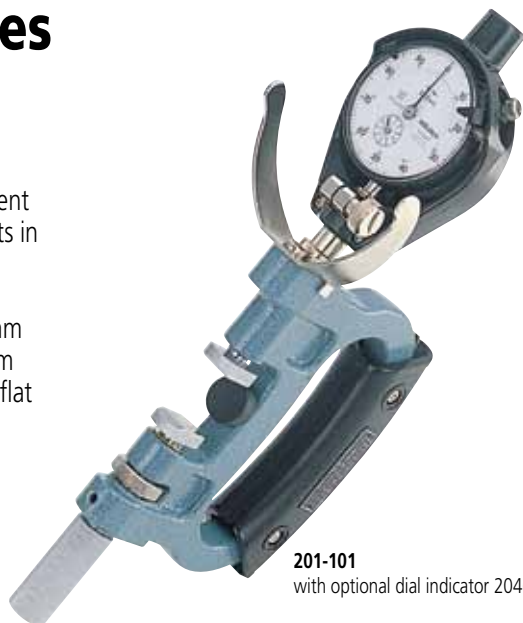


# Dial Snap Gages

## SERIES 201

### FEATURES

- Designed for quick GO/NG judgment of diameters of cylinders and shafts in machining processes.
- Dial indicator is optional.
- Anvil retracting stroke: .078" / 2mm
- Anvil positioning range: 1" / 25mm
- Wide (.53 x .47" / 13.5 x 12mm), flat carbide anvils.
- Both front edges of the anvil are chamfered for easy insertion.



**201-101**  
with optional dial indicator 2046SB.

### SPECIFICATIONS

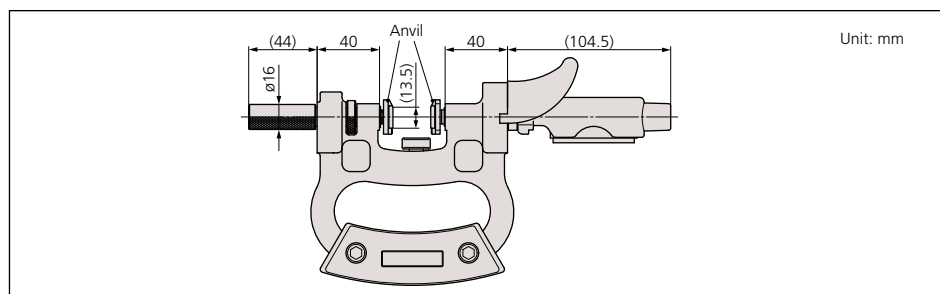
**Metric** — Gage stem diameter 8mm

Range	Order No.	Parallelism	Measuring force	Recommended dial indicator (optional)
0 - 25mm	<b>201-101</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
25 - 50mm	<b>201-102</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
50 - 75mm	<b>201-103</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
75 - 100mm	<b>201-104</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
100 - 125mm	<b>201-105</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
125 - 150mm	<b>201-106</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
150 - 175mm	<b>201-107</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
175 - 200mm	<b>201-108</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
200 - 225mm	<b>201-109</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
225 - 250mm	<b>201-110</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
250 - 275mm	<b>201-111</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)
275 - 300mm	<b>201-112</b>	5µm or less	15N±3N	<b>2046SB</b> (0.01mm reading), <b>2109SB-10</b> (0.001mm reading)

**Inch** — Gage stem diameter 3/8"

Range	Order No.	Parallelism	Measuring force	Recommended dial indicator (optional)
0 - 1"	<b>201-151</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
1 - 2"	<b>201-152</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
2 - 3"	<b>201-153</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
3 - 4"	<b>201-154</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
4 - 5"	<b>201-155</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
5 - 6"	<b>201-156</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
6 - 7"	<b>201-157</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
7 - 8"	<b>201-158</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
8 - 9"	<b>201-159</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
9 - 10"	<b>201-160</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
10 - 11"	<b>201-161</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)
11 - 12"	<b>201-162</b>	.00025" or less	15N±3N	<b>2803SB-10</b> (.0001" reading)

### DIMENSIONS



### Technical Data

Accuracy: Refer to the list of specifications  
 Anvil retracting stroke: .078" / 2mm  
 Anvil positioning range: 1" / 25mm  
 Anvil flatness: .00004" / 1µm

# Dial/Digimatic Indicator & Magnetic Stand Sets

**SERIES 950, 7**



Set No. 950-723



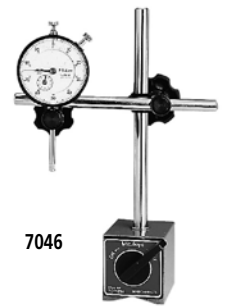
Set No. 950-705



Set No. 950-707



Set No. 950-728

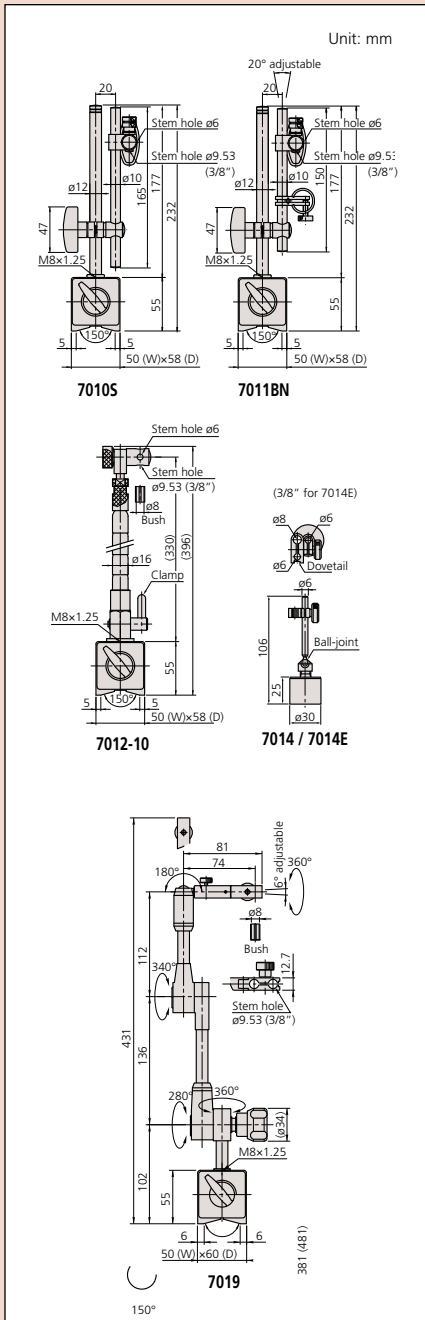


7046

## SPECIFICATIONS

Indicator Stand	IDS (543-683B) Digimatic Indicator	IDC (543-392B) Digimatic Indicator	2804S-10 Dial Indicator	2915S-10 Dial Indicator	2416S Dial Indicator
<b>7010S</b> Magnetic Stand	Set No. <b>950-720</b>	Set No. <b>950-721</b>	Set No. <b>7045</b>	Set No. <b>950-700</b>	Set No. <b>7046</b>
<b>7011BN</b> Magnetic Stand	Set No. <b>950-722</b>	Set No. <b>950-723</b>	Set No. <b>950-702</b>	Set No. <b>950-703</b>	Set No. <b>950-701</b>
<b>7012</b> Magnetic Flexi-Stand	Set No. <b>950-724</b>	Set No. <b>950-725</b>	Set No. <b>950-705</b>	Set No. <b>950-706</b>	Set No. <b>950-704</b>
<b>7019</b> Universal Stand	Set No. <b>950-726</b>	Set No. <b>950-727</b>	Set No. <b>950-708</b>	Set No. <b>950-709</b>	Set No. <b>950-707</b>
<b>7003</b> Serrated Anvil Stand	Set No. <b>950-728</b>	Set No. <b>950-729</b>	Set No. <b>950-711</b>	Set No. <b>950-712</b>	Set No. <b>950-710</b>
<b>7004</b> Flat Anvil Stand	Set No. <b>950-730</b>	Set No. <b>950-731</b>	Set No. <b>950-714</b>	Set No. <b>950-715</b>	Set No. <b>950-713</b>

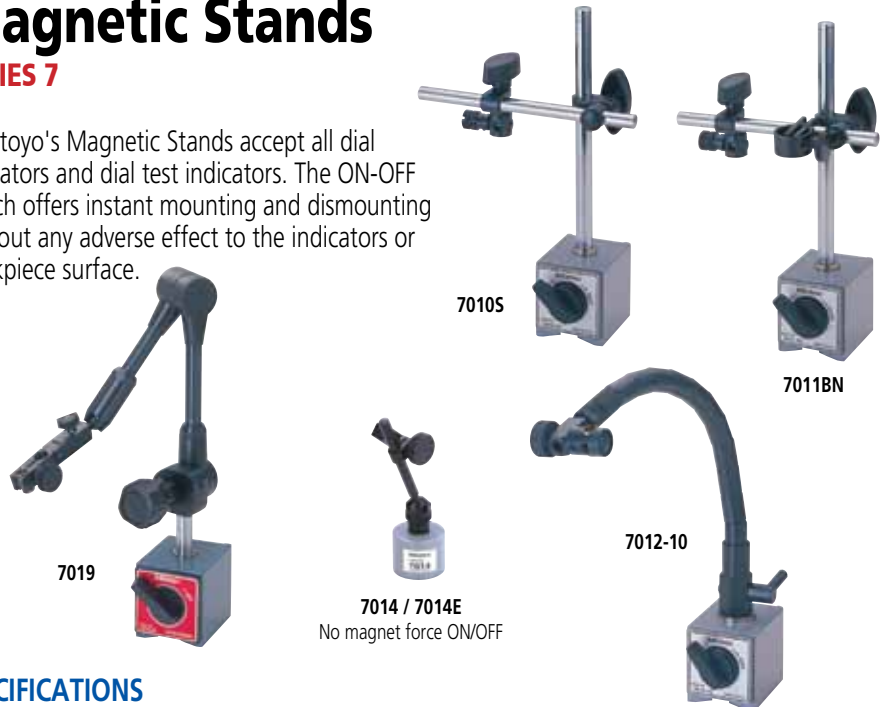
## DIMENSIONS



## Magnetic Stands

**SERIES 7**

Mitutoyo's Magnetic Stands accept all dial indicators and dial test indicators. The ON-OFF switch offers instant mounting and dismounting without any adverse effect to the indicators or workpiece surface.



## SPECIFICATIONS

Order No.	Description	Applicable holding stem dia.	Dovetail groove	Remarks
<b>7010S</b>	Magnetic stand	$\phi 6$ mm, $\phi 8$ mm*, $\phi 9.53$ mm (3/8")	—	—
<b>7011BN</b>	Magnetic stand	$\phi 6$ mm, $\phi 8$ mm*, $\phi 9.53$ mm (3/8")	—	With fine adjustment
<b>7012-10</b>	Magnetic flexi-stand	$\phi 6$ mm, $\phi 8$ mm*, $\phi 9.53$ mm (3/8")	—	For dial test indicator
<b>7014</b>	Mini magnetic stand	$\phi 6$ mm, $\phi 8$ mm	Provided	Without magnet ON/OFF
<b>7014E</b>	Mini magnetic stand	$\phi 6$ mm, $\phi 8$ mm*, $\phi 9.53$ mm (3/8")	Provided	Without magnet ON/OFF
<b>7019</b>	Universal magnetic stand	$\phi 8$ mm*, $\phi 9.53$ mm (3/8")	Provided	With hydraulic position lock

\*Supplied with collar **02AZC291**

**Mitutoyo**

# Dial Gage Stands

## SERIES 7

The Dial Gage Stands are designed for comparison measurements of height using a dial indicator or Digimatic Indicator.

### FEATURES

- Vertical travel of the gage holder — Dial Gage Stand: 100mm, Transfer Stand: 335mm
- Fine-adjustment of 1mm available for zero-setting of the indicator.
- With an interchangeable anvil. Domed anvil (**101463**) is optional.



**7001-10**  
with ø58mm serrated anvil

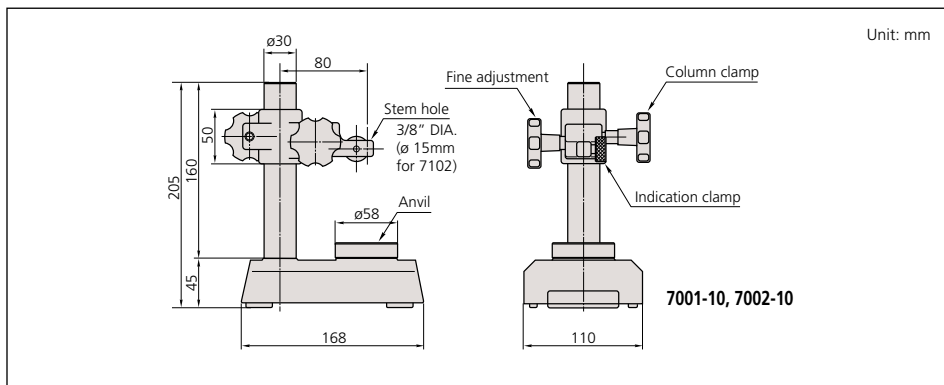


**7002-10**  
with ø58mm flat anvil

### SPECIFICATIONS

Inch			
Order No.	Stem hole	Remarks	Mass (kg)
<b>7001-10</b>	3/8" DIA	with serrated anvil (101462)	3.95
<b>7002-10</b>	3/8" DIA	with flat anvil (101461)	3.95

### DIMENSIONS



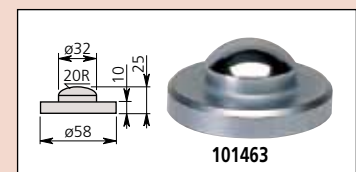
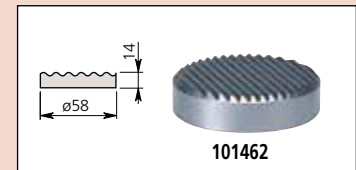
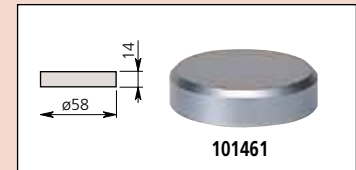
### Optional Accessories

**02AZC291:** Stem Collar OD 3/8", ID 8mm  
(For **7001-10**, **7002-10**)

**101462:** Hardened steel serrated anvil (flatness: 1µm)

**101463:** Hardened steel domed anvil

**101461:** Hardened steel flat anvil (flatness: 1µm)

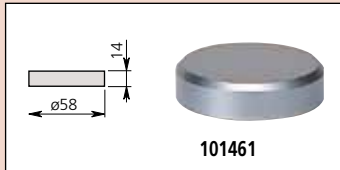




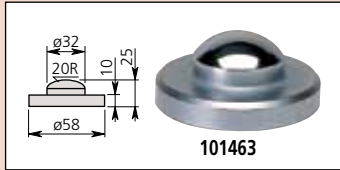
519-109E

### Optional Accessories

- 101461:** Hardened steel flat anvil (flatness: 1µm)
- 101463:** Hardened steel domed anvil
- 390070:** Dovetail attachment used with test indicators
- 58ZAA016:** Fine feed bracket assembly (standard)



101461



101463



390070

# Transfer Stand

## SERIES 519

The Transfer Stands are designed for comparison measurements of height using a dial indicator or Digimatic Indicator.

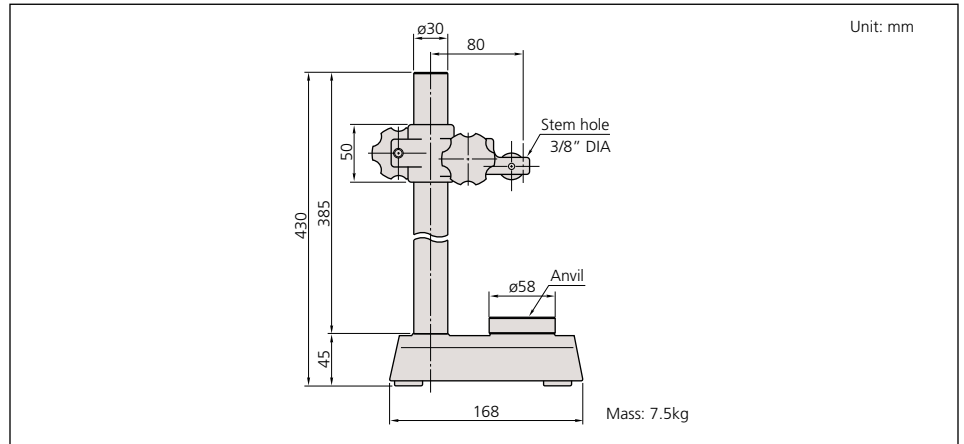
### SPECIFICATIONS

Order No.	Stem hole	Remarks
519-109E	3/8" DIA	with serrated anvil (101462)

### FEATURES

- Vertical travel of the gage holder — Dial Gage Stand: 100mm, Transfer Stand: 335mm
- Fine-adjustment of 1mm available for zero-setting of the indicator.
- With an interchangeable anvil. Domed anvil (**101463**) and Flat anvil (**101461**) are optional.

### DIMENSIONS AND MASS



# Roll Caliper

## SERIES 310

### FEATURES

- The Roll Caliper is the most widely used instrument for checking the diameter of rollers used in the manufacture of many products such as metal, rubber and paper.
- Performs fast and accurate comparison measurements of roller diameter with the roller still mounted on a machine tool.
- Various types of detectors (dial indicator,

Digimatic indicator, Mu-Checker gage head, etc.) can be attached according to the required accuracy and workpiece size.

### SPECIFICATIONS

Inch	
Range	Order No.
ø20" - ø56"	310-141
ø16" - ø42"	310-142
ø11" - ø32"	310-143
ø8" - ø24"	310-144
ø4" - ø17"	310-145



310-142  
with optional dial indicator

# Precision Granite Stands (with black granite bases)

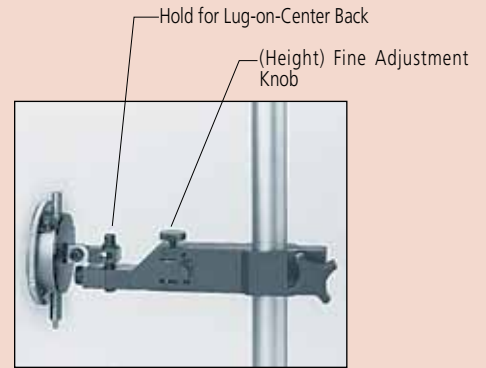
## SERIES 517

Mitutoyo's Granite Comparator Stands are basic building-blocks for the assembly of special-purpose, precision measuring equipment. By mounting precision measuring instruments such as Digimatic indicators, Mu-Checker Cartridge Heads, and Linear Gages onto the stands, it is possible to satisfy all manner of measuring assignment. The rigid granite base is free from burrs, pileups, rust, and deterioration over time.

517-895  
(stand only)



517-898  
(stand only)



## SPECIFICATIONS

Order No.	Base	Column Diameter	Column Height	Throat Clearance	Table Flatness	Table Thickness	Weight
517-890	6 x 8"	1.181"	6"	4.375"	.0001"	2"	18 lbs
517-891	6 x 8"	1.181"	8"	4.375"	.0001"	2"	19 lbs
517-892	6 x 8"	1.181"	12"	4.375"	.0001"	2"	20 lbs
517-893	6 x 8"	1.181"	18"	4.375"	.0001"	2"	21 lbs
517-895	8 x 12"	1.181"	6"	5.8"	.0001"	2"	29 lbs
517-896	8 x 12"	1.181"	8"	5.8"	.0001"	2"	30 lbs
517-897	8 x 12"	1.181"	12"	5.8"	.0001"	2"	31 lbs
517-898	8 x 12"	1.181"	18"	5.8"	.0001"	2"	32 lbs
517-899	8 x 12"	1.181"	24"	5.8"	.0001"	2"	35 lbs

## Optional Accessories

- 58AAA151: ø8mm bush\*
  - 58AAA273: ø9.53mm (3/8") bush\*
  - 58AAA276: ø15mm bush\*
- \*Only available for 215-156.

# Comparator Stands

## SERIES 215

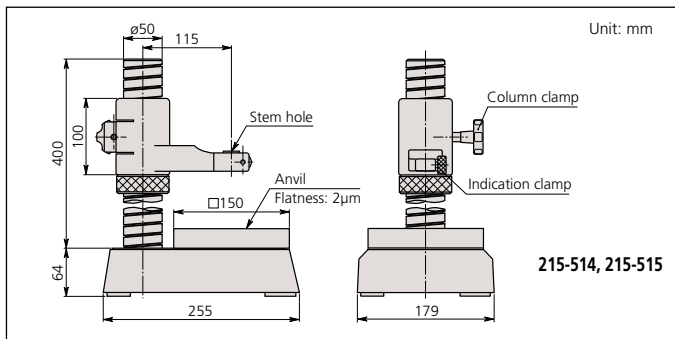
The Comparator Stands consists of a very stable, cast-iron base and an upright column with a mounting bracket that features fine

adjustment. The grid type anvil prevents the workpiece from sticking to it.

## SPECIFICATIONS

Order No.	Square anvil size (W x D)	Column travel	Stem hole	Mass (kg)	Remarks
215-514	150 x 150mm	250mm / 10"	.375"	22.5	With fine adjustment over the entire travel
215-515	150 x 150mm	250mm / 10"	.375" / .787"	23.0	With fine adjustment over the entire travel

## DIMENSIONS



215-514

## Optional Accessories

- 58AAA151: ø8mm bush\*
  - 58AAA273: ø9.53mm (3/8") bush\*
  - 58AAA276: ø15mm bush\*
- \*Only available for 215-515.