90th ANNIVERSARY

Mitutoyo

GB-20008

EACAMPOS
Metrologia e Sistemas, S.A.

MEASURING INSTRUMENTS CATALOGUE 2024 - 2026

Competence and customer proximity on one spot

Throughout Europe, the name Mitutoyo represents innovational power as well as outstanding quality in the field of sophisticated dimensional measuring solutions. In order to strengthen and synchronise the concerted pan-European activities, Mitutoyo established the European headquarters named Mitutoyo Europe GmbH in Neuss near Düsseldorf/Germany in January 2010.

The headquarters oversees all the activities of Mitutoyo's sales, service and production facilities throughout Europe and adjacent markets, e.g. of Turkey. It also plans and implements the medium and long term business strategies of such European operations. A Mitutoyo Europe GmbH key objective is to promote coordination amongst its European group companies in order to optimise its sales and technical support services in the best interests of customer satisfaction.

More than 260 highly skilled members of staff work for the benefit of our customers in development, service, sales and administration. They are supported by the specialists of Mitutoyo CTL Germany GmbH in Oberndorf on the River Neckar, which focuses solely on developing ground-breakingly powerful and easy to use software for three-coordinate measurement technology. The peripheral fields of coordinate measuring machines, jigging and loading systems and thermal cabins are covered by KOMEG company based in Saarland.

The range of products offered by Mitutoyo in Europe is divided into eight groups:

- Coordinate Measuring Machines
- Vision Measuring Systems
- Form Measurement
- Optical Measuring
- Sensor Systems
- Test Equipment and Seismometers
- Digital Scale and DRO Systems
- Small Tool Instruments and Data Management

In addition to top-level measuring and testing equipment, the range of products also includes a wide selection of accessories and – as a further area of focus – sophisticated, high-performance software for coordinate measuring machines and vision measuring systems as well as surface roughness, hardness and form measurement.

The Mitutoyo Information Center of Metrology (MIM) has been demonstrating the manufacturer's commitment to advanced training in all fields of dimensional measurement technology since 1999. The MIM is open to anyone working in the fields of manufacturing, service, science and research. Mitutoyo Europe GmbH is, moreover, a corporate member of "Ausbildung Koordinatenmesstechnik e. V. (AUKOM)". This association is dedicated to providing training schemes for coordinate measuring technology with the aim of ensuring a neutral, comprehensive and state of the art training concept.

Germany has also been home to the Mitutoyo M³ Solutions Europe division since 2004. The abbreviation M³ stands for Mitutoyo Measurement Metrology and, as such, for the concept of special measuring solutions developed by Mitutoyo to meet the particular requirements of its customers across the whole breadth of length, form and surface measurement technology. The Mitutoyo Europe GmbH in Neuss offers sample configurations in the 400 m² M³ Solution Center Europe to demonstrate the numerous possibilities. The center also presents the smooth and seamlss integration of peripheral systems, such as jigs or feed and climate control systems from KOMEG alongside the measuring equipment.

Highlights

Absolute Digimatic Indicator ID-C

Absolute Digimatic Indicator ID-F

USB-ITPAK Version 3

Linear Height LH-600F/FG

MF Microscope

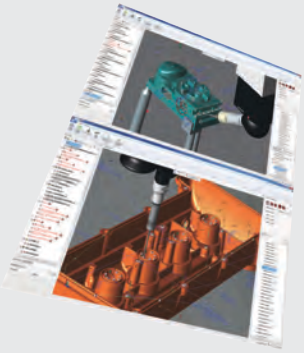
Surftest SJ-410

Formtracer Avant FTA-C4000

Roundtracer Extreme RTX

HR-620B

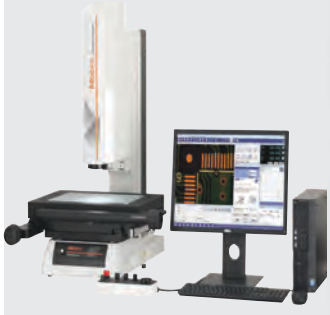
Automatic CMM Part Program Generation



MACH Ko-ga-me Series

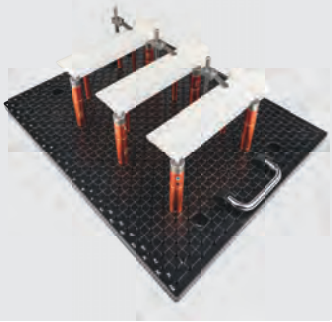
STRATO-Active Series

MANUAL Vision



CNC Vision

Fixtures



Styli

Mitutoyo

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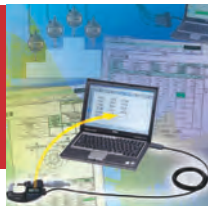

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For better communication with our customers

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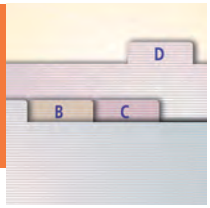

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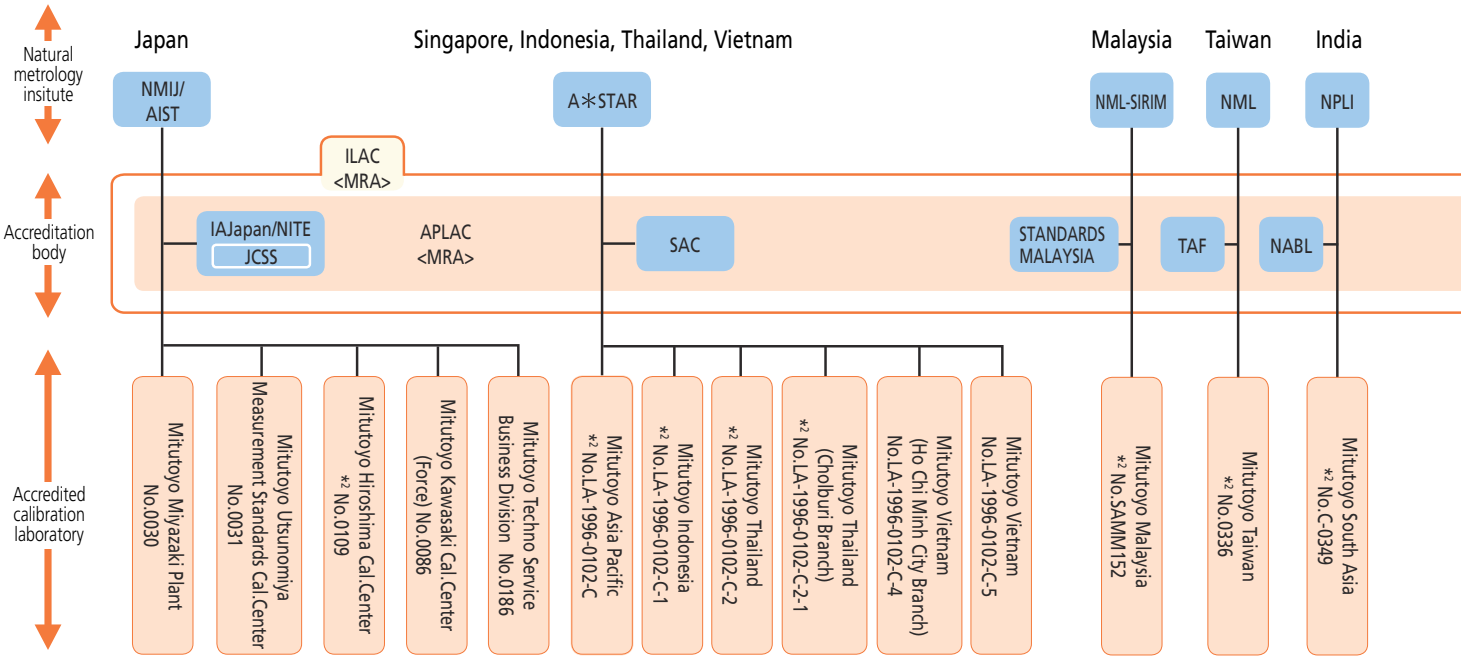
Mitutoyo

Offering Reliable Traceability Worldwide

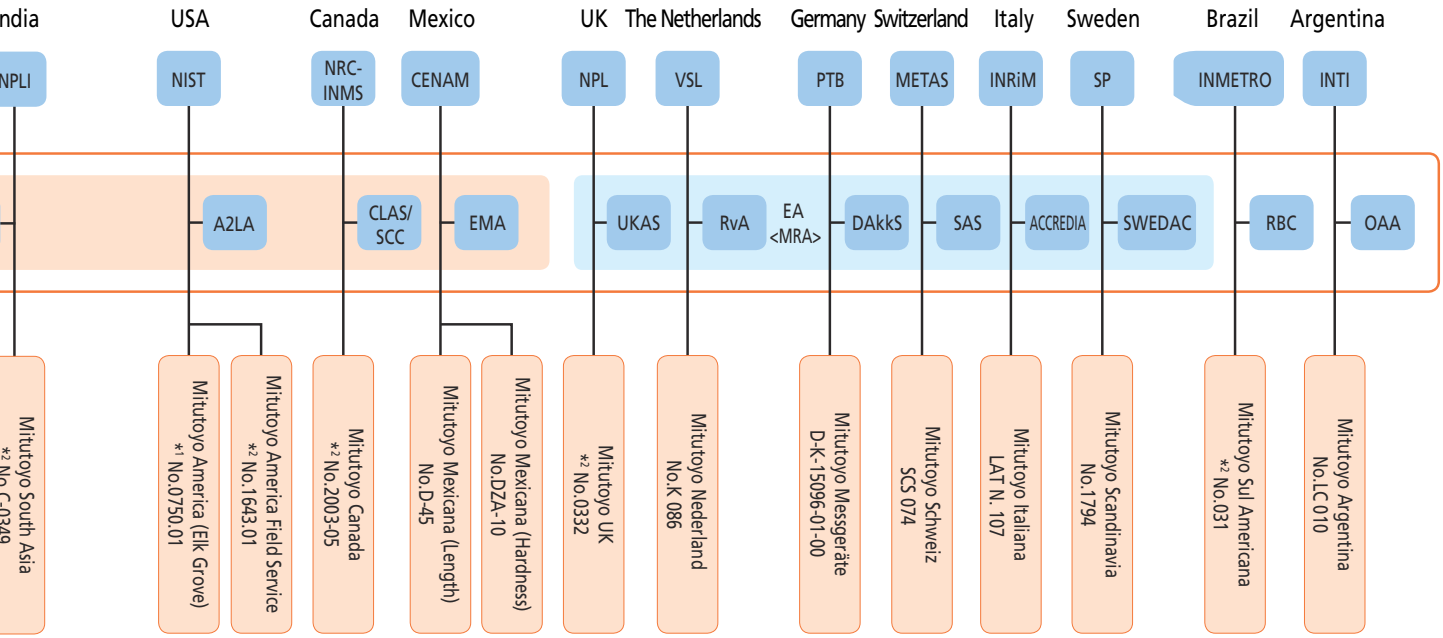
Calibration laboratories worldwide

Mitutoyo has a system allowing comprehensive support for the calibration of precision measuring products in the global market. In order to provide calibration services on a global basis, Mitutoyo has calibration laboratories that have received ISO/IEC 17025 certification, which is an international standard, from the accredited organisations in each of the countries in which Mitutoyo operates and subsidiaries are located, both in Japan and overseas.



*1 Length and Temperature *2 Length and Hardness No mark is only length

AIST:	National Institute of Advanced Industrial Science and Technology
NMIJ:	National Metrology Institute of Japan
JCSS:	Japan Calibration Service System
NITE:	National Institute of Technology and Evaluation
IAJapan:	International Accreditation Japan
A*STAR:	Agency for Science, Technology and Research
SAC:	Singapore Accreditation Council
NML:	National Measurement Laboratory
TAF:	Taiwan Accreditation Foundation
NML-SIRIM:	National Metrology Laboratory, Standards and Industrial Research Institute of Malaysia
STANDARDS MALAYSIA:	Department of Standards Malaysia
NIST:	National Institute of Standards and Technology
A2LA:	American Association for Laboratory Accreditation
NRC-INMS:	National Research Council of Canada-Institute for National Measurement Standards
CLAS:	Calibration Laboratory Assessment Service
SCC:	Standards Council of Canada
CENAM:	Centro Nacional de Metrologi´a
EMA:	Entidad Mexicana de Acreditacio´n, a.c.
UKAS:	United Kingdom Accreditation Service
NMi:	Nederlands Meetinstituut
RvA:	Raad voor Accreditatie
PTB:	Physikalisch-Technische Bundesanstalt
DAkkS:	Deutsche Akkreditierungsstelle GmbH
METAS:	The Swiss Federal Office of Metrology and Accreditation
SAS:	Swiss Accreditation Service
IMGC:	Istituto di Metrologia " GUSTAVO COLONNETTI "
ACCREDIA:	L'NTE ITALIANO DI ACCREDITAMENTO
SP:	Swedish National Testing and Research Institute
SWEDAC:	Swedish Board for Accreditation and Conformity Assessment
INMETRO:	Instituto Nacional de Metrologia Normalizacao e Qualidade Industrial
RBC:	Rede Brasileira de Calibracao
INTI:	Instituto Nacional de Tecnologia Industrial
OAA:	Organismo Argentino de Acreditaci
NPL:	National Physical Laboratory
NPLI:	National Physical Laboratory of India
NABL:	National Accreditation Board for Testing and Calibration Laboratories
(ILAC):	International Laboratory Accreditation Cooperation
(APLAC):	Asia-Pacific Laboratory Accreditation Cooperation
(EA):	European Accreditation Cooperation
(MRA):	Mutual Recognition Arrangement
#:	Accreditation No.


ndia
USA
Canada
Mexico
UK
The Netherlands
Germany
Switzerland
Italy
Sweden
Brazil
Argentina
NPLI
NIST
NRC-INMS
CENAM
NPL
VSL
PTB
METAS
INRiM
SP
INMETRO
INTI
A2LA
CLAS/SCC
EMA
UKAS
RvA
EA <MRA>
DAkkS
SAS
ACCREDIA
SWEDAC
RBC
OAA
Mitutoyo South Asia *2 No.C-0349
Mitutoyo America (Elk Grove) *1 No.0750.01
Mitutoyo America Field Service *2 No.1643.01
Mitutoyo Canada *2 No.2003-05
Mitutoyo Mexicana (Length) No.D-45
Mitutoyo Mexicana (Hardness) No.DZA-10
Mitutoyo UK *2 No.0332
Mitutoyo Nederland No.K 086
Mitutoyo Messgeräte D-K-15096-01-00
Mitutoyo Schweiz SCS 074
Mitutoyo Italiana LAT N. 107
Mitutoyo Scandinavia No.1794
Mitutoyo Sul Americana *2 No.031
Mitutoyo Argentina No.LC 010

ACCREDITED LABORATORY
MITUTOYO AMERICA CORPORATION (MAC)
Aurora, IL

ema
ACREDITA
A
MITUTOYO MEXICANA, S.A. DE C.V.
LABORATORIO DE CALIBRACIÓN MITUTOYO MÉXICO
Dureza*

Certificate of Accreditation

NABL
National Accreditation Board for Testing and Calibration Laboratories
CERTIFICATE OF ACCREDITATION
MITUTOYO SOUTH ASIA PRIVATE LIMITED
NEW DELHI
MECHANICAL CALIBRATION

CERTIFICADO DE CREDENCIAMENTO DE LABORATÓRIO DE CALIBRAÇÃO
Mitutoyo Sul Americana Ltda

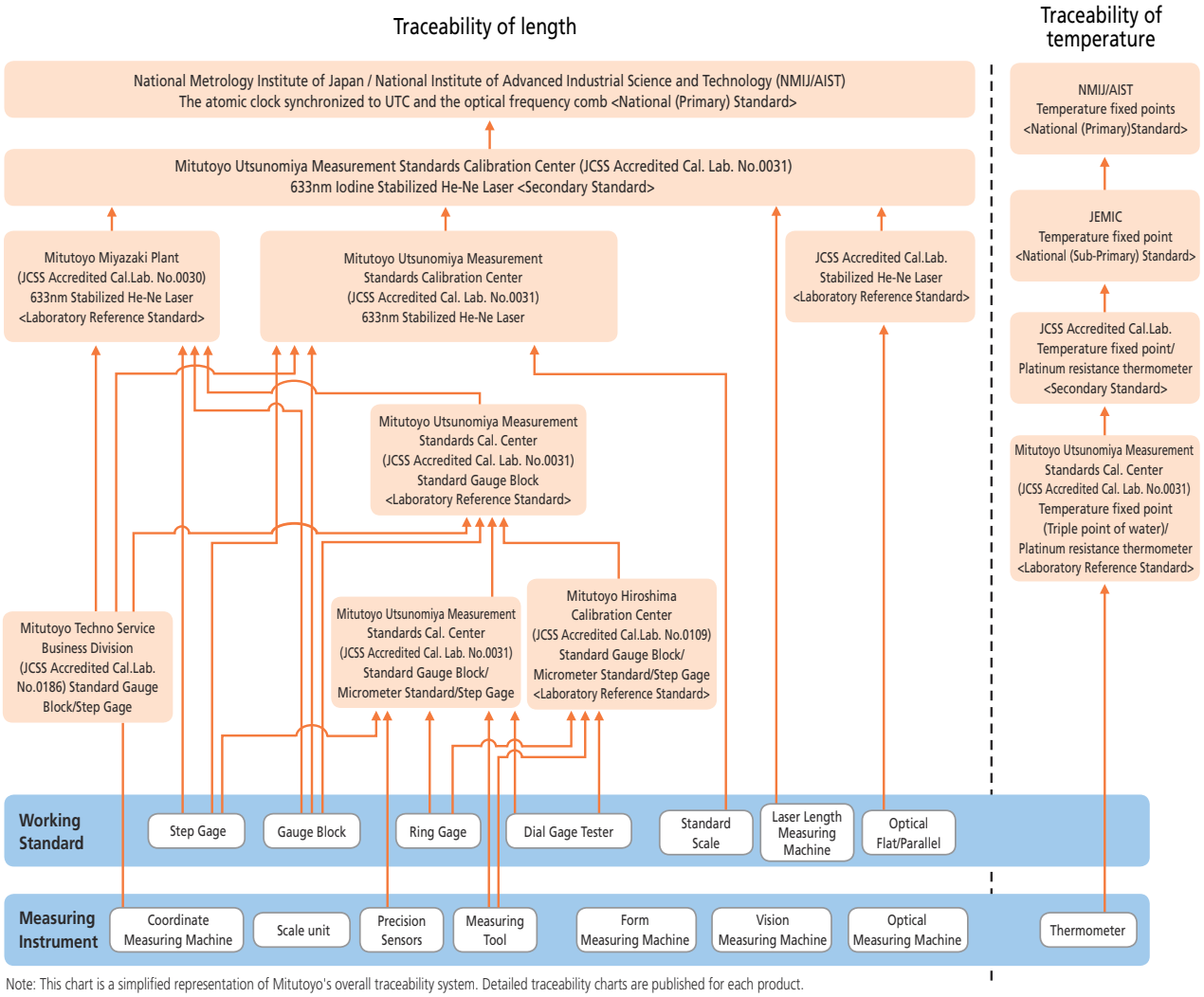
Offering High-level Calibration Services Worldwide

Based on highest measurement capabilities of the same level as national standards

Traceability system

Mitutoyo has a traceability system made possible through an in-house calibration organisation certified by the ISO/IEC 17025 international standard, with length standards directly related to national standards (atomic clock synchronised to UTC and the optical frequency comb) at the highest level.
National standards are mutually recognised by CIPM, and the certified calibration organisation is mutually recognised by ILAC, so that the establishment and maintenance of traceability for Mitutoyo products is achieved both in Japan and overseas.

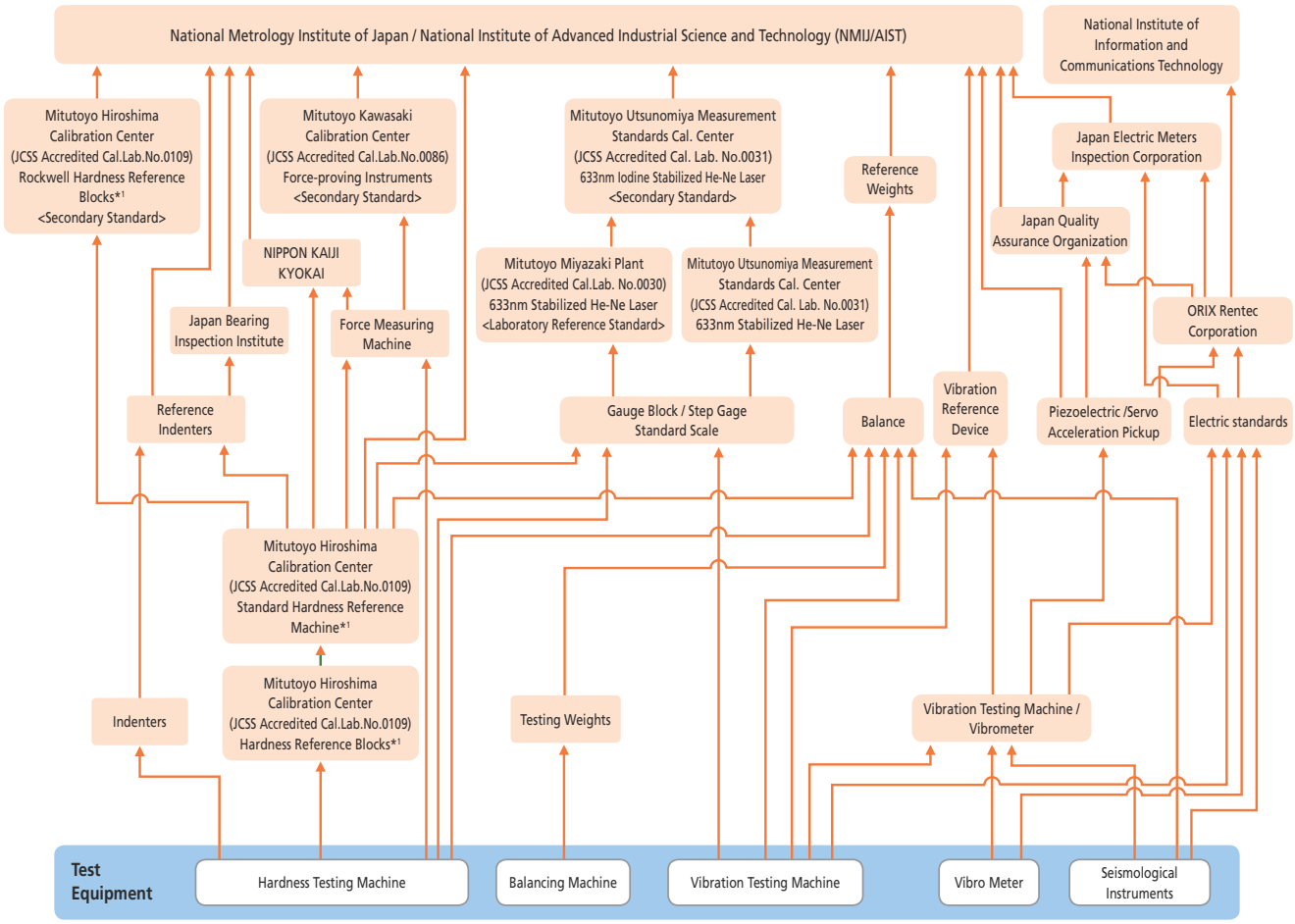
Certificate of JCSS accredited laboratory (Mitutoyo Utsunomiya Measurement Standards Calibration Center)



Note: This chart is a simplified representation of Mitutoyo's overall traceability system. Detailed traceability charts are published for each product.

CE Marking Directives

Traceability of Test Equipment

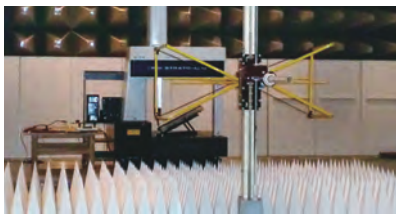


*1 The scope of JCSS accreditation is from 20HRC up to 65HRC in Rockwell Hardness Testing Machines and Hardness Reference Blocks.

Note: This chart is a simplified representation of Mitutoyo's overall traceability system. Detailed traceability charts are published for each product.

CE Marking Directives

CE stands for "Conformité Européenne", a challenging and important task for Mitutoyo in Europe. For Mitutoyo as a manufacturer of measuring electronics and measuring machines this means no sale without CE marking, no CE marking without completed conformity assessment procedure.



Meaning of Symbols

ABSOLUTE®

ABSOLUTE Linear Encoder

Mitutoyo's technology has realised the absolute position method (absolute method). With this method, you do not have to reset the system to zero after turning it off and then turning it on. The position information recorded on the scale is read every time. The following three types of absolute encoders are available: electrostatic capacitance model, electromagnetic induction model and model combining the electrostatic capacitance and optical methods. These encoders are widely used in a variety of measuring instruments as the length measuring system that can generate highly reliable measurement data.

Advantages:

1. No count error occurs even if you move the slider or spindle extremely rapidly.
2. You do not have to reset the system to zero when turning on the system after turning it off*1.
3. As this type of encoder can drive with less power than the incremental encoder, the battery life is prolonged to about 3.5 years (continuous operation of 18,000 hours)*2 under normal use.

*1: Unless the battery is removed
*2: In the case of the ABSOLUTE AOS Digimatic caliper (electromagnetic encoder model)

Measuring Instruments Shipped with Inspection Certificate

Mitutoyo guarantees product quality as a leading precision measuring instrument manufacturer and ships measuring instruments with an inspection certificate that includes inspection data so that customers can use them with confidence. Mitutoyo also calibrates the purchased measuring instrument and issues, for a fee, a calibration certificate that proves traceability to the relevant standard.

* For the meaning of the inspection marks shown at left, refer to the detailed description of each product

Main Unit Startup System

Installation of Main Unit Startup System

As a part of the enhancement of our export control system, the CNC measuring machines (all the CNC Coordinate Measuring Machines, Vision Measuring Systems, and Form Measuring Machines) are equipped with a Main Unit Startup System (relocation detecting system). This system is designed to take a machine out of operation upon detecting the mechanical shock that accompanies relocation. If you intend to relocate a measuring machine fitted with this system, please contact us beforehand so that our service engineers can assist you. On the other hand, the system may be triggered in the event of a natural event such as a powerful earthquake. In this case, our service engineers will deal with the situation at the earliest opportunity.

IP65

IP66

IP67

IP Codes

These are codes that indicate the degree of protection provided (by an enclosure) for the electrical function of a product against the ingress of foreign bodies, dust and water as defined in IEC standards (IEC 60529: 2001) and JIS C 0920: 2003. [IEC: International Electrotechnical Commission]

First characteristic numeral	Degrees of protection against solid foreign objects	
	Brief description	Definition
0	Unprotected	—
1	Protected against solid foreign objects of Sø50 mm and greater	A Sø50 mm object probe shall not fully penetrate enclosure*
2	Protected against solid foreign objects of Sø12.5 mm and greater	A Sø12.5 mm object probe shall not fully penetrate enclosure*
3	Protected against solid foreign objects of Sø2.5 mm and greater	A Sø2.5 mm object probe shall not fully penetrate enclosure*
4	Protected against solid foreign objects of Sø1.0 mm and greater	A Sø1.0 mm object probe shall not fully penetrate enclosure*
5	Protected against dust	Ingress of dust is not totally prevented, but dust that does penetrate must not interfere with satisfactory operation of the apparatus or impair safety.
6	Dust-proof	No ingress of dust allowed.
7	—	
8	—	

*: For details of the test conditions used in evaluating each degree of protection, please refer to the original standard.

Second characteristic numeral	Degrees of protection against water	
	Brief description	Definition
0	Unprotected	—
1	Protected against vertical water drops	Vertically falling water drops shall have no harmful effects.
2	Protected against vertical water drops within a tilt angle of 15 degrees	Vertically falling water drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical.
3	Protected against spraying water	Water sprayed at an angle up to 60° either side of the vertical shall have no harmful effects.
4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effects.
5	Protected against water jets	Water projected in jets against the enclosure from any direction shall have no harmful effects.
6	Protected against powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects.
7	Protection against water penetration	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardised conditions of pressure and time.
8	Protected against the effects of continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than for IPX7.

Independent Confirmation of Compliance

IP65, IP66 and IP67 protection level ratings for applicable Mitutoyo products have been independently confirmed by the German certification organisation, TÜV Rheinland.

Metric/Inch

Mitutoyo offers this quality product also in an switchable Metric/Inch version. Please refer to your local Mitutoyo website for detailed information.

Inch/Metric

Mitutoyo offers this quality product also in an switchable Inch/Metric version. Please refer to your local Mitutoyo website for detailed information.

Inch

Mitutoyo offers this quality product also in an Inch version. Please refer to your local Mitutoyo website for detailed information.

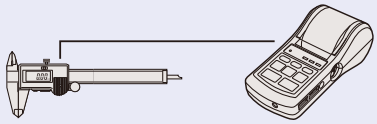
Example of Measurement Data Management System Design

A system for recording and analysing measurement results from various Mitutoyo measuring instruments for quality assurance purposes.

Implementation Step 1

Recording measurement results

No more handwriting

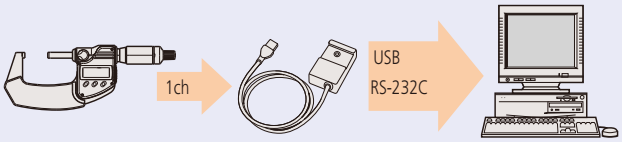


Measurement data can be printed easily. Data can be output to a PC for statistics calculations.

DP-1VR

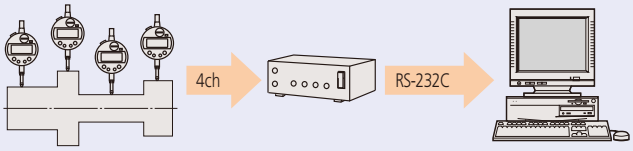
Direct data input to a PC

USB Input Tool Series



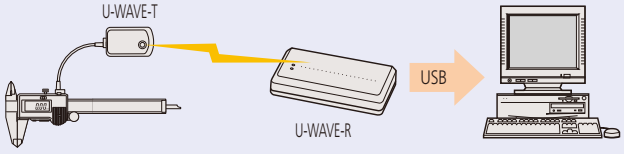
Input Tool Series

Connectable to a RS-232C interface PC with 4 channels and a sequencer



Multiplexer MUX-10F and DMX Interfaces

Wireless

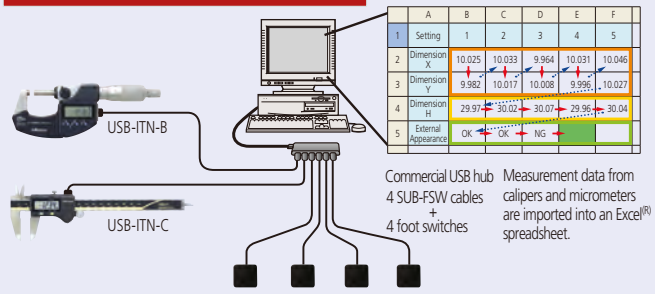


U-WAVE

Implementation Step 2

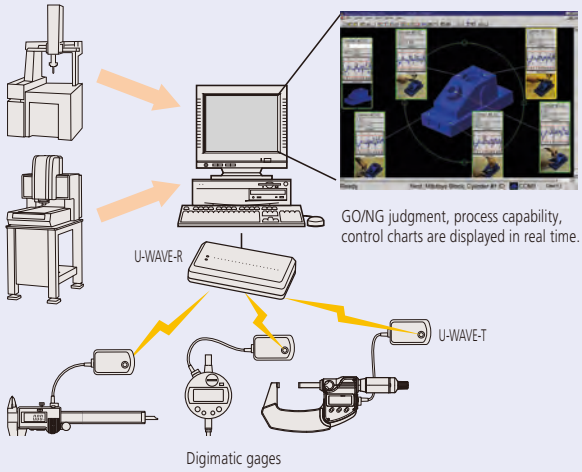
Software dedicated to inspection and quality control

Inspection certificate creation



USB-ITPAK

Statistical process control



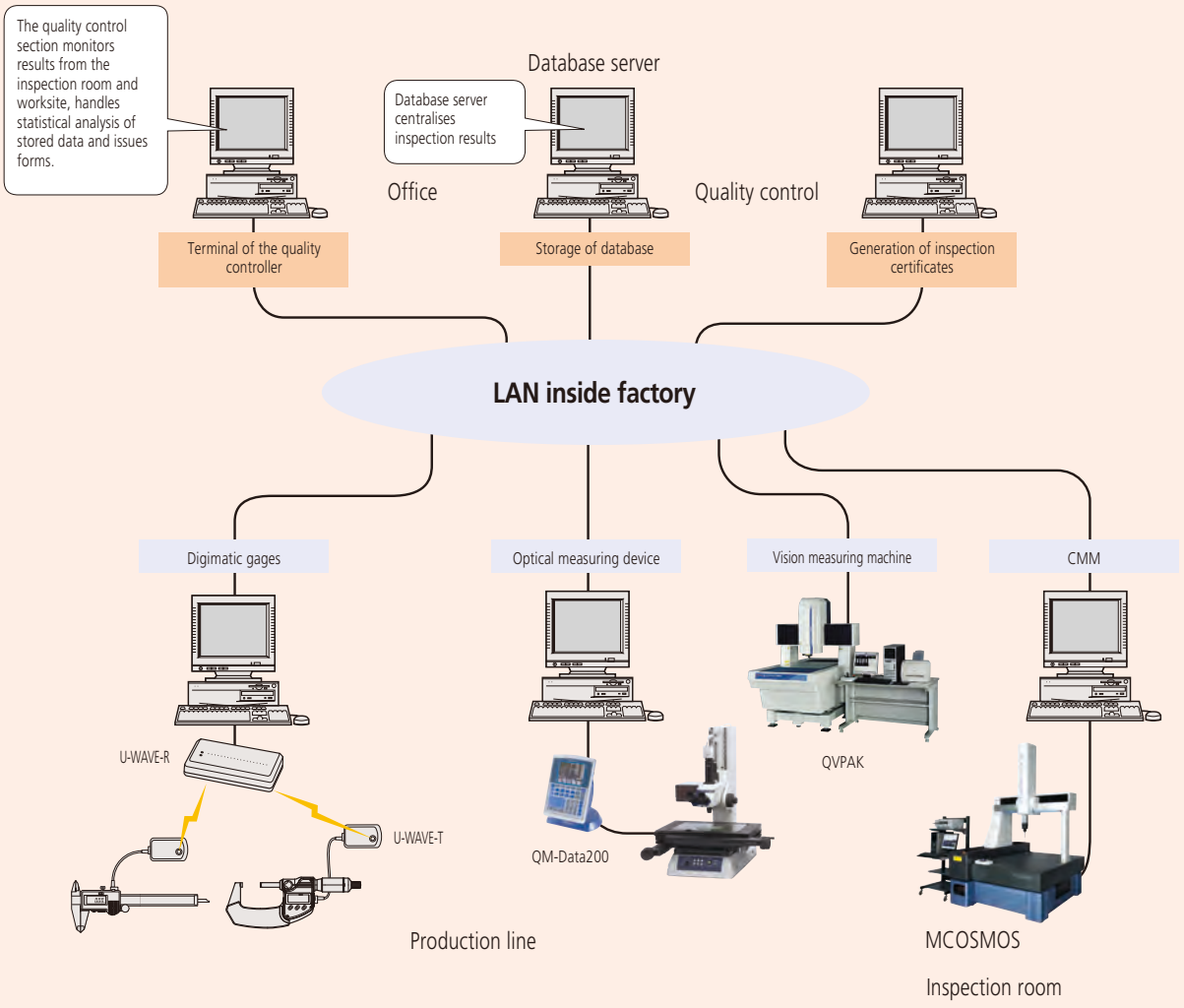
MeasurLink

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Implementation Step 3

Creating a quality control network covering a wide area within the factory

Unify management of the quality test using the network in the factory



MeasurLink

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Mitutoyo

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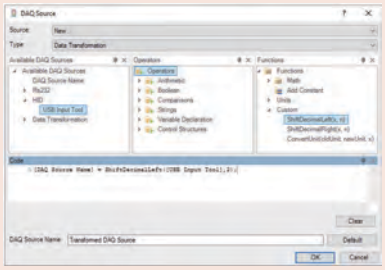
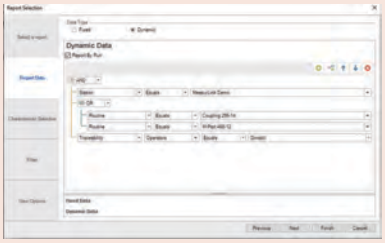
All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

MeasurLink 10





MeasurLink brochure available on request

An Integrated Solution for Quality Data Management

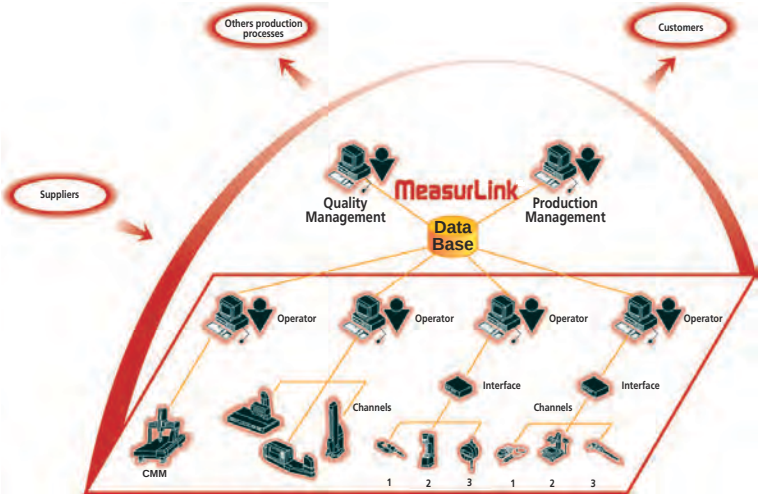
Most of Mitutoyo's electronic instruments can output data via optional connecting cables or wireless transmitters & receivers in the form of the Digimatic code. The Digimatic code can also be converted in RS-232C format by any of several available gage multiplexers. In this way, digital data can be sent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

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

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

Group Licensing

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



No.	Description
64AAB843R	MeasurLink 10 Site License - 30 Licenses*
64AAB844R	MeasurLink 10 Workgroup License - 15 Licenses*
64AAB846R	MeasurLink 10 Workgroup License - 10 Licenses*
64AAB847R	MeasurLink 10 Workgroup License - 5 Licenses*
64AAB845R	MeasurLink 10 Additional Site License - 1 License after 30 Licenses*
64AAB848R	MeasurLink 10 Academic License - 20 Licenses*
64AAB843R-U	MeasurLink 10 Site License Upgrade - 30 Licenses*
64AAB844R-U	MeasurLink 10 Workgroup License Upgrade - 15 Licenses*
64AAB846R-U	MeasurLink 10 Workgroup License Upgrade - 10 Licenses*
64AAB847R-U	MeasurLink 10 Workgroup License Upgrade - 5 Licenses*
64AAB845R-U	MeasurLink 10 Additional Site License Upgrade - 1 License after 30 Licenses*
64AAB848R-U	MeasurLink 10 Academic License Upgrade - 20 Licenses*

*Real-Time Professional 3D is not included

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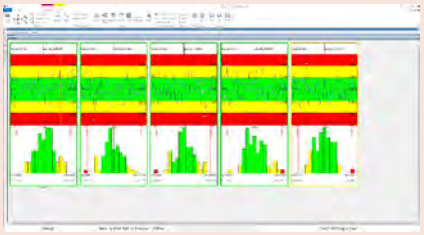
MeasurLink 10

MeasurLink Real-Time Standard Edition



MeasurLink 10 Real-Time Standard Edition is designed for customers that do not need to connect to major instruments such as CMMs, Vision and Form, etc. systems via DDE or ASCII file import.

It has basic views to allow the user to create Parts, Characteristics with nominal and tolerance, Traceability lists, etc. The data collection interface provides real-time graphics for Run charts, Control charts, Histograms, Statistics, etc. Standard views include the Datasheet (observations and charts), the Classic View (chart windows), and the 2D view (pictures with callouts that include charts and statistical data). This application does not support data filters. Full reporting functionality with templates is provided.

Supported data sources include keyboard, RS232C, HID, MTConnect, OPC UA and MQTT devices.

No.	Description
64AAB836R	MeasurLink 10 Real-Time Standard
64AAB836R-U	MeasurLink 10 Real-Time Standard Upgrade

MeasurLink Real-Time Professional Edition

Optional accessories

No.	Description
937179T	Footswitch for SPC
63AAA424	USB-Space Footswitch Interface

MeasurLink 10 Real-Time Professional Edition is designed for customers that do need to connect to major instruments such as CMMs, Vision and Form, etc. systems via DDE or ASCII file import.

It has basic views to allow the user to create Parts, Characteristics with nominal and tolerance, Traceability lists, etc. The data collection interface provides real-time graphics for Run charts, Control charts, Histograms, Statistics, etc. Standard views include the Datasheet (observations and charts), the Classic View (chart windows), and the 2D view (pictures with callouts that include charts and statistical data). This application does support data filters. Full reporting functionality with templates is provided.

Supported data sources include keyboard, RS232C and HID devices, MTConnect, OPC UA, MQTT, DDE, ASCII and QIF (xml-based) file imports.

No.	Description
64AAB837R	MeasurLink 10 Real-Time Professional
64AAB837R-U	MeasurLink 10 Real-Time Professional Upgrade

MeasurLink Real-Time Professional 3D Edition

Optional accessories

No.	Description
63AAA424	USB-Space Footswitch Interface
937179T	Footswitch for SPC

MeasurLink 10 Real-Time Professional 3D Edition is designed for customers that wish to collect data using the Hoops 3D graphics view.

It has basic views to allow the user to create Parts, Characteristics with nominal and tolerance, Traceability lists, etc. The data collection interface provides real-time graphics for Run charts, Control charts, Histograms, Statistics, etc. Standard views include the Datasheet (observations and charts), the Classic View (chart windows), and the 2D view (pictures with callouts that include charts and statistical data). This application does support data filters. Full reporting functionality with templates is provided.

Supported data sources include keyboard, RS232C and HID devices, MTConnect, OPC UA, MQTT, DDE, ASCII and QIF (xml-based) file imports.

No.	Description
64AAB838R	MeasurLink 10 Real-Time Professional 3D
64AAB838R-U	MeasurLink 10 Real-Time Professional 3D Upgrade

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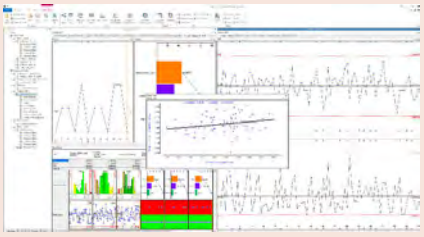
MeasurLink 10

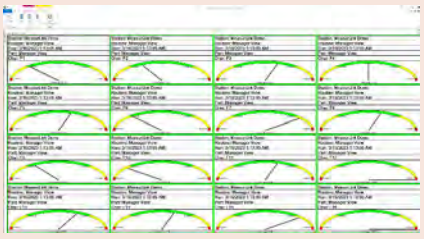


MeasurLink Process Analyse Professional Edition

MeasurLink 10 Process Analyzer Professional Edition is designed for Quality Engineers. Offline viewing of Real-Time data in a networked environment, all views supported by Real-Time Standard edition are supported. Full reporting is provided.

Data is organized by Station, Part or Routine. Merging, Filtering, What-if scenarios and advanced statistical treatments are supported.

No.	Description
64AAB839R	MeasurLink 10 Process Analyzer Professional
64AAB839R-U	MeasurLink 10 Process Analyzer Professional Upgrade



MeasurLink Process Manager Standard Edition

MeasurLink 10 Process Manager is a dashboard view of the current shop floor activity from a single computer. It displays those characteristics that are most in need of attention or adjustment.

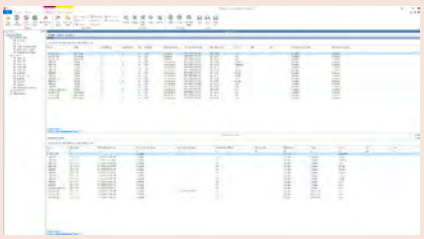
The view automatically updates to show a current state of measurement activity.

No.	Description
64AAB840R	MeasurLink 10 Process Manager
64AAB840R-U	MeasurLink 10 Process Manager Upgrade

MeasurLink Gage R&R

MeasurLink 10 Gage R&R is a collection of techniques whose purpose is to measure the capability of a measurement system for a measurement task.

No.	Description
64AAB841R	MeasurLink 10 Gage R&R
64AAB841R-U	MeasurLink 10 Gage R&R Upgrade



MeasurLink Gage Management

MeasurLink 10 Gage Management is designed for Gage inventory management with Calibration procedures and recall methods.

No.	Description
64AAB842R	MeasurLink 10 Gage Management
64AAB842R-U	MeasurLink 10 Gage Management Upgrade

MeasurLink Report Scheduler V10

MeasurLink 10 Report Scheduler is a tool that can be used to schedule MeasurLink reports for print, export or email as Adobe PDF files.

No.	Description
64AAB853R	MeasurLink 10 Report Scheduler
64AAB853R-U	MeasurLink 10 Report Scheduler Upgrade

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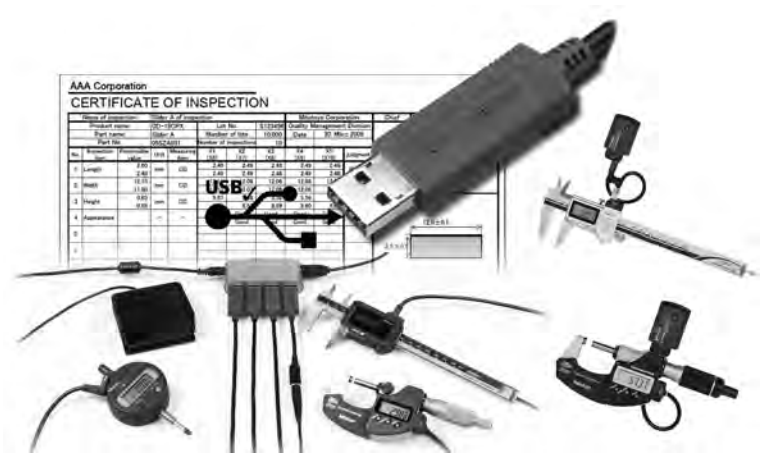
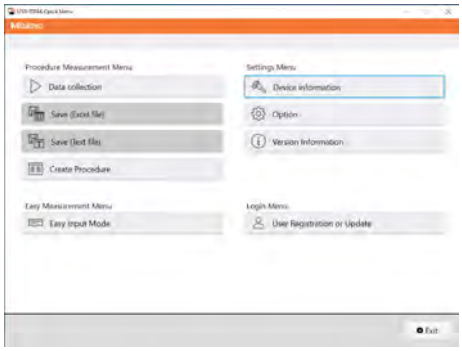
USB-ITPAK

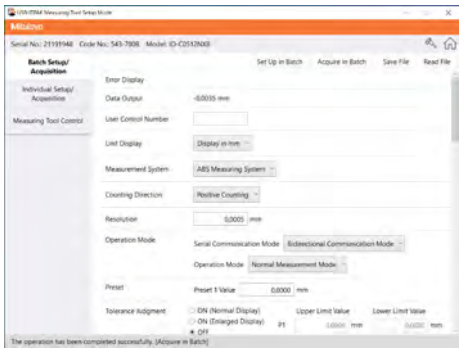
Series 06

USB-ITPAK Version 3 is software for collecting data from measuring instruments with Digimatic, Digimatic 2 and Digimatic S1 output to Excel by using USB Input Tool Interface, USB Input Tool Direct cables, U-WAVE wireless system and DP-1VA pinter/logger

- Supports bidirectional serial communication provided by e.g. ID-F/ ID-C Indicator (2022 model), Height Gauge LH-600F/FG and QuantuMike Micrometer (2024 model)
- Various settings are available like zero set, preset, unit, counting direction, tolerance setting, calibration date setting a.s.o.
- Measurement status information can be read like serial number, code number, calibration date, user control number a.s.o.
- USB-ITPAK Version 3 simple version is available online free of charge
- In order to use the full functionality of the software, no. 06AGR543 must be ordered
- Compatible OS Microsoft® Windows® 10 (64 bit) and 11
- For Microsoft® Excel® version 2010, 2013, 2016 and Microsoft 365







No.	Remarks
06AGR543	Version 3.0 can be used for Wireless Communication (U-WAVE and U-WAVE Bluetooth), USB Input Tool Direct Cable, USB-Input Tool No. 264-016-10 and 264-020 and DP-1 VA printer/logger. Supports bidirectional serial communication provided by e.g. ID-F/ ID-C Indicator (2022 model), LH-600 F/FG and QuantuMike Micrometer (2024 model).

Specifications

OS compatibility	Windows® 10 (64bit), 11
Applicable MS Excel Version	Excel 2010/2013/2016/2021, MS 365
Language for display	English, German, French, Italian, Spanish, Turkish, Czech, Polish, Hungarian, Swedish, Russian, Japanese, Korean, Simplified Chinese, Traditional Chinese, Dutch, Portuguese
Functions	• Create Microsoft® Excel® input procedures (workbook, worksheet, cell range a.s.o.) • Bidirectional communication (Digimatic S1) compatible (Vers. 3 only) • Information reading of measuring tools e.g. serial number, code number etc. (Vers. 3 only) • Settings and operations of measuring tools e.g. preset, power ON/OFF, etc. (Vers. 3 only) • Enter measured data in the quick entry mode (Vers. 3 only) • Enter measured data in a specified sequence (sequencial mode) • Enter measured data all at once (batch mode) • Enter measured data individually (individual mode) • Automatically enter measurement data periodically • Enter a string with your foot • Enter measurement data with foot switch, keyboard/mouse, data switch • Enter data into an arbitrary application • Enter log data from DP-1VA LOGGER
Delivered	License key (software can be downloaded from our website)

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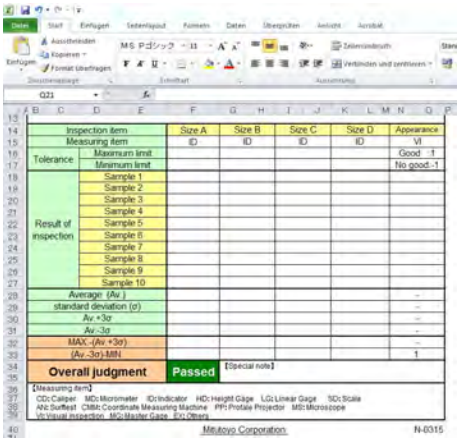
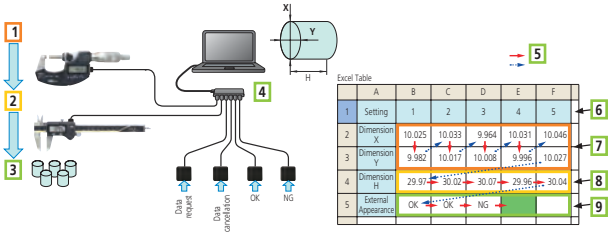
USB-ITPAK

Optional accessories

No.	Description
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type
06AFM380E	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Round 6-Pin Type
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
06AFM380G	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straigt IP Type
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
06ADV384	USB Input Tool Direct, Footswitch Adapter
264-020	USB Input Tool Interface Box, Digimatic/Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-505D	Statistic Processing Printer DP-1VA, Data Printer and Logger CEE Type

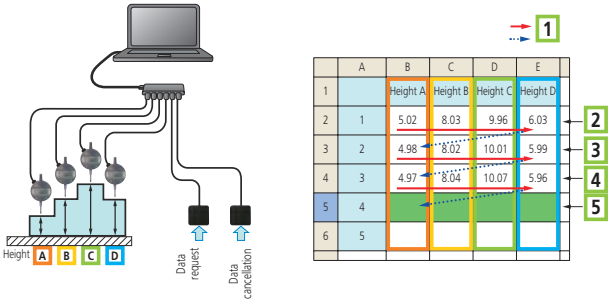


Microsoft® Excel® Worksheet waiting for data



Sequential Measurement

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



Simultaneous Measurement

1: Measurement direction
2: First measurement: press foot switch once = 4 complete data batches
3: second measurement: press foot switch once = 4 complete data batches
4: third measurement: press foot switch once = 4 complete data batches
5: is waiting for the next batch measurement

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Digimatic Mini Processor DP-1VA LOGGER

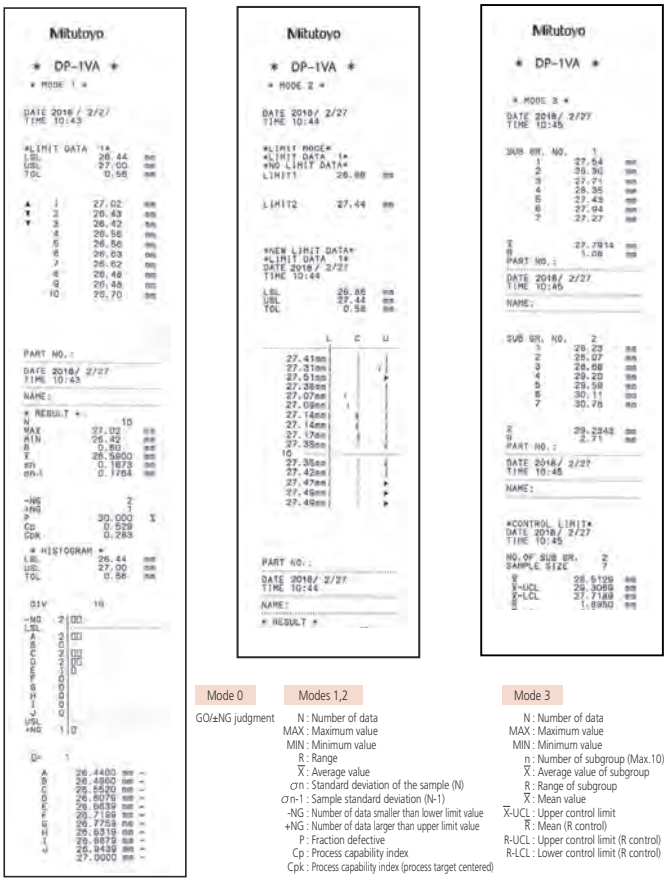
Series 264

This DP-1VA printer allows you to print measuring data, statistical evaluations a.s.o.

- Digimatic 2 support. 8 digits output for data printing and analysis even from high resolution or long stroke instruments.
- Statistical evaluations, and data printout from calipers, micrometers and other measuring devices equipped with a Digimatic port.
- Excellent printing speed, prints upon one-touch start and at low noise level. The thermosensitive paper has outstanding durability and chemical resistance for long-term storage.
- Timer function for timed measurement data loading
- Easy data transfer from printer to PC. USB (VCP/HID) output for PC (USB IT-PAK Vers. 2,1 or later, MeasurLink, Excel a.s.o.)
- Data Logger Function. Saves up to 1000 data records with time and date. Data can be saved even after the power is turned off.

264-505D

No.	Delivered	Mass [g]
264-505D	With AC adapter, printer paper (1 roll), strap	390



Mode 0
GO/±NG judgment

Modes 1,2
N : Number of data
MAX : Maximum value
MIN : Minimum value
R : Range
$\bar{X}$: Average value
σn : Standard deviation of the sample (N)
σn-1 : Sample standard deviation (N-1)
-NG : Number of data smaller than lower limit value
+NG : Number of data larger than upper limit value
P : Fraction defective
Cp : Process capability index
Cpk : Process capability index (process target centered)

Mode 3
N : Number of data
MAX : Maximum value
MIN : Minimum value
n : Number of subgroup (Max.10)
$\bar{X}$: Average value of subgroup
R : Range of subgroup
$\bar{\bar{X}}$: Mean value
$\bar{X}$-UCL : Upper control limit
$\bar{\bar{R}}$: Mean (R control)
R-UCL : Upper control limit (R control)
R-LCL : Lower control limit (R control)

Specifications

Data input	Digimatic, Digimatic 2, RS-232C Input (KA-Counter only)
Printer type	Thermal line printer
Printer speed	6,5 mm/s (using AC adapter)
Printer line number	7000 lines/roll (with large font) 10000 lines/roll (with normal font)
Printer paper	Width: 58 mm, length: 48 m
Processing capacity	Mode 0: 100000 data entries Mode 1/2: 9999 data entries Mode 3: sample size 10x subgroup 9999 = total number of data entries 99990
Logging of the measurement data (to store)	Max. 1000 points
Data output	USB, RS-232C at TTL level, tolerance judgment result (-NG, GO, +NG)
Power supply	AC adapter 6V, battery: LR6 x 4 (alkaline) or AA x 4 Ni-MH (rechargeable, battery is not charged in the device)
Battery life	Appr. 10000 lines (with 1600 mA Ni-MH and print 1 time/5 s)
Timer function	0,25 s; 1 s; 5 s; 30 s; 1 min; 30 min; 60 min (0,25 s only statistical function)

Standard accessories

No.	Description
06AGZ369D	AC-Adapter, DC 6V 2A, CEE version Germany (Europe)
09EAA069D	Thermal Printer Paper DP1-VR/-VA, 1 Roll

Optional accessories

No.	Description
06AGR543	USB-ITPAK Vers. 3.0, USB Dongle + Manual (Software available Online)
09EAA084	RS-232C Cable, DP-1VR/VA to PC, 1m, 9 Pin Connector
06AFZ050	USB Cable 1m, DP-1VA to PC etc., USB Type A to Micro USB Type B Plug
965516	GO/±NG judgement cable, for external device, 2m
09EAA094	RS-232C Cable, DP1-VR/-VA to KA-Counter, 1m, 25 Pin Connector
937179T	Footswitch for SPC
09EAA082-5	Thermal Printer Paper DP1-VR/-VA, 5 Rolls
011037	Battery, LR6, 1,5V, 4 pcs.

09EAA084 and 965516 can not be used simultaneously.

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USB Input Tool Direct (Digimatic-USB Cable)

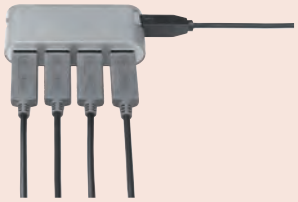
Specifications

Cable length	2 m
Output	USB: HID (keyboard format) or VCP (virtual COM-Port)
Max connectable devices	20 cables

Optional accessories

No.	Description
06AGR543	USB-ITPAK Vers. 3.0, USB Dongle + Manual (Software available Online)
06ADV384	USB Input Tool Direct, Footswitch Adapter
937179T	Footswitch for SPC

937179T and 06ADV384



Common USB Hub

06AFM380A

06AFM380B

06AFM380C

06AFM380D

06AFM380E

06AFM380F

06AFM380G

06AGQ001F

For more information about cable connectors see the end of this chapter.

Scan QR Code with your mobile device and watch our product videos on YouTube

Digimatic-USB Cable

This input tool allows you to directly connect Digimatic measuring devices to the USB interface of a PC, without needing additional software. Measurement data is then converted into keyboard codes, enabling interaction with any software such as Microsoft® Excel® working with keyboard entries (HID).

When using the VCP (virtual COM-Port) driver which is part of USB-ITPAK Vers. 3 (easy input mode version), a fixed COM-Port assignment in Microsoft® Windows® is possible. A VCP can be used e.g. for professional SPC software like Mitutoyo MeasurLink. The driver is available online, free of charge.

The following additional features are made available by adding the optional USB-ITPAK Vers. 3 (full version) to your workstation:

- Creation of worksheets and multi-channel input for measurement values to Microsoft® Excel®
- Automatic calling of said Excel® sheet for data input
- Cursor movement after data input can be set to enable automatic input
- Configuration of measuring methods, such as sequential measurement, batch measurement, individual measurement, and more
- Timed data requests

06AFM380C

No.	Model	OS compatibility	Remarks
06AFM380A	A	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable Straight With Data Switch (2m), e.g. for IP67 Caliper
06AFM380B	B	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable Back Side With Data Switch (2m); e.g. for IP65 Micrometer
06AFM380C	C	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable Straight With Data Switch (2m); e.g. for Standard Absolute Caliper
06AFM380D	D	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable Plain (2m) e.g. for ID-H Indicator
06AFM380E	E	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable Round (2m) e.g. for Caliper Gauge Series 209
06AFM380F	F	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable Straight (2m) e.g. for ID-S Indicator
06AFM380G	G	Windows® 2000, XP, Vista, 7, 8/8.1, 10, 11	USB Input Tool Direct Cable ID-N/ID-B (2m)
06AGQ001F	SF	Windows® 10 (64 bit) / Windows® 11	USB Input Tool Direct Cable for measuring tools with Digimatic S1 bidirectional interface

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Digimatic Data Cables

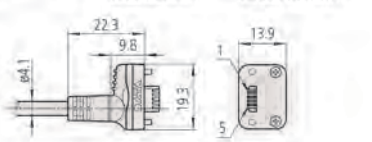
Digimatic Cables

This is an overview of available data cables, and how you can connect measuring devices with data output e.g.to a PC.

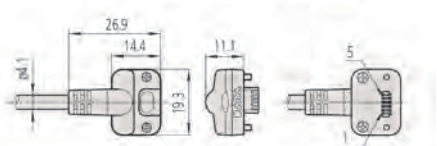
The cables listed are used to connect the measuring devices directly via USB (USB Input Tool Direct Cables), indirectly via standard Digimatic cables and interface box (e.g. DMX box or USB Input Tool Box), or the U-WAVE-T wireless transmitters (box version) to a PC.

Please find the appropriate cable for your particular Digimatic measuring instrument in the "Optional Accessories" section of its product entry.

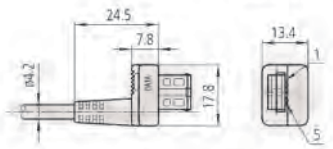
(1) **06AFM380A** (2) **05CZA624** (1 m) **05CZA625** (2 m) (3) **02AZD790A** (Standard) **02AZE140A** (FSW)



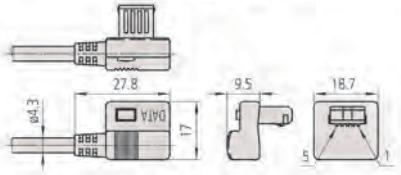
(1) **06AFM380B** (2) **05CZA662** (1 m) **05CZA663** (2 m) (3) **02AZD790B** (Standard) **02AZE140B** (FSW)



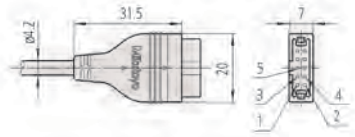
(1) **06AFM380C** (2) **959149** (1 m) **959150** (2 m) (3) **02AZD790C** (Standard) **02AZE140C** (FSW)



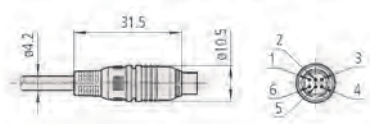
(1) No applicable models (2) **04AZB512** (1 m) **04AZB513** (2 m) (3) No applicable models



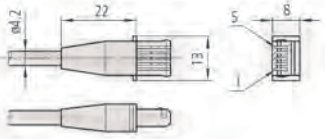
(1) **06AFM380D** (2) **936937** (1 m) **965014** (2 m) (3) **02AZD790D** (Standard) **02AZE140D** (FSW)



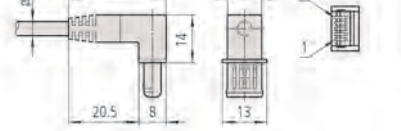
(1) **06AFM380E** (2) **937387** (1 m) **965013** (2 m) (3) **02AZD790E** (Standard) **02AZE140E** (FSW)



(1) **06AFM380F** (2) **905338** (1 m) **905409** (2 m) (3) **02AZD790F** (Standard) **02AZE140F** (FSW)

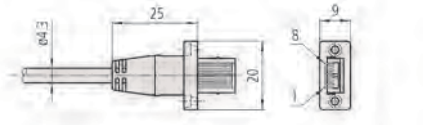


(1) No applicable models (2) **905689** (1 m) **905690** (2 m) (3) No applicable models

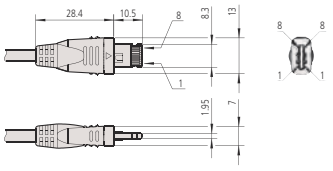


(1) No applicable models (2) **905691** (1 m) **905692** (2 m) (3) No applicable models

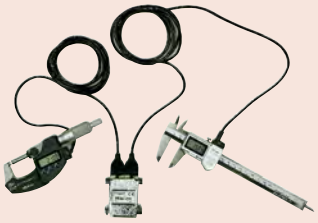
(1) **06AFM380G** (2) **21EAA194** (1 m) **21EAA190** (2 m) (3) **02AZD790G** (Standard) **02AZE140G** (FSW)



(1) **06AGQ001F** (2) **06AGL011** (1m) **06AGL021** (2m) (3) **02AZG011** (Standard) **02AZG021** (FSW)



(1)
USB Input Tool Direct Cable
2 m



(2)
Standard Digimatic Cable
1 m or 2 m

(3)
U-WAVE Connection Cable
(Standard)

(3)
U-WAVE Connection Cable
with Footswitch Connector
(FSW)

All products to be sold to commercial customers.
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Digimatic Extension Cables

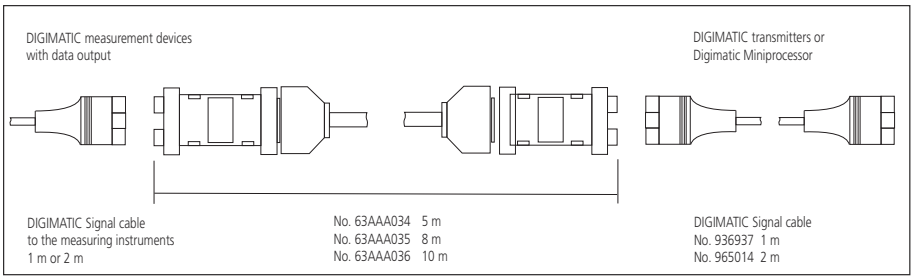
Optional accessories

No.	Description
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m

Extension Cables for Digimatic Cables

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

63AAA036



Digimatic Extension Cable

No.	Length [m]
63AAA034	5
63AAA035	8
63AAA036	10

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U-WAVE

U-WAVE and U-WAVE fit - Wireless Data transmission system

- Approx. 20 m (within visible range).
- Communication frequency: 2,4GHZ wireless system for reliable and secure data transmission.
- Easy data export to Easy data export to Microsoft® Excel® or other professional SPC software applications like Mitutoyo MeasurLink.
- Transmitter confirms data transfer by a buzzer sound or a red/green LED signal.
- Low power consumption: 400000 data transmissions with one battery.
- U-WAVE Event will also support a data request from a PC. This is ideal if the system is installed at an inaccessible side.

PC with U-WAVE-R (Receiver)

For Caliper U-WAVE-TC (U-WAVE fit transmitter) with Connection Unit

For Micrometer U-WAVE-TM (U-WAVE fit transmitter) with Connection Unit

For miscellaneous measuring instruments U-WAVE-T (Transmitter) with Connection Cable

Specifications

Wireless communication protocol	Proprietary (2,4 GHz by original specification based on IEEE 802.15.4)
Modulation method	DS-SS (Direct Sequence Spread Spectrum)
Communication distance	Approx. 20 m (within visible range)
Communication speed kbps	250
Communication frequency	2,4 GHz band (2,405-2,475 GHz, 15 channels (5 MHz interval)
Communication with measuring tool	Digimatic (6 digits), Digimatic 2 (8 digits) automatic identification
OS compatibility	Windows® 2000 Professional (≥SP4), Windows® XP Professional (≥SP2), Windows® XP Home Edition (≥SP2), Windows Vista®, Windows® 7 (32bit, 64bit), Windows® 8, 8. 1, 10 (32bit, 64bit), 11

Standard accessories

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.

Optional accessories

No.	Description
06AGR543	USB-ITPAK Vers. 3.0, USB Dongle + Manual (Software available Online)
02AZF300	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
02AZD790E	U-WAVE-T Connection Cable E, Round 6-Pin Type
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
02AZD790G	U-WAVE-T Connection Cable G, Flat Straight IP Type
02AZG011	U-WAVE-T Connection Cable SF, for Digimatic S1 Interface
63BAA057	U-WAVE T External Power Supply Adapter
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZF675	U-WAVE fit Transmitter Mounting Plate, for ID-N Digital Indicator
02AZE200	U-WAVE Transmitter Mounting Plate, Universal Type
02AZE990	U-WAVE Transmitter Mounting Plate, for QM-Height
12AAY486	U-WAVE-T Transmitter Mounting Plate, for LH-600F/FG

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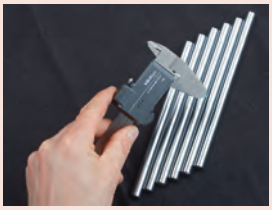
U-WAVE



264-620 + 02AZF310
U-WAVE-TC (Transmitter) + Connection Unit

264-622 + 02AZF310
U-WAVE-TM (Transmitter) + Connection Unit

02AZD730G + 02AZD790A
U-WAVE-T (Transmitter) + Connection Cable

02AZF670 + U-WAVE-TM
+ 02AZD790F

02AZE200 + U-WAVE-T
+ 02AZD790F

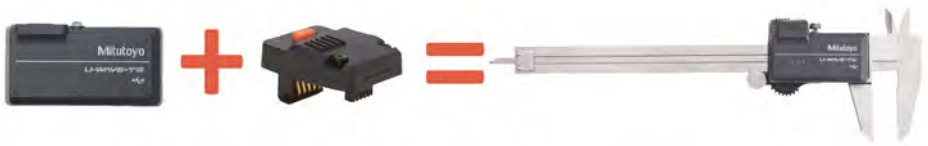
U-WAVE (Transmitter)

No.	Measuring Instruments	Remarks	Data reception indication	Transmission output	Type	Mass [g]
264-620	100, 150, 200, 300 mm IP67 caliper/standard caliper	IP67	LED (green, red, orange)	2,5 mW (4 dBm) or below	U-WAVE-TC (U-WAVE fit)	20
264-621	100, 150, 200, 300 mm IP67 caliper/standard caliper	Stand-ard	Buzzer and LED (green, red, or-ange)	2,5 mW (4 dBm) or below	U-WAVE-TC (U-WAVE fit)	20
264-622	COOLANT PROOF (IP65) micrometer, indicator	IP67	LED (green, red, orange)	2,5 mW (4 dBm) or below	U-WAVE-TM (U-WAVE fit)	20
264-623	COOLANT PROOF (IP65) micrometer, indicator	Stand-ard	Buzzer and LED (green, red, or-ange)	2,5 mW (4 dBm) or below	U-WAVE-TM (U-WAVE fit)	20
02AZD730G	Indicator, 3-Point Inside Mi-crometer, Carbon Fibre Caliper, Height Gauge, a.s.o	IP67	LED (green, red, orange)	2,5 mW (4 dBm) or below	U-WAVE-T for miscellaneous in-struments	23
02AZD880G	Indicator, 3-Point Inside Mi-crometer, Carbon Fibre Caliper, Height Gauge, a.s.o	Stand-ard	Buzzer and LED (green, red, or-ange)	2,5 mW (4 dBm) or below	U-WAVE-T for miscellaneous in-struments	23

U-WAVE-R (Receiver) for all Mitutoyo U-WAVE Transmitter (except U-WAVE Bluetooth)

No.	Remarks	Number of U-WAVE-R units that can be connected to PC	Number of U-Wave-T units that can be connected	Transmission out-put	Type	Mass [g]
02AZD810D	U-WAVE-R + Soft-ware (U-WAVE-PAK)	Up to 16	Up to 100	1 mW (0 dBm) or below	U-WAVE-R	130

02AZD810D
U-WAVE-R (Receiver)



Transmitter and Connection Unit (see page after next page) for Caliper (U-WAVE-TC + 02AZF300)

Transmitter and Connection Unit (see page after next page) for Micrometer (U-WAVE-TM + 02AZF310)

Transmitter and Connection Cables (see page after next page) e.g. for Digital Indicator

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U-WAVE Bluetooth

U-WAVE fit Bluetooth

- Bluetooth® communication allows for wireless transmission of measurement data from digimatic micrometers and calipers to PCs, smartphones, tablets, and other terminals alike.
- U-WAVE is now available with Bluetooth® wireless technology. With no receiver required, one PC can connect up to seven units with Mitutoyo U-WAVE Bluetooth ®. For tougher shop floor usage, dust / water-proof models are also available.
- Bluetooth® communication not only allows for cost reduction, as it does not require the conventional dedicated receiver unit, but it also improves operability.
- Communication distance of approx. 16 m in an open space and approx. 10 m in a factory environment.
- The application software for transferring measurement data to smartphones, tablets, or PCs

U-WAVEPAK-BM
Available for both Android and IOS, U-WAVEPAK-BM provides users to make use of simple process control with its measurement data import function.

U-WAVEPAK NAVI
Available only for Android U-WAVEPAK NAVI guides you throughout your measurement. By using pictures, the app tells you where and how to measure as well as in what order or what device to use.

U-WAVEPAK-BW
For use on computers, U-WAVEPAK-BW communicates directly with your measuring instrument, allowing you to transfer measurement data to your computer's software. This software can be downloaded for free on our company's website.

264-626 + 02AZF310
U-WAVE-TMB + Connection Unit

264-625 + 02AZF310
U-WAVE-TCB + Connection Unit

U-WAVE Bluetooth (Transmitter)

No.	Type	Measuring Instruments	Data reception indication	Mass [g]
264-624	U-WAVE-TCB (U-WAVE fit Bluetooth)	100, 150, 200, 300 mm IP67 caliper/standard caliper	LED (green, red, orange)	20
264-625	U-WAVE-TCB (U-WAVE fit Bluetooth)	100, 150, 200, 300 mm IP67 caliper/standard caliper	Buzzer and LED (green, red, orange)	20
264-626	U-WAVE-TMB (U-WAVE fit Bluetooth)	COOLANT PROOF (IP65) micrometer, indicator	LED (green, red, orange)	20
264-627	U-WAVE-TMB (U-WAVE fit Bluetooth)	COOLANT PROOF (IP65) micrometer, indicator	Buzzer and LED (green, red, orange)	20

For details of connectable measuring instruments please contact Mitutoyo or distributor

Specifications

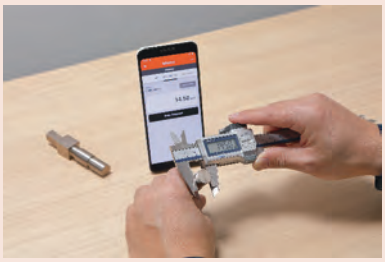
Wireless communication protocol	Bluetooth 4.2 Low energy
Modulation method	FH-SS (frequency-hopping spread spectrum)
Communication distance	Approx. 16 m (line of sight) Approx. 10 m (in factory environment)
Communication with measuring tool	Digimatic (6 digits), Digimatic 2 (8 digits) automatic identification
Transmission output	3,2 mW (5 dBm) or less (Class 2)

Standard accessories

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.

Optional accessories

No.	Description
06AGR543	USB-ITPAK Vers. 3.0, USB Dongle + Manual (Software available Online)
02AZF300	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth



U-WAVEPAK-BM available on App Store and Google Play

U-WAVE-NAVI available on Google Play

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U-WAVE Connection Cables and Connection Units

Standard accessories

No.	Description
05CZA619	Screw Driver

Optional accessories

No.	Description
02AZE200	U-WAVE Transmitter Mounting Plate, Universal Type
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZF675	U-WAVE fit Transmitter Mounting Plate, for ID-N Digital Indicator
02AZE990	U-WAVE Transmitter Mounting Plate, for QM-Height
12AAY486	U-WAVE-T Transmitter Mounting Plate, for LH-600F/FG

02AZE200
U-WAVE-T
02AZD790F

02AZF700
and Indicator

02AZF670
U-WAVE-TM
02AZD790F

02AZF675
U-WAVE-TM
02AZD790G

02AZE990
U-WAVE-T
02AZD790D

12AAY486
U-WAVE-T
02AZG011

Connections Transmitter and Instrument

- This connecting part connects a measuring tool to its U-WAVE T unit. Choose the appropriate cable for your measuring tool from the seven types below, A to SF.

Connection unit for U-WAVE fit transmitter (optional)

Connection cable without foot switch connector and transmitter (optional)

Connection cable with foot switch connector and transmitter + foot switch (optional)

1. Connection Unit for U-WAVE fit and U-WAVE fit Bluetooth

No.	Remarks	Mass [g]
02AZF300	For U-WAVE-TC and U-WAVE TCB Transmitter e.g. for ABS AOS Standard Caliper	6
02AZF310	For U-WAVE-TC/U-WAVE-TCB and U-WAVE-TM/U-WAVE-TMB e.g. IP67 Caliper, COOLANT PROOF (IP65) Micrometer	6
02AZF700	For U-WAVE-TM and U-WAVE TMB Transmitter and Digital Indicator ID-C 12,7 mm/0,5" range (2022 model)	10

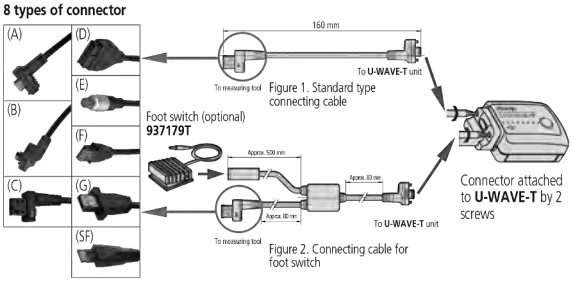
2. Connection cable without foot switch connector

No.	Model	Remarks	Mass [g]
02AZD790A	A	IP U-WAVE Data Cable Straight with Data Switch e.g. for IP66 Carbon Fibre Caliper	10
02AZD790B	B	IP U-WAVE Data Cable Back Side with Data Switch e.g. for IP65 Holtest	10
02AZD790C	C	U-WAVE Data Cable Straight with Data Switch e.g. for Height Gauge	10
02AZD790D	D	U-WAVE Data Cable Plain e.g. for ID-H/ID-F Indicator	10
02AZD790E	E	U-WAVE Data Cable Round e.g. for Digital Caliper Gauge Series 209	10
02AZD790F	F	U-WAVE Data Cable Straight e.g. for ID-C/ID-S Indidator	10
02AZD790G	G	IP U-WAVE Data Cable e.g. for ID-N/ID-B Indicator	10
02AZG011	SF	U-WAVE Data Cable Straight for Instruments with Digimatic S1 Interface e.g. for ID-C, ID-F Indicator and LH-600F/FG	10

3. Connection cable with foot switch connector

No.	Model	Remarks	Mass [g]
02AZE140A	A	IP U-WAVE Data Cable Straight with Data Switch/Foot Switch Connector e.g. for IP66 Carbon Fibre Caliper	34
02AZE140B	B	IP U-WAVE Data Cable Back Side with Data Switch/Foot Switch Connector e.g. for IP65 Holtest	34
02AZE140C	C	U-WAVE Data Cable Straight with Data Switch/Foot Switch Connector e.g. for Height Gauge	34
02AZE140D	D	U-WAVE Data Cable Plain with Foot Switch Connector e.g. for ID-H/ID-F Indicator	34
02AZE140E	E	U-WAVE Data Cable Round with Foot Switch Connector e.g. for Digital Caliper Gauge Series 209	34
02AZE140F	F	U-WAVE Data Cable Straight with Foot Switch Connector e.g. for ID-C/ID-S Indicator	34
02AZE140G	G	IP U-WAVE Data Cable with Foot Switch Connector e.g. for ID-N/ID-B Indicator	34
02AZG021	SF	U-WAVE Data Cable Straight with Foot Switch Connector for Instruments with Digimatic S1 Interface e.g. for ID-C, ID-F Indicator and LH-600F/FG	35

8 types of connector



For more information about cable ends see page 21

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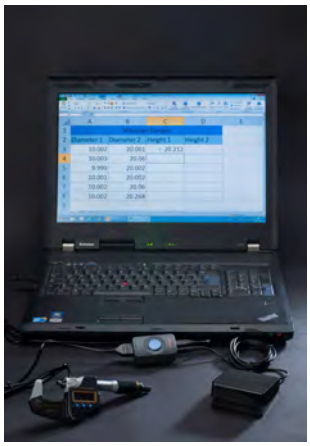
USB Input Tool

Series 264 - Keyboard Interface

The input tool allows you to directly connect Digimatic measuring devices to a USB interface, without needing additional software.
The USB Input Tool Direct offers the following benefits:

- Measurement data is converted into keyboard codes, enabling interaction with any program working with keyboard entries. (HID)
- You can also connect to a USB with fixed COM assignment in Microsoft Windows as a channel identification (VCP).
- The driver for creating the VCP is part of USB-ITPAK and is available online.
- The USB-ITPAK software lets you easily create Microsoft Excel worksheets.

264-020



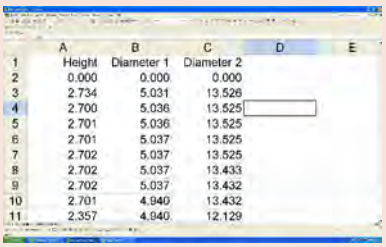
No.	Data input	Data output	Output decimal mark	Footswitch connector	Delivered	Mass [g]
264-020	1x Digimatic, Digimatic 2 or Digimatic S1	USB Virtual COM-Port (VCP) with VCP driver (available online). USB keyboard signal (HID)	Emulates the local Windows setting	Yes	USB cable (1 m)	54

Specifications

Dimensions (WxDxH)	38 x 64 x 21 mm
Power supply	5 V from the USB
Max. connectable devices	Microsoft® Windows® 2000, XP: 100 cables, Windows® Vista®, 7, 8, 8. 1, 10, 11: 20 cables
OS compatibility	Microsoft® Windows® 2000, XP, Vista®, 7, 8, 8. 1, 10 (32bit, 64bit), 11

Optional accessories

No.	Description
06AGR543	USB-ITPAK Vers. 3.0, USB Dongle + Manual (Software available Online)
937179T	Footswitch for SPC



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

DMX-3T / FS2 USB

Series 63 - Keyboard Interface

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

63AAA041

rear panel

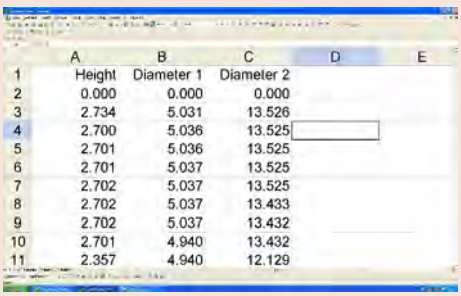
No.	Data input	Data output	Output decimal mark	Footswitch connector	Delivered	Mass [g]
63AAA041	3 x Digimatic	USB keyboard signal (HID)	point or comma (selectable)	Yes	USB cable (1,8 m)	330

Specifications

Dimensions (WxDxH)	112 x 122 x 45 mm
Power supply	5 V from the USB
Timer function	0-99 s (1s step) or 0-99 min
OS compatibility	Microsoft® Windows® 2000, XP, Vista®, 7, 8, 8. 1, 10 (32bit, 64bit), 11
Max. no. of cascadable interface	3 via optional link cable

Optional accessories

No.	Description
63AAA105	Link Cabel DMX-3T/FS2
937179T	Footswitch for SPC



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

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DMX-1

Series 63

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

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

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity
63AAA029	1 x Digimatic	RS-232C	D-SUB 9	Yes	9600	8	1	none

Specifications

Dimensions (WxDxH)	58 x 62 x 18 mm

Optional accessories

No.	Description
937179T	Footswitch for SPC
63AAA027	RS-232C Signal Cable, D-Sub9-D-Sub9, 2m

63AAA029

DMX-1 USB

Series 63

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

63AAA040

rear panel

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
63AAA040	1 x Digimatic	USB virtual COM-Port (VCP)	USB Type Mini-B	Yes	9600	8	1	none	USB cable (1,8 m)

Specifications

Power supply	5 V from the USB
OS compatibility	Microsoft® Windows® 2000, XP, Vista®, 7, 8, 8.1, 10 (32bit, 64bit), 11
Dimensions (WxDxH)	33 x 57 x 20 mm

Optional accessories

No.	Description
937179T	Footswitch for SPC

DMX-2 S

Series 63

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

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

63AAA038

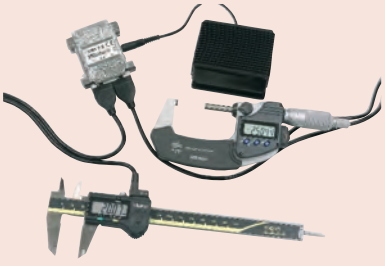
No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity
63AAA038	2 x Digimatic	RS-232C	D-SUB 25	Yes	9600	8	1	none

Specifications

Dimensions (WxDxH)	58 x 62 x 18 mm

Optional accessories

No.	Description
937179T	Footswitch for SPC
63AAA108	RS-232C Signal Cable, D-Sub-25-D-Sub-9, 2m
63AAA028	Adapter D-Sub25-D-Sub9, 0,2m



Sample application with footswitch (optional accessory)

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

DMX-2 USB

Series 63

Connecting two measurement devices, with Digimatic-output, to a USB port.
The DMX-2 USB offers the following benefits:

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

63AAA037

rear panel

No.	Data input	Data output	Interface cable connection	Foot-switch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
63AAA037	2 x Digimatic	USB virtual COM-Port (VCP) USB keyboard signal (HID) (switchable on the box)	USB Type Mini-B	Yes	9600	8	1	none	USB cable (1,8 m)

Specifications

Power supply	5 V from the USB
OS compatibility	Microsoft® Windows® 2000, XP, Vista®, 7, 8, 8.1, 10 (32bit, 64bit), 11
Output decimal mark (HID)	point or comma
Dimensions (WxDxH)	61 x 76 x 35 mm

Optional accessories

No.	Description
937179T	Footswitch for SPC

DMX-3 USB

Series 63

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

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

63AAA039

rear panel

No.	Data input	Data output	Interface cable connection	Foot-switch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
63AAA039	3 x Digimatic	USB virtual COM-Port (VCP), RS-232C	Serial cable: D-SUB 9 or USB: Type B	Yes	1200 or 9600 (adjustable with jumper)	8	1	none	USB cable (1,8 m) AC Adapter (only for serial cable connection)

Specifications

Power supply	5 V from the USB or AC-Adapter (for serial connection)
OS compatibility	Microsoft® Windows® 2000, XP, Vista®, 7, 8, 8.1, 10 (32bit, 64bit), 11
Dimensions (WxDxH)	170 x 128 x 55 mm

Optional accessories

No.	Description
63AAA027	RS-232C Signal Cable, D-Sub9-D-Sub9, 2m
937179T	Footswitch for SPC

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MUX-10F

Series 264

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

264-002D

rear panel

Specifications

Power supply	AC-Adapter, 9V 500mA
Dimensions (WxDxH)	91,4 x 92,5 x 50,4 mm

Optional accessories

No.	Description
12AAA882D	RS-232C Signal Cable, D-Sub9-D-Sub9, 2m, for MUX-10F and Surftest SJ
937179T	Footswitch for SPC

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
264-002D	4 x Digimatic	RS-232C	D-SUB 9	Yes	300, 600, 1200, 2400, 4800, 9600, 19200	8	1	none	AC Adapter

DMX-8/2

Series 63

The DMX-8/2 8 channel D-SUB9 serial interface is a microcontrolled interface for connecting eight measurement devices, with Digimatic output, to the RS-232C serial port of a computer. The DMX-8/2 model provides power and an ABS/Zero button to operate Series 575 ABS Linear Gauges.

63AAA033

rear panel

Specifications

Power supply	220-240V 50Hz
Dimensions (WxDxH)	158 x 204 x 66 mm

Optional accessories

No.	Description
63AAA027	RS-232C Signal Cable, D-Sub9-D-Sub9, 2m
937179T	Footswitch for SPC

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
63AAA033	8 x Digimatic	RS-232C	D-SUB 9	Yes	9600	8	1	none	Power cable

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DMX-16 / DMX-16C

Series 63

- The DMX-16/16C is a micro controlled Interface for connecting 16 Digimatic output measurement devices to the RS-232C interface of a computer
- DMX-16C features integrated microprocessors for data processing, thus enabling simultaneous input and output from all measurement instruments and increasing data processing speed.
- The DMX-16 and DMX-16C provides power and an ABS/ZERO button to operate Series 575 ABS Linear Gauges

63AAA026 or 63AAA106

rear panel

No.	Type	Data input	Data output	Remarks	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
63AAA026	DMX-16	16 x Digimatic	RS-232C	successive data reception	D-SUB 9	Yes	9600	8	1	none	Power cable
63AAA106	DMX-16C	16 x Digimatic	RS-232C	simultaneous data reception	D-SUB 9	Yes	9600	8	1	none	Power cable

Specifications

Power supply	220-240 V 50 Hz
Dimensions (WxDxH)	225 x 204 x 75 mm

Optional accessories

No.	Description
63AAA027	RS-232C Signal Cable, D-Sub9-D-Sub9, 2m
937179T	Footswitch for SPC

DMX-0-1 USB / DMX-3-2 USB

Series 63

These interfaces enable the connection of measuring devices with RS-232C data output (such as the Mitutoyo QM-Data 200 or LH-600) with the USB port of a computer.
The interfaces offer the following benefits:

- The ability to connect over 70 different measuring instruments with RS232C output, this includes not only Mitutoyo devices but other brands as well (a list is available upon request).
- The interface converts the different signals from the connected measuring instruments into the same format: keyboard signal (HID).
- The DMX-0-1 USB has one RS-232C input while the DMX-3-2 has two RS-232C inputs and also 3 Digimatic inputs for connecting Mitutoyo handheld measuring devices.
- The DMX-3-2 additionally has a virtual COM-Port (VCP) with MUX-10 or MUX-50 format.

63AAA043

63AAA042

rear panel

No.	Data input	Data output	Interface cable connection	Footswitch connector	Baud rate	Data bits	Stop bits	Parity	Delivered
63AAA043	1 x RS-232C	USB keyboard signal (HID)	USB Type B	Yes					USB cable (1,8 m)
63AAA042	3 x Digimatic 2 x RS-232C	USB virtual COM-Port (VCP), USB keyboard signal (HID)	USB Type B	Yes	9600	8	1	none	USB cable (1,8 m)

Specifications

Power supply	5 V from the USB
Timer function	interval 0-99 s or 0-99 min
Mitutoyo measuring instruments with RS232C ouput	KA-Counter Protractor Series 950 EH-Counter Printer DP1-VA Linear Height LH-600 E/EG and older LH models QM-Data 200 Litematic VL-50 Laser Scan Micrometer LSM QM-Height MF-Microscope Series PJ A3000 Projector PJ H30 Projector ID-H Indicator
OS compatibility	Microsoft® Windows® 2000, XP, Vista®, 7, 8, 8. 1, 10 (32bit, 64bit), 11
Output decimal mark (HID)	point or comma

Optional accessories

No.	Description
63AAA105	Link Cabel DMX-3T/FS2
937179T	Footswitch for SPC

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Digimatic Timerbox

Series 63

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

- It can be used with all Mitutoyo interfaces featuring 3,5 mm TRS Foot switch connectors (Mono) such as USB Input Tool Direct Footswitch Adapter. It works as a time-controlled footswitch.

Specifications

Power supply	AC-Adapter, 10 V 120 mA or 5 V from the USB
Timer function	1 s-99 h 59 min 59 s (100 h)
Timer tolerance	±8 s/24 h
Dimensions (WxDxH)	55 x 58 x 31 mm
Mass	84 g

Sample application with DMX Box

63AAA107

Sample application with USB Input Tool Direct

No.	Delivered
63AAA107	USB cable (0,8 m), AC Adapter, footswitch cable TTB1 (0,52 m)

Digimatic Switch Box

Series 63/939

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

63AAA030

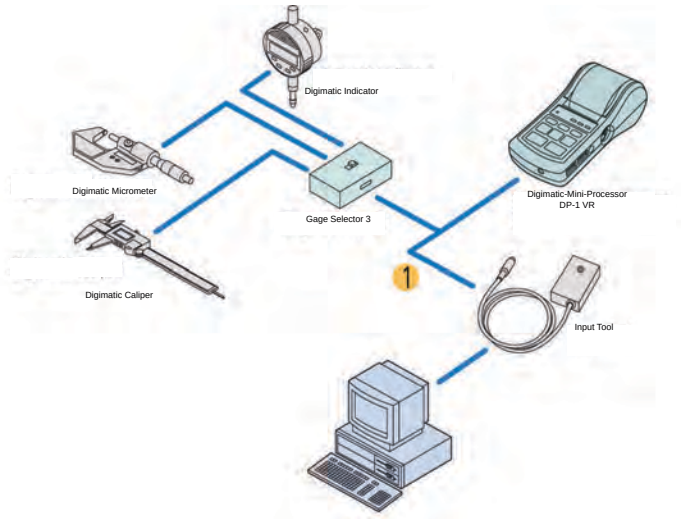
939039

No.	Data output	Data input	Footswitch connector	Delivered
63AAA030	1.0 x Digimatic (1.0 channel)	5 x Digimatic	Yes	with AC Adapter
939039	1 x Digimatic (1 channel)	3 x Digimatic	No	with AC Adapter (63AAA30)

Optional accessories

No.	Description
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
937179T	Footswitch for SPC

937179T for 63AAA030 only



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

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High Accuracy Digital Micrometers

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish, Ø 3,2 mm
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 lithium battery CR-2032
Battery life	Approx. 2 years
Delivered	Including box, key, driver, 1 battery, heat insulating cover, cleaning paper, certificate of inspection

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.

0,1 µm digital step

Series 293

ABSOLUTE®

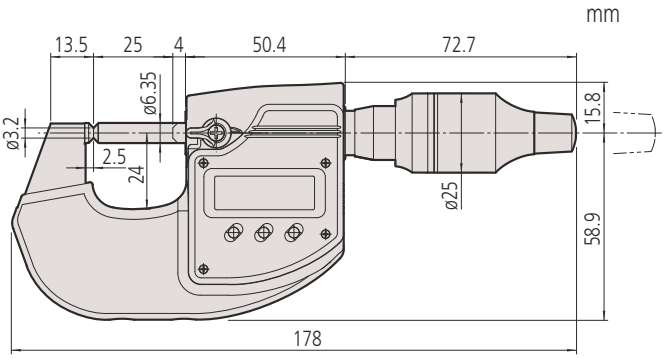
This Micrometer enables 0,1 µm resolution measurements and is ideal for customers who need to make highly accurate measurements with a hand-held tool (such as Gauge R & R analysis).
The Absolute High-Accuracy Micrometer offers the following benefits:

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

293-100-20

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	Mass [g]
293-100-20	0 - 25	0,1 µm / 0,5 µm	±0,5 µm	0,3 µm	0,6 µm	7-9	400



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

Scan QR Code with your mobile device and watch our product videos on YouTube

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Mitutoyo

Digimatic Micrometers QuantuMike IP65

Series 293

This is an IP65 micrometer offering movement four times as fast as a standard micrometer. It presents you with the following benefits:

- Faster measurement is achieved by using a coarser thread which feeds the spindle by 2 mm per thimble rotation.
- Extraordinary battery life of 2 years
- Outstanding accuracy
- Ratched thimble mechanism ensures easy single-handed or stand operation.
- Excellent resistance against water and dust (IP65 protection level) enables this micrometer to be used in machining situations that include splashing coolant fluid.

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 1419032586

Only for 0-25, 25-50 mm

IP65

QuantuMike

293-140-30

Coloured speeders

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

Specifications

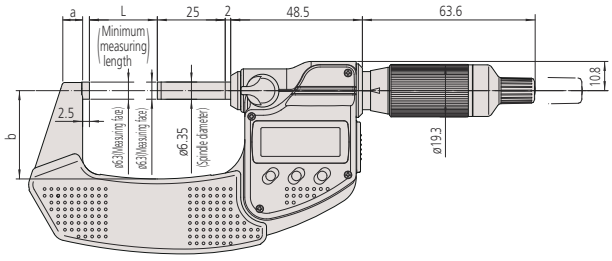
Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 2 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) certificate of inspection (0-50 mm range)

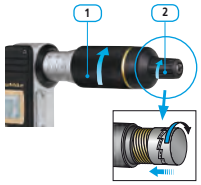
Metric — With data output

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	Mass [g]
293-140-30	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	7-12	0	6,5	25	265
293-141-30	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	7-12	25	7,3	32,5	325
293-142-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	7-12	50	10,1	47	465
293-143-30	75 - 100	0,001 mm	±2 µm	0,3 µm	2 µm	7-12	75	11,5	60	620

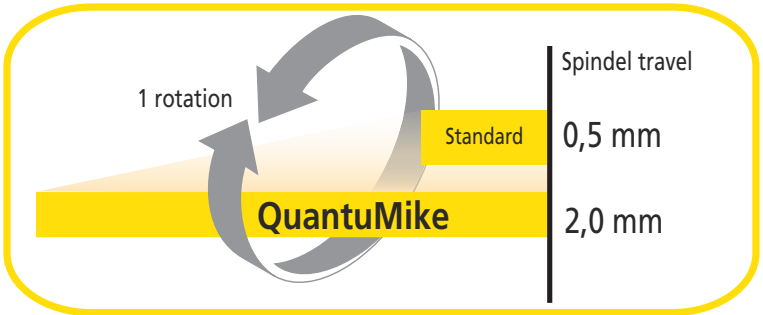
Metric — Without data output

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	Mass [g]
293-145-30	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	7-12	0	6,5	25	265
293-146-30	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	7-12	25	7,3	32,5	325
293-147-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	7-12	50	10,1	47	465
293-148-30	75 - 100	0,001 mm	±2 µm	0,3 µm	2 µm	7-12	75	11,5	60	620





1 : Ratchet on thimble
2 : Ratchet on speeder



Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
04GAA899	Color Speeder, for Ratchet Thimble Black
04GAA900	Color Speeder, for Ratchet Thimble Red
04GAA901	Color Speeder, for Ratchet Thimble Yellow
04GAA902	Color Speeder, for Ratchet Thimble Green
04GAA903	Color Speeder, for Ratchet Thimble Blue
04AAB208	Color Speeder, For Ratchet Thimble Grey

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

With Wireless System U-WAVE fit

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Digimatic Micrometers IP65 Metric

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years, 1,2 years (range >100 mm)
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) certificate of inspection (0-50 mm range)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 293 - Individual Range with Data Output

This IP65 micrometer offers outstanding accuracy, with data output, is highly robust and offers the following benefits:

- Oil-resistant material used for all plastic parts
- Extraordinary battery life of 2,4 years
- Excellent resistance against water and dust enables this micrometer to be used in machining situations that include splashing coolant fluid.

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

Only for 0-25, 25-50 mm

IP65

293-234-30 with ratched thimble

293-230-30 with ratched stop

293-252-30

293-237-30

Metric

With ratchet stop

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]
293-230-30	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	5-10
293-231-30	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	5-10
293-232-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	5-10
293-233-30	75 - 100	0,001 mm	±2 µm	0,3 µm	2 µm	5-10
293-250-30	100 - 125	0,001 mm	±2 µm	0,3 µm	5 µm	5-10
293-251-30	125 - 150	0,001 mm	±2 µm	0,3 µm	5 µm	5-10
293-252-30	150 - 175	0,001 mm	±3 µm	0,3 µm	5 µm	5-10
293-253-30	175 - 200	0,001 mm	±3 µm	0,3 µm	5 µm	5-10
293-254-30	200 - 225	0,001 mm	±3 µm	0,3 µm	5 µm	5-10
293-255-30	225 - 250	0,001 mm	±4 µm	0,3 µm	5 µm	5-10
293-256-30	250 - 275	0,001 mm	±4 µm	0,3 µm	5 µm	5-10
293-257-30	275 - 300	0,001 mm	±4 µm	0,3 µm	5 µm	5-10

No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
293-230-30	0	6,5	25	2,5	270
293-231-30	25	7,3	32,5	2,5	330
293-232-30	50	10,1	47	2,5	470
293-233-30	75	11,5	60	2,5	625
293-250-30	100	16,7	76	5,3	600
293-251-30	125	18,8	90	5,7	740
293-252-30	150	19,1	103	6,1	800
293-253-30	175	18,2	115	6,3	970
293-254-30	200	16,8	126	6,7	1100
293-255-30	225	18	139	5,5	1270
293-256-30	250	18	152	6,5	1340
293-257-30	275	18	166	6,5	1540

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Mitutoyo

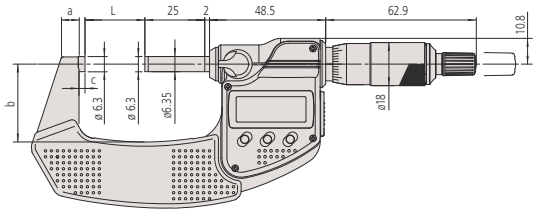
Digimatic Micrometers IP65 Metric

Metric

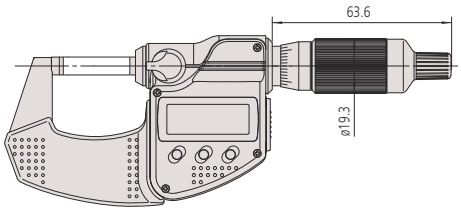
With ratchet thimble

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]
293-234-30	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	5-10
293-235-30	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	5-10
293-236-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	5-10
293-237-30	75 - 100	0,001 mm	±2 µm	0,3 µm	2 µm	5-10

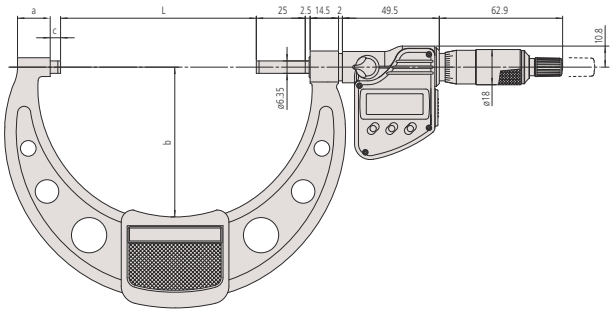
No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
293-234-30	0	6,5	25	2,5	270
293-235-30	25	7,3	32,5	2,5	330
293-236-30	50	10,1	47	2,5	470
293-237-30	75	11,5	60	2,5	625



Ratchet stop



Ratchet thimble



Ratchet stop over 100 mm range

Excellent resistance against water and dust IP65

With Wireless System U-WAVE fit

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Digimatic Micrometers IP65 Metric

Functions	Series 293 - Individual Range without Data Output
ORIGIN (until 100 mm)	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) certificate of inspection (0-50 mm range)

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Scan QR Code with your mobile device and watch our product videos on YouTube

Series 293 - Individual Range without Data Output

This IP65 micrometer offers outstanding accuracy, without data output, is highly robust and offers the following benefits:

- Oil-resistant material used for all plastic parts
- Extraordinary battery life of 2,4 years
- Excellent resistance against water and dust enables this micrometer to be used in machining situations that include splashing coolant fluid.

TÜVRheinland CERTIFIED – Dust- and Water-Protected – www.tuv.com ID 0000040191

IP65

Only for 0-25, 25-50 mm

293-240-30 with ratched stop

293-244-30 with ratchet thimble

Metric — With ratchet stop

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
293-240-30	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	5-10	0	6,5	25	2,5	270
293-241-30	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	5-10	25	7,3	32,5	2,5	330
293-242-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	5-10	50	10,1	47	2,5	470
293-243-30	75 - 100	0,001 mm	±2 µm	0,3 µm	2 µm	5-10	75	11,5	60	2,5	625

Metric — With ratchet thimble

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
293-244-30	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	5-10	0	6,5	25	2,5	270
293-245-30	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	5-10	25	7,3	32,5	2,5	330
293-246-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	5-10	50	10,1	47	2,5	470
293-247-30	75 - 100	0,001 mm	±2 µm	0,3 µm	2 µm	5-10	75	11,5	60	2,5	625

Excellent resistance against water and dust IP65

All products to be sold to commercial customers.
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Mitutoyo

Digimatic Micrometers IP65 Metric

Series 293 - Micrometer Set

This IP65 Micrometer offers outstanding accuracy, with data output, is highly robust and offers the following benefits:

- Oil-resistant material used for all plastic parts
- Extraordinary battery life of 2,4 years
- Excellent resistance against water and dust enables this micrometer to be used in machining situations that include splashing coolant fluid.

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

IP65

only for 0-25mm, 25-50mm

293-963-30

Metric

Set/With ratchet stop

No.	Range [mm]	Digital step	Measuring force [N]	Content of Set	Mass [g]
293-966-30	0 - 50	0,001 mm	5-10	293-230-30 / 293-231-30 + setting standard 25 mm (ceramic gauge block grade 1)	1030
293-962-30	0 - 75	0,001 mm	5-10	293-230-30 / 293-231-30 / 293-232-30 + setting standard 25 mm and 50 mm	1640
293-963-30	0 - 100	0,001 mm	5-10	293-230-30 / 293-231-30 / 293-232-30 / 293-233-30 + setting standard 25 mm, 50 mm and 75 mm	2725

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) certificate of inspection (0-50 mm range)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

With Wireless System U-WAVE fit

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Digimatic Wide Range Micrometers

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

Specifications

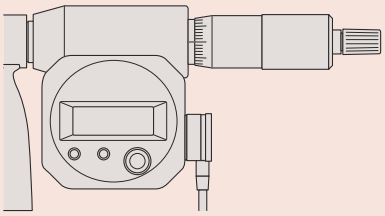
Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 8 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	2 batteries SR-44
Battery life	Approx. 1,8 years
Delivered	Including box, key, setting standard, 2 batteries

Optional accessories

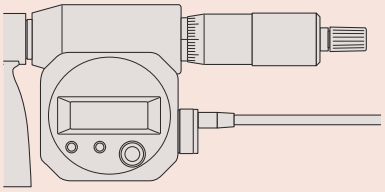
No.	Description
04AZB512	Digimatic Cable with Data Button, 1m, Flat L-Shape Left Type
04AZB513	Digimatic Cable, Straight, Data Button, 2m, Flat L-Shape Left Type
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Cable orientation downwards
04AZB512, 04AZB513



Cable orientation in thimble direction
959149, 959150

Series 293

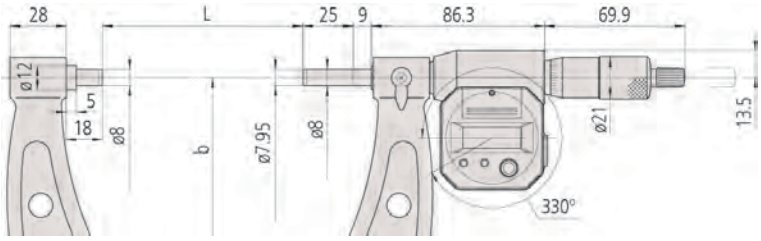
This Wide Measuring Range Digimatic Micrometer with data output offers the following benefits:

- The micrometer's 330° rotatable display unit enables easy reading in all measurement positions.
- With Carbide-tipped measuring faces

293-582

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	b [mm]	Mass [g]
293-582	300 - 325	0,001 mm	±6 µm	0,6 µm	5 µm	10-14	353	187	2000
293-583	325 - 350	0,001 mm	±6 µm	0,6 µm	5 µm	10-14	378	199	2150
293-584	350 - 375	0,001 mm	±6 µm	0,6 µm	5 µm	10-14	403	212	2300
293-585	375 - 400	0,001 mm	±7 µm	0,6 µm	6 µm	10-14	428	224	2450
293-586	400 - 425	0,001 mm	±7 µm	0,6 µm	6 µm	10-14	453	236	2600
293-587	425 - 450	0,001 mm	±7 µm	0,6 µm	6 µm	10-14	478	248	2750
293-588	450 - 475	0,001 mm	±8 µm	0,6 µm	6 µm	10-14	503	261	2900
293-589	475 - 500	0,001 mm	±8 µm	0,6 µm	7 µm	10-14	528	273	3100



The display is 330° rotatable

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Digimatic Micrometers

Series 293

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

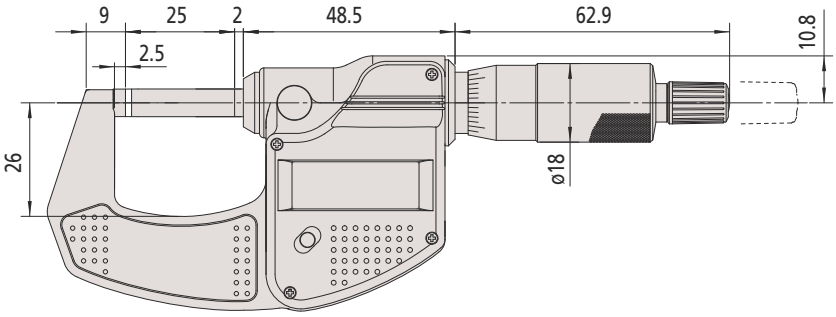
- It is cost-effective with simplified functionality for standard applications.
- Extraordinary battery life of 2,4 years. Without data output.
- Constant measuring force

293-821-30

Metric

With ratchet stop

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	Mass [g]
293-821-30	0 - 25	0,001 mm	±2 µm	0,3 µm	1 µm	5-10	275



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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, certificate of inspection

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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Digimatic Micrometers with Non-Rotating Spindle

Functions	Series 406
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

With Wireless System U-WAVE fit

Series 406

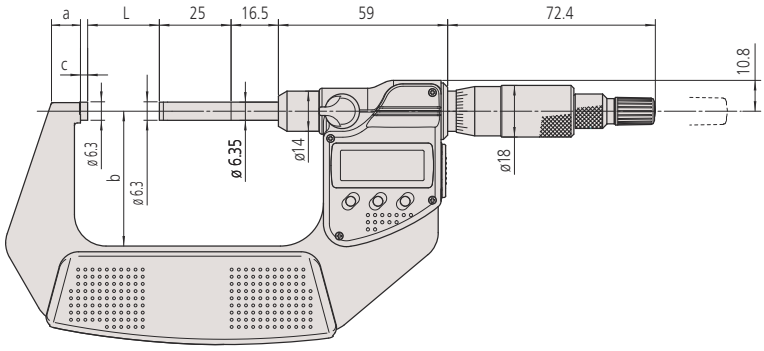
This Micrometer features a non-rotating spindle, and offers the following benefits:

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

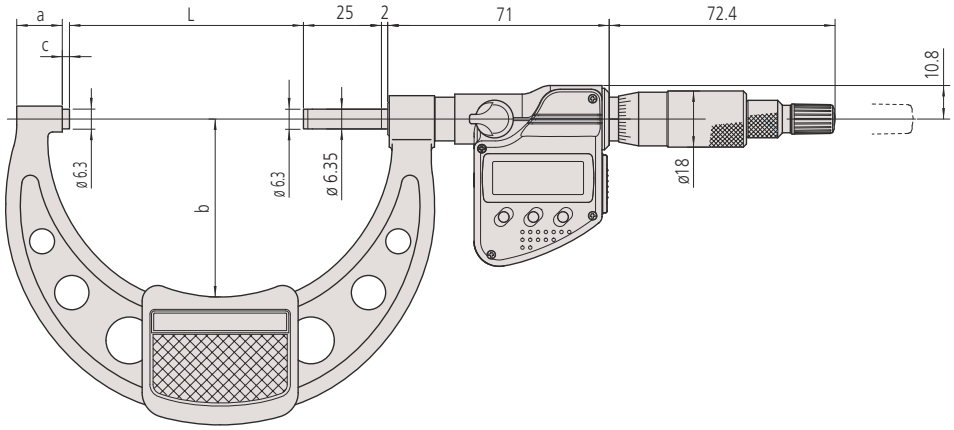
406-250-30

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
406-250-30	0 - 25	0,001 mm	±3 µm	0,3 µm	3 µm	3-8	0	7	32	2,8	330
406-251-30	25 - 50	0,001 mm	±3 µm	0,3 µm	3 µm	3-8	25	9,8	47	2,8	470
406-252-30	50 - 75	0,001 mm	±3 µm	0,3 µm	3 µm	3-8	50	11,2	60	2,8	625
406-253-30	75 - 100	0,001 mm	±4 µm	0,3 µm	3 µm	3-8	75	14,6	57	2,3	460



0 - 75 mm



75 - 100 mm

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ABSOLUTE Digimatic Micrometers Quickmike

Series 293

This Quickmike, with a non-rotating spindle, delivers much faster movement than standard models.
The ABSOLUTE Digimatic Micrometer Quickmike offers the following benefits:

- With 10 mm feed per thimble rotation, it delivers twenty times as fast as standard devices.
- Excellent resistance against water and dust (IP65) enables this micrometer to be used in machining situations that include splashing coolant fluid.
- ABSOLUTE linear scale means no restriction on adjustment speed.
- Larger measuring range - 30 mm compared with 25 mm - than standard micrometer.

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000063013

ABSOLUTE®
IP65

293-666-20

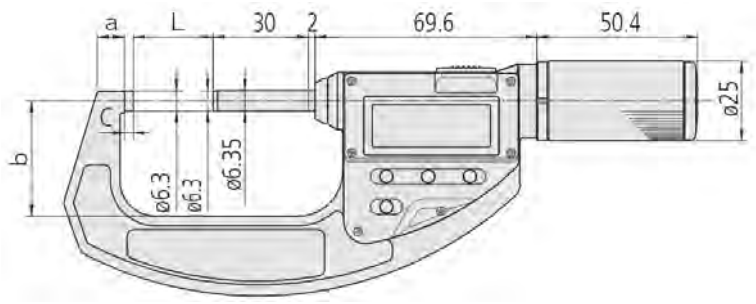
293-667-20

293-668-20

293-669-20

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
293-666-20	0 - 30	0,001 mm	±2 µm	0,3 µm	2 µm	5-12	0	7	25	2	275
293-667-20	25 - 55	0,001 mm	±2 µm	0,3 µm	2 µm	5-12	25	8,5	36	2,8	340
293-668-20	50 - 80	0,001 mm	±3 µm	0,3 µm	2 µm	5-12	50	10,3	47	2,8	480
293-669-20	75 - 105	0,001 mm	±3 µm	0,3 µm	3 µm	5-12	75	10,7	60	2,8	585



	Series 293
Functions	
ON/OFF	●
ORIGIN	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

Display	LCD, character height 10 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	Non-rotating, spindle feed 10 mm
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Delivered	Including box, setting standard (from 25 mm upward), 1 battery

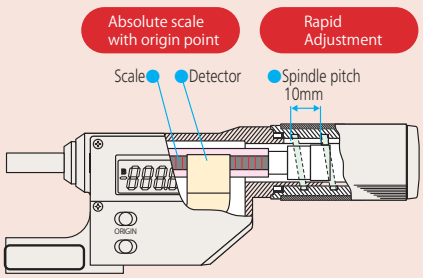
Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

293-666-20 with micrometer stand 156-101-10 (optional accessories)



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

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ABSOLUTE Digimatic Micrometers Quickmike

	Series 227
Functions	
ON/OFF	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
HOLD	●
PRESET	●

Specifications

Display	LCD, character height 10 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	ø6,35 mm, non-rotating, spindle feed 10 mm
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Delivered	Including box, setting standard (for 10-30 mm models), screwdriver, 1 battery

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 227

ABSOLUTE®

This Quickmike has an adjustable measuring force to suit various kinds of workpieces.
The ABSOLUTE Digimatic Micrometer Quickmike offers the following benefits:

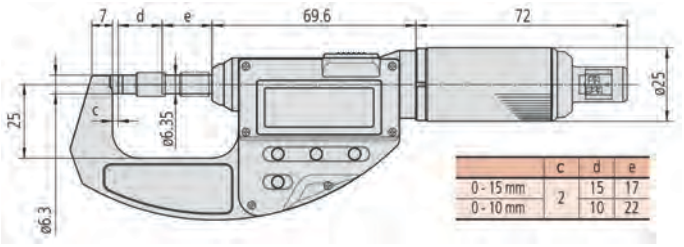
- It's dedicated to applications requiring a constant/low measuring force such as measuring wire, paper and plastic/rubber parts.
- Constant and low measuring force mechanism in the thimble.
- Non-rotating spindle.
- Speedy spindle feed of 10 mm per thimble rotation.

227-201-20

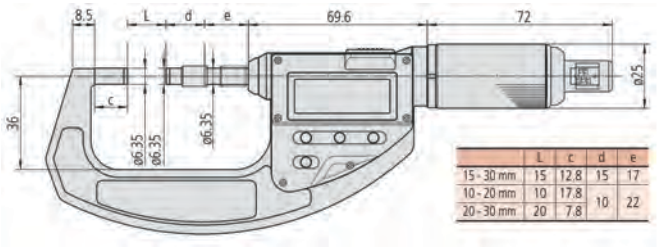
Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force settings [N]	Measuring force accuracy (1) [N]	Mass [g]
227-201-20	0 - 15	0,001 mm	±2 µm	0,3 µm	2 µm	0,5; 1; 1,5; 2; 2,5	±0,1 + (force setting/10)	300
227-203-20	15 - 30	0,001 mm	±2 µm	0,3 µm	2 µm	0,5; 1; 1,5; 2; 2,5	±0,1 + (force setting/10)	380
227-205-20	0 - 10	0,001 mm	±2 µm	0,3 µm	2 µm	2; 4; 6; 8; 10	±0,4 + (force setting/10)	345
227-206-20	10 - 20	0,001 mm	±2 µm	0,3 µm	2 µm	2; 4; 6; 8; 10	±0,4 + (force setting/10)	425
227-207-20	20 - 30	0,001 mm	±2 µm	0,3 µm	2 µm	2; 4; 6; 8; 10	±0,4 + (force setting/10)	415

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



227-201-20, 227-205-20



227-203-20, 227-206-20, 227-207-20

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Mitutoyo

Ratchet Thimble Micrometers

Series 102

This Ratchet Thimble Micrometer has a mechanism that ensures consistent and reliable measurements. It offers you the following benefits:

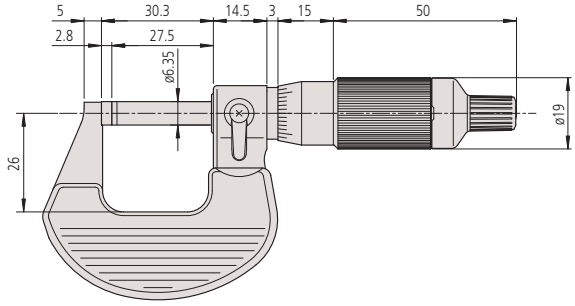
- It works both from the thimble and the speeder, enabling easy, one-handed operation.
- Ratchet's clearly audible operation provides reassurance that measurements are being taken at a constant, preset measuring force.
- Heat insulating frame.

102-701

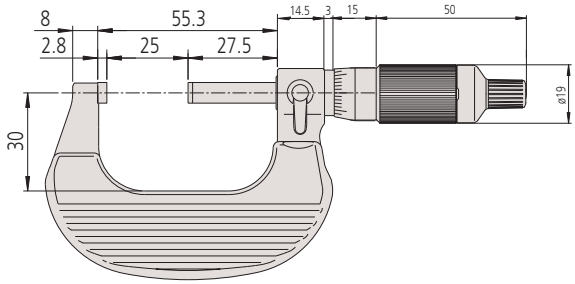
102-702

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	Mass [g]
102-701	0 - 25	0,01 mm	±2 µm	0,6 µm	2 µm	5-10	180
102-707	0 - 25	0,001 mm	±2 µm	0,6 µm	2 µm	5-10	180
102-702	25 - 50	0,01 mm	±2 µm	0,6 µm	2 µm	5-10	270
102-708	25 - 50	0,001 mm	±2 µm	0,6 µm	2 µm	5-10	270



0-25 mm



25-50 mm

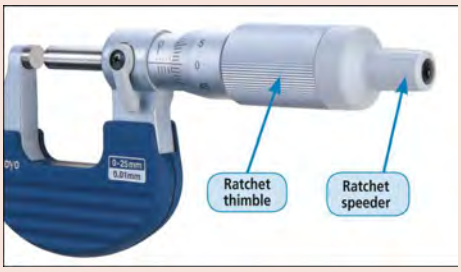
Coloured ratchet caps (optional accessories)

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø19 mm
Delivered	Including box, key, setting standard (from 25 mm upward), certificate of inspection

Optional accessories

No.	Description
04GAA899	Color Speeder, for Ratchet Thimble Black
04GAA900	Color Speeder, for Ratchet Thimble Red
04AAB208	Color Speeder, For Ratchet Thimble Grey
04GAA901	Color Speeder, for Ratchet Thimble Yellow
04GAA902	Color Speeder, for Ratchet Thimble Green
04GAA903	Color Speeder, for Ratchet Thimble Blue



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Outside Micrometer with Thermally Insulating Plate

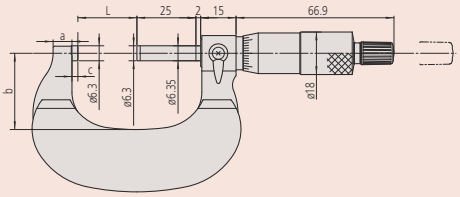
Series 102

Cut-away frame behind anvil for measuring in hard to reach places. A ratchet stop or friction thimble guarantees repeatable measurement.

Only for 0-25, 25-50 mm

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, key, setting standard (from 25 mm upward), certificate of inspection (0-50 mm range)



102-301

102-911-40

Metric

Graduation 0,001 mm is obtained with vernier on sleeve

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Remarks	Measuring force [N]
102-311	0 - 25	0,001 mm	±1 µm	0,3 µm	2 µm	Ratched Stop	5-10
102-312	25 - 50	0,001 mm	±1 µm	0,3 µm	1 µm	Ratched Stop	5-10
102-313	0 - 25	0,001 mm	±1 µm	0,3 µm	1 µm	Friction Thimble	5-10

No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
102-311	0	5	26	2,5	180
102-312	25	7,8	32	2,5	270
102-313	0	5	26	2,5	180

Metric

Graduation 0,01 mm

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Remarks	Measuring force [N]
102-301	0 - 25	0,01 mm	±2 µm	0,6 µm	2 µm	Ratched Stop	5-10
102-302	25 - 50	0,01 mm	±2 µm	0,6 µm	2 µm	Ratched Stop	5-10
102-303	50 - 75	0,01 mm	±2 µm	0,6 µm	2 µm	Ratched Stop	5-10
102-304	75 - 100	0,01 mm	±3 µm	0,6 µm	3 µm	Ratched Stop	5-10

No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
102-301	0	5	26	2,5	180
102-302	25	7,8	32	2,5	270
102-303	50	10,6	45	2,5	375
102-304	75	11	58	2,5	490

Metric

Micrometer set

No.	Range [mm]	Graduation	Remarks	Content of Set	Mass [g]
102-911-40	0 - 100	0,01 mm	Ratched Stop	102-301, 102-302, 102-303, 102-304, 3 setting standards	1200

All products to be sold to commercial customers.
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Analog Outside Micrometers Metric

Series 103

Lightweight workshop design with baked-enamel-finished frame.

- Equipped with Ratchet Stop for constant measuring force.

Only for 0-25 and 25-50 mm

103-137

103-139-10

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm (21 mm models >300 mm)
Delivered	Including box, key, setting standard (from 25 mm upward), certificate of inspection (0-50 mm range)

Metric

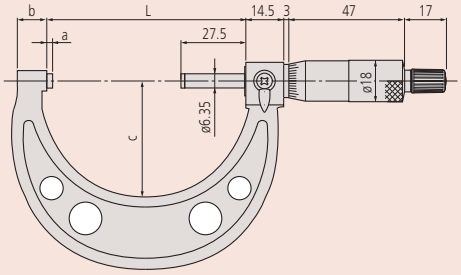
Graduation 0,001 mm is obtained with vernier on sleeve

No.	Range [mm]	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]
103-129	0-25	±2 µm	0,6 µm	2 µm	5-10	30,3	2,8	9	28	6,35	175
103-130	25-50	±2 µm	0,6 µm	2 µm	5-10	55,3	2,8	10	38	6,35	215

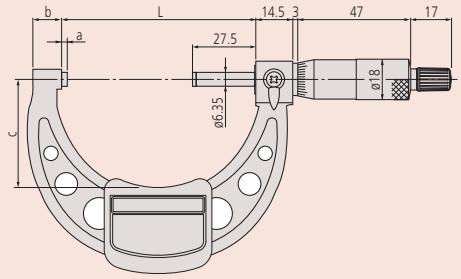
Metric

Graduation 0,01 mm

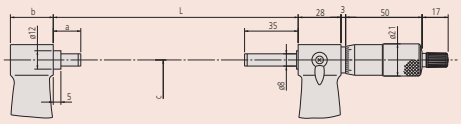
No.	Range [mm]	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]
103-137	0-25	±2 µm	0,6 µm	2 µm	5-10	30,3	2,8	9	28	6,35	175
103-138	25-50	±2 µm	0,6 µm	2 µm	5-10	55,3	2,8	10	38	6,35	215
103-139-10	50-75	±2 µm	0,6 µm	2 µm	5-10	80,3	2,8	12	46	6,35	315
103-140-10	75-100	±3 µm	0,6 µm	3 µm	5-10	105,3	2,8	14	57	6,35	375
103-141-10	100-125	±3 µm	0,6 µm	3 µm	5-10	132,8	5,3	17	76	6,35	515
103-142-10	125-150	±3 µm	0,6 µm	3 µm	5-10	158,2	5,7	19	90	6,35	665
103-143-10	150-175	±4 µm	0,6 µm	3 µm	5-10	183,6	6,1	20	102	6,35	720
103-144-10	175-200	±4 µm	0,6 µm	4 µm	5-10	208,8	6,3	19	115	6,35	920
103-145-10	200-225	±4 µm	0,6 µm	4 µm	5-10	234,2	6,7	18	127	6,35	1080
103-146-10	225-250	±5 µm	0,6 µm	4 µm	5-10	258	5,5	18	139	6,35	1255
103-147-10	250-275	±5 µm	0,6 µm	4 µm	5-10	284	6,5	18	152	6,35	1405
103-148-10	275-300	±5 µm	0,6 µm	5 µm	5-10	309	6,5	18	166	6,35	1565
103-149	300-325	±6 µm	1 µm	5 µm	10-15	353	18	28	187	8	1985
103-150	325-350	±6 µm	1 µm	5 µm	10-15	378	18	28	199	8	2155
103-151	350-375	±6 µm	1 µm	5 µm	10-15	403	18	28	212	8	2305
103-152	375-400	±7 µm	1 µm	6 µm	10-15	428	18	28	224	8	2455
103-153	400-425	±7 µm	1 µm	6 µm	10-15	453	18	28	236	8	2715
103-154	425-450	±7 µm	1 µm	6 µm	10-15	478	18	28	248	8	2965
103-155	450-475	±8 µm	1 µm	6 µm	10-15	503	18	28	261	8	3215
103-156	475-500	±8 µm	1 µm	7 µm	10-15	528	18	28	273	8	3450
103-157	500-525	±9 µm	1 µm	7 µm	10-15	575	40	28	307	8	4060
103-158	525-550	±9 µm	1 µm	7 µm	10-15	575	15	28	307	8	4080
103-159	550-575	±9 µm	1 µm	7 µm	10-15	625	40	28	332	8	4500
103-160	575-600	±9 µm	1 µm	8 µm	10-15	625	15	28	332	8	4525
103-161	600-625	±9 µm	1 µm	8 µm	10-15	675	40	28	355	8	4915
103-162	625-650	±9 µm	1 µm	8 µm	10-15	675	15	28	355	8	4930
103-163	650-675	±9 µm	1 µm	8 µm	10-15	725	40	28	382	8	5200
103-164	675-700	±9 µm	1 µm	9 µm	10-15	725	15	28	382	8	5215
103-165	700-725	±9 µm	1 µm	9 µm	10-15	775	40	28	405	8	5835
103-166	725-750	±9 µm	1 µm	9 µm	10-15	775	15	28	405	8	5860
103-167	750-775	±9 µm	1 µm	9 µm	10-15	825	40	28	430	8	6385
103-168	775-800	±9 µm	1 µm	10 µm	10-15	825	15	28	430	8	6410
103-169	800-825	±9 µm	1 µm	10 µm	10-15	875	40	28	455	8	6925
103-170	825-850	±9 µm	1 µm	10 µm	10-15	875	15	28	455	8	6940
103-171	850-875	±9 µm	1 µm	10 µm	10-15	925	40	28	480	8	7565
103-172	875-900	±9 µm	1 µm	11 µm	10-15	925	15	28	480	8	7590
103-173	900-925	±9 µm	1 µm	11 µm	10-15	975	40	28	505	8	8215
103-174	925-950	±9 µm	1 µm	11 µm	10-15	975	15	28	505	8	8240
103-175	950-975	±9 µm	1 µm	11 µm	10-15	1025	40	28	530	8	8860
103-176	975-1000	±9 µm	1 µm	12 µm	10-15	1025	15	28	530	8	8880



Models up to 50 mm



Models 50 mm to 300 mm with insulating plate



Models over 300 mm

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Analog Outside Micrometers in Set

Specifications

Measuring face	Carbide tipped, micro-lap finish
Measuring spindle	With spindle lock, ø6,35 mm , spindle pitch 0,5 mm
Delivered	Including box, key, setting standard (from 25 mm upward),

Series 103

Lightweight workshop design with baked-enamel-finished frame.

PROPRIETARY INSPECTION CERTIFICATE

Only for 0-25 and 25-50 mm

103-927-10

103-913-50

103-914-50

Setting standards 103-914-50

Metric Micrometer set

No.	Range [mm]	Graduation	Content of Set	Mass [g]
103-927-10	0 - 75	0,01 mm	103-137, 103-138, 103-139-10, 2 setting standards	750
103-913-50	0 - 150	0,01 mm	103-137, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10, 5 setting standards	2260
103-915-10	150 - 300	0,01 mm	103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 6 setting standards	7695
103-914-50	0 - 300	0,01 mm	103-137, 103-138, 103-139-10, 103-140-10, 103-141-10, 103-142-10103-143-10, 103-144-10, 103-145-10, 103-146-10, 103-147-10, 103-148-10, 11 setting standards	9300

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Mitutoyo

Digit Outside Micrometers

Series 193

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

- Mechanical Digit counter
- Quick and easy reading

193-101

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key

193-902

Metric

Graduation 0,001 mm is obtained with vernier on sleeve

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
193-111	0 - 25	0,001 mm	±2 µm	0,6 µm	2 µm	5-15	30	2,5	5	26	224
193-112	25 - 50	0,001 mm	±2 µm	0,6 µm	2 µm	5-15	55	2	8	32	275
193-113	50 - 75	0,001 mm	±2 µm	0,6 µm	2 µm	5-15	80	2	9	45	379
193-114	75 - 100	0,001 mm	±3 µm	0,6 µm	3 µm	5-15	105	2	9	57	489

Metric

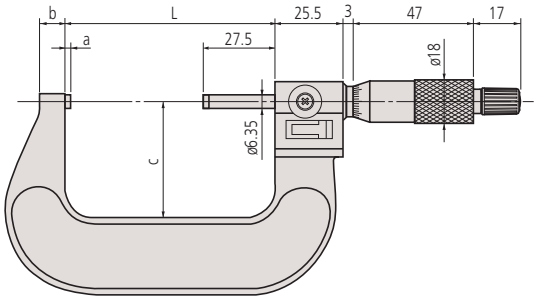
Graduation 0,01 mm

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
193-101	0 - 25	0,01 mm	±2 µm	0,6 µm	2 µm	5-15	30	2,5	5	26	224
193-102	25 - 50	0,01 mm	±2 µm	0,6 µm	2 µm	5-15	55	2	8	32	275
193-103	50 - 75	0,01 mm	±2 µm	0,6 µm	2 µm	5-15	80	2	9	45	379
193-104	75 - 100	0,01 mm	±3 µm	0,6 µm	3 µm	5-15	105	2	9	57	489

Metric

Micrometer set

No.	Range [mm]	Graduation	Measuring force [N]	Content of Set	Mass [g]
193-901	0 - 75	0,01 mm	5-15	193-101, 193-102, 193-103, 2 setting standards	820
193-902	0 - 100	0,01 mm	5-15	193-101, 193-102, 193-103, 193-104, 3 setting standards	1367



193-112

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Digimatic Micrometers with Interchangeable Anvils

Series 340

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

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

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

IP65 up 300 mm

	Series 340
Functions	
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●
2 x PRESET	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped spindle, hardened anvil
Measuring spindle	With spindle lock, ø 6,35 mm, ø8 mm (over 300 mm), spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	Battery SR-44
Battery life	Approx. 2,4 years, 1,8 years (range >300 mm)
Delivered	Including box, setting standard, anvils, key, 1 battery (2 batteries > 300 mm)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
04AZB512	Digimatic Cable with Data Button, 1m, Flat L-Shape Left Type
04AZB513	Digimatic Cable, Straight, Data Button, 2m, Flat L-Shape Left Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button

05CZA662, 05CZA663, 06AFM380B,
264-622, 264-623, 02AZF310
for models up to 300 mm
959149, 959150, 04AZB512, 04AZB5130,
6AFM380C, 02AZD730G, 02AZD880G, 02AZD790C
for models over 300 mm

Consumable spares

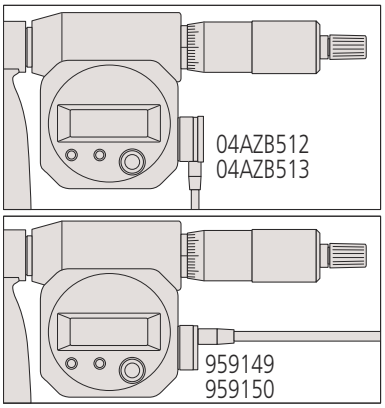
No.	Description
938882	Battery SR44 1,5 V

340-251-30 (IP65 up to 300 mm Range)

340-520 (not IP65 protected >300 mm Range)

Metric

No.	Range [mm]	Digital step	Limit of error	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	Setting standard	Interchangeable anvils	Mass [kg]
340-251-30	0 - 150	0,001 mm	±6 µm	3	0,6 µm	3 µm	5-10	5 (25, 50, 75, 100, 125 mm)	6	0,96
340-252-30	150 - 300	0,001 mm	±8 µm	3	0,6 µm	5 µm	5-10	6 (150, 175, 200, 225, 250, 275 mm)	6	1,88
340-520	300 - 400	0,001 mm	±10 µm	3	1 µm	6 µm	10-15	4 (300, 325, 350, 375 mm)	4	2,6
340-521	400 - 500	0,001 mm	±11 µm	3	1 µm	7 µm	10-15	4 (400, 425, 450, 475 mm)	4	4,1
340-522	500 - 600	0,001 mm	±12 µm	3	1 µm	8 µm	10-15	4 (500, 525, 550, 575 mm)	4	5,5
340-523	600 - 700	0,001 mm	±14 µm	3	1 µm	9 µm	10-15	4 (600, 625, 650, 675 mm)	4	6,8
340-524	700 - 800	0,001 mm	±15 µm	3	1 µm	10 µm	10-15	4 (700, 725, 750, 775 mm)	4	8,2
340-525	800 - 900	0,001 mm	±16 µm	3	1 µm	11 µm	10-15	4 (800, 825, 850, 875 mm)	4	9,5
340-526	900 - 1000	0,001 mm	±18 µm	3	1 µm	12 µm	10-15	4 (900, 925, 950, 975 mm)	4	10,9



Models over 300 mm

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Mitutoyo

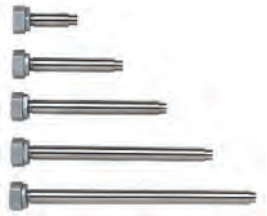
Outside Micrometers with Interchangeable Anvils

Series 104

This Outside Micrometer offers you an extra wide measuring range with the following benefits:

- Easy, interchangeable anvils allow a wide range of measurements.

104-171



104-135A

Specifications

Measuring face	Hardened, lapped (anvil), carbide tipped, lapped (spindle side)
Measuring spindle	With spindle lock, ø 6,35 mm (up to 300 mm) ø8 mm (over 300 mm), spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm (ø21 mm >300 mm)
Delivered	Including box, setting standard, anvils, key

Metric

No.	Range [mm]	Graduation	Limit of error	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	Setting standard	Interchangeable anvils	Mass [kg]
104-171	0 - 50	0,01 mm	±5 µm	3	0,6 µm	2 µm	5-10	1 (25 mm)	1	0,32
104-139A	0 - 100	0,01 mm	±6 µm	3	0,6 µm	3 µm	5-10	3 (25, 50, 75 mm)	4	0,79
104-135A	0 - 150	0,01 mm	±6 µm	3	0,6 µm	3 µm	5-10	5 (25, 50, 75, 100, 125 mm)	6	1,35
104-161A	50 - 150	0,01 mm	±6 µm	3	0,6 µm	3 µm	5-10	5 (50, 75, 100, 125 mm)	4	1,35
104-140A	100 - 200	0,01 mm	±7 µm	3	0,6 µm	4 µm	5-10	4 (100, 125, 150, 175 mm)	4	1,38
104-136A	150 - 300	0,01 mm	±8 µm	3	0,6 µm	5 µm	5-10	6 (100, 125, 150, 175, 200, 225 mm)	6	2,65
104-141A	200 - 300	0,01 mm	±8 µm	3	0,6 µm	5 µm	5-10	4 (200, 225, 250, 275 mm)	4	2,22
104-142A	300 - 400	0,01 mm	±10 µm	3	1 µm	6 µm	10-14	4 (300, 325, 350, 375 mm)	4	3,31
104-143A	400 - 500	0,01 mm	±11 µm	3	1 µm	7 µm	10-14	4 (400, 425, 450, 475 mm)	4	4,81
104-144A	500 - 600	0,01 mm	±12 µm	3	1 µm	8 µm	10-14	4 (500, 525, 550, 575 mm)	4	6,35
104-145A	600 - 700	0,01 mm	±14 µm	3	1 µm	9 µm	10-14	4 (600, 625, 650, 675 mm)	4	7,72
104-146A	700 - 800	0,01 mm	±15 µm	3	1 µm	10 µm	10-14	4 (700, 725, 750, 775 mm)	4	9,08
104-147A	800 - 900	0,01 mm	±16 µm	3	1 µm	11 µm	10-14	4 (800, 825, 850, 875 mm)	4	10,41
104-148A	900 - 1000	0,01 mm	±18 µm	3	1 µm	12 µm	10-14	4 (900, 925, 950, 975 mm)	4	11,78

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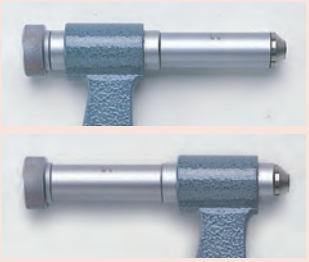
Outside Micrometers with Anvil Extension Collars

Specifications

Scale	Thimble and sleeve satin chrome finish ø21 mm
Measuring face	Carbide-tipped, micro-lap finish
Delivered	Including box, setting standards



Anvil extension collar

Series 105 - 500 mm to 1000 mm Range

This Outside Micrometer comes with Extension Anvil Collars.
It offers you the following benefits:

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

105-105

Metric

Extension Collar: 50 mm

No.	Range [mm]	Graduation	Limit of error	Spindle feed error [µm]	Flatness	Parallelism
105-103	500 - 600	0,01 mm	±14 µm	6	1,3 µm	8 µm
105-104	600 - 700	0,01 mm	±16 µm	6	1,3 µm	9 µm
105-105	700 - 800	0,01 mm	±17 µm	6	1,3 µm	10 µm
105-106	800 - 900	0,01 mm	±18 µm	6	1,3 µm	11 µm
105-107	900 - 1000	0,01 mm	±20 µm	6	1,3 µm	12 µm

No.	Measuring force [N]	Extension collar	Mass [kg]
105-103	5-10	50 mm	5,53
105-104	5-10	50 mm	6,35
105-105	5-10	50 mm	7,17
105-106	5-10	50 mm	7,99
105-107	5-10	50 mm	8,81

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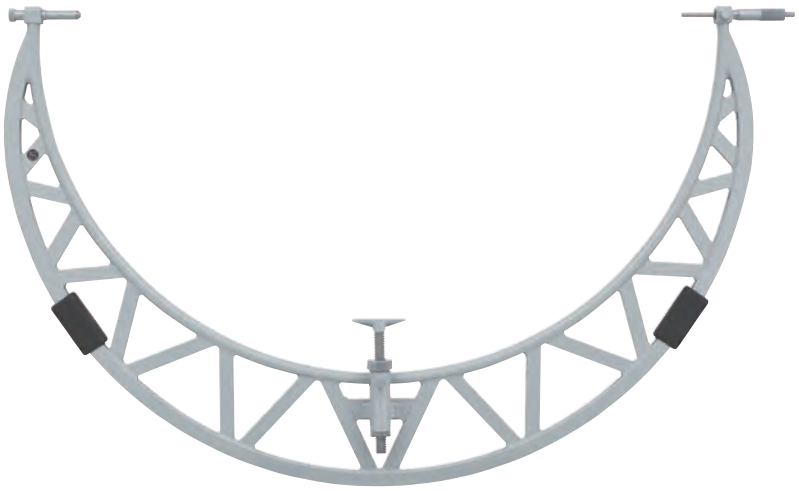
Outside Micrometers with Anvil Extension Collars

Series 105 - 1000 mm to 2000 mm Range

This Outside Micrometer comes with Extension Anvil Collars.
It offers you the following benefits:

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



105-408

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, Ø 8 mm spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø21 mm
Delivered	Including box, setting standards, adjustable stop

Application with adjustable stop on workpiece

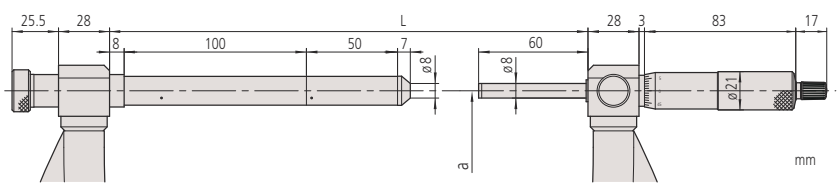
Application with adjustable stop on workpiece

Metric — Extension Collar: 50 mm

No.	Range [mm]	Graduation	Limit of error	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	Extension collar	L [mm]	a [mm]	Mass [kg]
105-408	1000-1100	0,01 mm	±21 µm	6	1,3 µm	13 µm	5-10	50 mm	1225	600	9,4
105-409	1100 - 1200	0,01 mm	±22 µm	6	1,3 µm	14 µm	5-10	50 mm	1225	600	9,9
105-410	1200 - 1300	0,01 mm	±24 µm	6	1,3 µm	15 µm	5-10	50 mm	1425	700	10,8
105-411	1300 - 1400	0,01 mm	±25 µm	6	1,3 µm	16 µm	5-10	50 mm	1425	700	11,3
105-412	1400 - 1500	0,01 mm	±26 µm	6	1,3 µm	17 µm	5-10	50 mm	1625	800	11,8
105-413	1500 - 1600	0,01 mm	±28 µm	6	1,3 µm	18 µm	5-10	50 mm	1625	800	12,5
105-414	1600 - 1700	0,01 mm	±29 µm	6	1,3 µm	19 µm	5-10	50 mm	1825	900	13,1
105-415	1700 - 1800	0,01 mm	±30 µm	6	1,3 µm	20 µm	5-10	50 mm	1825	900	14
105-416	1800 - 1900	0,01 mm	±32 µm	6	1,3 µm	21 µm	5-10	50 mm	2025	1000	14,8
105-417	1900 - 2000	0,01 mm	±33 µm	6	1,3 µm	22 µm	5-10	50 mm	2025	1000	15,7

Metric — Extension Collar: 50 mm, 100 mm

No.	Range [mm]	Graduation	Limit of error	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	Extension collar	L [mm]	a [mm]	Mass [kg]
105-418	1000/1200	0,01 mm	±22 µm	6	1,3 µm	14 µm	5-10	50/100 mm	1225	600	10
105-419	1200/1400	0,01 mm	±25 µm	6	1,3 µm	16 µm	5-10	50/100 mm	1425	700	11,4
105-420	1400/1600	0,01 mm	±28 µm	6	1,3 µm	18 µm	5-10	50/100 mm	1625	800	12,6
105-421	1600/1800	0,01 mm	±30 µm	6	1,3 µm	20 µm	5-10	50/100 mm	1825	900	14,1
105-422	1800/2000	0,01 mm	±33 µm	6	1,3 µm	22 µm	5-10	50/100 mm	2025	1000	15,8



All products to be sold to commercial customers.
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Digimatic Sheet Metal Micrometers

Functions	Series 389
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●
2 x PRESET	●

Series 389

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

IP65 except 389-514

TÜVRheinland CERTIFIED Dust- and Water-Protected www.tuv.com ID 0000040191

389-251-30

389-514

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm/ø 8 mm (389-514), spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	Battery SR-44
Battery life	Approx. 2,4 years, approx. 1,8 years (389-514)
Delivered	Including box, key, 1 battery, 2 batteries (389-514)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
959150	Digimatic Cable, Straight, Data Button, 2 m
959149	Digimatic Cable, Straight, Data Button, 1 m
04AZB512	Digimatic Cable with Data Button, 1m, Flat L-Shape Left Type
04AZB513	Digimatic Cable, Straight, Data Button, 2m, Flat L-Shape Left Type
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button

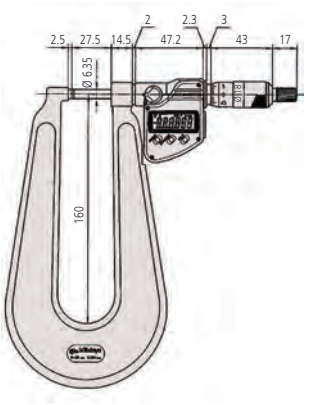
959149, 959150, 04AZB512, 04AZB513
06AFM380C,
02AZD880G, 02AZD730G, 02AZD790C
for 389-514

Consumable spares

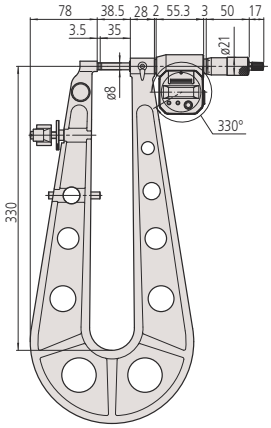
No.	Description
938882	Battery SR44 1,5 V

Metric

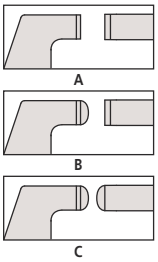
No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Anvil / Spindle	Measuring force [N]	Throat depth	Mass [g]
389-251-30	0 - 25	0,001 mm	±4 µm	0,6 µm	3 µm	Type A, flat/flat	3-8	160	840
389-261-30	0 - 25	0,001 mm	±4 µm	0,6 µm	3 µm	Type B, spherical/flat	3-8	160	840
389-271-30	0 - 25	0,001 mm	±4 µm	0,6 µm	3 µm	Type C, spherical/spherical	3-8	160	840
389-514	0 - 25	0,001 mm	±5 µm	1 µm	3 µm	Type A, flat/flat	10-14	330	2750
389-252-30	25 - 50	0,001 mm	±4 µm	0,6 µm	3 µm	Type A, flat/flat	3-8	160	920
389-262-30	25 - 50	0,001 mm	±4 µm	0,6 µm	3 µm	Type B, spherical/flat	3-8	160	920
389-272-30	25 - 50	0,001 mm	±4 µm	0,6 µm	3 µm	Type C, spherical/spherical	3-8	160	920

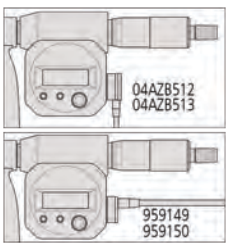


0-25 mm



389-514





Digimatic cable for 389-514

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Mitutoyo

Sheet Metal Micrometers

Series 118

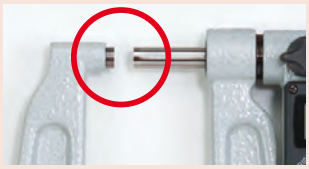
This Sheet Metal Micrometer is designed with a deep frame for measuring the thickness of sheet material.

118-101

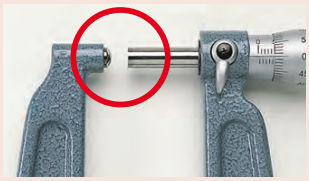
118-102

Specifications

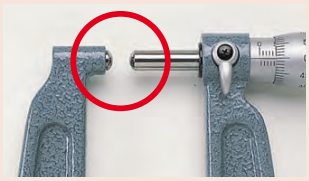
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, throat depth up to 150 mm : ø 6.35 mm throat depth up to 300 mm : ø 8 mm, spindle pitch 0.5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm (118-103 ø21 mm)
Delivered	Including box, key, setting standard (from 25 mm upward)



Type A
Flat-Flat



Type B
Spherical-Flat



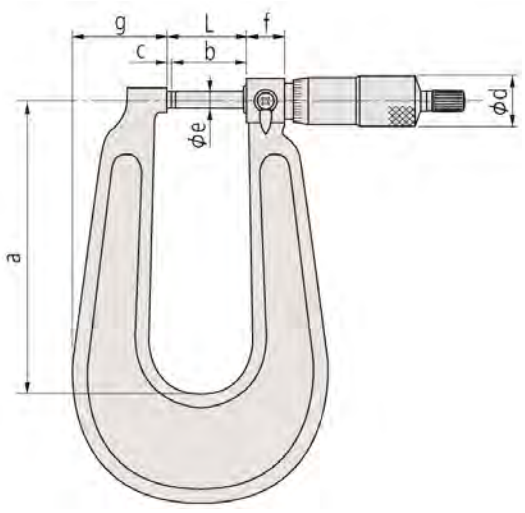
Type C
Spherical-Spherical

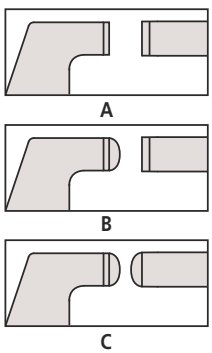
118-103

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Anvil / Spindle	Measuring force [N]
118-101	0 - 25	0,01 mm	±4 µm	0,6 µm	3 µm	Type A, flat/flat	3-8
118-102	0 - 25	0,01 mm	±4 µm	0,6 µm	3 µm	Type A, flat/flat	3-8
118-103	0 - 25	0,01 mm	±5 µm	1 µm	3 µm	Type A, flat/flat	10-14
118-110	25 - 50	0,01 mm	±4 µm	0,6 µm	3 µm	Type A, flat/flat	3-8
118-114	0 - 25	0,01 mm	±4 µm	0,6 µm	3 µm	Type B, spherical/flat	3-8
118-118	0 - 25	0,01 mm	±4 µm	0,6 µm	3 µm	Type C, spherical/spherical	3-8
118-126	25 - 50	0,01 mm	±4 µm	0,6 µm	3 µm	Type C, spherical/spherical	3-8

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	Mass [g]
118-101	30,3	110	27,5	2,5	18	6,35	14,5	34	445
118-102	30,3	160	27,5	2,5	18	6,35	14,5	43	740
118-103	38,5	330	35	3,5	21	8	28	84	2650
118-110	55,3	165	27,5	2,5	18	6,35	14,5	41	820
118-114	30,3	160	27,5	2,5	18	6,35	14,5	43	740
118-118	30,3	160	27,5	2,5	18	6,35	14,5	43	740
118-126	55,3	165	27,5	2,5	18	6,35	14,5	41	820





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Sheet Metal Micrometers Graduated Dial

Series 119

This Sheet Metal Micrometer comes with a graduated dial.
It offers you the following features:

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

119-202

Specifications

Measuring face	Convex anvil and flat spindle, carbide-tipped
Measuring spindle	With spindle lock, ø 6,35 mm
Delivered	Including box

Optional accessories

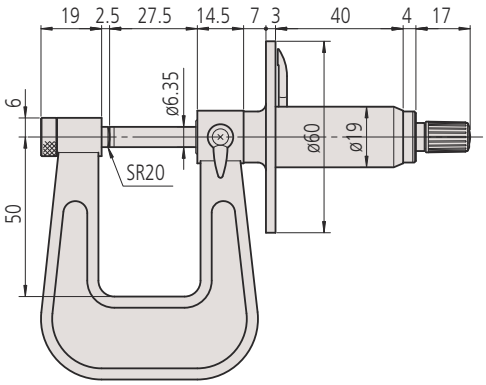
No.	Description
156-105-10	Micrometer Stand, 45° Angle Type, for Micrometer 0-50mm/0-2"
156-101-10	Micrometer Stand, Adjustable Angle Type, for Micrometer 0-100mm/0-4"

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

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Measuring force [N]	Mass [g]
119-202	0 - 25	0,01 mm	±4 µm	5-10	305

mm



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Digimatic Caliper Jaw Micrometers

Series 343

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

343-250-30

Functions	Series 343
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

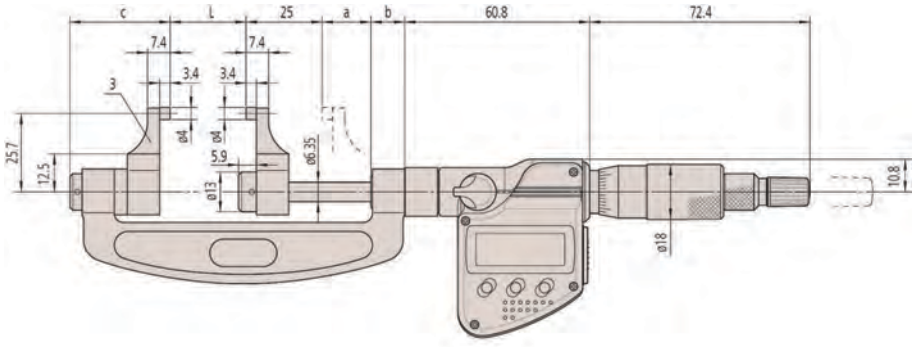
Specifications

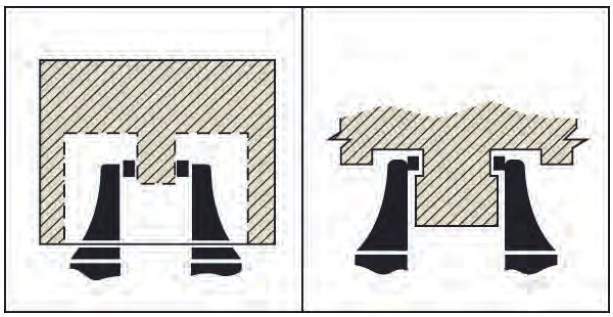
Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]
343-250-30	0 - 25	0,001 mm	±5 µm	0,3 µm	3 µm	1-6
343-251-30	25 - 50	0,001 mm	±6 µm	0,3 µm	3 µm	1-6
343-252-30	50 - 75	0,001 mm	±7 µm	0,3 µm	4 µm	1-6
343-253-30	75 - 100	0,001 mm	±8 µm	0,3 µm	4 µm	1-6

No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
343-250-30	0	16	10,6	32,9	320
343-251-30	25	16	10,6	32,9	340
343-252-30	50	16	10,6	32,9	390
343-253-30	75	16	10,6	32,9	440





Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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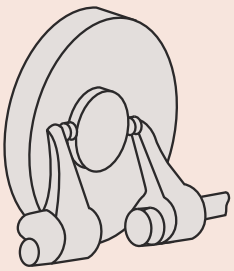
Caliper Jaw Micrometers

Series 143

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

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	ø6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, key, setting standard (from 25 mm upward)

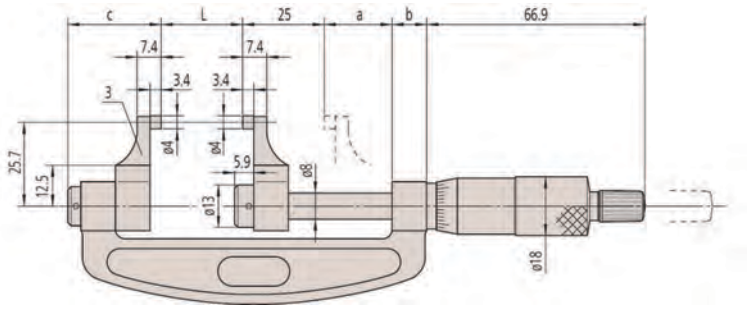


143-102

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]
143-101	0 - 25	0,01 mm	±5 µm	0,3 µm	3 µm	1-6
143-102	25 - 50	0,01 mm	±6 µm	0,3 µm	3 µm	1-6
143-103	50 - 75	0,01 mm	±7 µm	0,3 µm	4 µm	1-6
143-104	75 - 100	0,01 mm	±8 µm	0,3 µm	4 µm	1-6
143-105	100 - 125	0,01 mm	±9 µm	0,3 µm	4 µm	1-6
143-106	125 - 150	0,01 mm	±9 µm	0,3 µm	5 µm	1-6
143-107	150 - 175	0,01 mm	±10 µm	0,3 µm	5 µm	1-6
143-108	175 - 200	0,01 mm	±10 µm	0,3 µm	5 µm	1-6
143-109	200 - 225	0,01 mm	±11 µm	0,3 µm	6 µm	1-6
143-110	225 - 250	0,01 mm	±11 µm	0,3 µm	6 µm	1-6
143-111	250 - 275	0,01 mm	±12 µm	0,3 µm	6 µm	1-6
143-112	275 - 300	0,01 mm	±12 µm	0,3 µm	7 µm	1-6

No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
143-101	0	31,8	10,6	28,6	210
143-102	25	31,8	10,6	28,6	230
143-103	50	31,8	10,6	28,6	280
143-104	75	31,8	10,6	28,6	330
143-105	100	31,8	10,6	28,6	400
143-106	125	31,8	10,6	28,6	450
143-107	150	31,8	10,6	28,6	520
143-108	175	31,8	10,6	28,6	600
143-109	200	27,8	14,5	32,5	690
143-110	225	27,8	14,5	32,5	790
143-111	250	27,8	14,5	32,5	900
143-112	275	27,8	14,5	32,5	920



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Digimatic Screw Thread Micrometers with Interchangeable Tips

Series 326

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

A metric (unified) 60° setting standard is included with all models except those measuring range from 0-25 mm.

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

IP65

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Interchangeable anvil/ spindle inserts (optional)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) interchangeable tips are optional

326-251-30 with optional accessories

Interchangeable anvils/spindle tips in matching pairs

Standard accessories

No.	Description
167-261	Setting Standard Screw Thread Micrometer, 60°, Length: 25mm
167-262	Setting Standard Screw Thread Micrometer, 60°, Length: 50mm
167-263	Setting Standard Screw Thread Micrometer, 60°, Length: 75mm

Metric

No.	Range [mm]	Digital step	Spindle feed error [µm]	Measuring force [N]	A [mm]	B [mm]	Mass [g]
326-251-30	0 - 25	0,001 mm	3	5-10	39,5	25	350
326-252-30	25 - 50	0,001 mm	3	5-10	64,5	32	380
326-253-30	50 - 75	0,001 mm	3	5-10	90	45	470
326-254-30	75 - 100	0,001 mm	3	5-10	115,6	65	510

All products to be sold to commercial customers.
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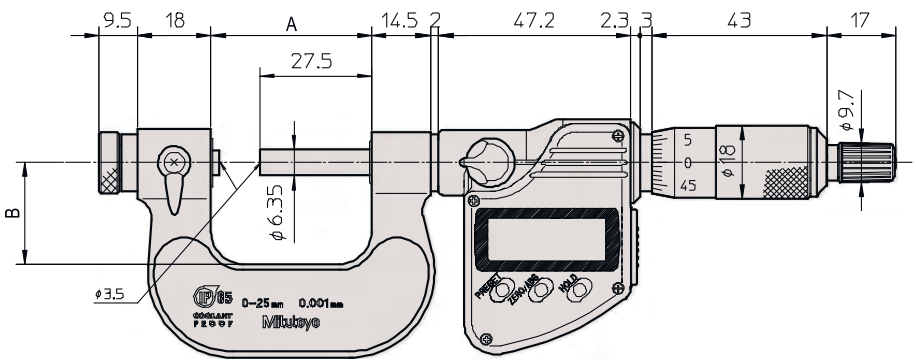
Digimatic Screw Thread Micrometers with Interchangeable Tips

Optional accessories

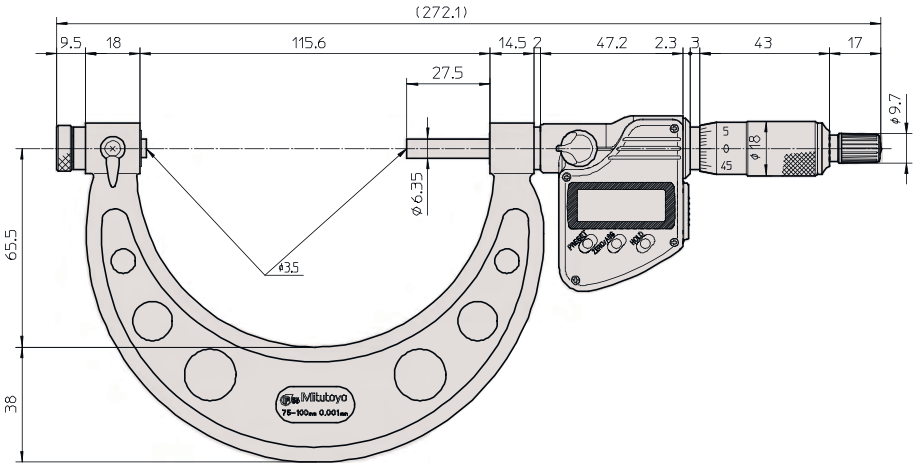
No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
167-272	Setting Standard Screw Thread Micrometer, 55°, Length: 25mm
167-273	Setting Standard Screw Thread Micrometer, 55°, Length: 50mm
167-274	Setting Standard Screw Thread Micrometer, 55°, Length: 75mm
167-275	Setting Standard Screw Thread Micrometer, 55°, Length: 100mm
126-800	Interchangeable Tip Set (Metric/UNF), 6 pairs
126-810	Interchangeable Tip Set (Whitworth), 10 pairs
126-801	Interchangeable Tips, 0,4-0,5mm/ 64-48TPI
126-802	Interchangeable Tips, 0,6-0,9mm/ 44-28TPI
126-803	Interchangeable Tips, 1-1,75mm/ 24-14TPI
126-804	Interchangeable Tips, 2-3mm/13-9TPI
126-805	Interchangeable Tips, 3,5-5mm/8-5TPI
126-806	Interchangeable Tips, 5,5-7mm/ 4,5-3,5TPI
126-811	Interchangeable Tips, 60-48 TPI
126-812	Interchangeable Tips, 48-40 TPI
126-813	Interchangeable Tips, 40-32 TPI
126-814	Interchangeable Tips, 32-24 TPI
126-815	Interchangeable Tips, 24-18 TPI
126-816	Interchangeable Tips, 18-14 TPI
126-817	Interchangeable Tips, 14-10 TPI
126-818	Interchangeable Tips, 10-7 TPI
126-819	Interchangeable Tips, 7-4,5 TPI
126-820	Interchangeable Tips, 7-5-3,5 TPI

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



0-75 mm



75-100 mm

All products to be sold to commercial customers.
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Screw Thread Micrometers with Interchangeable Tips

Series 126

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

A metric (unified) 60° setting standard is included with all models except those measuring range from 0-25 mm.

126-125 with optional accessories

Interchangeable anvils/spindle tips in matching pairs

Metric

No.	Range [mm]	Graduation	Spindle feed error [µm]	Measuring force [N]	L [mm]	a [mm]	Mass [g]
126-125	0 - 25	0,01 mm	3	5-10	39,5	25	240
126-126	25 - 50	0,01 mm	3	5-10	64,5	32	290
126-127	50 - 75	0,01 mm	3	5-10	90	45	390
126-128	75 - 100	0,01 mm	3	5-10	115,6	65	450
126-129	100 - 125	0,01 mm	3	5-10	140,6	79	530
126-130	125 - 150	0,01 mm	3	5-10	165,6	93	620
126-131	150 - 175	0,01 mm	3	5-10	190,5	105	730
126-132	175 - 200	0,01 mm	3	5-10	214,5	118	860
126-133	200 - 225	0,01 mm	3	5-10	240,5	131	1030
126-134	225 - 250	0,01 mm	3	5-10	265,5	144	1200
126-135	250 - 275	0,01 mm	3	5-10	290,5	156	1370
126-136	275 - 300	0,01 mm	3	5-10	314,5	169	1540

Specifications

Measuring face	Interchangeable anvil/ spindle inserts (optional)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (60,0°) (from 25,0 mm upward), key Interchangeable anvils/spindle tips not included

Standard accessories

No.	Description
167-261	Setting Standard Screw Thread Micrometer, 60°, Length: 25mm
167-262	Setting Standard Screw Thread Micrometer, 60°, Length: 50mm
167-263	Setting Standard Screw Thread Micrometer, 60°, Length: 75mm
167-264	Setting Standard Screw Thread Micrometer, 60°, Length: 100mm
167-265	Setting Standard Screw Thread Micrometer, 60°, Length: 125mm
167-266	Setting Standard Screw Thread Micrometer, 60°, Length: 150mm
167-267	Setting Standard Screw Thread Micrometer, 60°, Length: 175mm
167-268	Setting Standard Screw Thread Micrometer, 60°, Length: 200mm
167-269	Setting Standard Screw Thread Micrometer, 60°, Length: 225mm
167-270	Setting Standard Screw Thread Micrometer, 60°, Length: 250mm
167-271	Setting Standard Screw Thread Micrometer, 60°, Length: 275mm

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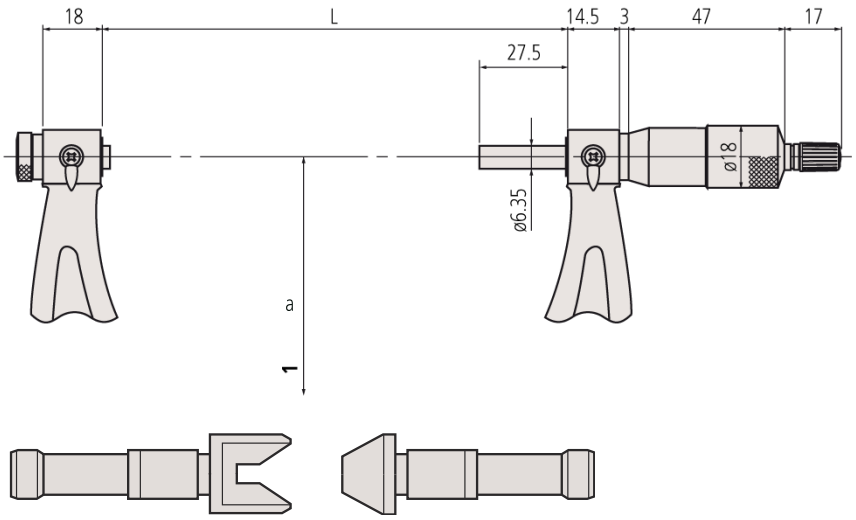
Screw Thread Micrometers with Interchangeable Tips

Optional accessories

No.	Description
167-272	Setting Standard Screw Thread Micrometer, 55°, Length: 25mm
167-273	Setting Standard Screw Thread Micrometer, 55°, Length: 50mm
167-274	Setting Standard Screw Thread Micrometer, 55°, Length: 75mm
167-275	Setting Standard Screw Thread Micrometer, 55°, Length: 100mm
167-276	Setting Standard Screw Thread Micrometer, 55°, Length: 125mm
167-277	Setting Standard Screw Thread Micrometer, 55°, Length: 150mm
167-278	Setting Standard Screw Thread Micrometer, 55°, Length: 175mm
167-279	Setting Standard Screw Thread Micrometer, 55°, Length: 200mm
167-280	Setting Standard Screw Thread Micrometer, 55°, Length: 225mm
126-800	Interchangeable Tip Set (Metric/UNF), 6 pairs
126-810	Interchangeable Tip Set (Whitworth), 10 pairs
126-801	Interchangeable Tips, 0,4-0,5mm/ 64-48TPI
126-802	Interchangeable Tips, 0,6-0,9mm/ 44-28TPI
126-803	Interchangeable Tips, 1-1,75mm/ 24-14TPI
126-804	Interchangeable Tips, 2-3mm/13-9TPI
126-805	Interchangeable Tips, 3,5-5mm/8-5TPI
126-806	Interchangeable Tips, 5,5-7mm/ 4,5-3,5TPI
126-811	Interchangeable Tips, 60-48 TPI
126-812	Interchangeable Tips, 48-40 TPI
126-813	Interchangeable Tips, 40-32 TPI
126-814	Interchangeable Tips, 32-24 TPI
126-815	Interchangeable Tips, 24-18 TPI
126-816	Interchangeable Tips, 18-14 TPI
126-817	Interchangeable Tips, 14-10 TPI
126-818	Interchangeable Tips, 10-7 TPI
126-819	Interchangeable Tips, 7-4,5 TPI
126-820	Interchangeable Tips, 7-5-3,5 TPI

mm



Anvil/spindle-tip matching pair

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Mitutoyo

Interchangeable Thread Measuring Anvil / Spindle Tip Sets

Series 126

Optional accessories anvils/spindle-tips

Individual measuring anvil/spindle-tip pairs

No.	Half Angle Error	Metric pitch	UNF threads/inch	Withworth threads / inch
126-801	±30'	0,4 - 0,5 mm	64 - 48 TPI	
126-802	±20'	0,6 - 0,9 mm	44 - 28 TPI	
126-803	±15'	1 - 1,75 mm	24 - 14 TPI	
126-804	±10'	2 - 3 mm	13 - 9 TPI	
126-805	±10'	3,5 - 5 mm	8 - 5 TPI	
126-806	±10'	5,5 - 7 mm	4,5 - 3,5 TPI	
126-811	±30'			60 - 48 TPI
126-812	±30'			48 - 40 TPI
126-813	±20'			40 - 32 TPI
126-814	±20'			32 - 24 TPI
126-815	±15'			24 - 18 TPI
126-816	±15'			18 - 14 TPI
126-817	±10'			14 - 10 TPI
126-818	±10'			10 - 7 TPI
126-819	±10'			7 - 4,5 TPI
126-820	±10'			4,5 - 3,5 TPI

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

No.	Content of Set	Metric pitch	UNF threads/inch
126-800	No. 126-801 to 126-806	0,4 - 7 mm	64 - 3,5 TPI

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

No.	Content of Set	Withworth threads / inch
126-810	No. 126-811 to 126-820	60 - 3,5 TPI

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

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

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Screw Thread Micrometers

Series 125

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

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

125-103

Specifications

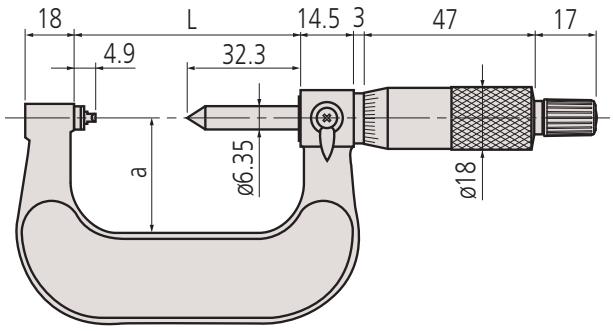
Measuring face	Hardened steel, fixed anvil/spindle
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard 60° (from 25 mm upward), key

Optional accessories

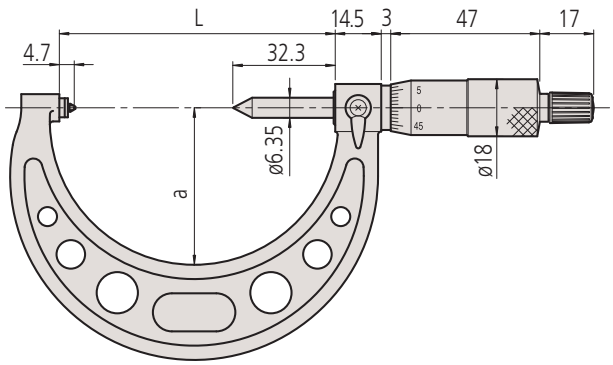
No.	Description
156-105-10	Micrometer Stand, 45° Angle Type, for Micrometer 0-50mm/0-2"
156-101-10	Micrometer Stand, Adjustable Angle Type, for Micrometer 0-100mm/0-4"

Metric

No.	Range [mm]	Graduation	Spindle feed error [µm]	Thread to be measured (Metric/Unified)	L [mm]	a [mm]	Mass [g]
125-101	0 - 25	0,01 mm	3	0,4-0,5 mm / 64-48 TPI	37,2	25	200
125-102	0 - 25	0,01 mm	3	0,6-0,9 mm / 44-28 TPI	37,2	25	200
125-103	0 - 25	0,01 mm	3	1-1,75 mm / 24-14 TPI	37,2	25	200
125-104	0 - 25	0,01 mm	3	2-3 mm / 13-9 TPI	37,2	25	200
125-105	0 - 25	0,01 mm	3	3,5-5 mm / 8-5 TPI	37,2	25	200
125-106	25 - 50	0,01 mm	3	0,4-0,5 mm / 64-48 TPI	62,2	32	250
125-107	25 - 50	0,01 mm	3	0,6-0,9 mm / 44-28 TPI	62,2	32	250
125-108	25 - 50	0,01 mm	3	1-1,75 mm / 24-14 TPI	62,2	32	250
125-109	25 - 50	0,01 mm	3	2-3 mm / 13-9 TPI	62,2	32	250
125-110	25 - 50	0,01 mm	3	3,5-5 mm / 8-5 TPI	62,2	32	250
125-111	50 - 75	0,01 mm	3	0,6-0,9 mm / 44-28 TPI	87	49	260
125-112	50 - 75	0,01 mm	3	1-1,75 mm / 24-14 TPI	87	49	260
125-113	50 - 75	0,01 mm	3	2-3 mm / 13-9 TPI	87	49	260
125-114	50 - 75	0,01 mm	3	3,5-5 mm / 8-5 TPI	87	49	260
125-115	50 - 75	0,01 mm	3	5,5-7 mm / 4,5-3,5 TPI	87	49	260
125-116	75 - 100	0,01 mm	3	0,6-0,9 mm / 44-28 TPI	112	63	330
125-117	75 - 100	0,01 mm	3	1-1,75 mm / 24-14 TPI	112	63	330
125-118	75 - 100	0,01 mm	3	2-3 mm / 13-9 TPI	112	63	330
125-119	75 - 100	0,01 mm	3	3,5-5 mm / 8-5 TPI	112	63	330
125-120	75 - 100	0,01 mm	3	5,5-7 mm / 4,5-3,5 TPI	112	63	330



0-50 mm



50-100 mm

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Digimatic Gear Tooth Micrometers

Series 324

This Digimatic Gear Tooth Micrometer is designed to measure the over-pin diameter of gears .

- It has interchangeable steel or carbide ball inserts (optional accessory) that allow you to measure modules sized between 0,5-5,25 mm.

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

IP65

Functions	Series 324
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●
PRESET	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Interchangeable anvil/ spindle inserts (optional)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward) interchangeable tips are optional

324-251-30

324-252-30

324-253-30

324-254-30

Metric

No.	Range [mm]	Digital step	Spindle feed error [µm]	Measuring force [N]	L [mm]	a [mm]	Mass [g]
324-251-30	0 - 25	0,001 mm	3	5-10	64,5	32	400
324-252-30	25 - 50	0,001 mm	3	5-10	90	45	490
324-253-30	50 - 75	0,001 mm	3	5-10	115,6	65,5	530
324-254-30	75 - 100	0,001 mm	3	5-10	140,6	79	600

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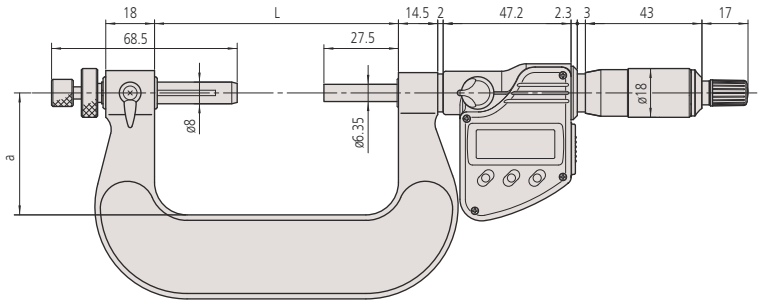
Digimatic Gear Tooth Micrometers

Optional accessories

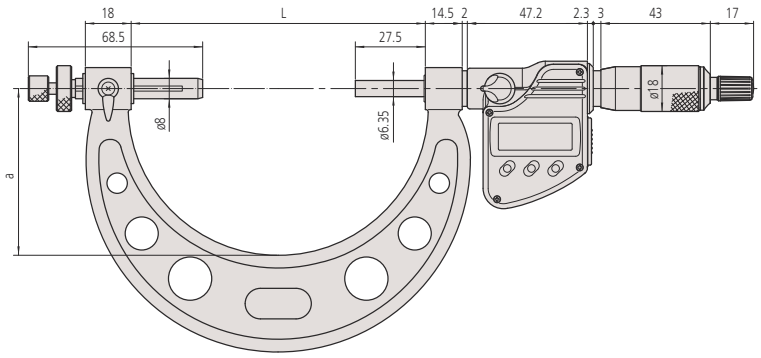
No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
124-801	Interchangeable Ball Anvil/Spindle Tip, 0,8mm
124-802	Interchangeable Ball Anvil/Spindle Tip, 1,0mm
124-821	Interchangeable Ball Anvil/Spindle Tip, 1,5mm
124-805	Interchangeable Ball Anvil/Spindle Tip, 2,0mm
124-822	Interchangeable Ball Anvil/Spindle Tip, 2,5mm
124-807	Interchangeable Ball Anvil/Spindle Tip, 3,0mm
124-823	Interchangeable Ball Anvil/Spindle Tip, 3,5mm
124-810	Interchangeable Ball Anvil/Spindle Tip, 4,0mm
124-824	Interchangeable Ball Anvil/Spindle Tip, 4,5mm
124-812	Interchangeable Ball Anvil/Spindle Tip, 5,0mm
124-814	Interchangeable Ball Anvil/Spindle Tip, 6,0mm
124-816	Interchangeable Ball Anvil/Spindle Tip, 7,0mm
124-819	Interchangeable Ball Anvil/Spindle Tip, 8,0mm
124-803	Interchangeable Ball Anvil/Spindle Tip, 1,191mm (3/64")
124-804	Interchangeable Ball Anvil/Spindle Tip, 1,588mm (1/16")
124-806	Interchangeable Ball Anvil/Spindle Tip, 2,381mm (3/32")
124-808	Interchangeable Ball Anvil/Spindle Tip, 3,175mm (1/8")
124-809	Interchangeable Ball Anvil/Spindle Tip, 3,969mm (5/32")
124-811	Interchangeable Ball Anvil/Spindle Tip, 4,763mm (3/16")
124-813	Interchangeable Ball Anvil/Spindle Tip, 5,556mm (7/32")
124-815	Interchangeable Ball Anvil/Spindle Tip, 6,35mm (1/4")
124-817	Interchangeable Ball Anvil/Spindle Tip, 7,144mm (9/32")
124-818	Interchangeable Ball Anvil/Spindle Tip, 7,938mm (5/16")
124-820	Interchangeable Ball Anvil/Spindle Tip, 8,731mm (11/32")

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



0-50 mm



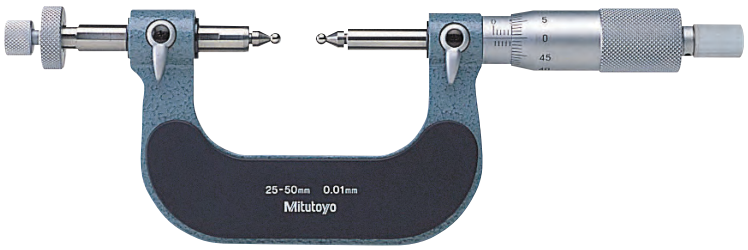
50-100 mm

Gear Tooth Micrometers

Series 124

Measuring the over-pin diameter of gears .

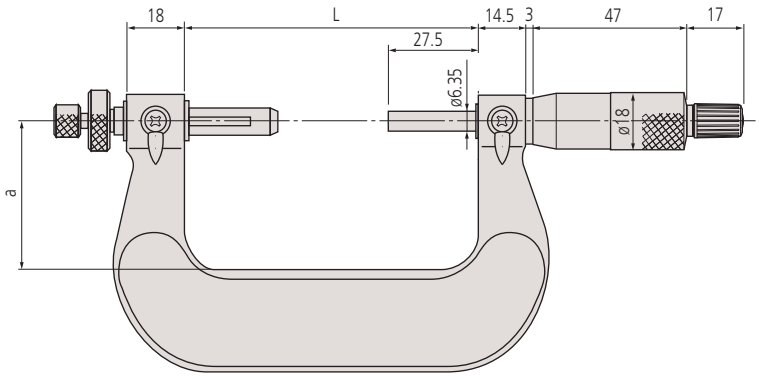
- It has interchangeable steel or carbide ball inserts (optional accessory) that allow you to measure modules sized between 0,5-5,25 mm.



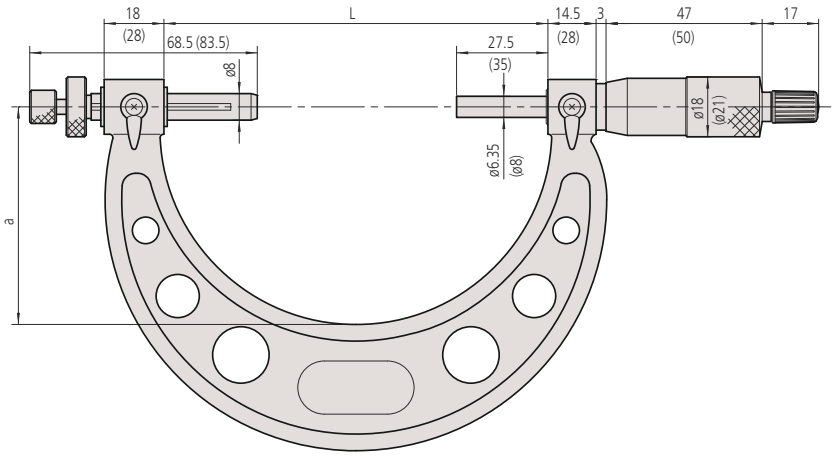
124-173 with optional accessories

Metric

No.	Range [mm]	Graduation	Spindle feed error [µm]	Measuring force [N]	L [mm]	a [mm]	Mass [g]
124-173	0 - 25	0,01 mm	3	5-10	64,5	32	295
124-174	25 - 50	0,01 mm	3	5-10	90	45	400
124-175	50 - 75	0,01 mm	3	5-10	115,6	65	460
124-176	75 - 100	0,01 mm	3	5-10	140,6	79	540
124-177	100 - 125	0,01 mm	3	5-10	165,6	93	640
124-178	125 - 150	0,01 mm	3	5-10	190,5	105	760
124-179	150 - 175	0,01 mm	3	5-10	214,5	120	900
124-180	175 - 200	0,01 mm	3	5-10	240,5	131	1060
124-181	200 - 225	0,01 mm	3	5-10	265,5	144	1230
124-182	225 - 250	0,01 mm	3	5-10	290,5	156	1430
124-183	250 - 275	0,01 mm	3	5-10	314,5	171	1620
124-195	275 - 300	0,01 mm	3	5-10	353	187	2070



0-50 mm



50-300 mm

Specifications

Measuring face	Interchangeable anvil/ spindle inserts (optional)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key, interchangeable anvils/spindle tips not included

Optional accessories

No.	Description
124-801	Interchangeable Ball Anvil/Spindle Tip, 0,8mm
124-802	Interchangeable Ball Anvil/Spindle Tip, 1,0mm
124-821	Interchangeable Ball Anvil/Spindle Tip, 1,5mm
124-805	Interchangeable Ball Anvil/Spindle Tip, 2,0mm
124-822	Interchangeable Ball Anvil/Spindle Tip, 2,5mm
124-807	Interchangeable Ball Anvil/Spindle Tip, 3,0mm
124-823	Interchangeable Ball Anvil/Spindle Tip, 3,5mm
124-810	Interchangeable Ball Anvil/Spindle Tip, 4,0mm
124-824	Interchangeable Ball Anvil/Spindle Tip, 4,5mm
124-812	Interchangeable Ball Anvil/Spindle Tip, 5,0mm
124-814	Interchangeable Ball Anvil/Spindle Tip, 6,0mm
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124-803	Interchangeable Ball Anvil/Spindle Tip, 1,191mm (3/64")
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124-820	Interchangeable Ball Anvil/Spindle Tip, 8,731mm (11/32")

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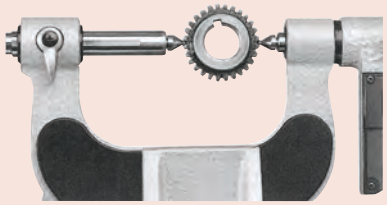
Interchangeable Ball Anvil/Spindle Tip Sets



124-801

Series 124/ 324

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

124-801

124-802

124-807

124-822

Metric

No.	Diameter (D)	Remarks	Measurable module [mm]	Diameter over balls
124-801	0,8 mm	Carbide-tipped type	0,5 - 0,55	50 mm
124-802	1 mm	Carbide-tipped type	0,6 - 0,65	45 mm
124-821	1,5 mm	Carbide-tipped type	0,9 - 1	28 - 26 mm
124-805	2 mm	Carbide-tipped type	1,25	22 mm
124-822	2,5 mm	Steel type	1,5	17 mm
124-807	3 mm	Steel type	1,75	15 mm
124-823	3,5 mm	Steel type	2	13 mm
124-810	4 mm	Steel type	2,25	11 mm
124-824	4,5 mm	Steel type	2,5	10 mm
124-812	5 mm	Steel type	2,75	9 mm
124-814	6 mm	Steel type	3,5	7 mm
124-816	7 mm	Steel type	4	6,5 mm
124-819	8 mm	Steel type	4,75	5,5 mm

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Digimatic Disc Micrometers

Series 323

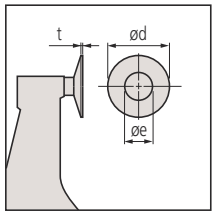
This Digimatic Disc Micrometer enables you to measure hard-to-reach features,
offering you the following benefits:

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

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000040191

IP65

323-250-30

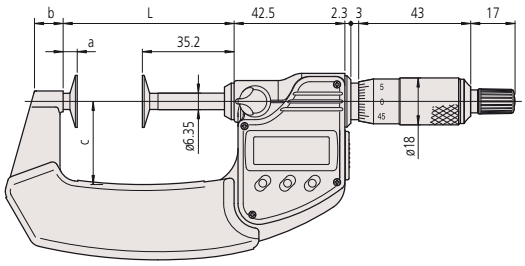


Metric

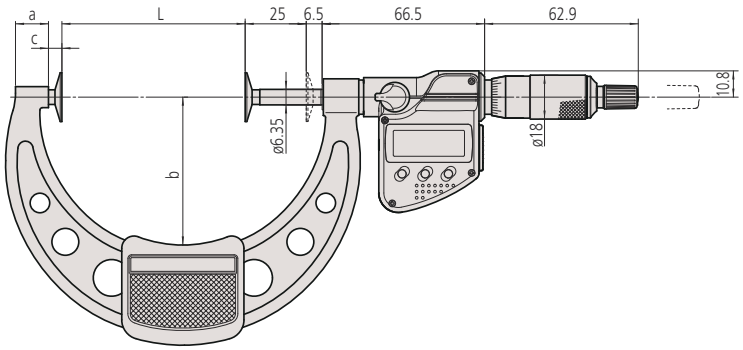
No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]
323-250-30	0 - 25	0,001 mm	±4 µm	1 µm	4 µm	3-8
323-251-30	25 - 50	0,001 mm	±4 µm	1 µm	4 µm	3-8
323-252-30	50 - 75	0,001 mm	±6 µm	1 µm	6 µm	3-8
323-253-30	75 - 100	0,001 mm	±6 µm	1 µm	6 µm	3-8

No.	Measurable module [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]
323-250-30	0,5 - 6	39,7	4,5	9,2	25	20	8	0,7	290
323-251-30	0,5 - 6	65,6	5,4	11	31	20	8	0,7	355
323-252-30	0,5 - 6	90,7	5,5	12,2	50	20	8	0,7	555
323-253-30	0,5 - 6	112,5	5,5	13,5	60	20	8	0,7	610

mm



0-75 mm



75-100 mm

Functions	Series 323
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

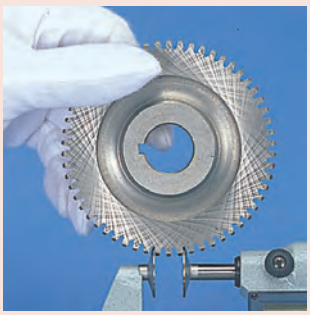
Display	LCD, character height 7,5 mm
Measuring face	Hardened steel
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

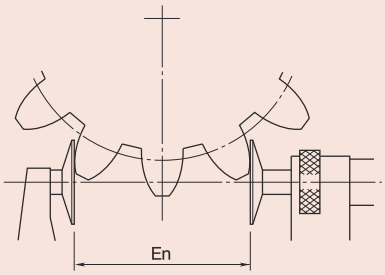
Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V





Root tangent length of gear (En)

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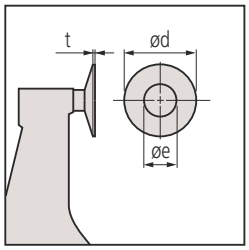
Disc Micrometers

Series 123

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

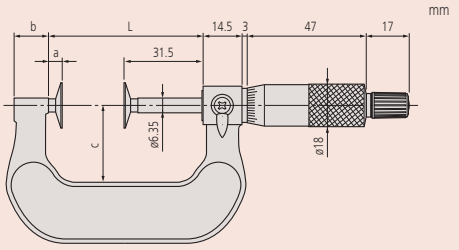
- Measuring the root tangent length of spur and helical gears.
- You can measure recessed features that are difficult to reach with a standard micrometer.

123-101

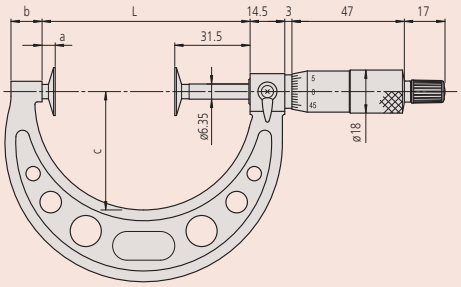


Specifications

Measuring face	Hardened steel or carbide-tipped
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, key, setting standard (from 25 mm upward)



0-50 mm



50-300 mm

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	Measurable module [mm]
123-101	0 - 25	0,01 mm	±4 µm	1 µm	4 µm	5-10	0,5 - 6
123-102	25 - 50	0,01 mm	±4 µm	1 µm	4 µm	5-10	0,5 - 6
123-103	50 - 75	0,01 mm	±6 µm	1 µm	6 µm	5-10	0,5 - 6
123-104	75 - 100	0,01 mm	±6 µm	1 µm	6 µm	5-10	0,5 - 6
123-105	100 - 125	0,01 mm	±7 µm	1,6 µm	7 µm	5-10	0,7 - 11
123-106	125 - 150	0,01 mm	±7 µm	1,6 µm	7 µm	5-10	0,7 - 11
123-107	150 - 175	0,01 mm	±8 µm	1,6 µm	8 µm	5-10	0,7 - 11
123-108	175 - 200	0,01 mm	±8 µm	1,6 µm	8 µm	5-10	0,7 - 11
123-109	200 - 225	0,01 mm	±8 µm	1,6 µm	8 µm	5-10	0,7 - 11
123-110	225 - 250	0,01 mm	±9 µm	1,6 µm	9 µm	5-10	0,7 - 11
123-111	250 - 275	0,01 mm	±9 µm	1,6 µm	9 µm	5-10	0,7 - 11
123-112	275 - 300	0,01 mm	±9 µm	1,6 µm	9 µm	5-10	0,7 - 11

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]
123-101	37,5	6	14	25	20	8	0,7	200
123-102	62,5	6	14	32	20	8	0,7	250
123-103	87	5,5	11	49	20	8	0,7	300
123-104	112	5,5	11	63	20	8	0,7	375
123-105	137,5	6	12	79	30	12	1	520
123-106	162,5	6	15	94	30	12	1	570
123-107	187,5	6	16	106	30	12	1	730
123-108	212,5	6	15	118	30	12	1	890
123-109	237,5	6	14	130	30	12	1	1000
123-110	262,5	6	14	143	30	12	1	1200
123-111	287,5	6	15	156	30	12	1	1410
123-112	312,5	6	15	169	30	12	1	1680

Metric

With carbide-tipped discs

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Remarks	Measuring force [N]
123-113	0 - 25	0,01 mm	±4 µm	1 µm	4 µm	Disks have carbide tips	5-10
123-114	25 - 50	0,01 mm	±4 µm	1 µm	4 µm	Disks have carbide tips	5-10
123-115	50 - 75	0,01 mm	±6 µm	1 µm	6 µm	Disks have carbide tips	5-10
123-116	75 - 100	0,01 mm	±6 µm	1 µm	6 µm	Disks have carbide tips	5-10

No.	Measurable module [mm]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	t [mm]	Mass [g]
123-113	0,5 - 6	39,7	4,5	9,2	25	20	9,8	0,7	200
123-114	0,5 - 6	65,6	5,4	11	31	20	9,8	0,7	250
123-115	0,5 - 6	90,7	5,5	12,2	50	20	9,8	0,7	300
123-116	0,5 - 6	112,5	5,5	13,5	60	20	9,8	0,7	375

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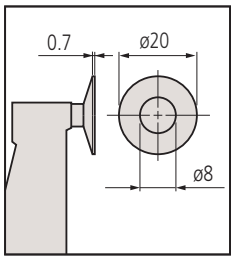
Digimatic Disc Micrometers Non-Rotating Spindle Type

Series 369

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

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

369-250-30

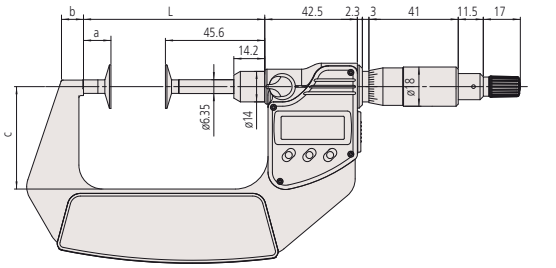


Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	Measurable module [mm]
369-250-30	0 - 25	0,001 mm	±4 µm	1 µm	4 µm	3-8	0,5 - 6
369-251-30	25 - 50	0,001 mm	±4 µm	1 µm	4 µm	3-8	0,5 - 6
369-252-30	50 - 75	0,001 mm	±6 µm	1 µm	6 µm	3-8	0,5 - 6
369-253-30	75 - 100	0,001 mm	±6 µm	1 µm	6 µm	3-8	0,5 - 6

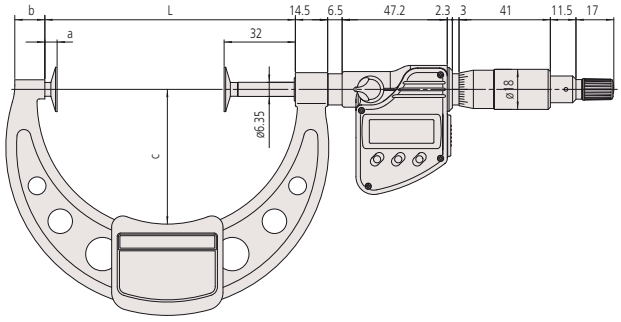
No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
369-250-30	58,5	12,9	7	32	340
369-251-30	83,5	12,9	9,8	47	480
369-252-30	108,5	12,9	11,2	60	635
369-253-30	112,5	5,5	13,5	60	775

mm



0-75 mm

mm



75-100 mm

Functions	Series 369
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Hardened steel
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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ABSOLUTE Digimatic Disc Micrometers Quickmike

Functions	Series 369 and Series 227
ON/OFF	●
ORIGIN	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
HOLD	●

Specifications

Display	LCD, character height 10 mm
Measuring face	Hardened steel, micro-lap finish
Measuring spindle	Non-rotating, spindle feed 10 mm
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Delivered	Including box, 1 battery, setting standard (from 25 mm upward)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Ajustable Measuring Force
227-221-20
227-223-20

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

Series 369 and Series 227

ABSOLUTE® IP65

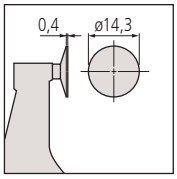
369-411-20
369-412-20

The ABSOLUTE Digimatic Disc Micrometer Quickmike allows you to measure with a fast spindle feed of 10 mm per thimble rotation.
It offers you the following benefits:

- Suitable for measuring felt, rubber, cardboard, fabric etc.
- Suitable to measure "root tangent length" of spur gears and helical gears.
- With a non-rotating spindle and disc-shaped measuring surface.
- Measuring force is adjustable for various kinds of workpieces (series 227)

369-411-20

227-221-20



Series 227 without recess

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	Measurable module [mm]
369-411-20	0 - 30	0,001 mm	±4 µm	1 µm	4 µm	3-8	0,5 - 6
369-412-20	25 - 55	0,001 mm	±4 µm	1 µm	4 µm	3-8	0,5 - 6

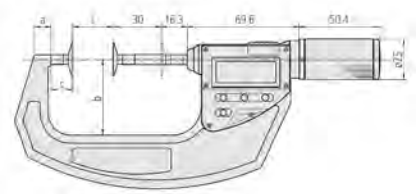
No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
369-411-20	0	8,5	36	13,5	360
369-412-20	25	10,3	47	13,5	490

Metric

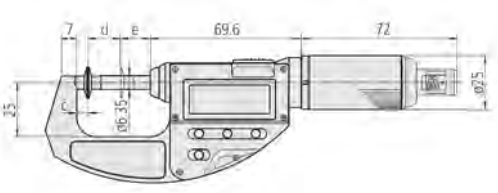
Quickmike type with adjustable measuring force

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force settings [N]	Measuring force accuracy (1) [N]
227-221-20	0 - 15	0,001 mm	±4 µm	1 µm	3 µm	0,5 / 1 / 1,5 / 2 / 2,5	±0,1 + (force setting/10)
227-223-20	0 - 10	0,001 mm	±4 µm	1 µm	3 µm	2 / 4 / 6 / 8 / 10	±0,4 + (force setting/10)

No.	Measurable module [mm]	c [mm]	d [mm]	e [mm]	Mass [g]
227-221-20	0,4-3	5,2	15	13,8	300
227-223-20	0,4-3	5,2	10	18,8	340



369-411-20, 369-412-20



227-221-20, 227-223-20

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Mitutoyo

Disc Micrometers Non-Rotating Spindle Type

Series 169

This Disc Micrometer has a non-rotating spindle and allows you measure a range of different materials.
It offers you the following benefits:

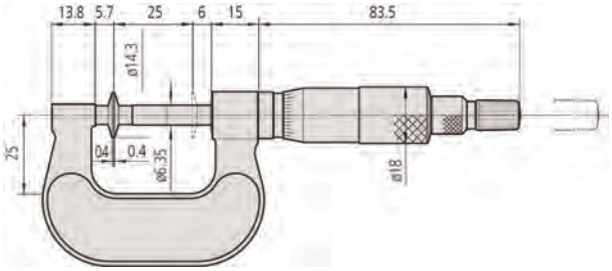
- It features a non-rotating spindle and disc-shaped measuring surfaces.
- Measuring the root tangent length of spur and helical gears
- Measurable range of gear pitch: 0,5-6 module
- It's suitable for measuring materials such as felt, rubber, cardboard and fabric.

169-101-10

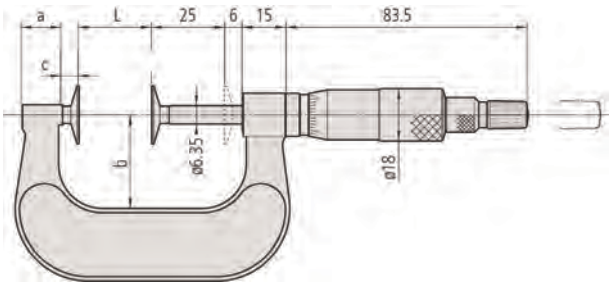
169-201-10

Metric

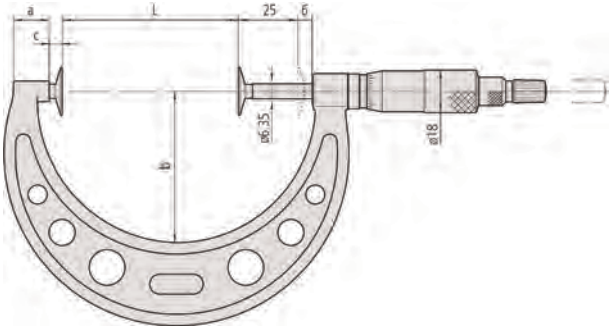
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
169-101-10	0 - 25	0,01mm	±4 µm	1 µm	3 µm	8,02 N ± 0,8 N	0	13,8	25	5,7	230
169-201-10	0 - 25	0,01mm	±4 µm	1 µm	4 µm	3 - 8 N	0	13,8	25	5,7	230
169-202-10	25 - 50	0,01mm	±4 µm	1 µm	4 µm	3 - 8 N	25	13,8	32	5,7	280
169-205-10	50 - 75	0,01mm	±6 µm	1 µm	6 µm	3 - 8 N	50	12	49	5,5	315
169-207-10	75 - 100	0,01mm	±6 µm	1 µm	6 µm	3 - 8 N	75	14	63	5,5	400



169-101-10



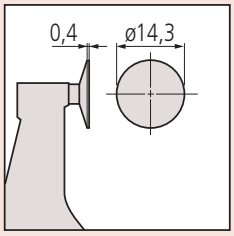
0-50 mm



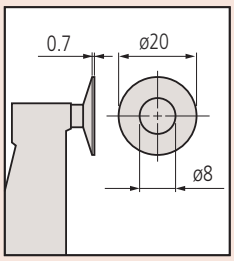
50-100 mm

Specifications

Measuring face	Hardened steel, micro-lap finish
Measuring spindle	Spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key



169-101-10 no central recess



With annular measuring surfaces

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Digimatic Spline Micrometers

Functions	Series 331
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	
HOLD	●

Specifications

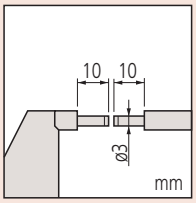
Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Optional accessories

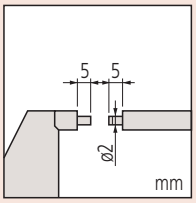
No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Type A



Type B

Series 331

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

IP65

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

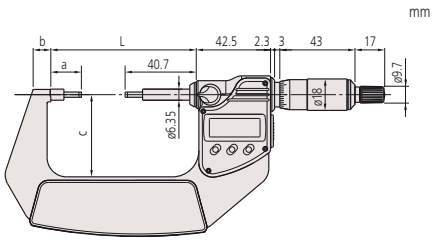
- Anvil and spindle are of small diameter for measuring splined shafts, slots and keyways.
- Excellent resistance against water and dust (IP65 protection level) enables this micrometer to be used in machining situations that include splashing coolant fluid.

331-251-30

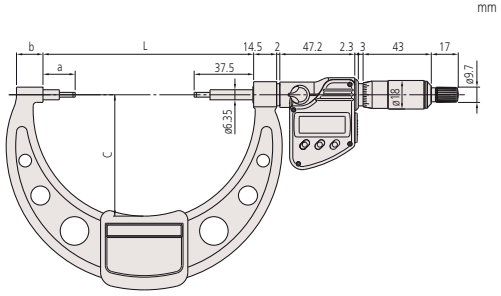
Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Parallelism	Anvil / Spindle
331-251-30	0 - 25	0,001 mm	±2 µm	0,3 µm	2 µm	Type A, D=3 mm
331-261-30	0 - 25	0,001 mm	±2 µm	0,3 µm	2 µm	Type B, D=2 mm
331-252-30	25 - 50	0,001 mm	±2 µm	0,3 µm	2 µm	Type A, D=3 mm
331-262-30	25 - 50	0,001 mm	±2 µm	0,3 µm	2 µm	Type B, D=2 mm
331-253-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	Type A, D=3 mm
331-263-30	50 - 75	0,001 mm	±2 µm	0,3 µm	2 µm	Type B, D=2 mm
331-254-30	75 - 100	0,001 mm	±3 µm	0,3 µm	3 µm	Type A, D=3 mm
331-264-30	75 - 100	0,001 mm	±3 µm	0,3 µm	3 µm	Type B, D=2 mm

No.	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
331-251-30	5-10	58,2	17,5	7,3	32,5	330
331-261-30	5-10	58,2	17,5	7,3	32,5	330
331-252-30	5-10	83,2	17,5	10,1	47	470
331-262-30	5-10	83,2	17,5	10,1	47	470
331-253-30	5-10	108,2	17,5	11,5	60	625
331-263-30	5-10	108,2	17,5	11,5	60	625
331-254-30	5-10	132,8	20,3	16,7	76	565
331-264-30	5-10	132,8	20,3	16,7	76	565



0-75 mm



75-100 mm

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Mitutoyo

Spline Micrometers

Series 111

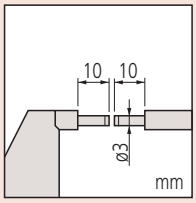
This Spline Micrometer makes it easy for you to measure grooves and shaped parts.
It offers you the following benefits:

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

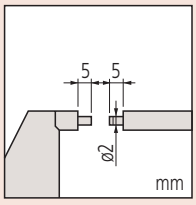
111-115

Specifications

Measuring face	Carbide-tipped, micro-lap finish, stepped
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key



Type A

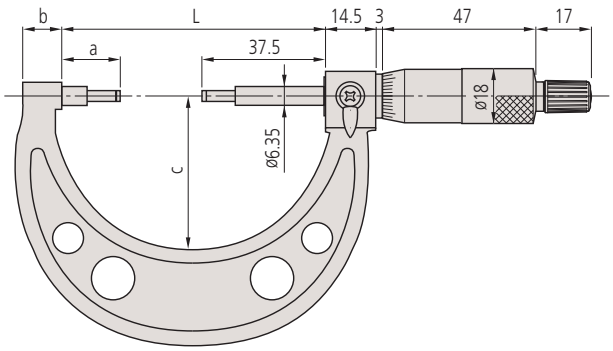


Type B

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Anvil / Spindle	Measuring force [N]
111-115	0 - 25	0,01 mm	±3 µm	0,3 µm	2 µm	Type A, D=3 mm	5-10
111-215	0 - 25	0,01 mm	±3 µm	0,3 µm	2 µm	Type B, D=2 mm	5-10
111-116	25 - 50	0,01 mm	±3 µm	0,3 µm	2 µm	Type A, D=3 mm	5-10
111-117	50 - 75	0,01 mm	±3 µm	0,3 µm	2 µm	Type A, D=3 mm	5-10
111-118	75 - 100	0,01 mm	±4 µm	0,3 µm	3 µm	Type A, D=3 mm	5-10
111-119	100 - 125	0,01 mm	±4 µm	0,3 µm	3 µm	Type A, D=3 mm	5-10
111-120	125 - 150	0,01 mm	±4 µm	0,3 µm	3 µm	Type A, D=3 mm	5-10
111-121	150 - 175	0,01 mm	±5 µm	0,3 µm	3 µm	Type A, D=3 mm	5-10
111-122	175 - 200	0,01 mm	±5 µm	0,3 µm	4 µm	Type A, D=3 mm	5-10
111-123	200 - 225	0,01 mm	±5 µm	0,3 µm	4 µm	Type A, D=3 mm	5-10
111-124	225 - 250	0,01 mm	±6 µm	0,3 µm	4 µm	Type A, D=3 mm	5-10
111-125	250 - 275	0,01 mm	±6 µm	0,3 µm	4 µm	Type A, D=3 mm	5-10
111-126	275 - 300	0,01 mm	±6 µm	0,3 µm	5 µm	Type A, D=3 mm	5-10

No.	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
111-115	54,5	17,5	10	38	205
111-215	54,5	17,8	10	38	205
111-116	79,5	17,8	12	49	305
111-117	104,5	17,8	14	60	370
111-118	132,3	20,3	16,7	79	500
111-119	157,7	20,7	18,8	94	655
111-120	183,1	21,1	19,1	106	710
111-121	208,3	21,3	18,2	118	900
111-122	233,7	21,7	16,8	130	1040
111-123	257,5	20,5	18	143	1245
111-124	283,5	21,5	18	156	1395
111-125	308,5	21,5	18	169	1555
111-126	333,5	21,5	18	181	1975



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Digimatic Tube Micrometers

Series 395

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

Dust- and Water-Protected

www.tuv.com ID 0000040191

IP65

Functions	Series 395
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

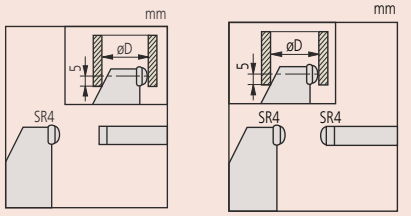
Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Optional accessories

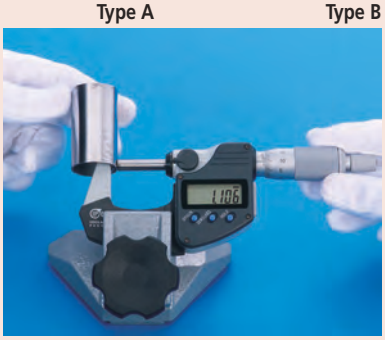
No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Type A Type B



395-251-30

Metric

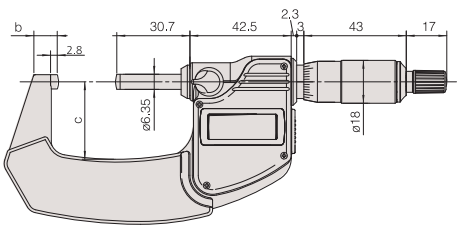
Model with spherical anvil

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Anvil / Spindle	Measuring force [N]	D [mm]	b [mm]	c [mm]	Mass [g]
395-251-30	0 - 25	0,001 mm	±2 µm	0,3 µm	Type A, spherical anvil SR=4 mm/flat spindle	5-10	15	9	25	270
395-252-30	25 - 50	0,001 mm	±2 µm	0,3 µm	Type A, spherical anvil SR=4 mm/flat spindle	5-10	15	9,8	32	330
395-253-30	50 - 75	0,001 mm	±2 µm	0,3 µm	Type A, spherical anvil SR=4 mm/flat spindle	5-10	19	12,6	47	470
395-254-30	75 - 100	0,001 mm	±3 µm	0,3 µm	Type A, spherical anvil SR=4 mm/flat spindle	5-10	20	14	60	625

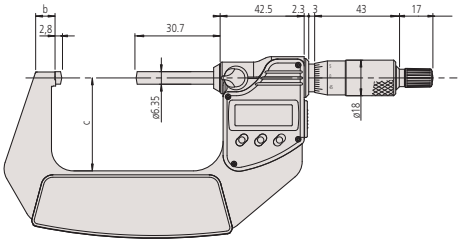
Metric

Model with spherical anvil and spindle

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Anvil / Spindle	Measuring force [N]	D [mm]	b [mm]	c [mm]	Mass [g]
395-271-30	0 - 25	0,001 mm	±2 µm	Type B, spherical anvil and spindle SR=4 mm	5-10	15	9	25	270
395-272-30	25 - 50	0,001 mm	±2 µm	Type B, spherical anvil and spindle SR=4 mm	5-10	15	9,8	32	330
395-273-30	50 - 75	0,001 mm	±2 µm	Type B, spherical anvil and spindle SR=4 mm	5-10	19	12,6	32	470
395-274-30	75 - 100	0,001 mm	±3 µm	Type B, spherical anvil and spindle SR=4 mm	5-10	20	14	60	625



0-50 mm



50-100 mm

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Mitutoyo

Digimatic Tube Micrometers

Series 395

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

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000040191

IP65

395-261-30

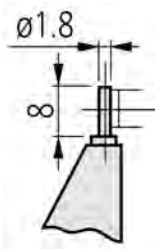
395-262-30

395-263-30

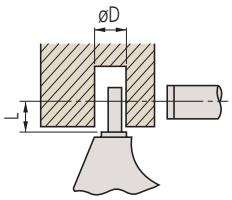
395-264-30

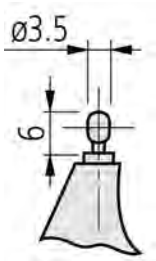
Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Anvil / Spindle	Measuring force [N]	L [mm]	D [mm]	Mass [g]
395-261-30	0 - 25	0,001 mm	±3 µm	0,3 µm	Type A, pin D=1,8 mm/flat spindle	3-8	4	2	270
395-262-30	0 - 25	0,001 mm	±3 µm	0,3 µm	Type B, spherical pin D=3,5 mm/flat spindle	3-8	4	3,6	270
395-263-30	0 - 25	0,001 mm	±3 µm	0,3 µm	Type C, spherical pin D=4,7 mm/flat spindle	3-8	12	4,8	310
395-264-30	0 - 25	0,001 mm	±3 µm	0,3 µm	Type D, cylindrical pin D=8 mm/flat spindle	3-8	22	8,2	310

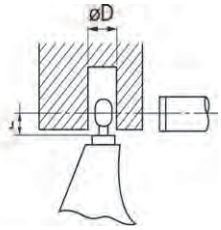


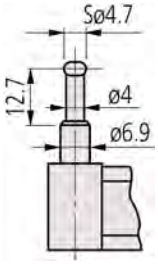
Type A



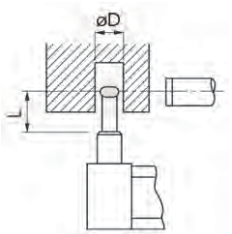


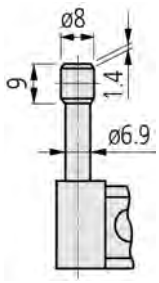
Type B



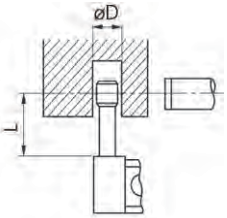


Type C





Type D



Functions	Series 395
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped, micro-lap finish (spindle) anvil: hardened steel
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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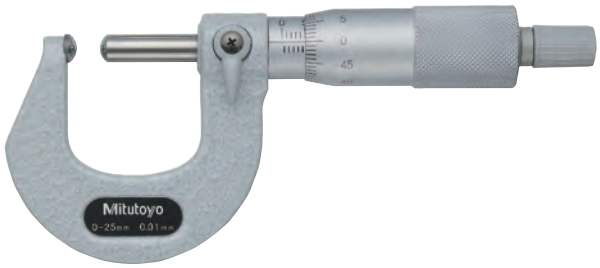
Tube Micrometers

Series 115

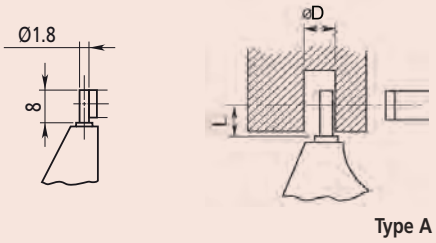
This Tube Micrometer allows you to measure curved surfaces such as the wall thickness of tubes, bearings and rings.



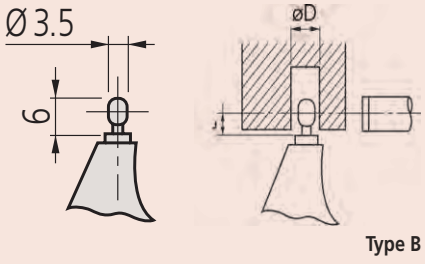
115-215

Specifications

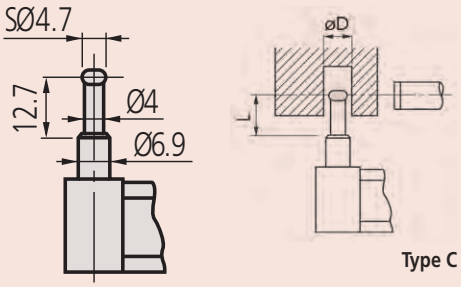
Measuring face	Spindle and anvil: carbide-tipped, micro-lap finish (115-1xx, 115-2xx) spindle: carbide-tipped anvil: hardened steel (115-3xx)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key



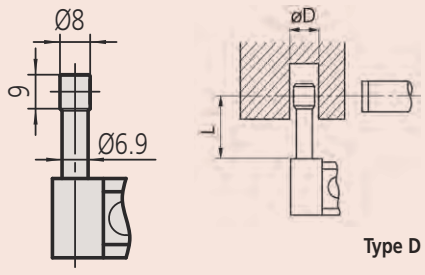
Type A



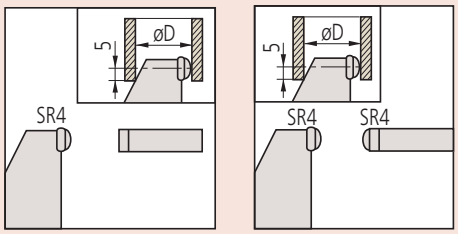
Type B



Type C



Type D



Type E Type F

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Anvil / Spindle	Measuring force [N]	L [mm]	D [mm]	Mass [g]
115-302	0 - 25	0,01 mm	±3 µm	0,6 µm	Type A, pin D=1,8 mm/ flat spindle	5-10	4	2	180
115-308	0 - 25	0,01 mm	±3 µm	0,6 µm	Type B, spherical pin D=3,5 mm/ flat spindle	5-10	4	3,6	180
115-315	0 - 25	0,01 mm	±3 µm	0,6 µm	Type C, spherical pin D=4,7 mm/ flat spindle	3-8	12	4,8	180
115-316	0 - 25	0,01 mm	±3 µm	0,6 µm	Type D, cylindrical pin D=8 mm/ flat spindle	3-8	22	8,2	180
115-303	25 - 50	0,01 mm	±3 µm	0,6 µm	Type A, pin D=1,8 mm/ flat spindle	5-10	4	2	240
115-309	25 - 50	0,01 mm	±3 µm	0,6 µm	Type B, spherical pin D=3,5 mm/ flat spindle	5-10	4	3,6	240

Metric

Model with spherical anvil

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Anvil / Spindle	Measuring force [N]	D [mm]	Mass [g]
115-115	0 - 25	0,01 mm	±3 µm	0,6 µm	Type E, sperical anvil SR=4 mm/ flat spindle	5-10	10	180
115-116	25 - 50	0,01 mm	±3 µm	0,6 µm	Type E, sperical anvil SR=4 mm/ flat spindle	5-10	11	240
115-117	50 - 75	0,01 mm	±3 µm	0,6 µm	Type E, sperical anvil SR=4 mm/ flat spindle	5-10	17	315
115-118	75 - 100	0,01 mm	±4 µm	0,6 µm	Type E, sperical anvil SR=4 mm/ flat spindle	5-10	18	375

Metric

Model with spherical anvil and spindle face

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Anvil / Spindle	Measuring force [N]	D [mm]	Mass [g]
115-215	0 - 25	0,01 mm	±3 µm	Type F, spherical anvil and spindle SR=4 mm	5-10	10	180
115-216	25 - 50	0,01 mm	±3 µm	Type F, spherical anvil and spindle SR=4 mm	5-10	11	240
115-217	50 - 75	0,01 mm	±3 µm	Type F, spherical anvil and spindle SR=4 mm	5-10	17	315
115-218	75 - 100	0,01 mm	±4 µm	Type F, spherical anvil and spindle SR=4 mm	5-10	18	375

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Digimatic Point Micrometers

Series 342

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

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

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000040191

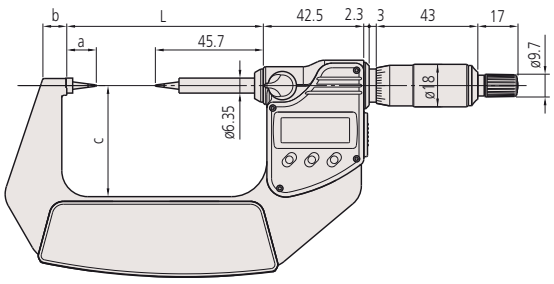
IP65

342-251-30

Metric

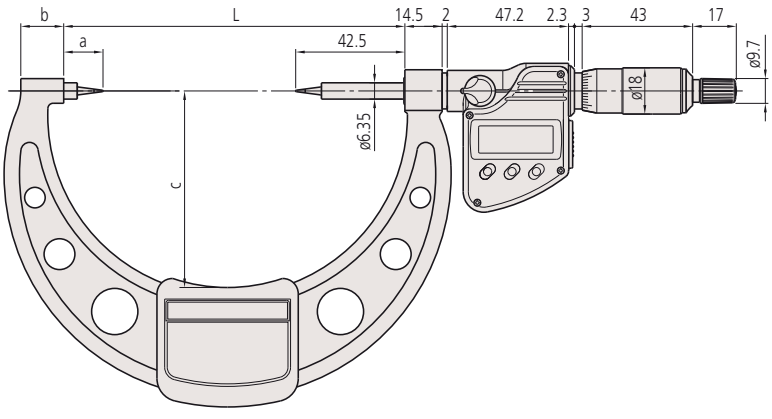
No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Tip	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
342-251-30	0 - 25	0,001 mm	±2 µm	15°	3-8	58,2	12,5	7,3	32	330
342-261-30	0 - 25	0,001 mm	±2 µm	30°	3-8	58,2	12,5	7,3	32	330
342-252-30	25 - 50	0,001 mm	±2 µm	15°	3-8	83,2	12,5	10,1	47	470
342-262-30	25 - 50	0,001 mm	±2 µm	30°	3-8	83,2	12,5	10,1	47	470
342-253-30	50 - 75	0,001 mm	±2 µm	15°	3-8	108,2	12,5	11,5	60	625
342-263-30	50 - 75	0,001 mm	±2 µm	30°	3-8	108,2	12,5	11,5	60	625
342-254-30	75 - 100	0,001 mm	±3 µm	15°	3-8	132,8	15,3	16,7	76	565
342-264-30	75 - 100	0,001 mm	±3 µm	30°	3-8	132,8	15,3	16,7	76	565

mm



0-75 mm

mm



75-100 mm

Functions	Series 342
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped and conical spindle and anvil, measuring point radius 0,3 mm
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

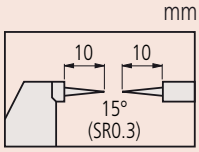
Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

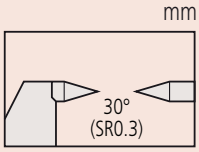
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

mm



mm



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Point Micrometers

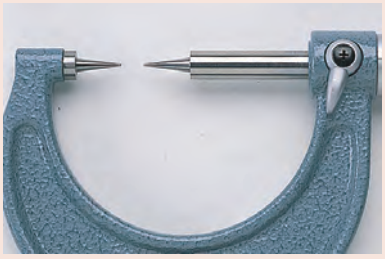
Series 112

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

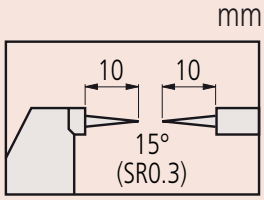
- Its pointed anvil and spindle has a choice of included angle, ending in small-radius contact points.
- You can use it to measure grooves, steps and similar.

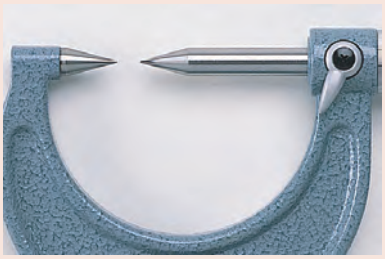
Specifications

Measuring face	Carbide pointed or hardened steel spindle and anvil, measuring point radius 0,3 mm
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key

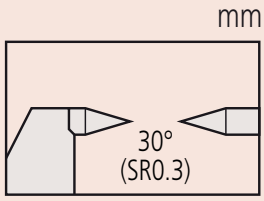


Tip angle : 15°





Tip angle : 30°



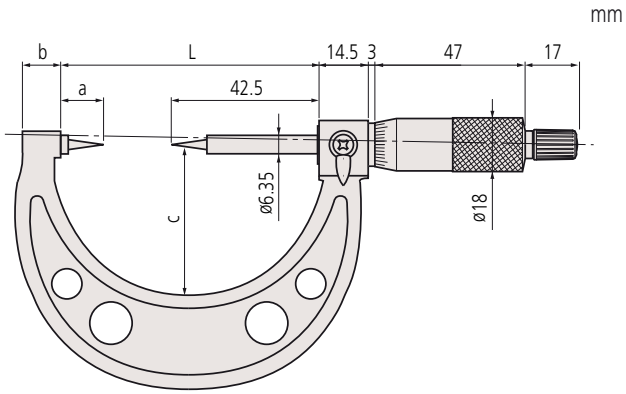
112-201

Metric — Carbide tip

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Tip	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
112-165	0 - 25	0,01 mm	±3 µm	15°	3-8	55,3	12,8	10	38	205
112-213	0 - 25	0,01 mm	±3 µm	30°	3-8	55,3	12,8	10	38	205
112-166	25 - 50	0,01 mm	±3 µm	15°	3-8	80,3	12,8	12	49	305
112-214	25 - 50	0,01 mm	±3 µm	30°	3-8	80,3	12,8	12	49	305
112-167	50 - 75	0,01 mm	±3 µm	15°	3-8	105,3	12,8	14	60	370
112-215	50 - 75	0,01 mm	±3 µm	30°	3-8	105,3	12,8	14	60	370
112-168	75 - 100	0,01 mm	±4 µm	15°	3-8	132,8	15,3	17	79	500
112-216	75 - 100	0,01 mm	±4 µm	30°	3-8	132,8	15,3	17	79	500

Metric — Hardened steel tip

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Tip	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
112-153	0 - 25	0,01 mm	±3 µm	15°	3-8	55,3	12,8	10	38	205
112-201	0 - 25	0,01 mm	±3 µm	30°	3-8	55,3	12,8	10	38	205
112-154	25 - 50	0,01 mm	±3 µm	15°	3-8	80,3	12,8	12	49	305
112-202	25 - 50	0,01 mm	±3 µm	30°	3-8	80,3	12,8	12	49	305
112-155	50 - 75	0,01 mm	±3 µm	15°	3-8	105,3	12,8	14	60	370
112-203	50 - 75	0,01 mm	±3 µm	30°	3-8	105,3	12,8	14	60	370
112-156	75 - 100	0,01 mm	±4 µm	15°	3-8	132,8	15,3	17	79	500
112-204	75 - 100	0,01 mm	±4 µm	30°	3-8	132,8	15,3	17	79	500



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Crimp Height Micrometers

Series 342/ Series 112

This Crimp Height Micrometer that features a flat anvil and pointed spindle offers you the following benefits:

- It allows you to measure the crimped height of electrical contacts.
- Excellent resistance against water and dust (IP65 protection level).

IP65

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000040191

342-271-30

ABSOLUTE®

342-451-20

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000063013

342-451-20

Functions	Series 342/ Series 112 342-271-30	342-451-20
ON/OFF		●
ORIGIN	●	●
ABS / INC (INC ZERO)	●	●
Auto Power OFF after 20 min. non use	●	
Low voltage alarm	●	●
Function lock	●	
HOLD	●	●

112-401

342-271-30

342-451-20

Specifications

Measuring face	Hardened steel
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm (342-271-30, 112-401) without spindle lock ø 6,35 mm, spindle feed (342-451-20) 10 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm (112-401, 342-271-30)
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years (342-271-30), 5 years under normal use (342-451-20)
Delivered	Including box, 1 battery

Metric — Analog model

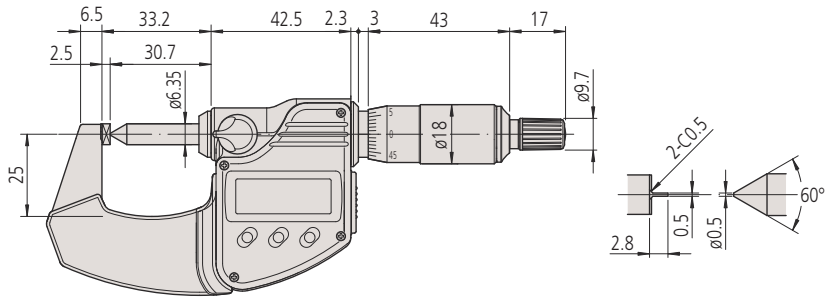
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Measuring force [N]	Mass [g]
112-401	0 - 25	0,01 mm	±3 µm	3-8	165

Metric — Digital model

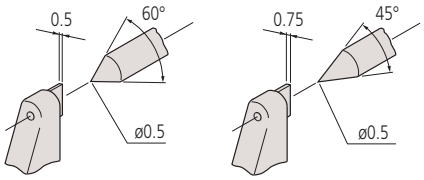
No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Measuring force [N]	Mass [g]
342-271-30	0 - 20	0,001 mm	±3 µm	3-8	270

Metric — Quickmike

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Measuring force [N]	Mass [g]
342-451-20	0 - 15	0,001 mm	±3 µm	4-6	270



342-271-30



342-271-30
112-401

342-451-20

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

02AZD880G, 02AZD730G, 02AZD790B
Wireless Sytem for 342-451-20

264-622, 264-623, 02AZF310
or
264-626, 264-627, 02AZF310
Wireless System for 342-271-30

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Digimatic Blade Micrometers

Functions	Series 422
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

Specifications

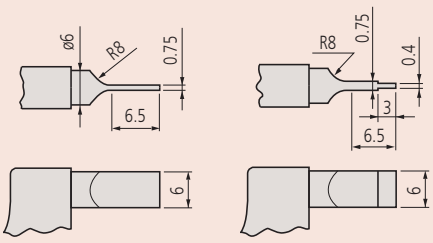
Display	LCD, character height 7,5 mm
Measuring face	Hardened steel or carbide-tipped
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Measuring force	3-8 N
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, key, 1 battery, setting standard (from 25 mm upward)

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

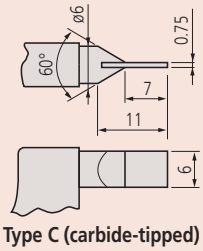
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

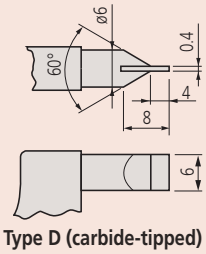


Type A (hardened steel)

Type B (hardened steel)



Type C (carbide-tipped)



Type D (carbide-tipped)

Series 422

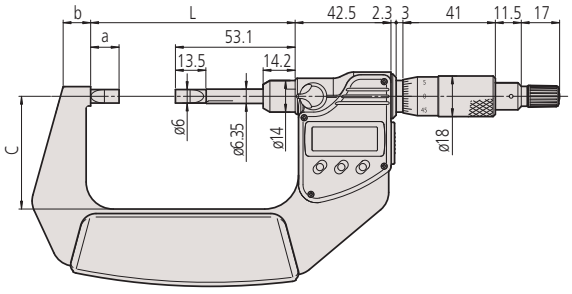
This Digimatic Blade Micrometer is designed to help you measure hard-to-reach features. It offers the following benefits:

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

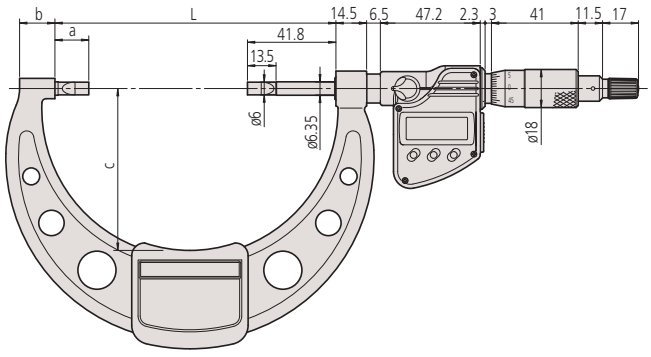
422-230-30

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Parallelism	Anvil / Spindle	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
422-230-30	0 - 25	0,001 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm	65,6	12,5	11	31	365
422-260-30	0 - 25	0,001 mm	±3 µm	3 µm	Type B, hardened steel, t=0,4 mm	65,6	12,5	11	31	365
422-270-30	0 - 25	0,001 mm	±3 µm	3 µm	Type C, carbide t=0,75 mm	65,6	12,5	11	31	365
422-271-30	0 - 25	0,001 mm	±3 µm	3 µm	Type D, carbide t=0,4 mm	65,6	12,5	11	31	365
422-231-30	25 - 50	0,001 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm	90,7	12,6	12,2	50	565
422-261-30	25 - 50	0,001 mm	±3 µm	3 µm	Type B, hardened steel, t=0,4 mm	90,7	12,6	12,2	50	565
422-232-30	50 - 75	0,001 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm	105,3	13,5	14,1	57	465
422-233-30	75 - 100	0,001 mm	±4 µm	4 µm	Type A, hardened steel t=0,75 mm	132,8	16	16,7	76	580



0-50 mm



50-100 mm

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Mitutoyo

ABSOLUTE Digimatic Blade Micrometers Quickmike

Series 422

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

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

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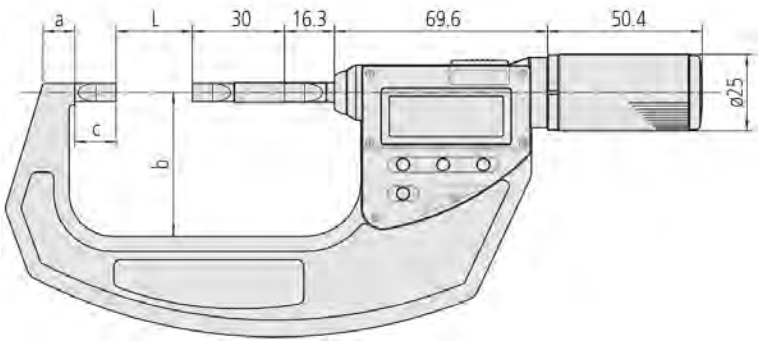
IP65

422-411-20

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Parallelism	Anvil / Spindle	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
422-411-20	0 - 30	0,001 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm	5-12	0	8,5	36	13,5	350
422-412-20	25 - 55	0,001 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm	5-12	25	10,3	47	13,5	490



Functions	Series 422
ON/OFF	●
ORIGIN	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
HOLD	●

Specifications

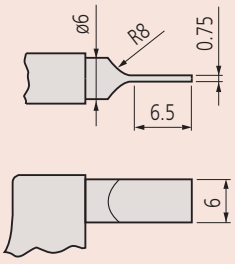
Display	LCD, character height 10 mm
Measuring face	Hardened steel
Measuring spindle	Non-rotating, spindle feed 10 mm
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Delivered	Including box, setting standard (from 25 mm upward), 1 battery

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Type A (hardened steel)

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Blade Micrometers

Series 122

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

- Blade-shaped anvil and spindle for measuring the groove diameter of shafts.
- Non-rotating spindle.

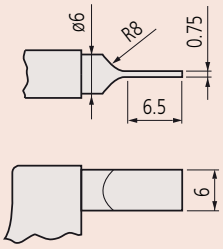
122-101-10

122-105-10

Specifications

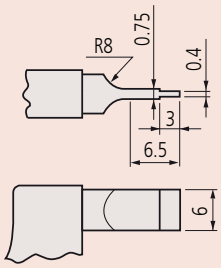
Measuring face	Hardened steel or carbide-tipped
Measuring spindle	ø6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key

mm



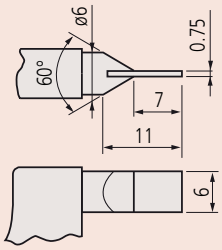
Type A (hardened steel)

mm



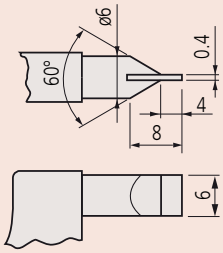
Type B (hardened steel)

mm



Type C (carbide-tipped)

mm

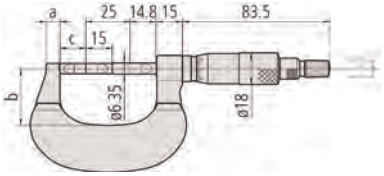


Type D (carbide-tipped)

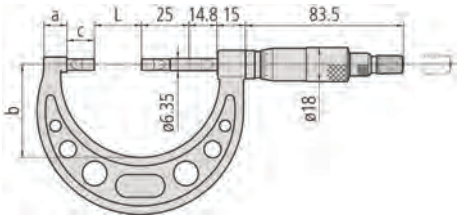
Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Parallelism	Anvil / Spindle
122-101-10	0 - 25	0,01 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm
122-111-10	0 - 25	0,01 mm	±3 µm	3 µm	Type B, hardened steel t=0,4 mm
122-161-10	0 - 25	0,01 mm	±3 µm	3 µm	Type C, carbide t=0,75 mm
122-141-10	0 - 25	0,01 mm	±3 µm	3 µm	Type D, carbide t=0,4 mm
122-102-10	25 - 50	0,01 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm
122-112-10	25 - 50	0,01 mm	±3 µm	3 µm	Type B, hardened steel t=0,4 mm
122-162-10	25 - 50	0,01 mm	±3 µm	3 µm	Type C, carbide t=0,75 mm
122-142-10	25 - 50	0,01 mm	±3 µm	3 µm	Type D, carbide t=0,4 mm
122-103-10	50 - 75	0,01 mm	±3 µm	3 µm	Type A, hardened steel t=0,75 mm
122-104-10	75 - 100	0,01 mm	±4 µm	4 µm	Type A, hardened steel t=0,75 mm
122-105-10	100 - 125	0,01 mm	±4 µm	4 µm	Type A, hardened steel t=0,75 mm
122-106-10	125 - 150	0,01 mm	±4 µm	4 µm	Type A, hardened steel t=0,75 mm
122-107-10	150 - 175	0,01 mm	±5 µm	5 µm	Type A, hardened steel t=0,75 mm
122-108-10	175 - 200	0,01 mm	±5 µm	5 µm	Type A, hardened steel t=0,75 mm
122-109-10	200 - 225	0,01 mm	±5 µm	5 µm	Type A, hardened steel t=0,75 mm
122-110-10	225 - 250	0,01 mm	±6 µm	6 µm	Type A, hardened steel t=0,75 mm
122-115-10	250 - 275	0,01 mm	±6 µm	6 µm	Type A, hardened steel t=0,75 mm
122-116-10	275 - 300	0,01 mm	±6 µm	6 µm	Type A, hardened steel t=0,75 mm

No.	Measuring force [N]	L [mm]	a [mm]	b [mm]	c [mm]	Mass [g]
122-101-10	3-8	0	7,8	32	15	260
122-111-10	3-8	0	7,8	32	14,7	260
122-161-10	3-8	0	7,8	32	14,7	275
122-141-10	3-8	0	7,8	32	14,7	275
122-102-10	3-8	25	12,2	49	14,5	300
122-112-10	3-8	25	12,2	49	14,5	300
122-162-10	3-8	25	12,2	49	14,5	315
122-142-10	3-8	25	12,2	49	14,5	315
122-103-10	3-8	50	14,6	60	14,5	360
122-104-10	3-8	75	16,7	79	17,5	525
122-105-10	3-8	100	18,8	94	17,9	670
122-106-10	3-8	125	19,1	106	18,3	775
122-107-10	3-8	150	18,2	118	18,5	950
122-108-10	3-8	175	16,8	130	18,9	1140
122-109-10	3-8	200	18	143	17,7	1300
122-110-10	3-8	225	18	156	18,7	1450
122-115-10	3-8	250	18	169	18,7	1600
122-116-10	3-8	275	18	181	18,7	2020



Models up to 25 mm measuring range



Models over 25 mm measuring range

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Mitutoyo

Digimatic V-Anvil Micrometers

Series 314

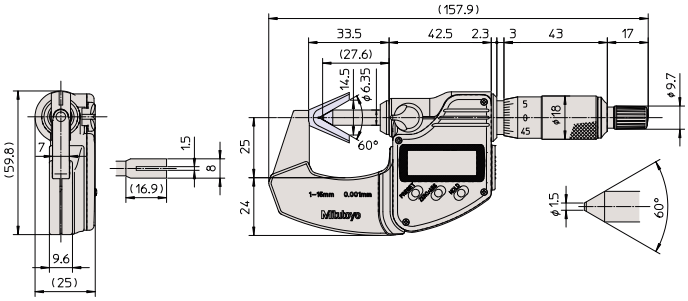
This Digimatic V-Anvil Micrometer helps you to measure cutting tools and taps.
It offers the following benefits:

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

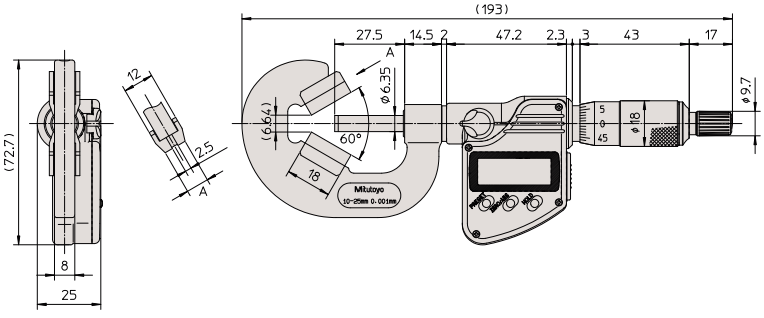
314-251-30

Metric

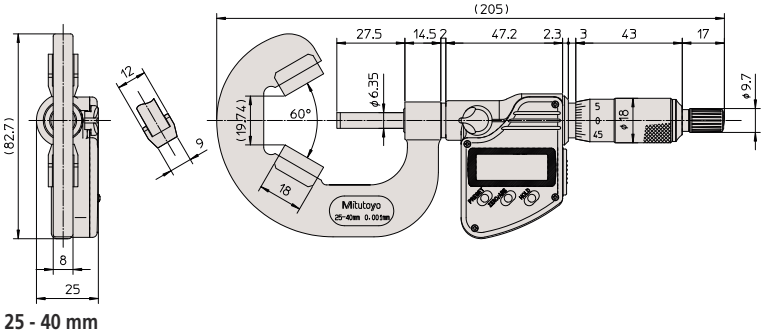
No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Flatness	Remarks	Measuring force [N]	Setting standard	Mass [g]
314-251-30	1 - 15	0,001 mm	±4 µm	0,3 µm (spindle), 1 µm (anvil)	With groove	3-8	167-327 ø 5 mm	275
314-261-30	1 - 15	0,001 mm	±4 µm	0,3 µm (spindle), 1 µm (anvil)	-	3-8	167-327 ø 5 mm	275
314-252-30	10 - 25	0,001 mm	±4 µm	0,3 µm (spindle), 1 µm (anvil)	With groove	5-10	167-328 ø 10 mm	410
314-262-30	10 - 25	0,001 mm	±4 µm	0,3 µm (spindle), 1 µm (anvil)	-	5-10	167-328 ø 10 mm	410
314-253-30	25 - 40	0,001 mm	±5 µm	0,3 µm (spindle), 1 µm (anvil)	-	5-10	167-329 ø 25 mm	465



1 - 15 mm



10 - 25 mm



25 - 40 mm

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Prism angle 60°
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,75 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, setting standard, key, 1 battery

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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V-Anvil Micrometers

Series 114

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

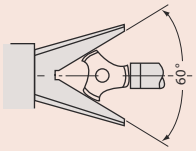
- It measures the outside diameter of cutting tools (such as taps, reamers, end mills) which have three or five flutes.
- V-anvils with a centreline groove are available for measuring the pitch diameter of taps by the single-wire method.

114-204

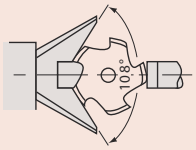
114-121

Specifications

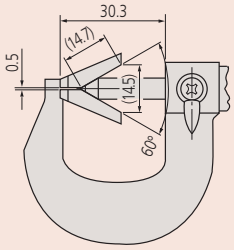
Measuring face	Prism angle 60°/108°, carbide tipped spindle hardened anvil (114-204, 114-137 carbide tipped anvil/spindle)
Measuring spindle	With spindle lock, ø6,35 mm, spindle pitch 0,75 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard, key



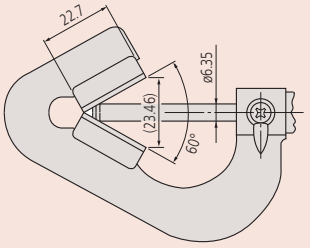
For 3-flute cutting tools



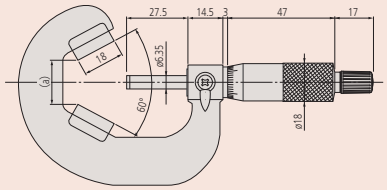
For 5-flute cutting tools



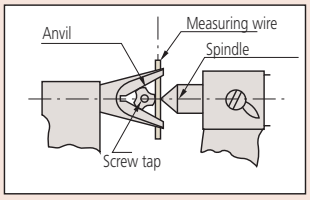
114-101, 114-161



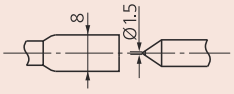
114-204



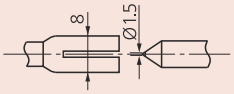
114-102 to 114-110



For 114-101, 114-102, 114-121



Plain anvil model



Grooved anvil model

Metric — For 3-flute cutting tools (60°)

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Remarks	Measuring force [N]	Setting standard	a [mm]	Mass [g]
114-101	1 - 15	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	With groove	5-10	167-327 ø 5 mm	0,5	120
114-161	1 - 15	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-327 ø 5 mm	0,5	120
114-204	2,3 - 25	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-327 ø 5 mm	0,5	290
114-102	10 - 25	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	With groove	5-10	167-328 ø 10 mm	6,2	280
114-162	10 - 25	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-328 ø 10 mm	6,2	280
114-103	25 - 40	0,01 mm	±5 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-329 ø 25 mm	19,14	400
114-104	40 - 55	0,01 mm	±6 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-330 ø 40 mm	32,13	465
114-105	55 - 70	0,01 mm	±6 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-331 ø 55 mm	45,12	675
114-106	70 - 85	0,01 mm	±7 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-332 ø 70 mm	58,11	910
114-107	85 - 100	0,01 mm	±7 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-333 ø 85 mm	71,1	1160
114-108	100 - 115	0,01 mm	±8 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-334 ø 100 mm	84,1	1480
114-109	115 - 130	0,01 mm	±8 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-335 ø 115 mm	97,09	2080
114-110	130 - 145	0,01 mm	±9 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-336 ø 130 mm	110,1	2880

Metric — For 5-flute cutting tools (108°)

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Remarks	Measuring force [N]	Setting standard	Mass [g]
114-137	2,3 - 25	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-327 ø 5 mm	220
114-121	5 - 25	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	With groove	5-10	167-327 ø 5 mm	255
114-165	5 - 25	0,01 mm	±4 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-327 ø 5 mm	255
114-122	25 - 45	0,01 mm	±5 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-329 ø 25 mm	400
114-123	45 - 65	0,01 mm	±6 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-331 ø 55 mm	540
114-124	65 - 85	0,01 mm	±7 µm	0,6 µm (spindle), 1,3 µm (anvil)	-	5-10	167-332 ø 70 mm	760

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Mitutoyo

Can Seam Micrometers

Series 147

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

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

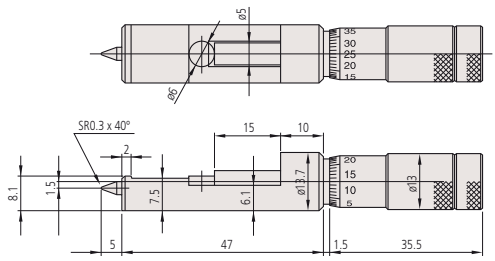
147-103

147-105

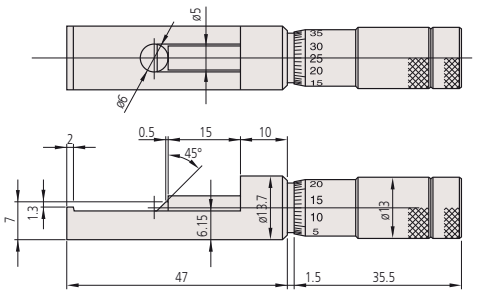
147-202

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Remarks	Mass [g]
147-103	0 - 13	0,01 mm	±3 µm	For steel cans	65
147-105	0 - 13	0,01 mm	±3 µm	For aluminium cans	65
147-202	0 - 13	0,01 mm	±3 µm	For spray cans	65



147-103



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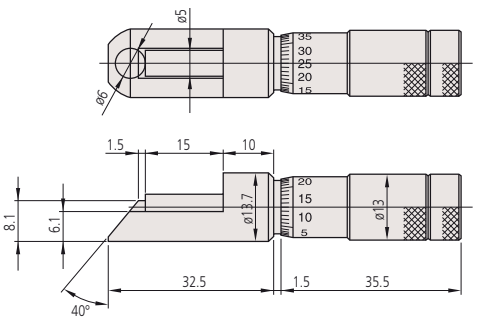
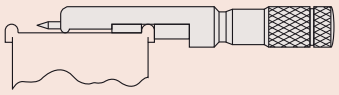


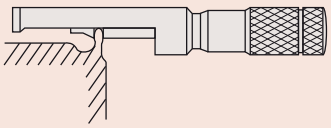
147-202

Specifications

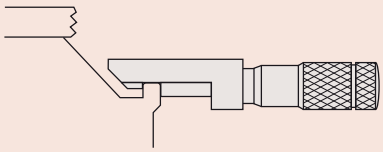
Measuring face	Hardened steel
Scale	Thimble and sleeve satin chrome finish ø13 mm
Delivered	Including box, key



147-103
For steel cans



147-105
For aluminium cans



147-202
For spray cans

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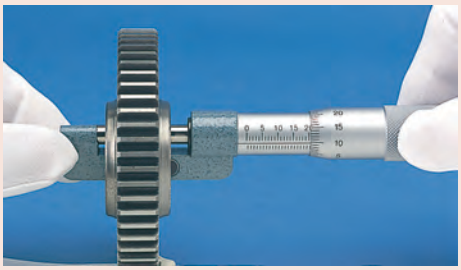
Hub Micrometers

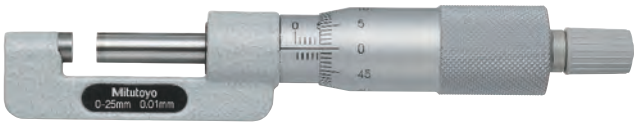
Series 147

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

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	ø6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key



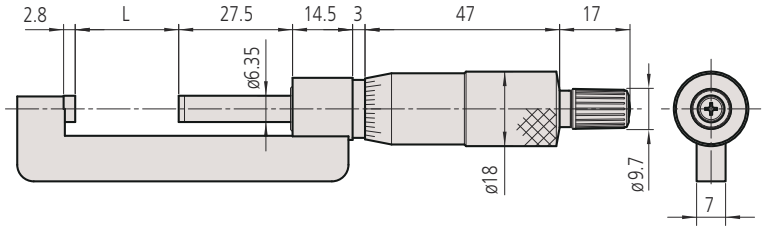


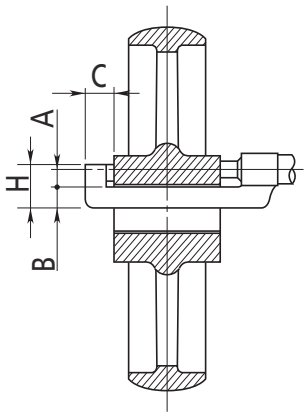
147-301

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]
147-301	0 - 25	0,01 mm	±2 µm	0,6 µm	3 µm	5-10
147-302	25 - 50	0,01 mm	±2 µm	0,6 µm	3 µm	5-10
147-303	50 - 75	0,01 mm	±2 µm	0,6 µm	3 µm	5-10
147-304	75 - 100	0,01 mm	±3 µm	0,6 µm	3 µm	5-10

No.	L [mm]	A [mm]	B [mm]	C [mm]	H [mm]	Mass [g]
147-301	0	6	8,5	13,5	17,5	135
147-302	25	6,5	11	14	20,5	150
147-303	50	6,5	11	13	20,5	170
147-304	75	6,5	11	13	20,5	185





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Digimatic Micrometers Interchangeable Anvil Type

Series 317

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

- Measures tubing thickness, shoulder edge distance, rivet head height, etc., with interchangeable anvils (flat anvil, rod anvil, V-anvil).

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000040191

IP65

317-251-30

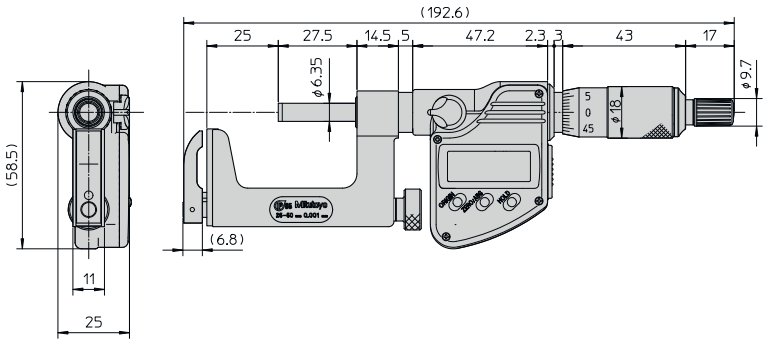
Functions	Series 317
ORIGIN	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
HOLD	●

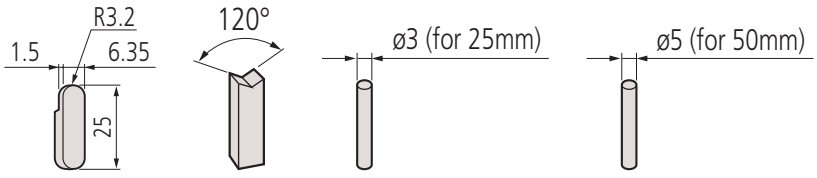
Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped spindle, hardened anvil
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years
Delivered	Including box, setting standard (from 25 mm upward), key, 1 battery, anvils

Metric

No.	Range [mm]	Digital step	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	Content of Set	Mass [g]
317-251-30	0 - 25	0,001 mm	3	0,6 µm (spindle), 2 µm (anvil)	3 µm	5-10	Anvils 201217, 201216	335
317-252-30	25 - 50	0,001 mm	3	0,6 µm (spindle), 2 µm (anvil)	3 µm	5-10	Anvils 201379, 201216	360





201216 Flat anvil
201218 V-anvil
201217 Cylindrical anvil
201379 Cylindrical anvil

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
201218	V-Anvil
950758	Round Base for Series 117, for 0-25mm

Consumable spares

No.	Description
938882	Battery SR44 1,5 V
201217	Cylindrical Anvil 3mm
201379	Cylindrical Anvil 5mm
201216	Flat Anvil

950758 with micrometer

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Micrometers Interchangeable Anvil Type

Series 117

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

- Measures tubing thickness, shoulder edge distance, rivet head height, etc., with interchangeable anvils (flat anvil, rod anvil, V-anvil).

Specifications

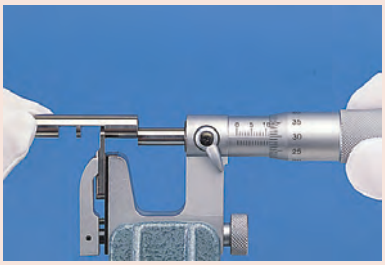
Measuring face	Carbide-tipped (spindle)
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key, anvils

Optional accessories

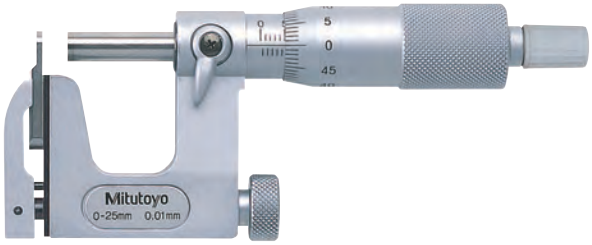
No.	Description
950758	Round Base for Series 117, for 0-25mm
201218	V-Anvil

Consumable spares

No.	Description
201217	Cylindrical Anvil 3mm
201379	Cylindrical Anvil 5mm
201216	Flat Anvil



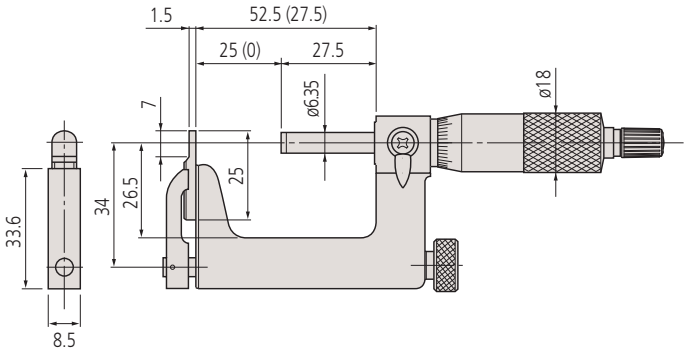
950758 with micrometer

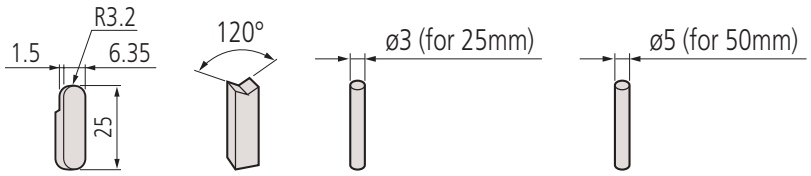


117-101

Metric

No.	Range [mm]	Graduation	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	Content of Set	Mass [g]
117-101	0 - 25	0,01 mm	3	0,6 µm (spindle), 2 µm (anvil)	3 µm	5-10	Anvils 201217, 201216	255
117-102	25 - 50	0,01 mm	3	0,6 µm (spindle), 2 µm (anvil)	3 µm	5-10	Anvils 201379, 201216	320





201216 Flat anvil

201218 V-anvil

201217 Cylindrical anvil

201379 Cylindrical anvil

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Limit Micrometers

Series 113

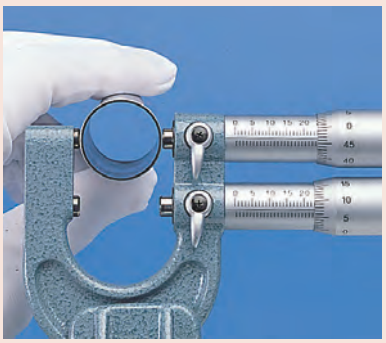
This Limit Micrometer offers the following benefits:

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

113-102

Specifications

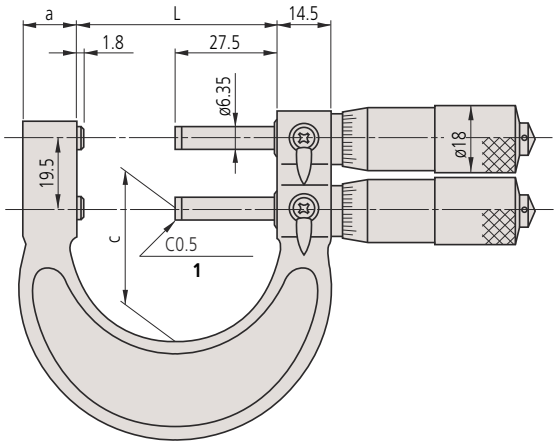
Measuring face	Carbide-tipped with chamfer micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key



Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness	Parallelism	Measuring force [N]	L [mm]	a [mm]	c [mm]	Mass [g]
113-102	0 - 25	0,01 mm	±3 µm	0,6 µm	3 µm	5-10	29,3	15	23	340
113-103	25 - 50	0,01 mm	±3 µm	0,6 µm	3 µm	5-10	54,3	15	37	380

mm



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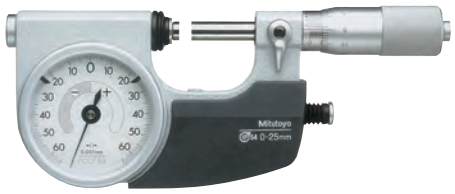
Indicating Micrometers

Series 510

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

- It is easy to use when operated one-handed due to retractable anvil.
- Protection level IP54 and large and easy to read characters on the dial plate
- Large dial comparator for easy reading (+/- 0,06 mm)
- Tolerance markers for GO/NG measurements
- 8 mm spindle diameter gives you easy positioning and highly accurate measurements.



510-121

510-141

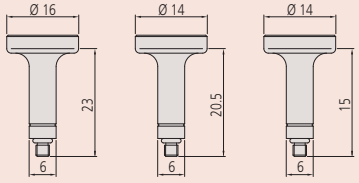
Specifications

Measuring face	Carbide-tipped, micro-lap finish, ø 8 mm
Scale	Thimble and sleeve satin chrome finish ø21 mm
Delivered	Including box, key

Optional accessories

No.	Description
04AZA124	Workpiece Stopper Indicating Micrometer, 23mm
04AZA125	Workpiece Stopper Indicating Micrometer, 20,5mm
04AZA126	Workpiece Stopper Indicating Micrometer, 15mm

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



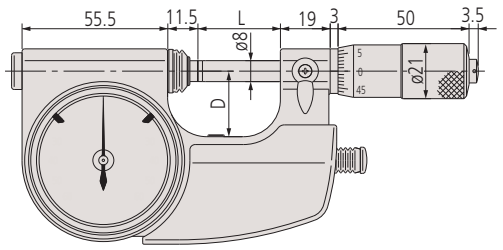
04AZA124 Workpiece stop A | **04AZA125 Workpiece stop B** | **04AZA126 Workpiece stop C**

Adjusting screw for dial comparator ± 5 µm

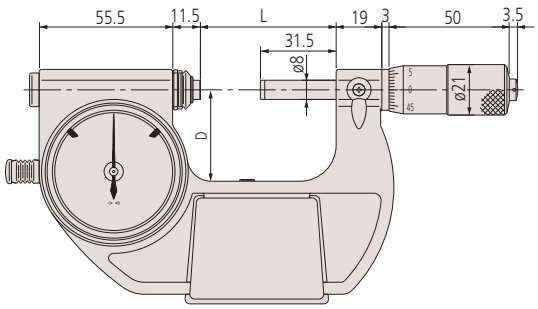
Metric

No.	Range [mm]	Indicating range	Anvil retracting stroke	Spindle feed error [µm]	Accuracy dial comparator
510-121	0 - 25	±0,06 mm	2 mm	3	1 µm
510-141	0 - 25	±0,06 mm	2 mm	3	1 µm
510-122	25 - 50	±0,06 mm	2 mm	3	1 µm
510-123	50 - 75	±0,06 mm	2 mm	3	1 µm
510-124	75 - 100	±0,06 mm	2 mm	3	1 µm

No.	Repeatability	Flatness	Parallelism	Graduation	Measuring force [N]	Operating button	L [mm]	D [mm]	Mass [g]
510-121	0,4 µm	0,3 µm	0,6 µm	0,001 mm	5-10	Right	31,5	25	520
510-141	0,4 µm	0,3 µm	0,6 µm	0,001 mm	5-10	Left	31,5	25	520
510-122	0,4 µm	0,3 µm	0,6 µm	0,001 mm	5-10	Left	56,5	38	670
510-123	0,4 µm	0,3 µm	1 µm	0,001 mm	5-10	Left	81,5	50	820
510-124	0,4 µm	0,3 µm	1 µm	0,001 mm	5-10	Left	106,5	63	970



0-25 mm



25-100 mm

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Indicating Snap Gauges

Series 523

This is a Snap Gauge with integrated dial comparator. It offers you the following benefits:

- It is ideal for rapidly inspecting workpieces, especially cylindrical, in batch or mass production situations.
- It can be set with external length standards such as block gauges.
- Easy-to-operate retracting button

523-121

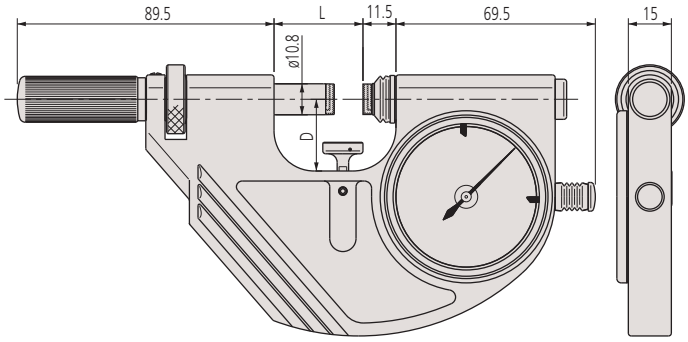
Specifications

Measuring face	Carbide-tipped, micro-lap finish ø 10,8 mm
Delivered	Including box, workpiece rest

Metric

No.	Range [mm]	Graduation	Indicating range	Anvil retracting stroke	Accuracy dial comparator	Repeatability	Flatness
523-121	0 - 25	0,001 mm	±0,06 mm	2 mm	1 µm	0,4 µm	0,3 µm
523-122	25 - 50	0,001 mm	±0,06 mm	2 mm	1 µm	0,4 µm	0,3 µm
523-123	50 - 75	0,001 mm	±0,06 mm	2 mm	1 µm	0,4 µm	0,3 µm
523-124	75 - 100	0,001 mm	±0,06 mm	2 mm	1 µm	0,4 µm	0,3 µm

No.	Parallelism	Measuring force [N]	L [mm]	D [mm]	Mass [g]
523-121	0,6 µm	5-10	31	25	740
523-122	0,6 µm	5-10	56	35	840
523-123	1 µm	5-10	81	47,5	950
523-124	1 µm	5-10	106	60	1080



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Snap Gauges

Series 523

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

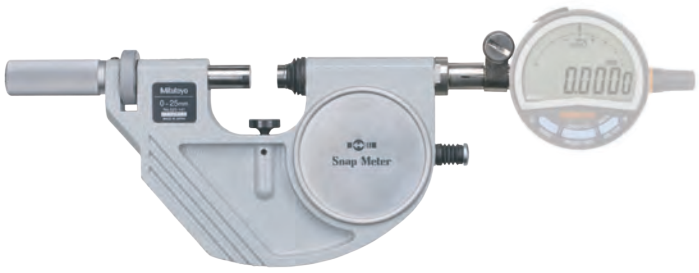
- It's ideal for rapidly inspecting workpieces, especially cylindrical, in batch or mass production situations, when you need an indication of where a measurement falls within the tolerance band.
- You can set it with external length standards such as block gauges.
- Easy-to-operate retracting button.

Specifications

Measuring face	Carbide-tipped, micro-lap finish ø 10,8 mm
Delivered	Including box, workpiece rest, without indicator

Optional accessories

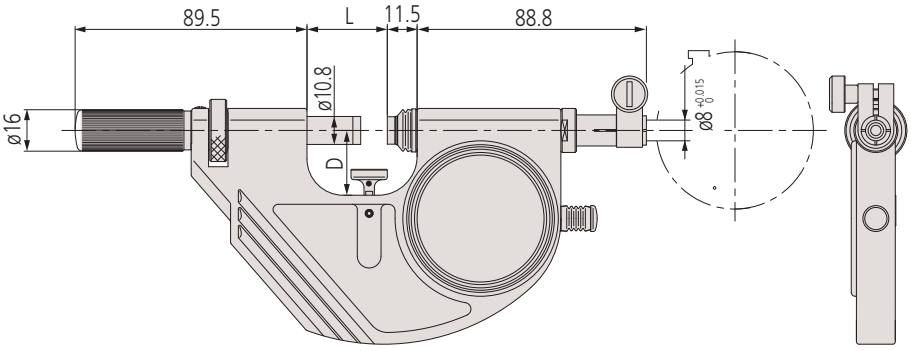
No.	Description
2109AB-10	Dial Gauge, Flat Back, ISO Type, Jeweled Bearing, Shockproof, 1mm, 0,001mm
2900AB-10	Dial Gauge, Flat Back, ISO Type, One Revolution, Jeweled Bearing, Shockproof, 0,08mm, 0,001mm
543-700B	Digital Indicator ID-C, 12,7mm, 0,0005mm, Flat Back Plate



523-141 with optional indicator

Metric

No.	Range [mm]	Anvil retracting stroke	Repeatability	Flatness	Parallelism	Measuring force [N]	L [mm]	D [mm]	Mass [g]
523-141	0 - 25	2 mm	0,4 µm	0,3 µm	0,6 µm	5-10	31	25	710
523-142	25 - 50	2 mm	0,4 µm	0,3 µm	0,6 µm	5-10	56	35	810
523-143	50 - 75	2 mm	0,4 µm	0,3 µm	1 µm	5-10	81	47,5	920
523-144	75 - 100	2 mm	0,4 µm	0,3 µm	1 µm	5-10	106	60	1050



ABS Digimatic Indicator

Linear Gage and counter

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Mitutoyo

Dial Gauge Micrometers

Series 107

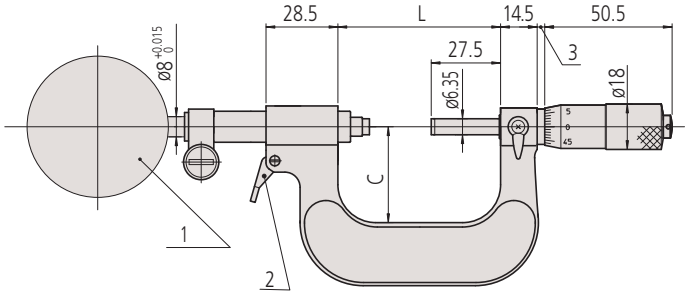
This Dial Gauge Micrometer allows you to quickly measure mass-produced parts.
It offers the following benefits:

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

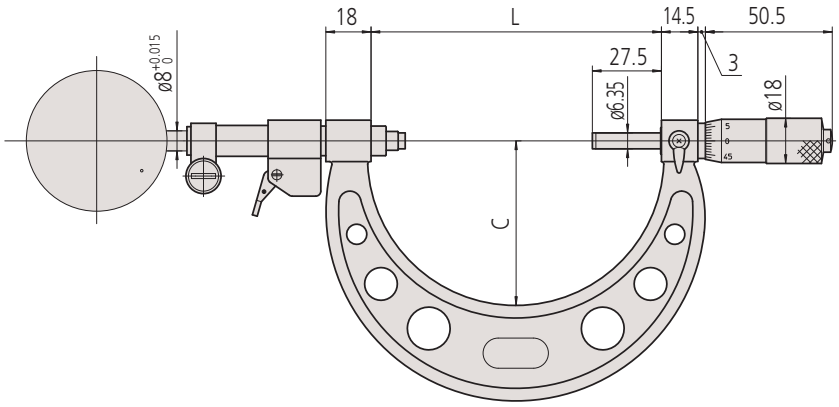
107-201 with optional dial indicator

Metric

No.	Range [mm]	Graduation	Anvil retracting stroke	Spindle feed error [µm]	Flatness	Parallelism	Measuring force [N]	L [mm]	C [mm]	Mass [g]
107-201	0 - 25	0,01 mm	3 mm	3	0,6 µm	2 µm	5-10	39,5	30	480
107-202	25 - 50	0,01 mm	3 mm	3	0,6 µm	2 µm	5-10	64,5	38	520
107-203	50 - 75	0,01 mm	3 mm	3	0,6 µm	2 µm	5-10	90	45	585
107-204	75 - 100	0,01 mm	3 mm	3	0,6 µm	3 µm	5-10	115,6	65	630
107-205	100 - 125	0,01 mm	3 mm	3	0,6 µm	3 µm	5-10	140,6	79	725
107-206	125 - 150	0,01 mm	3 mm	3	0,6 µm	3 µm	5-10	165,6	93	810
107-207	150 - 175	0,01 mm	3 mm	3	0,6 µm	3 µm	5-10	190,5	105	1050
107-208	175 - 200	0,01 mm	3 mm	3	0,6 µm	4 µm	5-10	215,5	120	1170



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



50 - 200 mm

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, setting standard (from 25 mm upward), key

2900AB-10
(1 µm graduation)

543-700B
(0,0005 µm digital step)

542-192
(0,1 µm digital step)

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Dial Snap Gauges

Series 201

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

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

Specifications

Measuring face	Carbide-tipped, micro-lap finish
Delivered	Including hand guard adjustable workpiece stop

Optional accessories

No.	Description
2046AB	Dial Gauge, Flat Back, ISO Type, 10mm, 0,01mm
2109AB-10	Dial Gauge, Flat Back, ISO Type, Jeweled Bearing, Shockproof, 1mm, 0,001mm
2972AB	Dial Gauge, Flat Back, ISO Type, One Revolution, Shock- & Dustproof, 1mm, 0,01mm
2900AB-10	Dial Gauge, Flat Back, ISO Type, One Revolution, Jeweled Bearing, Shockproof, 0,08mm, 0,001mm
21DZA000	Protector for Indicator (plastic cover)

201-101 with optional accessories: stand 156-101-10 and dial indicator

201-101

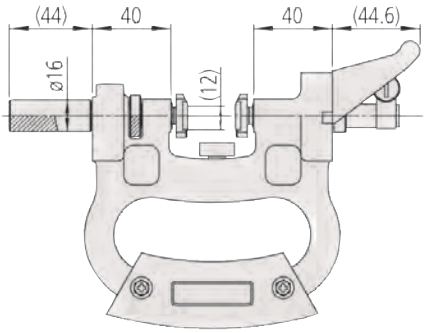
201-102

201-104

201-107

Metric

No.	Range [mm]	Anvil retracting stroke	Repeatability	Flatness	Parallelism	Remarks	Measuring force [N]	Mass [g]
201-101	0 - 25	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	570
201-102	25 - 50	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	660
201-103	50 - 75	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	700
201-104	75 - 100	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	770
201-105	100 - 125	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	870
201-106	125 - 150	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	950
201-107	150 - 175	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	1070
201-108	175 - 200	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	1160
201-109	200 - 225	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	1260
201-110	225 - 250	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	1350
201-111	250 - 275	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	1470
201-112	275 - 300	2 mm	2 µm	1 µm	5 µm	For indicator with 8 mm stem	12-18	1620



201-101

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Mitutoyo

Internal Groove Micrometers

Series 146

This Internal Groove Micrometer is designed to measure the width and location of grooves cut into bore walls.
It offers the following features:

- Two-directional ratchet stop

146-221

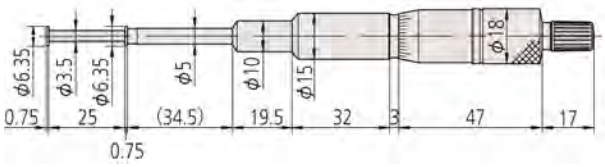
146-222

Metric

Non-rotating spindle type

No.	Range Outside	Range Inside	Graduation	Max. Permissible Error J MPE	Parallelism	Measuring force [N]	L [mm]	l [mm]	Mass [g]
146-221	0-25 mm	1,6-26,5 mm	0,01 mm	±10 µm	10 µm	5-10	25	115	135
146-222	0-25 mm	1,6-26,5 mm	0,01 mm	±10 µm	10 µm	5-10	25	115	185
146-223	25-50 mm	26,5-51,5 mm	0,01 mm	±10 µm	10 µm	5-10	50	90	175
146-224	50-75 mm	51,5-76,5 mm	0,01 mm	±10 µm	10 µm	5-10	75	65	165
146-225	75-100 mm	76,5-101,5 mm	0,01 mm	±10 µm	10 µm	5-10	100	40	160

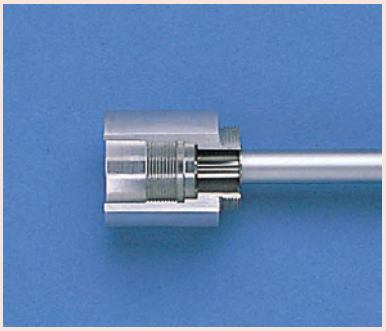
Unit: mm

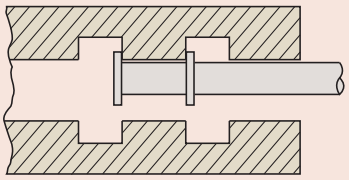


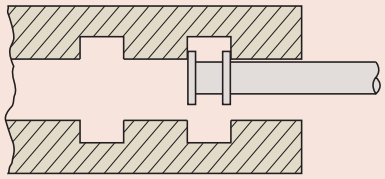
146-221

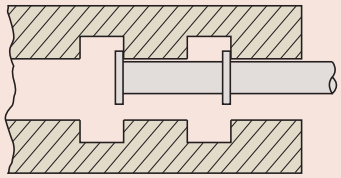
Specifications

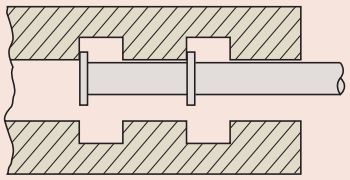
Measuring face	Hardened steel
Measuring spindle	Spindle pitch 0,5 mm
Scale	Thimble and sleeve satin chrome finish ø18 mm
Delivered	Including box, key











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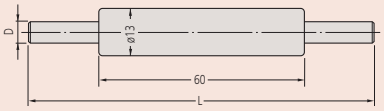
Micrometer Setting Standards ≤ 1000 mm

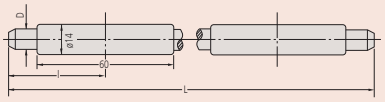
Specifications

Measuring face	Micro-lap finish

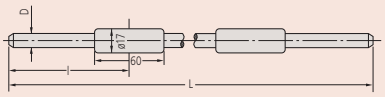
25 mm - 75 mm



100 mm - 175 mm



200 mm - 475 mm



500 mm - 1000 mm

Series 167

Used for adjusting the reference point of outside micrometers

167-103

167-108

Metric

No.	Length (L)	Diameter (D)	Accuracy	Flatness	Parallelism	l [mm]
167-101	25 mm	6,35 mm	±1,5 µm	0,3 µm	2 µm	18
167-102	50 mm	6,35 mm	±2 µm	0,3 µm	2 µm	40
167-103	75 mm	6,35 mm	±2,5 µm	0,3 µm	2 µm	40
167-104	100 mm	7,9 mm	±3 µm	0,3 µm	2 µm	
167-105	125 mm	7,9 mm	±3,5 µm	0,3 µm	2 µm	
167-106	150 mm	7,9 mm	±4 µm	0,3 µm	2 µm	
167-107	175 mm	7,9 mm	±4,5 m	0,3 µm	2 µm	
167-108	200 mm	7,9 mm	±5 µm	0,3 µm	2 µm	47
167-109	225 mm	7,9 mm	±5,5 µm	0,3 µm	2 µm	47
167-110	250 mm	7,9 mm	±6 µm	0,3 µm	2 µm	52
167-111	275 mm	7,9 mm	±6,5 µm	0,3 µm	2 µm	57
167-112	300 mm	7,9 mm	±7 µm	0,3 µm	2 µm	64
167-113	325 mm	7,9 mm	±7,5 µm	0,3 µm	2 µm	69
167-114	350 mm	7,9 mm	±8 µm	0,3 µm	2 µm	74
167-115	375 mm	7,9 mm	±8,5 µm	0,3 µm	2 µm	80
167-116	400 mm	7,9 mm	±9 µm	0,3 µm	2 µm	85
167-117	425 mm	7,9 mm	±9,5 µm	0,3 µm	2 µm	90
167-118	450 mm	7,9 mm	±10 µm	0,3 µm	2 µm	95
167-119	475 mm	7,9 mm	±10,5 µm	0,3 µm	2 µm	101
167-120	500 mm	11,9 mm	±11 µm	0,3 µm	2 µm	106
167-121	525 mm	11,9 mm	±11,5 µm	0,3 µm	2 µm	112
167-122	550 mm	11,9 mm	±12 µm	0,3 µm	2 µm	117
167-123	575 mm	11,9 mm	±12,5 µm	0,3 µm	2 µm	122
167-124	600 mm	11,9 mm	±13 µm	0,3 µm	2 µm	128
167-125	625 mm	11,9 mm	±13,5 µm	0,3 µm	2 µm	133
167-126	650 mm	11,9 mm	±14 µm	0,3 µm	2 µm	138
167-127	675 mm	11,9 mm	±14,5 µm	0,3 µm	2 µm	142
167-128	700 mm	11,9 mm	±15 µm	0,3 µm	2 µm	147
167-129	725 mm	11,9 mm	±15,5 µm	0,3 µm	2 µm	153
167-130	750 mm	11,9 mm	±16 µm	0,3 µm	2 µm	158
167-131	775 mm	11,9 mm	±16,5 µm	0,3 µm	2 µm	164
167-132	800 mm	11,9 mm	±17 µm	0,3 µm	2 µm	170
167-133	825 mm	11,9 mm	±17,5 µm	0,3 µm	2 µm	175
167-134	850 mm	11,9 mm	±18 µm	0,3 µm	2 µm	180
167-135	875 mm	11,9 mm	±18,5 µm	0,3 µm	2 µm	185
167-136	900 mm	11,9 mm	±19 µm	0,3 µm	2 µm	191
167-137	925 mm	11,9 mm	±19,5 µm	0,3 µm	2 µm	196
167-138	950 mm	11,9 mm	±20 µm	0,3 µm	2 µm	201
167-139	975 mm	11,9 mm	±20,5 µm	0,3 µm	2 µm	207
167-140	1000 mm	11,9 mm	±21 µm	0,3 µm	2 µm	211

Metric Sets

No.	Length (L)	Flatness	Parallelism	Content of Set
167-902	25-125 mm	0,3 µm	2 µm	167-101 up to 167-105
167-903	25-275 mm	0,3 µm	2 µm	167-101 up to 167-111

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Mitutoyo

Micrometer Setting Standards > 1000 mm

Series 167

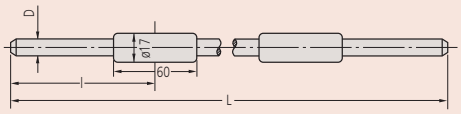
Used for adjusting the reference point of outside micrometers

Metric

No.	Length (L)	Diameter (D)	Accuracy	Flatness	Parallelism	l [mm]
167-365	1025 mm	11,9 mm	±21,5 µm	0,3 µm	2 µm	217
167-366	1050 mm	11,9 mm	±22 µm	0,3 µm	2 µm	222
167-367	1075 mm	11,9 mm	±22,5 µm	0,3 µm	2 µm	227
167-368	1100 mm	11,9 mm	±23 µm	0,3 µm	2 µm	232
167-369	1125 mm	11,9 mm	±23,5 µm	0,3 µm	2 µm	238
167-370	1150 mm	11,9 mm	±24 µm	0,3 µm	2 µm	243
167-371	1175 mm	11,9 mm	±24,5 µm	0,3 µm	2 µm	248
167-372	1200 mm	11,9 mm	±25 µm	0,3 µm	2 µm	254
167-373	1225 mm	11,9 mm	±25,5 µm	0,3 µm	2 µm	259
167-374	1250 mm	11,9 mm	±26 µm	0,3 µm	2 µm	264
167-375	1275 mm	11,9 mm	±26,5 µm	0,3 µm	2 µm	269
167-376	1300 mm	11,9 mm	±27 µm	0,3 µm	2 µm	275
167-377	1325 mm	11,9 mm	±27,5 µm	0,3 µm	2 µm	280
167-378	1350 mm	11,9 mm	±28 µm	0,3 µm	2 µm	285
167-379	1375 mm	11,9 mm	±28,5 µm	0,3 µm	2 µm	291
167-380	1400 mm	11,9 mm	±29 µm	0,3 µm	2 µm	296
167-381	1425 mm	11,9 mm	±29,5 µm	0,3 µm	2 µm	301
167-382	1450 mm	11,9 mm	±30 µm	0,3 µm	2 µm	306
167-383	1475 mm	11,9 mm	±30,5 µm	0,3 µm	2 µm	312
167-384	1500 mm	11,9 mm	±31 µm	0,3 µm	2 µm	317
167-385	1525 mm	11,9 mm	±31,5 µm	0,3 µm	2 µm	322
167-386	1550 mm	11,9 mm	±32 µm	0,3 µm	2 µm	328
167-387	1575 mm	11,9 mm	±32,5 µm	0,3 µm	2 µm	333
167-388	1600 mm	11,9 mm	±33 µm	0,3 µm	2 µm	338
167-389	1625 mm	11,9 mm	±33,5 µm	0,3 µm	2 µm	343
167-390	1650 mm	11,9 mm	±34 µm	0,3 µm	2 µm	349
167-391	1675 mm	11,9 mm	±34,5 µm	0,3 µm	2 µm	354
167-392	1700 mm	11,9 mm	±35 µm	0,3 µm	2 µm	359
167-393	1725 mm	11,9 mm	±35,5 µm	0,3 µm	2 µm	364
167-394	1750 mm	11,9 mm	±36 µm	0,3 µm	2 µm	370
167-395	1775 mm	11,9 mm	±36,5 µm	0,3 µm	2 µm	375
167-396	1800 mm	11,9 mm	±37 µm	0,3 µm	2 µm	380
167-397	1825 mm	11,9 mm	±37,5 µm	0,3 µm	2 µm	386
167-398	1850 mm	11,9 mm	±38 µm	0,3 µm	2 µm	391
167-399	1875 mm	11,9 mm	±38,5 µm	0,3 µm	2 µm	396
167-400	1900 mm	11,9 mm	±39 µm	0,3 µm	2 µm	401
167-401	1925 mm	11,9 mm	±39,5 µm	0,3 µm	2 µm	407
167-402	1950 mm	11,9 mm	±40 µm	0,3 µm	2 µm	412
167-403	1975 mm	11,9 mm	±40,5 µm	0,3 µm	2 µm	417
167-404	2000 mm	11,9 mm	±41 µm	0,3 µm	2 µm	423

Specifications

Measuring face	Micro-lap finish



1000-2000 mm

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Setting Standards for Screw Thread Micrometers

Setting Standards Metric (unified) 60°

Used for accurately setting screw thread micrometers at the start or end of the measuring range.

Metric — Angle 60°

No.	Length (L)	Accuracy
167-261	25 mm	±4 µm
167-262	50 mm	±5 µm
167-263	75 mm	±6 µm
167-264	100 mm	±7 µm
167-265	125 mm	±8 µm
167-266	150 mm	±9 µm
167-267	175 mm	±10 µm
167-268	200 mm	±11 µm
167-269	225 mm	±12 µm
167-270	250 mm	±13 µm
167-271	275 mm	±14 µm

Setting Standards Metric Whitworth 55°

Used for accurately setting screw thread micrometers at the start or end of the measuring range.

Metric — Angle 55°

No.	Length (L)	Accuracy
167-272	25 mm	±4 µm
167-273	50 mm	±5 µm
167-274	75 mm	±6 µm
167-275	100 mm	±7 µm
167-276	125 mm	±8 µm
167-277	150 mm	±9 µm
167-278	175 mm	±10 µm
167-279	200 mm	±11 µm
167-280	225 mm	±12 µm
167-281	250 mm	±13 µm
167-282	275 mm	±14 µm

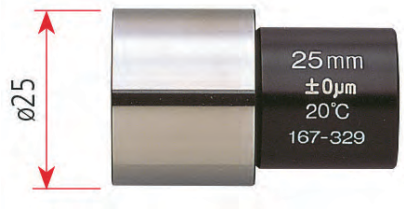
Setting Standards for V-Anvil Micrometers

Series 167

Used for accurately setting V-anvil micrometers

Metric

No.	Length (L)	Accuracy	Remarks
167-327	5 mm	±2 µm	Plug
167-328	10 mm	±2 µm	Plug
167-329	25 mm	±2 µm	Plug
167-330	40 mm	±3 µm	Ring
167-331	55 mm	±3 µm	Ring
167-332	70 mm	±3 µm	Ring
167-333	85 mm	±3 µm	Ring
167-334	100 mm	±5 µm	Ring
167-335	115 mm	±5 µm	Ring
167-336	130 mm	±5 µm	Ring



167-329

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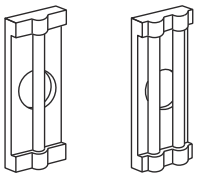
Mitutoyo

3-Wire Measuring Process

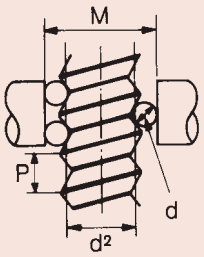
Series 313

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

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



313-101



P =thread pitch
d_D =measuring wire Ø
d_2 =pitch diameter
M =theoretical dimension at measuring pressure d
a =pitch angle
d =correction factor

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

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

1) Wire in set

No.	Accuracy	Remarks	Content of Set
313-101	DIN 2269, Grade 1	For micrometer spindle diameter 6,35 mm	18 pairs of wires D= 0,17 - 3,2 mm
313-102	DIN 2269, Grade 1	For micrometer spindle diameter 8 mm	18 pairs of wires D= 0,17 - 3,2 mm

Individual wires (content of 313-101)
One pair, support spindle ø 6.35 mm

No.	Diameter (D)	Accuracy
952131	0,17 mm	DIN 2269, Grade 1
952132	0,195 mm	DIN 2269, Grade 1
952133	0,22 mm	DIN 2269, Grade 1
952134	0,25 mm	DIN 2269, Grade 1
952135	0,29 mm	DIN 2269, Grade 1
952136	0,335 mm	DIN 2269, Grade 1
952137	0,39 mm	DIN 2269, Grade 1
952138	0,455 mm	DIN 2269, Grade 1
952139	0,53 mm	DIN 2269, Grade 1
952140	0,62 mm	DIN 2269, Grade 1
952141	0,725 mm	DIN 2269, Grade 1
952142	0,895 mm	DIN 2269, Grade 1
952143	1,1 mm	DIN 2269, Grade 1
952144	1,35 mm	DIN 2269, Grade 1
952145	1,65 mm	DIN 2269, Grade 1
952146	2,05 mm	DIN 2269, Grade 1
952147	2,55 mm	DIN 2269, Grade 1
952148	3,2 mm	DIN 2269, Grade 1

Individual wires (content of 313-102)
One pair, support spindle ø 8 mm

No.	Diameter (D)	Accuracy
952149	0,17 mm	DIN 2269, Grade 1
952150	0,195 mm	DIN 2269, Grade 1
952151	0,22 mm	DIN 2269, Grade 1
952152	0,25 mm	DIN 2269, Grade 1
952153	0,29 mm	DIN 2269, Grade 1
952154	0,335 mm	DIN 2269, Grade 1
952155	0,39 mm	DIN 2269, Grade 1
952156	0,455 mm	DIN 2269, Grade 1
952157	0,53 mm	DIN 2269, Grade 1
952158	0,62 mm	DIN 2269, Grade 1
952159	0,725 mm	DIN 2269, Grade 1
952160	0,895 mm	DIN 2269, Grade 1
952161	1,1 mm	DIN 2269, Grade 1
952162	1,35 mm	DIN 2269, Grade 1
952163	1,65 mm	DIN 2269, Grade 1
952164	2,05 mm	DIN 2269, Grade 1
952165	2,55 mm	DIN 2269, Grade 1
952166	3,2 mm	DIN 2269, Grade 1

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

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

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Micrometer Stands

Series 156

This is a micrometer stand that offers you the following benefits:

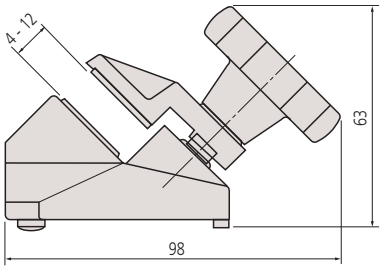
- Keeps both hands free for operating the micrometer and positioning the workpiece.
- Designed for batch or mass production measurements in manufacturing and quality assurance.

156-105-10

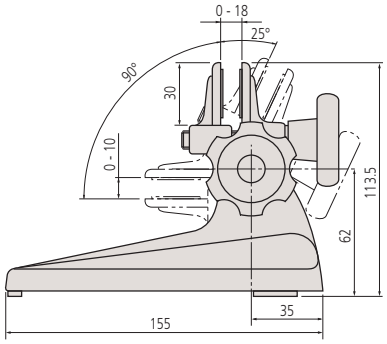
156-101-10

156-102

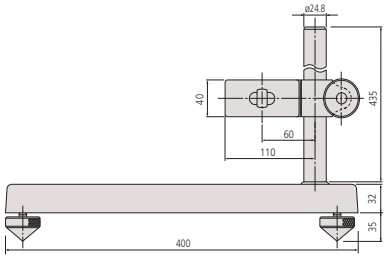
No.	Applicable measuring range	Remarks	Mass [g]
156-105-10	0 - 50 mm	Fixed angle type 45°	700
156-101-10	0 - 100 mm	Adjustable angle type	1210
156-102	100 - 300 mm	Vertical type	9000
156-103	300 - 1000 mm	Vertical type	8500



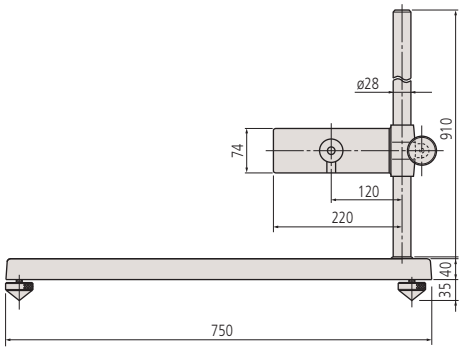
156-105-10



156-101-10



156-102



156-103

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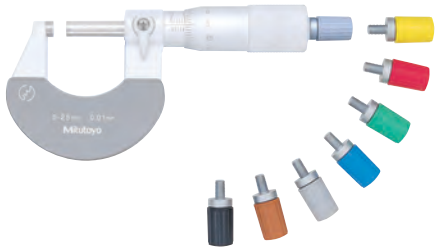
Colour Coded Ratchets and Speeders

Micrometer accessories



Colour-coded ratchets

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

Colour-coded ratchets for analogue micrometer 0-300 mm

No.	Colour
985056	Black
985061	Red
985081	Blue
985071	Yellow
985076	Green
985066	Brown
04GZA239	Grey

Colour-coded ratchets for analogue micrometer 300-1000 mm

No.	Colour
04GZA243	Grey

Colour-coded speeders for digital micrometer 0-300 mm

No.	Colour
04GZA241	Grey

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

No.	Colour
04AAB208	Grey
04GAA900	Red
04GAA901	Yellow
04GAA902	Green
04GAA903	Blue
04GAA899	Black

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Ball Attachments

Sample application

Micrometer accessories

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

101468M

Metric

No.	Diameter (D)
101468M	5 mm

Optical Parallels

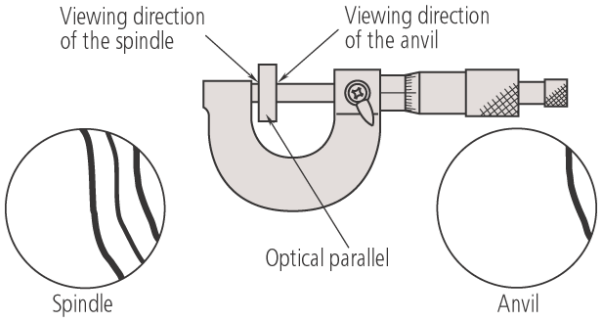
Series 157

These Optical Parallels allow you to inspect micrometers and other measuring tools. Using optical interference, they can inspect the measuring faces for parallelism and flatness.

157-904

Metric

No.	Diameter (D)	Flatness	Parallelism	Remarks	Content of Set
157-904	30 mm	0,1 µm	0,2 µm	For micrometer range 25 - 50 mm	157-105 (25 mm), 157-106 (25,12 mm), 157-107 (25,25 mm), 157-108 (25,37 mm)



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

All products to be sold to commercial customers.
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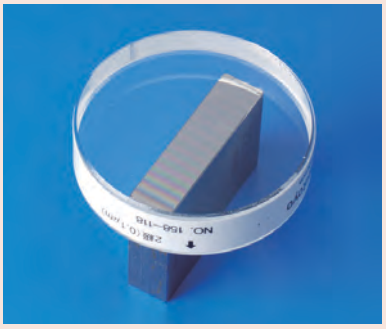
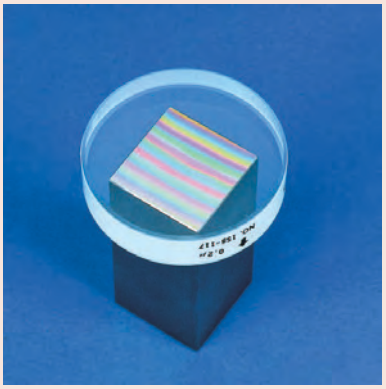
Optical Flats

Series 158

These optical flats are an essential tool to test the flatness of reflective surfaces such as gauge blocks through optical interference technology.

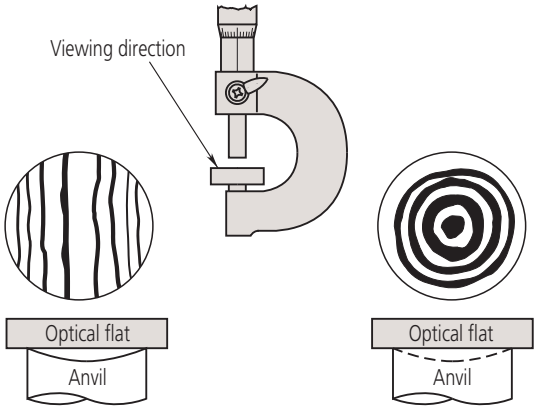
158-118





Metric

No.	Length (L)	Diameter (D)	Flatness
158-117	12 mm	45 mm	0,2 µm
158-118	12 mm	45 mm	0,1 µm
158-119	15 mm	60 mm	0,2 µm
158-120	15 mm	60 mm	0,1 µm



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Digital Micrometer Heads with Non-Rotating Spindle

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped
Power supply	2 batteries SR-44
Battery life	Approx. 1,8 years

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

164-163 Application

Series 164

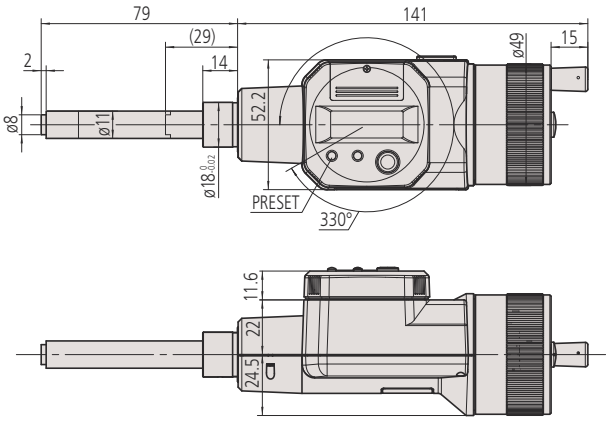
This is a digital micrometer head with non-rotating spindle. It offers you the following benefits:

- Rotatable display, carbide tipped and non-rotating spindle
- It is perfect for integration into machinery and measuring instruments.

164-163

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Remarks	Mass [g]
164-163	0 - 50	0,001 mm	±3 µm	Flat	0,5	18 mm	Flat	Non-rotating spindle	490



164-163
( ): with spindle full retracted

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Digital Micrometer Heads with 10 mm Stem

Series 350

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

- You can integrate it into machinery and measuring instruments.
- Measurement values are clearly displayed in 0,001mm increments.
- Stem diameter: 10 mm.

350-251-30

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped
Measuring spindle	With spindle lock, ø 6,35 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years

Optional accessories

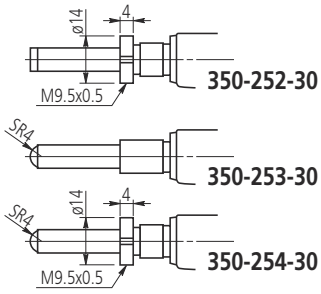
No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

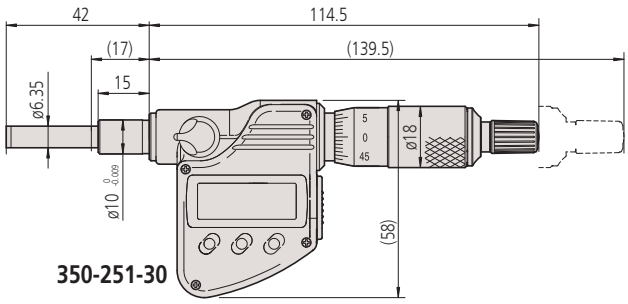
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
350-251-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	10 mm	Plain		230
350-252-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	10 mm	w/ clamp nut	11,5	230
350-253-30	0 - 25	0,001 mm	±2 µm	Spherical (SR4)	0,5	10 mm	Plain		230
350-254-30	0 - 25	0,001 mm	±2 µm	Spherical (SR4)	0,5	10 mm	w/ clamp nut	11,5	230





( ): with spindle full retracted

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Digital Micrometer Heads with 12 mm Stem

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

Specifications

Display	LCD, character height 7,5 mm
Measuring face	Carbide-tipped
Measuring spindle	With spindle lock, ø 6,35 mm
Scale	Thimble and sleeve satin chrome finish
Power supply	1 battery SR-44
Battery life	Approx. 2,4 years

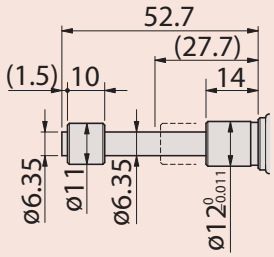
Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

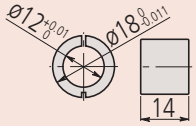
Consumable spares

No.	Description
938882	Battery SR44 1,5 V
305307	Bush, Series 350, Ø 12/18 mm, 14 mm length
306625	Bush, Series 350, Ø 12/18 mm, 16 mm length

306625 Standard for 350-271-30, 350-273-30
305307 Standard for 350-261-30



350-261-30



305307

Series 350

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

- You can integrate it into machinery and measuring instruments.
- Its excellent water and dust resistance (IP65 protection level) lets you use it in machining situations that include splashing coolant fluid (except types with threaded stem).

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000040191

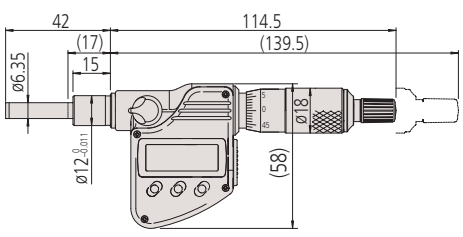
IP65

350-281-30

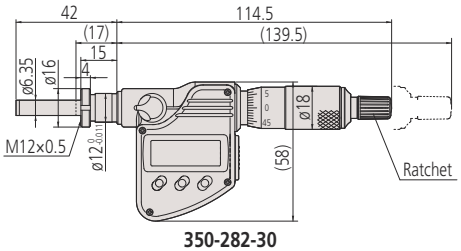
350-282-30

Metric

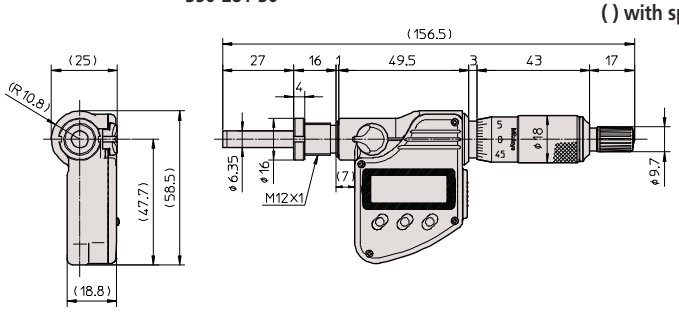
No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Remarks	Mass [g]
350-271-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	12 mm	Plain		IP65	230
350-272-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	12 mm	w/ clamp nut	11,5	Threaded stem	230
350-273-30	0 - 25	0,001 mm	±2 µm	Spherical (SR4)	0,5	12 mm	Plain		IP65	230
350-274-30	0 - 25	0,001 mm	±2 µm	Spherical (SR4)	0,5	12 mm	w/ clamp nut	11,5	Threaded stem	230
350-281-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	12 mm	Plain		IP65	230
350-282-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	12 mm	w/ clamp nut	11,5	IP65	230
350-283-30	0 - 25	0,001 mm	±2 µm	Spherical (SR4)	0,5	12 mm	Plain		IP65	230
350-284-30	0 - 25	0,001 mm	±2 µm	Spherical (SR4)	0,5	12 mm	w/ clamp nut	11,5	IP65	230
350-261-30	0 - 25	0,001 mm	±2 µm	Flat	0,5	12 mm	Plain		IP65, w/ non-rotating measuring face w/o ratched stop	235



350-281-30



350-282-30
( ) with spindle full retracted



350-272-30

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Mitutoyo

Micrometer Heads with Counter

Series 250 - Digit counter type

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

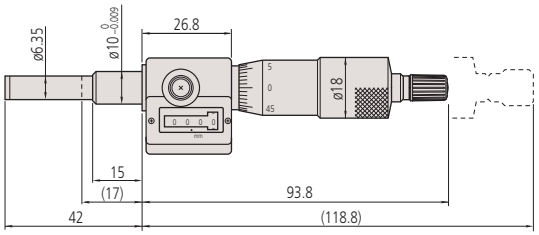
250-301

Specifications

Measuring spindle	With spindle lock, ø 6,35 mm, spindle pitch 0,5 mm
Measuring face	Carbide-tipped
Scale	• Thimble and sleeve satin chrome finish • White anodized aluminium

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Mass [g]
250-301	0 - 25	0,01 mm	±2 µm	Flat	0,5	10 mm	Plain	165



250-301

Micro Jack

Series 7

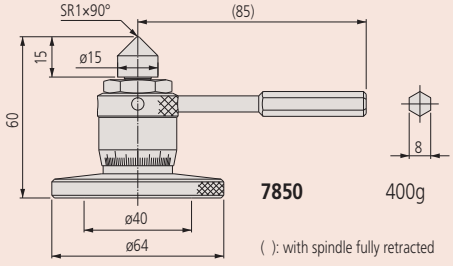
This Micro Jack allows you to make easy adjustments under a heavy load.
It offers the following benefits:

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

7850

Specifications

Measuring face	Hardened steel (>60 HRC)



Metric

No.	Graduation	Range [mm]	Remarks	Mass [g]
7850	0,01 mm	60 - 75	Max. load : 400kg	400

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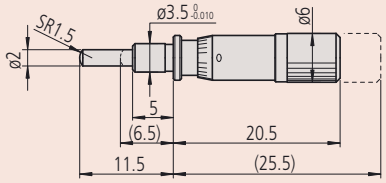
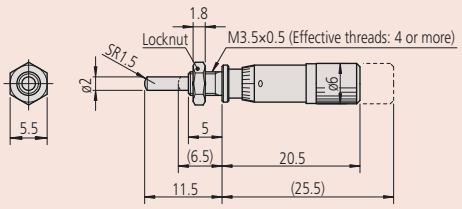
Fine Spindle Feed 0,1 mm / rev Micrometer Heads 5 mm and 6,5 mm Range

Specifications

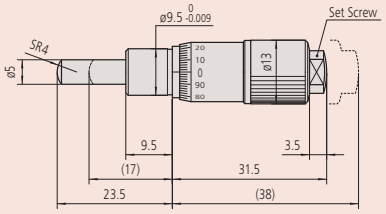
Measuring face	Hardened steel (>60 HRC)



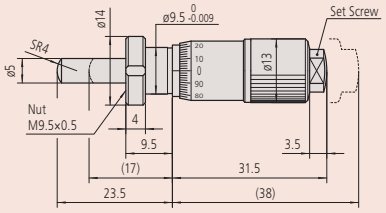
148-244



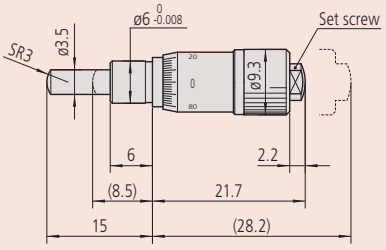
148-245



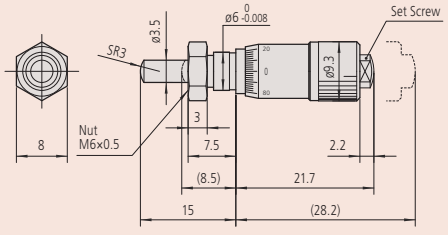
148-142-10



148-143-10



148-242-10



148-243-10

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

These micrometer heads have a very fine spindle feed of 0,1 mm/rev.
They offer the following benefits:

- Small size micrometer heads with extremely fine pitch of 0,1 mm.
- Ideal for fine adjustment applications in scientific apparatus.

148-244

148-245

148-142-10

148-143-10

148-242-10

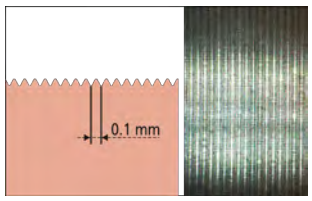
148-243-10

148-342-10

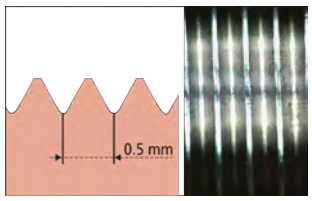
148-343-10

Metric

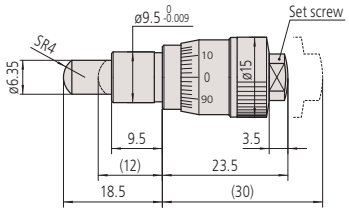
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
148-244	0 - 5	0,004 mm	±5 µm	Spherical (SR1,5)	0,1	3,5 mm	Plain		4
148-245	0 - 5	0,004 mm	±5 µm	Spherical (SR1,5)	0,1	3,5 mm	w/ clamp nut	3	5
148-142-10	0 - 6,5	0,002 mm	±2 µm	Spherical (SR4)	0,1	9,5 mm	Plain		31
148-143-10	0 - 6,5	0,002 mm	±2 µm	Spherical (SR4)	0,1	9,5 mm	w/ clamp nut	6	34
148-242-10	0 - 6,5	0,002 mm	±5 µm	Spherical (SR3)	0,1	6 mm	Plain		10
148-243-10	0 - 6,5	0,002 mm	±5 µm	Spherical (SR3)	0,1	6 mm	w/ clamp nut	4	10
148-342-10	0 - 6,5	0,002 mm	±2 µm	Spherical (SR4)	0,1	9,5 mm	Plain		29
148-343-10	0 - 6,5	0,002 mm	±2 µm	Spherical (SR4)	0,1	9,5 mm	w/ clamp nut	6	31



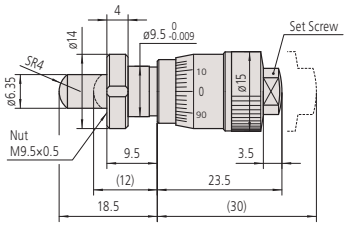
Pitch 0,1 mm



Pitch 0,5 mm



148-342-10



148-343-10
(): with spindle full retracted

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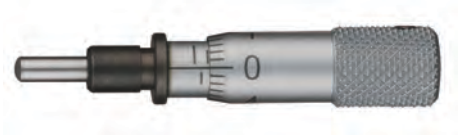
Ultra Small Micrometer Heads 5 mm and 6,5 mm Range

Series 148 - Ultra small

This ultra-small micrometer head allows you to easily incorporate it into machines and offers you the following benefits:

- Plain stem and a flat spindle end
- Hardened steel measuring surface



148-215

148-216

148-201-10

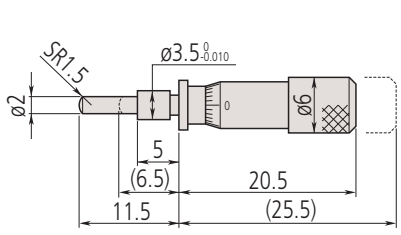
148-203-10

Specifications

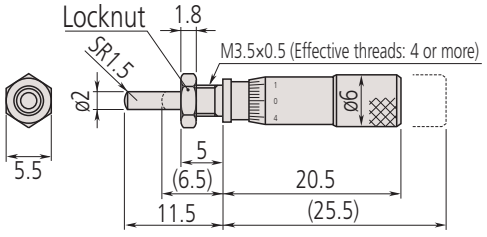
Measuring face	Hardened steel (>60 HRC)

Metric

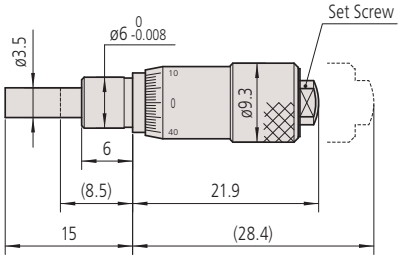
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
148-215	0 - 5	0,02 mm	±5 µm	Spherical (SR1,5)	0,5	3,5 mm	Plain			4
148-216	0 - 5	0,02 mm	±5 µm	Spherical (SR1,5)	0,5	3,5 mm	w/ clamp nut	3		4
148-201-10	0 - 6,5	0,01 mm	±5 µm	Flat	0,5	6 mm	Plain			10
148-203-10	0 - 6,5	0,01 mm	±5 µm	Flat	0,5	6 mm	w/ clamp nut	4		10
148-205-10	0 - 6,5	0,01 mm	±5 µm	Spherical (SR3)	0,5	6 mm	Plain			10
148-207-10	0 - 6,5	0,01 mm	±5 µm	Spherical (SR3)	0,5	6 mm	w/ clamp nut	4		10
148-209-10	0 - 6,5	0,01 mm	±5 µm	Flat	0,5	6 mm	Plain		Reverse reading	10
148-211-10	0 - 6,5	0,01 mm	±5 µm	Flat	0,5	6 mm	w/ clamp nut	4	Reverse reading	10



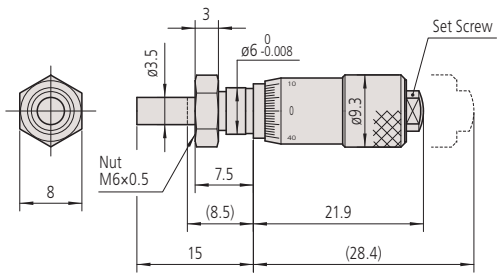
148-215



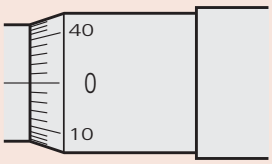
148-216



148-201-10
(): with spindle full retracted



148-203-10



148-209-10
148-211-10
Reverse reading

All products to be sold to commercial customers.
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Fine Spindle Feed 0,25 mm / rev Micrometer Heads 6,5 mm and 13 mm Range

Specifications

Measuring face	Hardened steel (>60 HRC)

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

These micrometer heads are a standard, small-sized type with a 6,5 mm and 13 mm measuring range.
They offer the following benefits:

- Fine spindle feed of 0,25 mm/rev for fine adjustment.

148-132-10

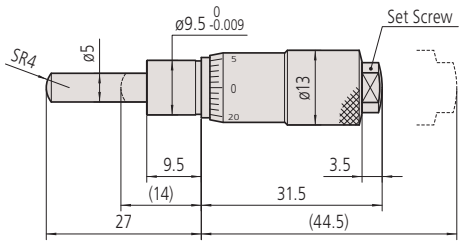
148-133-10

148-322-10

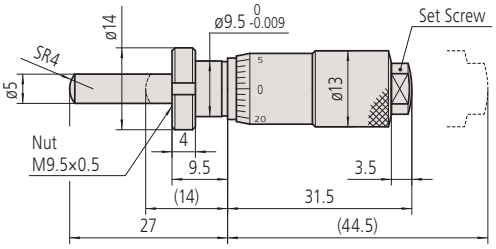
148-323-10

Metric

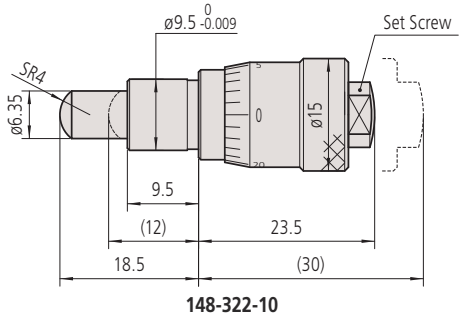
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
148-132-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,25	9,5 mm	Plain		30
148-133-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,25	9,5 mm	w/ clamp nut	6	35
148-322-10	0 - 6,5	0,01 mm	±2 µm	Spherical (SR4)	0,25	9,5 mm	Plain		30
148-323-10	0 - 6,5	0,01 mm	±2 µm	Spherical (SR4)	0,25	9,5 mm	w/ clamp nut	6	35



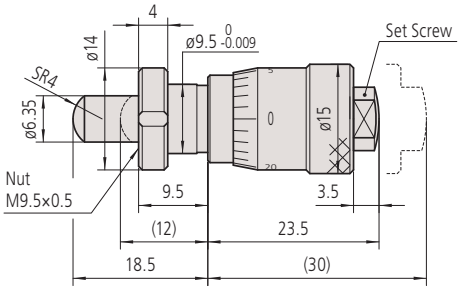
148-132-10



148-133-10



148-322-10



148-323-10
(): with spindle full retracted

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Micrometer Head 6,5 mm and 13 mm Short Thimble Type

Series 148 - Compact Type for Limited Space Applications

Short thimble type with thimble diameter options.

148-301-10

148-302-10

148-303-10

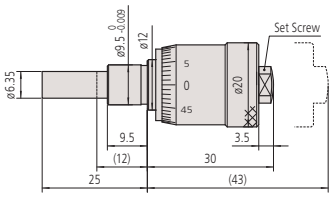
148-309-10

148-310-10

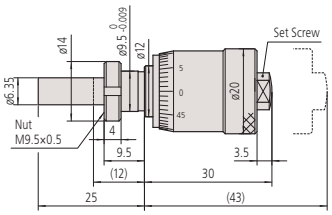
148-311-10

Metric

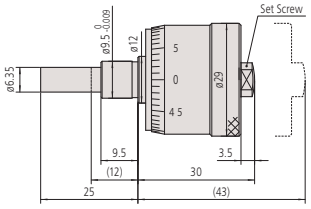
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Thimble Ø	Mass [g]
148-301-10	0 - 6,5	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		15 mm	26
148-302-10	0 - 6,5	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	15 mm	26
148-303-10	0 - 6,5	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		20 mm	39
148-304-10	0 - 6,5	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	20 mm	39
148-313-10	0 - 6,5	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain		15 mm	26
148-314-10	0 - 6,5	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6	15 mm	26
148-307-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		15 mm	35
148-308-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	15 mm	35
148-309-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		20 mm	55
148-310-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	20 mm	55
148-311-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		29 mm	103
148-312-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	29 mm	103



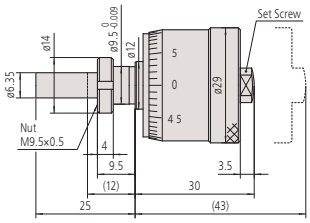
148-309-10



148-310-10



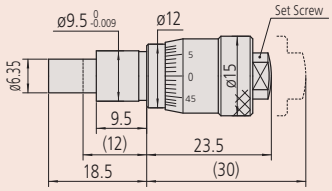
148-311-10
(): with spindle full retracted



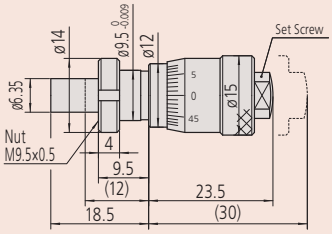
148-312-10

Specifications

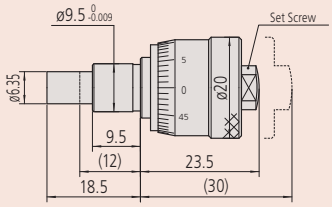
Measuring face	Hardened steel (>60 HRC)



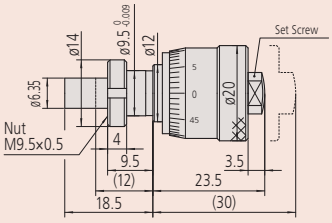
148-301-10



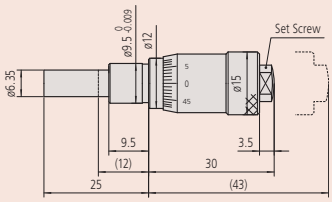
148-302-10



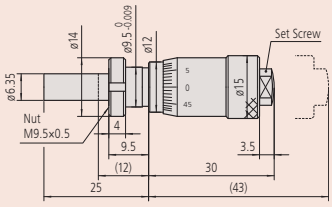
148-303-10



148-304-10



148-307-10



148-308-10

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Micrometer Heads 6,5 mm Range with Spindle Lock

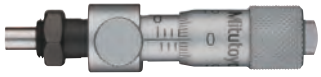
Specifications

Measuring face	Hardened steel (>60 HRC)

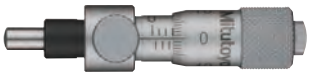
Series 148 - Locking screw Type

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

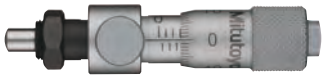
148-220-10



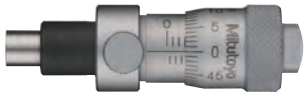
148-221-10



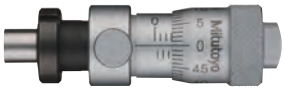
148-222-10



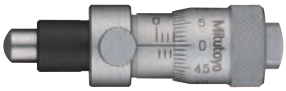
148-223-10



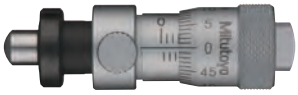
148-316-10



148-317-10



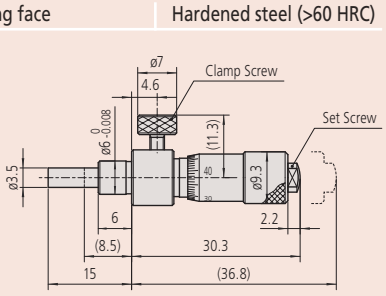
148-318-10



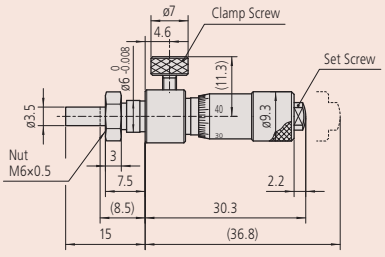
148-319-10

Metric

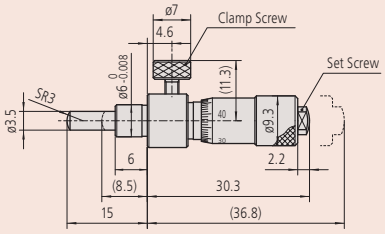
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
148-220-10	0 - 6,5	0,01 mm	±5 µm	Flat	0,5	6	Plain		16
148-221-10	0 - 6,5	0,01 mm	±5 µm	Flat	0,5	6	w/ clamp nut	4	17
148-222-10	0 - 6,5	0,01 mm	±5 µm	Spherical (SR3)	0,5	6	Plain		16
148-223-10	0 - 6,5	0,01 mm	±5 µm	Spherical (SR3)	0,5	6	w/ clamp nut	4	17
148-316-10	0 - 6,5	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		40
148-317-10	0 - 6,5	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	43
148-318-10	0 - 6,5	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain		40
148-319-10	0 - 6,5	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6	43



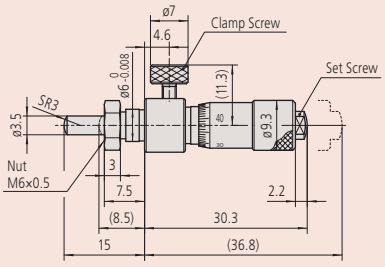
148-220-10



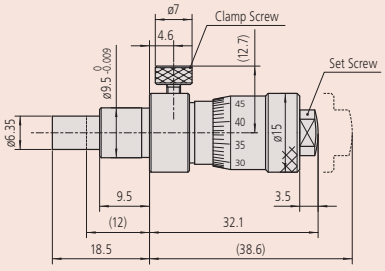
148-221-10



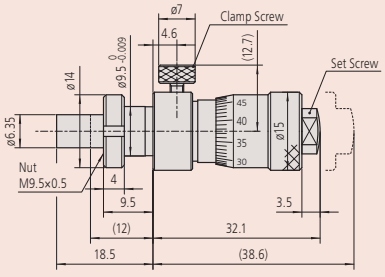
148-222-10



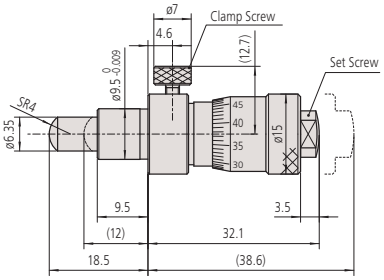
148-223-10



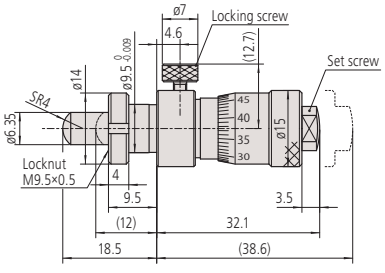
148-316-10



148-317-10



148-318-10
(): with spindle full retracted



148-319-10

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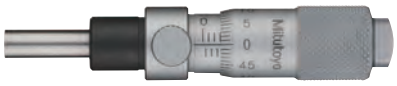
Micrometer Heads 13 mm Range with Spindle Lock

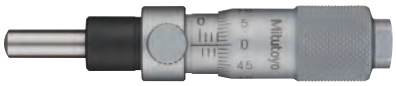
Series 148 - Locking screw Type

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

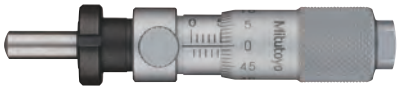


148-150-10

148-151-10



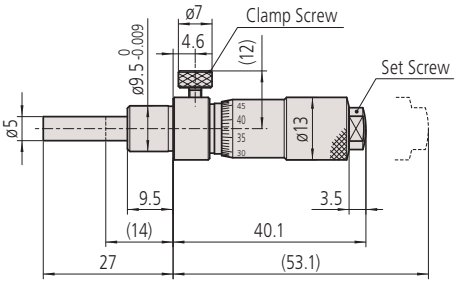
148-152-10



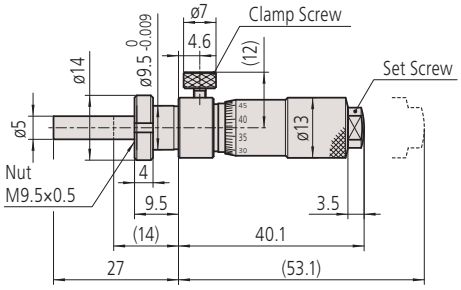
148-153-10

Metric

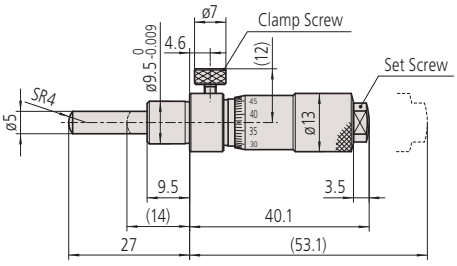
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
148-150-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		40
148-151-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	43
148-152-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain		40
148-153-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6	43



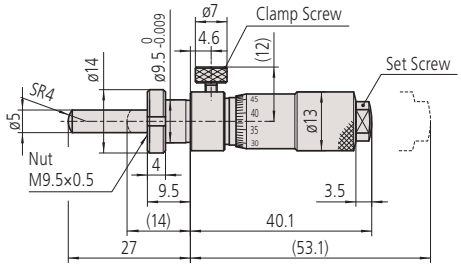
148-150-10



148-151-10



148-152-10



148-153-10
(): with spindle full retracted

Specifications

Measuring face	Hardened steel (>60 HRC)

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Micrometer Heads 13 mm Range with Zero Thimble

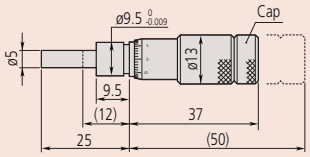
Specifications

Measuring face	Hardened steel (>60 HRC)

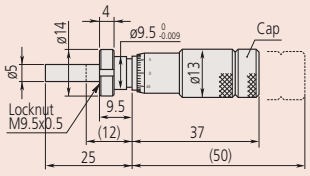
Series 148 - Standard type, small size with zero-adjustable thimble.

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

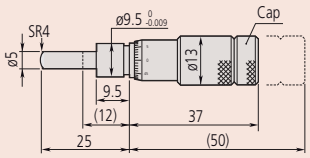
- You can make a zero-setting at any position by loosening the setscrew in the thimble.



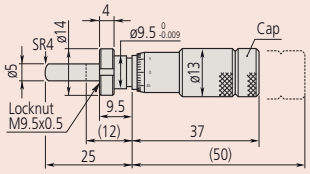
148-503



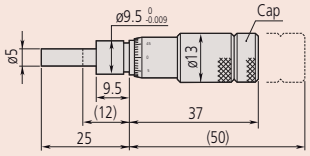
148-508



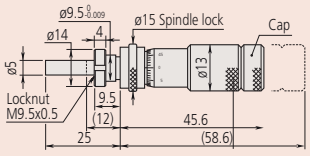
148-853



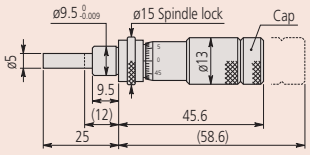
148-858



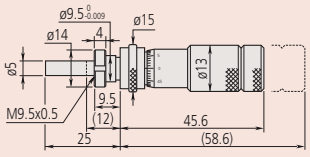
148-863



148-864



148-506



148-504

(): with spindle full retracted

148-508

148-853

148-863

148-864

148-506

148-504

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
148-503	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		35
148-508	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	40
148-853	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain		40
148-858	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6	40

Metric — Reverse reading

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
148-863	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		Reverse reading	35
148-868	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	Reverse reading	40

Metric — Reverse reading / with spindle lock

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
148-864	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	Reverse reading	40
148-866	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		Reverse reading	35

Metric — With spindle lock

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
148-506	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		35
148-504	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	40
148-854	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6	40
148-856	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain		35

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Micrometer Heads 13 mm Range Small Standard Type

Series 148 - Small standard type

This is a standard, small-sized micrometer head which offers you the following benefits:

- Plain stem and a flat or spherical spindle end
- Hardened steel measuring surface

148-104-10

148-103-10

148-801-10

148-802-10

148-121-10

148-120-10

Metric

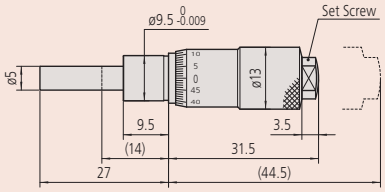
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
148-104-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain			30
148-103-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6		35
148-801-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain			30
148-802-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6		35
148-821-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		Reverse reading	30
148-822-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	Reverse reading	35

Metric With spindle lock

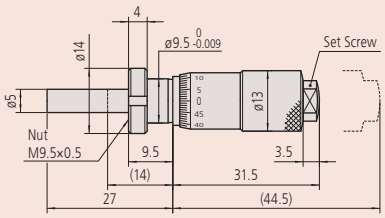
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
148-121-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain			40
148-120-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6		45
148-803-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain			40
148-804-10	0 - 13	0,01 mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6		45
148-823-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	Plain		Reverse reading	40
148-824-10	0 - 13	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	Reverse reading	45

Specifications

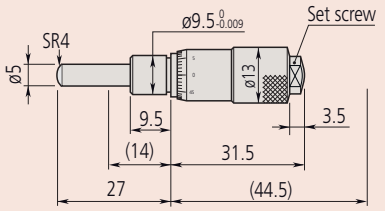
Measuring face	Hardened steel (>60 HRC)



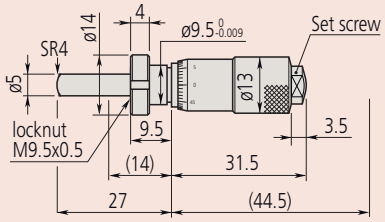
148-104-10



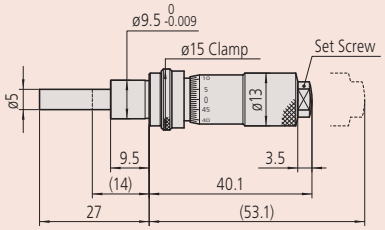
148-103-10



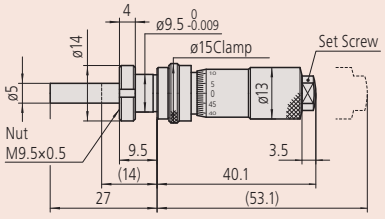
148-801-10



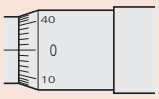
148-802-10



148-121-10



148-120-10



148-821-10 / 148-822-10
148-823-10 / 148-824-10
Reverse reading

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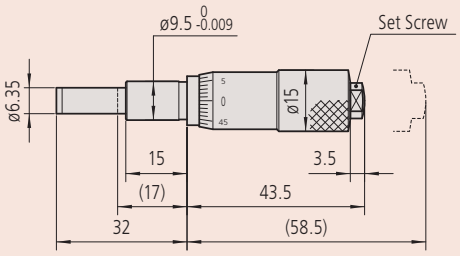
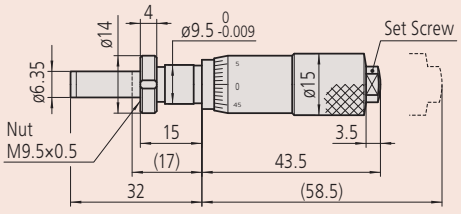
Micrometer Heads 15 mm Range

Specifications

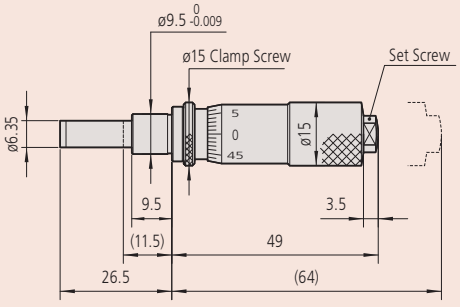
Measuring face	Carbide-tipped



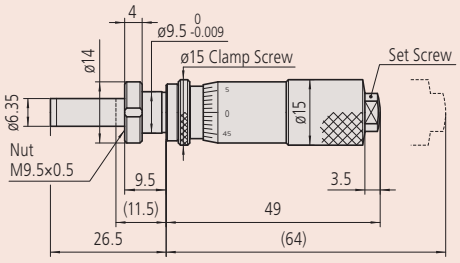
149-132-10



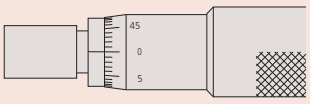
149-131-10



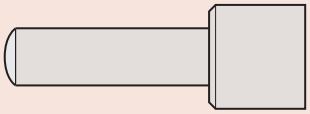
149-183-10



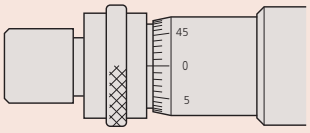
149-184-10



Reverse reading



Spherical spindle end



With spindle lock

Series 149 - Small standard type with carbide-tipped spindle

This small micrometer head with tungsten carbide measuring surface offers you the following benefits:

- Stem with clamp nut and a flat or spherical spindle end
- Stem with carbide-tipped spindle

149-132-10

149-131-10

149-183-10

149-184-10

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
149-132-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	Plain			55
149-131-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	11,5		60
149-801-10	0 - 15	0,01mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain			55
149-802-10	0 - 15	0,01mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	11,5		60
149-821-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	Plain		Reverse reading	55
149-822-10	0 - 15	0,01 mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	11,5	Reverse reading	60

Metric With spindle lock

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
149-183-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	Plain			55
149-184-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6		60
149-803-10	0 - 15	0,01mm	±2 µm	Spherical (SR4)	0,5	9,5	Plain			55
149-804-10	0 - 15	0,01mm	±2 µm	Spherical (SR4)	0,5	9,5	w/ clamp nut	6		60
149-823-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	Plain		Reverse reading	55
149-824-10	0 - 15	0,01mm	±2 µm	Flat	0,5	9,5	w/ clamp nut	6	Reverse reading	60

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Micrometer Heads 25 mm Range

Series 150 - Medium-sized standard type

This is a standard, medium-size micrometer head that offers you the following benefits:

- Plain stem and a flat or spherical spindle end
- With carbide-tipped spindle

150-192

150-191

150-801

150-802

150-196-10

150-195-10

150-209

150-210

150-803

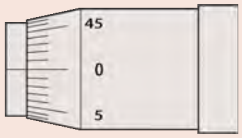
150-824

150-211-10

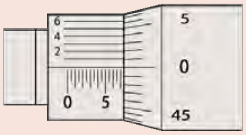
150-212-10

Specifications

Measuring face	Carbide-tipped



Reverse reading



Graduation 0,001mm

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
150-192	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	Plain			95
150-191	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5		100
150-801	0 - 25	0,01 mm	±2 µm	Spherical (SR4)	0,5	10	Plain			95
150-802	0 - 25	0,01 mm	±2 µm	Spherical (SR4)	0,5	10	w/ clamp nut	11,5		100
150-821	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	Plain		Reverse reading	95
150-822	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5	Reverse reading	100
150-190	0 - 25	0,001 mm	±2 µm	Flat	0,5	10	Plain		Graduation 0,001 mm	95
150-189	0 - 25	0,001 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5	Graduation 0,001 mm	100
150-196-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	Plain		w/o ratchet stop	90
150-195-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5	w/o ratchet stop	90

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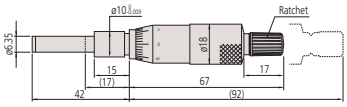
Micrometer Heads 25 mm Range

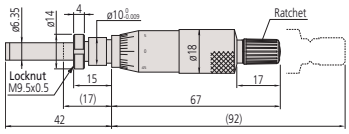
Metric

With spindle lock

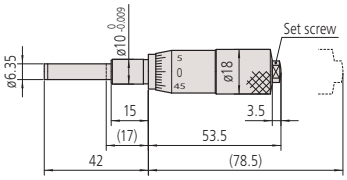
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
150-209	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	Plain			110
150-210	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5		115
150-803	0 - 25	0,01 mm	±2 µm	Spherical (SR4)	0,5	10	Plain			125
150-804	0 - 25	0,01 mm	±2 µm	Spherical (SR4)	0,5	10	w/ clamp nut	11,5		125
150-823	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	Plain		Reverse reading	125
150-824	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5	Reverse reading	125
150-183	0 - 25	0,001 mm	±2 µm	Flat	0,5	10	Plain		Graduation 0,001 mm	110
150-184	0 - 25	0,001 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5	Graduation 0,001 mm	115
150-211-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	Plain		w/o ratchet stop	115
150-212-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	10	w/ clamp nut	11,5	w/o ratchet stop	115



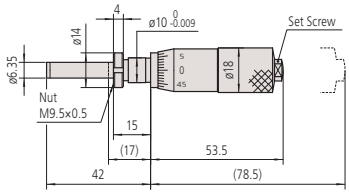
150-192



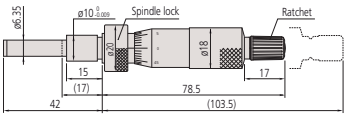
150-191



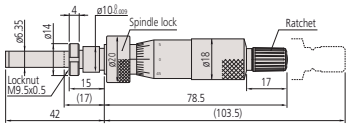
150-196-10



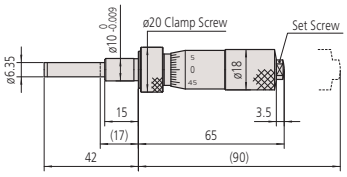
150-195-10



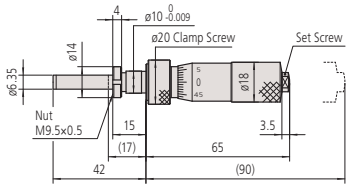
150-209



150-210



150-211-10



150-212-10

( ): with spindle full retracte

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Mitutoyo

Micrometer Heads 25 mm and 50 mm Range with 8 mm Spindle Diameter

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

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

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

151-224

151-223

151-256

151-255

151-214

151-213

Metric

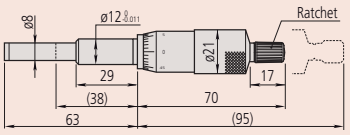
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
151-224	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	Plain			150
151-223	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	w/ clamp nut	25,5		155
151-222	0 - 25	0,001 mm	±2 µm	Flat	0,5	12	Plain		Graduation 0,001 mm	150
151-221	0 - 25	0,001 mm	±2 µm	Flat	0,5	12	w/ clamp nut	25,5	Graduation 0,001 mm	155
151-227-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	Plain		w/o ratchet stop	150
151-228-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	w/ clamp nut	25,5	w/o ratchet stop	155
151-256	0 - 50	0,01 mm	±4 µm	Flat	0,5	12	Plain			240
151-255	0 - 50	0,01 mm	±4 µm	Flat	0,5	12	w/ clamp nut	25,5		250
151-260-10	0 - 50	0,01 mm	±4 µm	Flat	0,5	12	Plain		w/o ratchet stop	240
151-259-10	0 - 50	0,01 mm	±4 µm	Flat	0,5	12	w/ clamp nut	25,5	w/o ratchet stop	250

Metric With spindle lock

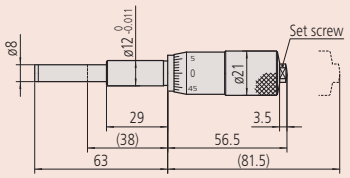
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
151-214	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	Plain			160
151-213	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	w/ clamp nut	15,5		165
151-212	0 - 25	0,001 mm	±2 µm	Flat	0,5	12	Plain		Graduation 0,001 mm	160
151-211	0 - 25	0,001 mm	±2 µm	Flat	0,5	12	w/ clamp nut	15,5	Graduation 0,001 mm	165
151-225-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	Plain		w/o ratchet stop	165
151-226-10	0 - 25	0,01 mm	±2 µm	Flat	0,5	12	w/ clamp nut	15,5	w/o ratchet stop	165

Specifications

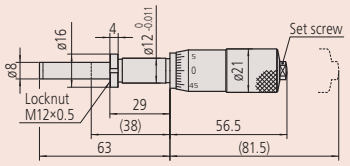
Measuring face	Carbide-tipped



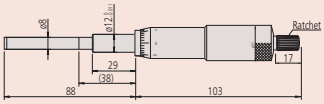
151-224



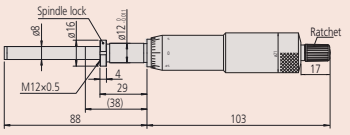
151-227-10



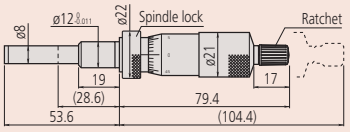
151-228-10



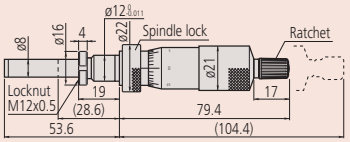
151-256



151-255



151-214



151-213

( ): with spindle full retracted

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Micrometer Heads with Large Thimble

Specifications

Measuring face	Carbide-tipped

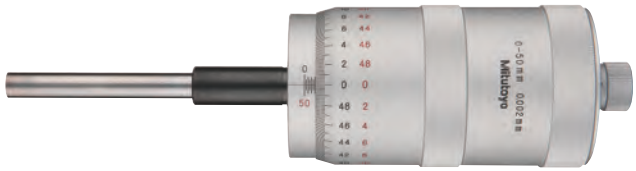
Series 152 - Large thimble type for fine adjustment

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

- The large scale drum allows fine graduation and very easy rotation.

152-283

152-332



152-380

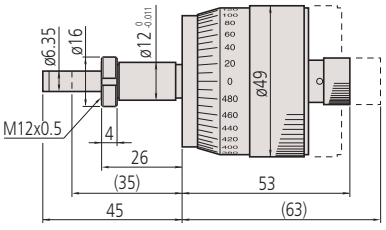
Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Mass [g]
152-283	0 - 10	0,002 mm	±2 µm	Flat	0,5	12	w/ clamp nut	22,5	190
152-332	0 - 25	0,002 mm	±2 µm	Flat	0,5	12	Plain		310

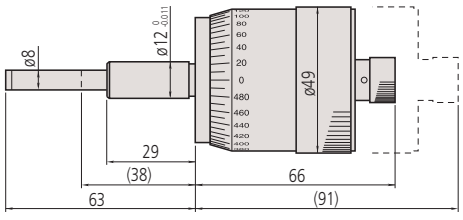
Metric

Black and red scaling in both directions

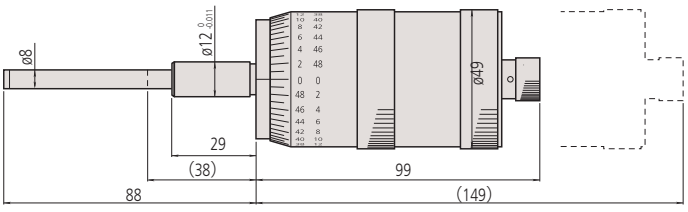
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Special features	Mass [g]
152-380	0 - 50	0,002 mm	±4 µm	Flat	0,5	12	Plain	Bidirectional graduation	460



152-283



152-332



152-380

( ): with spindle full retracted

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Micrometer Heads for XY-Stage

Series 152 - XY Stage type

These XY Stage type micrometer heads let you read measurement values easily.
They offer the following benefits:

- Micrometer heads especially designed for accurate cross-travel stage translation in X and Y axes.
- Spindle end: Flat form and hardened, or spherical with carbide tip (more than HRA90), lapped surface.

152-389

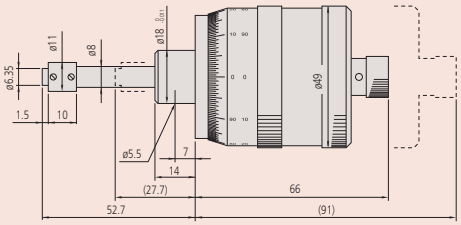
152-390

Metric

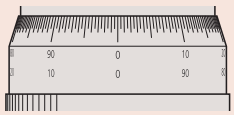
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Special features	Mass [g]
152-389	0 - 25	0,005 mm	±2 µm	Flat with non-rotating device	1	18	Plain	For Y-axis Bidirectional grad.	270
152-390	0 - 25	0,005 mm	±2 µm	Flat with non-rotating device	1	18	Plain	For X-axis Bidirectional grad.	270

Specifications

Measuring face	Hardened steel (>60 HRC) 152-390, 152-389



152-390



152-389

Quick Spindle Feed Micrometer Heads

Series 152 - Quick spindle feed of 1/rev

This is a quick spindle micrometer head.
It offers you the following benefits:

- Micrometer head with 1 mm / rotation

152-101

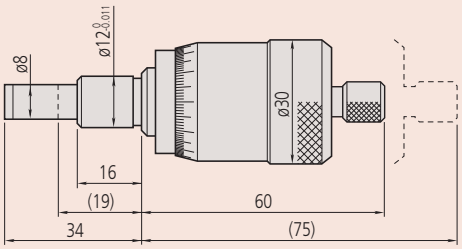
152-102

Metric

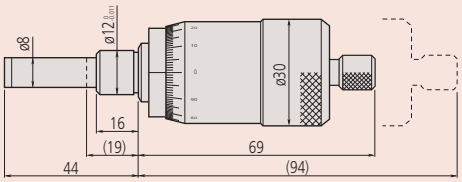
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Mass [g]
152-101	0 - 15	0,01 mm	±2 µm	Flat	1	12 mm	Plain	205
152-102	0 - 25	0,01 mm	±2 µm	Flat	1	12 mm	Plain	230

Specifications

Measuring face	Carbide-tipped



152-101



152-102

(): with spindle full retracted

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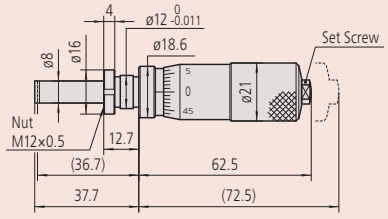
Micrometer Heads with Non-Rotating Spindle

Specifications

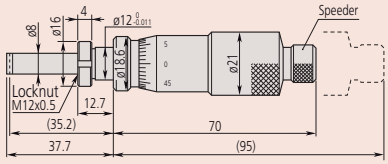
Measuring face	Carbide-tipped

Version with non-rotating spindle

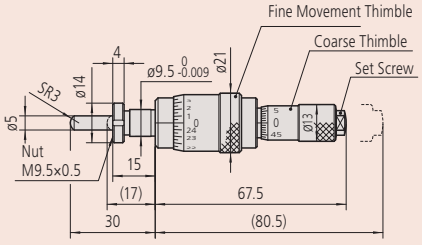
Version with rotating spindle
110-502-10



110-105-10
110-106-10



110-101
110-102



110-502-10
(): with spindle full retracted

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

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

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

110-101

110-102

110-105-10

110-106-10

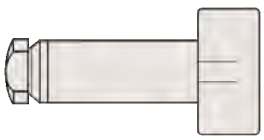
110-107-10

110-108-10

110-502-10

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Stem Ø [mm]	Stem	Fixture thickness for clamp nut [mm]	Special features	Mass [g]
110-101	0 - 2,5	0,001 mm	±5 µm / ±1,5 µm	Flat	12	w/ clamp nut	9,5		150
110-102	0 - 2,5	0,0001 mm	±5 µm / ±1,5 µm	Flat	12	w/ clamp nut	9,5	Fine Graduation	150
110-105-10	0 - 1	0,001 mm	±3 µm / ±1,5 µm	Flat	12	w/ clamp nut	9,5		150
110-106-10	0 - 1	0,0001 mm	±3 µm / ±1,5 µm	Flat	12	w/ clamp nut	9,5	Fine Graduation	150
110-107-10	0 - 1	0,001 mm	±3 µm / ±1,5 µm	Spherical (SR10)	12	w/ clamp nut	9,5		150
110-108-10	0 - 1	0,0001 mm	±3 µm / ±1,5 µm	Spherical (SR10)	12	w/ clamp nut	9,5	Fine Graduation	150
110-502-10	0 - 13	A: 0,01 mm / B: 0,0005 mm	±3 µm / ±1,5 µm	Spherical (SR3)	9,5	w/ clamp nut	11,5	Range A: 0-13 mm, Range B: 0-0,2 mm	100



110-107-10
110-108-10

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Mitutoyo

Micrometer Heads with Non-Rotating Spindle

Series 153 - Standard type

- Micrometer Head featuring a non-rotating spindle for delicate workpieces
- Design suits applications where the twisting effect of the standard spindle is undesirable because of the risk of damage

153-101

153-203

153-201

153-202

Specifications

Measuring face	Carbide-tipped

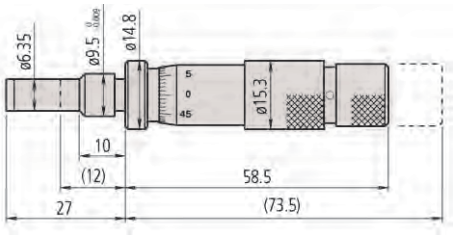
Version with non-rotating spindle

Metric

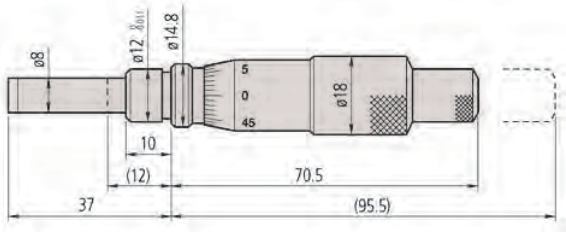
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Special features	Mass [g]
153-101	0 - 15	0,01 mm	±3 µm	Flat	0,5	9,5	Plain		70
153-203	0 - 25	0,01 mm	±3 µm	Flat	0,5	12	Plain		125
153-204	0 - 25	0,001 mm	±3 µm	Flat	0,5	12	Plain	Graduation with vernier	125

Metric With ratchet stop

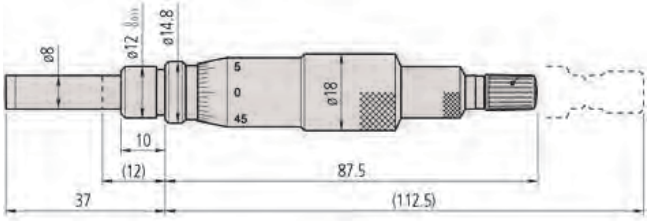
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Special features	Mass [g]
153-201	0 - 25	0,01 mm	±3 µm	Flat	0,5	12	Plain		125
153-202	0 - 25	0,001 mm	±3 µm	Flat	0,5	12	Plain	Graduation with vernier	125



153-101

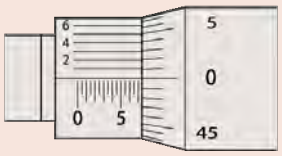


153-203 + 153-204



153-201 + 153-202

( ): with spindle full retracted



153-204 / 153-202
Graduation 0,001 mm

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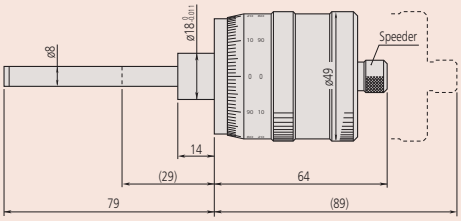
Micrometer Heads with Non-Rotating Spindle

Specifications

Measuring face	Carbide-tipped



197-101

Series 197 - Non-rotating spindle and large thimble

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

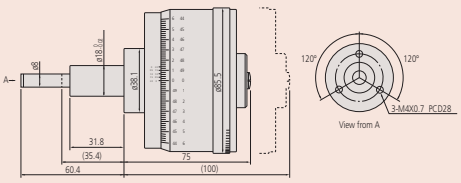
197-101

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Special features	Mass [g]
197-101	0 - 50	0,005 mm	±5 µm	Flat	1	18	Plain	Bidirectional graduation	300

Specifications

Measuring face	Carbide-tipped



153-301

Series 153 - Fine graduation and high accuracy

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

153-301

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Spindle end	Spindle pitch [mm]	Stem Ø [mm]	Stem	Special features	Mass [g]
153-301	0 - 25	0,0005 mm	±1 µm / ±0,5 µm	Flat	0,5	18	Plain	Bidirectional graduation	750

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Micrometer Head Accessories

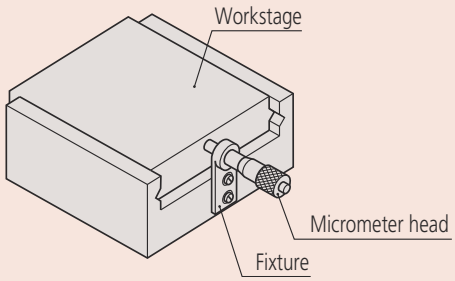
Fixtures for Micrometer Heads

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

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

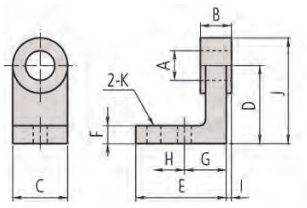
Fixtures for micrometer heads with clamp nut

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]
303559	9,5	6	15	20	24	5	11	8	0,5	27,5	3,4	
303568	9,5	11,5	20	30	35	7	16	12	1,75	40	4,5	
303578	10	11,5	20	30	35	7	16	12	1,75	40	4,5	
303563	9,5	6	30	37,5	4,5	15	10	15	3,4			
303572	9,5	11,5	40	50	6,5	18	15	20	4,5			
303582	10	11,5	40	50	6,5	18	15	20	4,5			
303561	9,5	6	40	3,5	30	15	3,4					
303570	9,5	11,5	60	5,5	40	20	4,5					
303580	10	11,5	60	5,5	40	20	4,5					
303565	9,5	6	15	15	25	8,5	7,5	10	10	27,5	3,4	0,75
303574	9,5	11,5	15	20	40	8,5	10	20	15	35	4,5	1,25
303584	10	11,5	15	20	40	8,5	10	20	15	35	4,5	1,25

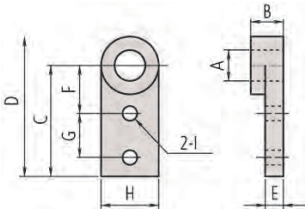


Fixtures for plain stem type micrometer heads

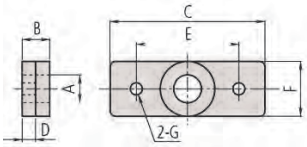
No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]
303560	9,5	9	15	20	23	5	11	8	1,5	32,5	4,5	ø3,4	M3x0,5
303569	9,5	14,5	20	30	35	7	16	12	3,25	42,5	7,25	4,5	M3x0,5
303579	10	14,5	20	30	35	7	16	12	3,25	42,5	7,25	4,5	M3x0,5
303564	9,5	9	30	42,5	4	15	10	15	4,5	3,4	M3x0,5		
303573	9,5	14,5	40	52,5	6	18	15	20	7,25	4,5	M3x0,5		
303583	10	14,5	40	52,5	6	18	15	20	7,25	4,5	M3x0,5		
303562	9,5	9	15	20	40	3	30	15	3,4	M3x0,5			
303571	9,5	14,5	15	22,5	60	5	40	20	4,5	M3x0,5			
303581	10	14,5	15	22,5	60	5	40	20	4,5	M3x0,5			
303566	9,5	9	15	15	25	8,5	7,5	10	10	32,5	4,5	3,4	M3x0,5
303575	9,5	14,5	15	20	40	8,5	10	20	15	40	7,25	4,5	M3x0,5
303585	10	14,5	15	20	40	8,5	10	20	15	40	7,25	4,5	M3x0,5



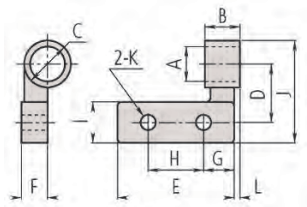
303559/68/78



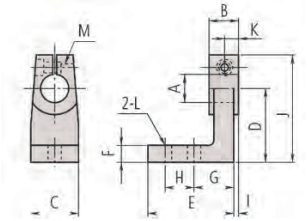
303563/72/82



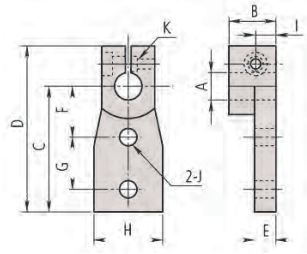
303561/70/80



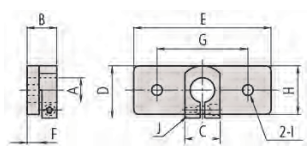
303565/74/84



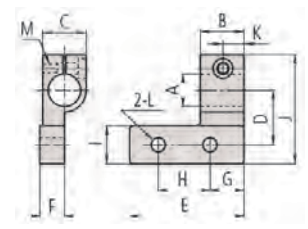
303560/69/79



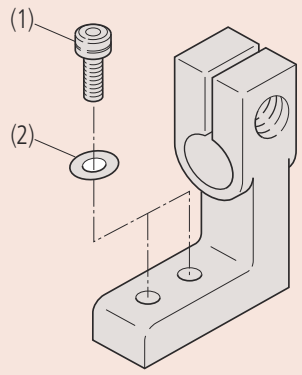
303564/73/83



303562/71/81



303566/75/85



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

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Inside Measuring Instruments

Inside Micrometers
Page 130

Bore Gauges
Page 151

Inside Measuring Instruments Accessories
Page 163

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Mitutoyo

Digimatic Holtests Individual Metric

Series 468

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

- Individual micrometer.
- Titanium-coated measuring pins give you excellent durability and impact resistance.
- They also have excellent resistance against water and dust (IP65 protection level), allowing you to use this product in machining situations that include splashing coolant fluid.
- Large LCD display with character height of 7,5 mm enables you to read measurements easily.
- Without setting rings or extensions.

Titanium coated measuring surfaces for durability

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

Specifications

Display	LCD, character height 7,5 mm
Measuring pins	Titanium coated tungsten carbide (6-12 mm) titanium coated hardened steel (12-300 mm) taper: tungsten carbide
Power supply	1 battery SR-44
Battery life	Approx. 1,2 years
Delivered	Including box, key, 1 battery, certificate of inspection

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type
952322	Holtest, Boremetic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range
156-101-10	Micrometer Stand, Adjustable Angle Type, for Micrometer 0-100mm/0-4"
04AZB157	Holder for Micrometer Stand, for Series 468

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Mass [g]
468-161	6 - 8	0,001 mm	±2 µm	370
468-162	8 - 10	0,001 mm	±2 µm	370
468-163	10 - 12	0,001 mm	±2 µm	370
468-164	12 - 16	0,001 mm	±3 µm	400
468-165	16 - 20	0,001 mm	±3 µm	400
468-166	20 - 25	0,001 mm	±3 µm	470
468-167	25 - 30	0,001 mm	±3 µm	480
468-168	30 - 40	0,001 mm	±3 µm	480
468-169	40 - 50	0,001 mm	±3 µm	500
468-170	50 - 63	0,001 mm	±3 µm	620
468-171	62 - 75	0,001 mm	±4 µm	630
468-172	75 - 88	0,001 mm	±4 µm	960
468-173	87 - 100	0,001 mm	±4 µm	970
468-174	100 - 125	0,001 mm	±5 µm	940
468-175	125 - 150	0,001 mm	±5 µm	1030
468-176	150 - 175	0,001 mm	±5 µm	1120
468-177	175 - 200	0,001 mm	±5 µm	1210
468-178	200 - 225	0,001 mm	±6 µm	1300
468-179	225 - 250	0,001 mm	±6 µm	1390
468-180	250 - 275	0,001 mm	±6 µm	1480
468-181	275 - 300	0,001 mm	±6 µm	1570

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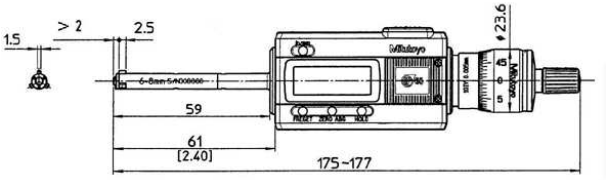
Digimatic Holtests Individual Metric

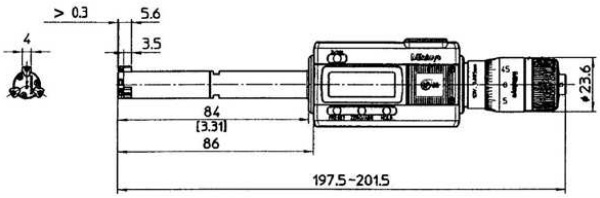
Holtest with optional accessories
Stand 156-101-10
Printer DP1-VA 264-505D
Holder 04AZB157
Cable 05CZA662

04AZB157

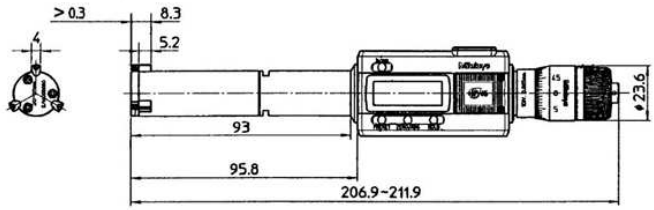
Extension rod for deep holes



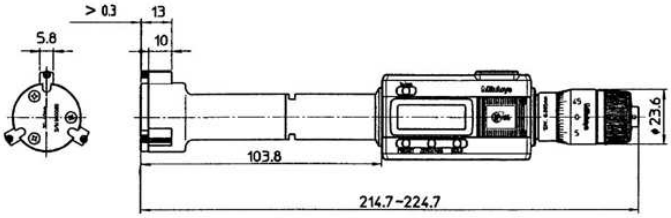
468-161, 468-162, 468-163



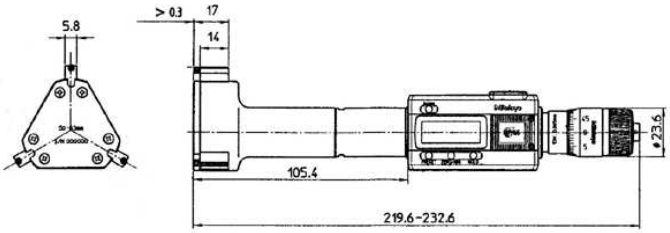
468-164, 468-165



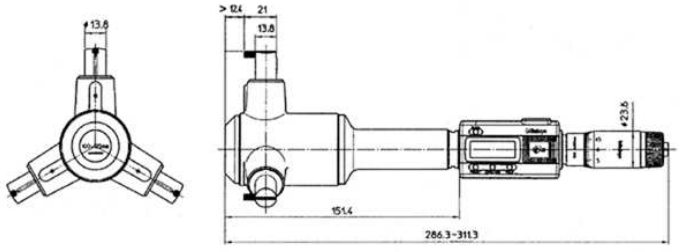
468-166, 468-167



468-168, 468-169



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



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

All products to be sold to commercial customers.
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Digimatic Holtest Interchangeable Head Sets

Series 468

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

- Interchangeable head set.
- Titanium-coated measuring pins give you excellent durability and impact resistance.
- They also have excellent resistance against water and dust (IP65 protection level), allowing you to use this product in machining situations that include splashing coolant fluid.
- Large LCD display with character height of 7,5 mm enables you to read measurements easily.
- With setting rings and extensions.

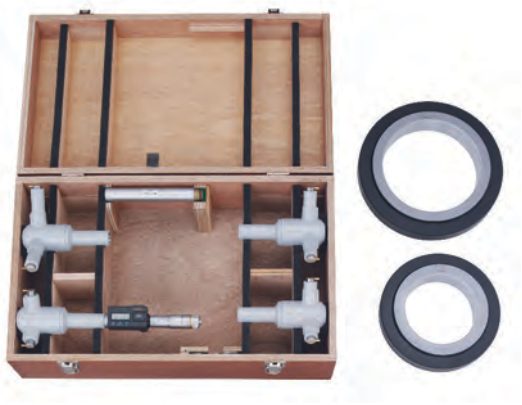
Dust- and Waterproof IP65

TÜVRheinland CERTIFIED www.tuv.com ID 0000021605

PROPRIETARY INSPECTION CERTIFICATE

IP65

468-973



468-975

Metric

No.	Range [mm]	Digital step	Individual ranges [mm]	Setting rings included	Mass [g]
468-971	6 - 12	0,001 mm	6-8, 8-10, 10-12	ø8 mm (177-125) ø10 mm (177-126)	420
468-972	12 - 20	0,001 mm	12-16, 16-20	ø16 mm (177-177)	560
468-973	20 - 50	0,001 mm	20-25, 25-30, 30-40, 40-50	ø25 mm (177-139) ø40 mm (177-290)	1170
468-974	50 - 100	0,001 mm	50-63, 62-75, 75-88, 87-100	ø62 mm (177-314) ø87 mm (177-318)	2420
468-975	100 - 200	0,001 mm	100-125, 125-150, 150-175, 175-200	ø125 mm (177-298) ø175 mm (177-302)	3540

Holtest with optional accessories
Stand 156-101-10
Printer DP1-VA 264-505D
Holder 04AZB157
Cable 05CZA662

Extension

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

Specifications

Display	LCD, character height 7,5 mm
Measuring pins	Titanium coated tungsten carbide (6-12 mm) titanium coated hardened steel (12-200 mm) taper: tungsten carbide
Power supply	1 battery SR-44
Battery life	Approx. 1,2 years
Delivered	Including box, key, 1 battery, setting ring, extension, certificate of inspection (instruments only - certificate of inspection for setting rings not included).

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type
952322	Holtest, Boremetic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range
156-101-10	Micrometer Stand, Adjustable Angle Type, for Micrometer 0-100mm/0-4"
04AZB157	Holder for Micrometer Stand, for Series 468

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

04AZB157

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Digimatic Holtest Complete Unit Sets

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

Specifications

Display	LCD, character height 7,5 mm
Measuring pins	Titanium coated tungsten carbide (6-12 mm) titanium coated hardened steel (12-100 mm) taper: tungsten carbide
Power supply	1 battery SR-44
Battery life	Approx. 1,2 years
Delivered	Including box, key, 1 battery, setting ring, certificate of inspection (instruments only - certificate of inspection for setting rings not included).

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type
952322	Holtest, Boremetic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range
156-101-10	Micrometer Stand, Adjustable Angle Type, for Micrometer 0-100mm/0-4"
04AZB157	Holder for Micrometer Stand, for Series 468

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

04AZB157

Series 468

Dust- and Waterproof IP65

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

- Complete unit set.
- Titanium-coated measuring pins give you excellent durability and impact resistance.
- They also have excellent resistance against water and dust (IP65 protection level), allowing you to use this product in machining situations that include splashing coolant fluid.
- Large LCD display with character height of 7,5 mm enables you to read measurements easily.
- With setting rings but without extensions.

468-981

468-983

Metric

Measuring surfaces titanium coated. Carbide taper and contact points.

No.	Range [mm]	Digital step	Individual ranges	Models included	Setting rings included	Mass [g]
468-981	6 - 12	0,001 mm	6-8, 8-10, 10-12 mm	468-161 / 468-162 / 468-163	ø8 mm (177-125) ø10 mm (177-126)	1160
468-982	12 - 25	0,001 mm	12-16, 16-20, 20-25 mm	468-164 / 468-165 / 468-166	ø16 mm (177-177) ø20 mm (177-286)	1290
468-983	25 - 50	0,001 mm	25-30, 30-40, 40-50 mm	468-167 / 468-168 / 468-169	ø30 mm (177-288) ø40 mm (177-290)	1480
468-984	50 - 75	0,001 mm	50-63, 62-75 mm	468-170 / 468-171	ø62 mm (177-314)	1270
468-985	75 - 100	0,001 mm	75-88, 87-100 mm	468-172 / 468-173	ø87 mm (177-318)	1990

Extension

Holtest with optional accessories
Stand 156-101-10
Printer DP1-VA 264-505D
Holder 04AZB157
Cable 05CZA662

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Analog Holtest Individual Metric

Series 368

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

- Titanium-coated measuring pins give you excellent durability and impact resistance (3-point type).
- Three-point micrometer allows stable measurement through automatic centring.
- It is delivered without setting rings or extensions.

368-001 368-168 368-170 368-174

Metric

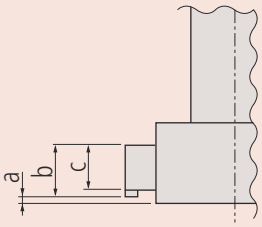
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	a [mm]	b [mm]	c [mm]	L1 [mm]	L2 [mm]	Mass [g]
368-001	2 - 2,5	0,001 mm	±2 µm			2	12	103.5-104	88
368-002	2,5 - 3	0,001 mm	±2 µm			2	12	103.5-104	88
368-003	3 - 4	0,001 mm	±2 µm			2	22	113-114	91
368-004	4 - 5	0,001 mm	±2 µm			2	22	113-114	91
368-005	5 - 6	0,001 mm	±2 µm			2	22	113-114	91
368-161	6 - 8	0,001 mm	±2 µm	2		2,5	59	102-104	60
368-162	8 - 10	0,001 mm	±2 µm	2		2,5	59	102-104	60
368-163	10 - 12	0,001 mm	±2 µm	2		2,5	59	102-104	60
368-164	12 - 16	0,005 mm	±3 µm	0,3	5,6	3,5	82	126-130	150
368-165	16 - 20	0,005 mm	±3 µm	0,3	5,6	3,5	82	126-130	160
368-166	20 - 25	0,005 mm	±3 µm	0,3	8,3	5,2	94	126-130	260
368-167	25 - 30	0,005 mm	±3 µm	0,3	8,3	5,2	94	137-142	280
368-168	30 - 40	0,005 mm	±3 µm	0,3	13	10	102	145-155	290
368-169	40 - 50	0,005 mm	±3 µm	0,3	13	10	102	145-155	330
368-170	50 - 63	0,005 mm	±3 µm	0,3	17	14	105	150-163	440
368-171	62 - 75	0,005 mm	±4 µm	0,3	17	14	105	150-163	450
368-172	75 - 88	0,005 mm	±4 µm	0,3	17	14	105	150-165	570
368-173	87 - 100	0,005 mm	±4 µm	0,3	17	14	105	150-165	580
368-174	100 - 125	0,005 mm	±5 µm	12,4	21	13,8	161	227-252	1030
368-175	125 - 150	0,005 mm	±5 µm	12,4	21	13,8	161	227-252	1120
368-176	150 - 175	0,005 mm	±5 µm	12,4	21	13,8	161	227-252	1210
368-177	175 - 200	0,005 mm	±5 µm	12,4	21	13,8	161	227-252	1320
368-178	200 - 225	0,005 mm	±6 µm	12,4	21	13,8	161	227-252	1430
368-179	225 - 250	0,005 mm	±6 µm	12,4	21	13,8	161	227-252	1550
368-180	250 - 275	0,005 mm	±6 µm	12,4	21	13,8	161	227-252	1700
368-181	275 - 300	0,005 mm	±6 µm	12,4	21	13,8	161	227-252	1870

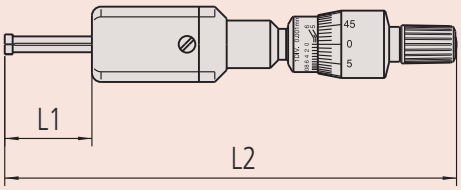
Specifications

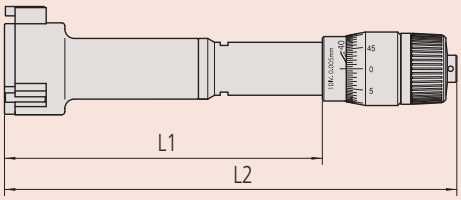
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : ø17 mm Over 12 mm : ø23 mm
Measuring Surface/Pins	2 - 6 mm: carbide 6 - 12 mm: titanium coated tungsten carbide 12 - 300 mm: titanium coated hardened steel taper: tungsten carbide
Measuring spindle	Spindle pitch 0,5 mm
Measuring method	2-6 mm : 2-point 6-300 mm : 3-point
Delivered	Including box, key, certificate of inspection

Optional accessories

No.	Description
952322	Holtest, Borematic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Borematic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Borematic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Borematic Extension 150mm, for 50-300mm Measuring Range







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Analog Holtests Set

Series 368

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

- Complete unit set.
- Carbide measuring surface (2-6 mm range).
- Titanium-coated measuring pins (>6 mm range) give you excellent durability and impact resistance.
- Delivered with setting rings and extension rod (>6 mm range).

Specifications

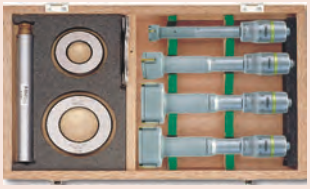
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : ø17 mm Over 12 mm : ø23 mm
Measuring Surface/Pins	2 - 6 mm: carbide 6 - 12 mm: titanium coated tungsten carbide 12 - 300 mm: titanium coated hardened steel taper: tungsten carbide
Measuring method	2-6 mm 2-point 6-200 mm 3-point
Delivered	Including box, key, setting ring, extension, certificate of inspection (instruments only - certificate of inspection for setting rings not included).

368-906

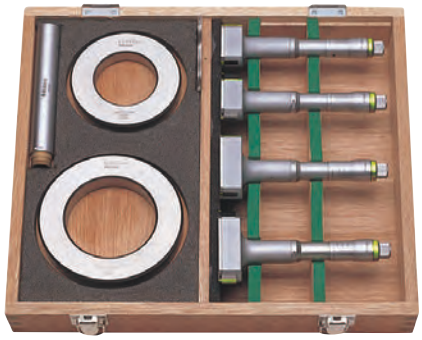
368-907

368-911

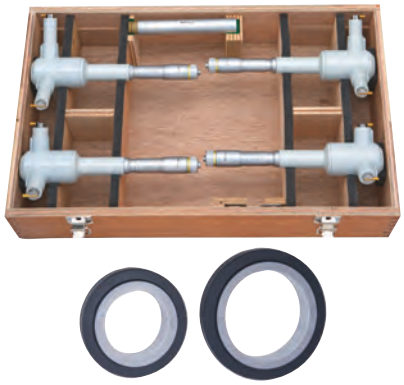
368-912



368-913



368-914



368-915

Metric

No.	Range [mm]	Graduation	Individual ranges	Models included	Setting rings included	Extension rod	Mass [g]
368-906	2 - 3	0,001 mm	2-2,5, 2,5-3 mm	368-001 / 368-002	ø2,5 mm (177-208)		310
368-907	3 - 6	0,001 mm	3-4, 4-5, 5-6 mm	368-003 / 368-004 / 368-005	ø4 mm (177-204) ø5 mm (177-205)		505
368-911	6 - 12	0,001 mm	6-8, 8-10, 10-12 mm	368-161 / 368-162 / 368-163	ø8 mm (177-125) ø10 mm (177-126)	952322	180
368-912	12 - 20	0,005 mm	12-16, 16-20 mm	368-164 / 368-165	ø16 mm (177-177)	952621	280
368-913	20 - 50	0,005 mm	20-25, 25-30, 30-40, 40-50 mm	368-166 / 368-167 / 368-168 / 368-169	ø25 mm (177-139) ø40 mm (177-290)	952622	960
368-914	50 - 100	0,005 mm	50-63, 62-75, 75-88, 87-100 mm	368-170 / 368-171 / 368-172 / 368-173	ø62 mm (177-314) ø87 mm (177-318)	952623	2030
368-915	100 - 200	0,005 mm	100-125, 125-150, 150-175, 175-200 mm	368-174 / 368-175 / 368-176 / 368-177	ø125 mm (177-298) ø175 mm (177-302)	952623	4680

All products to be sold to commercial customers.
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Economy Holtests Individual Metric

Series 368

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

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

368-765 368-769 368-770 368-774

Specifications

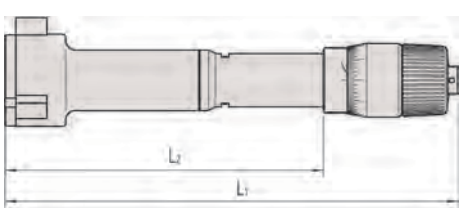
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : Ø17 mm Over 12 mm : Ø23 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring face	Hardened steel taper: hardened steel
Measuring method	3-point
Delivered	Including box, key, certificate of inspection

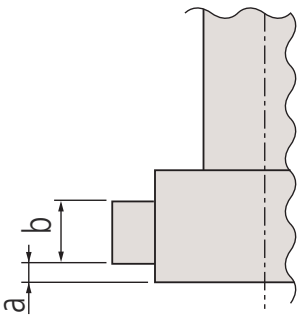
Optional accessories

No.	Description
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	a [mm]	b [mm]	L1 [mm]	L2 [mm]	Mass [g]
368-764	12 - 16	0,005 mm	±3 µm	2,6	3,5	126 - 130	82	150
368-765	16 - 20	0,005 mm	±3 µm	2,6	3,5	126 - 130	82	150
368-766	20 - 25	0,005 mm	±3 µm	3,4	5,2	137 - 142	94	260
368-767	25 - 30	0,005 mm	±3 µm	3,4	5,2	137 - 142	94	280
368-768	30 - 40	0,005 mm	±3 µm	3,4	10	145 - 155	102	290
368-769	40 - 50	0,005 mm	±3 µm	3,4	10	145 - 155	102	330
368-770	50 - 63	0,005 mm	±3 µm	3,4	14	150 - 163	105	440
368-771	62 - 75	0,005 mm	±4 µm	3,4	14	150 - 163	105	450
368-772	75 - 88	0,005 mm	±4 µm	3,4	14	150 - 163	105	560
368-773	87 - 100	0,005 mm	±4 µm	3,4	14	150 - 163	105	570
368-774	100 - 125	0,005 mm	±5 µm	19,6	13,8	227 - 252	161	1020
368-775	125 - 150	0,005 mm	±5 µm	19,6	13,8	227 - 252	161	1110
368-776	150 - 175	0,005 mm	±5 µm	19,6	13,8	227 - 252	161	1200
368-777	175 - 200	0,005 mm	±5 µm	19,6	13,8	227 - 252	161	1300
368-778	200 - 225	0,005 mm	±6 µm	19,6	13,8	227 - 252	161	1420
368-779	225 - 250	0,005 mm	±6 µm	19,6	13,8	227 - 252	161	1540
368-780	250 - 275	0,005 mm	±6 µm	19,6	13,8	227 - 252	161	1690
368-781	275 - 300	0,005 mm	±6 µm	19,6	13,8	227 - 252	161	1860





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Economy Holtest Sets

Series 368

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

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

Specifications

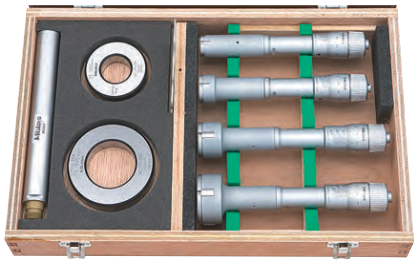
Scale	Thimble and sleeve satin chrome finish, Up to 12 mm : Ø17 mm Over 12 mm : Ø23 mm
Measuring method	3-point
Delivered	Including box, key, setting ring, extension, certificate of inspection (instruments only - certificate of inspection for setting rings not included).

Optional accessories

No.	Description
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range

Extension

368-991



368-992

368-993

368-994

Metric

No.	Range [mm]	Graduation	Individual ranges	Models included	Setting rings included	Extension rod	Mass [g]
368-991	12 - 20	0,005 mm	12-16, 16-20 mm	368-764 / 368-765	ø16 mm (177-177)	952621	310
368-992	20 - 50	0,005 mm	20-25, 25-30, 30-40, 40-50 mm	368-766 / 368-767 368-768 / 368-769	ø25 mm (177-139) ø40 mm (177-290)	952622	1160
368-993	50 - 100	0,005 mm	50-63, 62-75, 75-88, 87-100 mm	368-770 / 368-771 / 368-772 / 368-773	ø62 mm (177-314) ø87 mm (177-318)	952623	2020
368-994	100 - 200	0,005 mm	100-125, 125-150, 150-175, 175-200 mm	368-774 / 368-775 / 368-776 / 368-777	ø125 mm (177-298) ø175 mm (177-302)	952623	4630

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ABSOLUTE Boremetic Individual Metric

Series 568

This is a individual unit Three-Point Digimatic Snap Open Bore Gauge.
It offers you the following benefits:

- It enables you to take measurements easily and quickly.
- Titanium-coated measuring pins gives you excellent durability and impact resistance.
- 330° rotatable display unit also gives you easy reading at any angle.
- GO/NG tolerance judgement function.

568-361

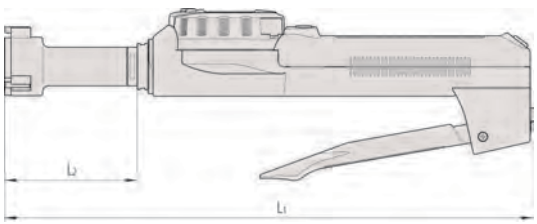
568-364

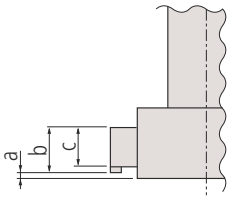
568-366

568-368

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	a [mm]	b [mm]	c [mm]	L1 [mm]	L2 [mm]	Mass [g]
568-361	6 - 8	0,001 mm	±5 µm	2		2,5	284	83	480
568-362	8 - 10	0,001 mm	±5 µm	2		2,5	284	83	485
568-363	10 - 12	0,001 mm	±5 µm	2		2,5	284	83	485
568-364	12 - 16	0,001 mm	±5 µm	0,3	5,6	3,5	255	53	475
568-365	16 - 20	0,001 mm	±5 µm	0,3	5,6	3,5	255	53	480
568-366	20 - 25	0,001 mm	±6 µm	0,3	8,3	5,2	261	59	540
568-367	25 - 30	0,001 mm	±6 µm	0,3	8,3	5,2	261	59	555
568-368	30 - 40	0,001 mm	±6 µm	0,3	13	10	269	67	565
568-369	40 - 50	0,001 mm	±6 µm	0,3	13	10	269	67	610
568-370	50 - 63	0,001 mm	±6 µm	0,3	17	14	277	75	730
568-371	62 - 75	0,001 mm	±6 µm	0,3	17	14	277	75	740
568-372	75 - 88	0,001 mm	±6 µm	0,3	17	14	277	75	790
568-373	87 - 100	0,001 mm	±6 µm	0,3	17	14	277	75	800
568-374	100 - 113	0,001 mm	±6 µm	0,3	17	14	277	75	900
568-375	112 - 125	0,001 mm	±6 µm	0,3	17	14	277	75	910





Functions	Series 568
ABS / INC (INC ZERO)	●
ON/OFF	●
Function lock	●
DATA (output with cable) / HOLD (display value)	●
2 x PRESET	●
Data output	●
GO/±NG judgement	●

Specifications

Display	LCD, character height: 11 mm
Measuring pins	Titanium coated tungsten carbide (6 - 12 mm) Titanium coated hardened steel (12 - 125 mm)
Power supply	1 battery SR-44
Battery life	Approx. 5000 hours
Delivered	Including box, key, 1 battery, certificate of inspection

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
952322	Holtest, Boremetic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Titanium coated measuring surfaces for durability

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

ABSOLUTE Boremetic Interchangeable Head Sets

Functions	Series 568
ABS / INC (INC ZERO)	●
ON/OFF	●
Function lock	●
DATA (output with cable) / HOLD (display value)	●
2 x PRESET	●
Data output	●
GO/±NG judgement	●

Specifications

Display	LCD, character height: 11 mm
Measuring pins	Titanium coated tungsten carbide (6 - 12 mm) Titanium coated hardened steel (12 - 125 mm)
Power supply	1 battery SR-44
Battery life	Approx. 5000 hours
Delivered	Including box, key, 1 battery, setting ring, certificate of inspection (instruments only - certificate of inspection for setting rings not included).

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
952322	Holtest, Boremetic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Titanium coated measuring surfaces for durability

Series 568

ABSOLUTE®

This is a Three-Point Digimatic Snap Open Bore Gauge Set with one display unit and interchangeable heads.
It offers you the following benefits:

- It enables you to take measurements easily and quickly.
- Titanium-coated measuring pins gives you excellent durability and impact resistance.
- 330° rotatable display unit also gives you easy reading at any angle.
- GO/NG tolerance judgement function.

568-924

568-926

Metric

No.	Range [mm]	Digital step	Individual ranges	Setting rings included	Mass [g]
568-924	6 - 12	0,001 mm	6-8 mm 8-10 mm 10-12 mm	Ø8 mm (177-125) Ø10 mm (177-126)	530
568-925	12 - 25	0,001 mm	12-16 mm 16-20 mm 20-25 mm	Ø16 mm (177-177) Ø20 mm (177-286)	690
568-926	25 - 50	0,001 mm	25-30 mm 30-40 mm 40-50 mm	Ø30 mm (177-288) Ø40 mm (177-290)	930
568-927	50 - 100	0,001 mm	50-63 mm 62-75 mm 75-88 mm 87-100 mm	Ø62 mm (177-314) Ø87 mm (177-318)	1850

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Mitutoyo

ABSOLUTE Boremetic Complete Unit Sets

ABSOLUTE Boremetic Complete Unit Sets

This is a Three-Point Digimatic Snap Open Bore Gauge Set with a display unit for each measuring head.
It offers you the following benefits:

- It enables you to take measurements easily and quickly.
- Titanium-coated measuring pins gives you excellent durability and impact resistance.
- 330° rotatable display unit also gives you easy reading at any angle.
- GO/NG tolerance judgement function.

568-955

568-959

Metric

No.	Range [mm]	Digital step	Individual ranges	Setting rings included	Mass [g]
568-955	6 - 12	0,001 mm	6-8 mm 8-10 mm 10-12 mm	Ø8 mm (177-125) Ø10 mm (177-126)	1450
568-956	12 - 25	0,001 mm	12-16 mm 16-20 mm 20-25 mm	Ø16 mm (177-177) Ø20 mm (177-286)	1520
568-957	25 - 50	0,001 mm	25-30 mm 30-40 mm 40-50 mm	Ø30 mm (177-288) Ø40 mm (177-290)	1750
568-958	50 - 75	0,001 mm	50-63 mm 62-75 mm	Ø62 mm (177-314)	1490
568-959	75 - 100	0,001 mm	75-88 mm 87-100 mm	Ø87 mm (177-318)	1610

Functions	ABSOLUTE Boremetic Complete Unit Sets
ABS / INC (INC ZERO)	●
ON/OFF	●
Function lock	●
DATA (output with cable) / HOLD (display value)	●
2 x PRESET	●
Data output	●
GO/±NG judgement	●

Specifications

Display	LCD, character height: 11 mm
Measuring pins	Titanium coated tungsten carbide (6 - 12 mm) Titanium coated hardened steel (12 - 125 mm)
Power supply	1 battery SR-44
Battery life	approx. 5000 hours
Delivered	Including box, key, battery, setting ring, certificate of inspection (instruments only - certificate of inspection for setting rings not included).

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
952322	Holtest, Boremetic Extension 100mm, for 6-12mm Measuring Range
952621	Holtest, Boremetic Extension 150mm, for 12-20mm Measuring Range
952622	Holtest, Boremetic Extension 150mm, for 20-50mm Measuring Range
952623	Holtest, Boremetic Extension 150mm, for 50-300mm Measuring Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Titanium coated measuring surfaces for durability

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Digimatic Caliper Jaw Inside Micrometers

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

Specifications

Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measuring face	Carbide tipped
Measuring force	1-6 N
Power supply	1 battery SR-44
Battery life	2,4 years
Delivered	Including box, key, 1 battery.

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 345

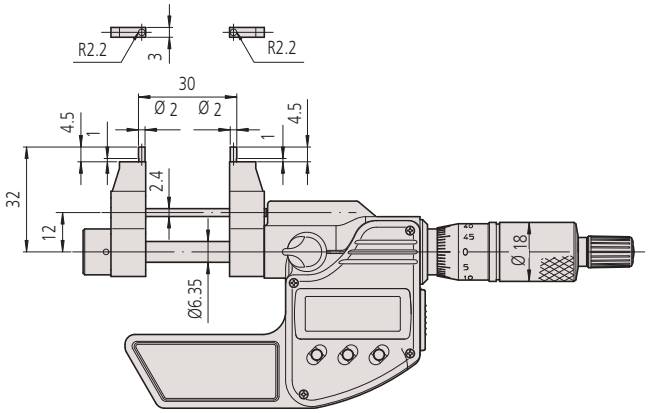
The Digimatic Caliper Jaw Inside Micrometer offers you the following benefits:

- Carbide measuring faces
- A setting standard (optional) is needed to accurately set the micrometer to the reference point.

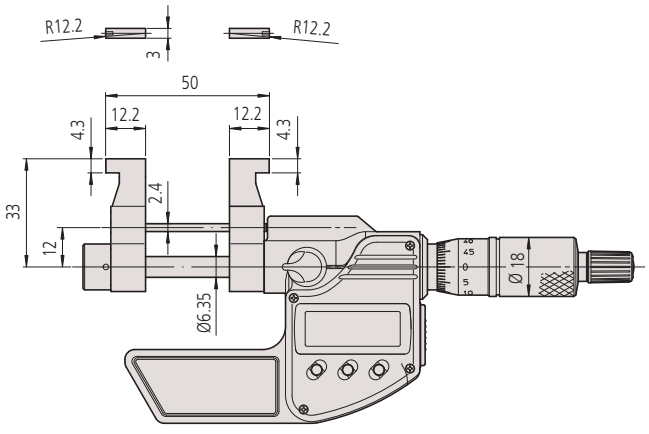
345-250-30

Metric

No.	Range [mm]	Digital step	Max. Permissible Error J MPE	Mass [g]
345-250-30	5 - 30	0,001 mm	±5 µm	305
345-251-30	25 - 50	0,001 mm	±6 µm	310



345-250-30



345-251-30

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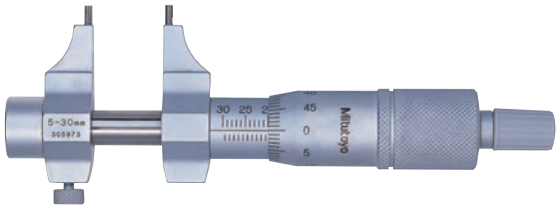
Mitutoyo

Caliper Jaw Inside Micrometers

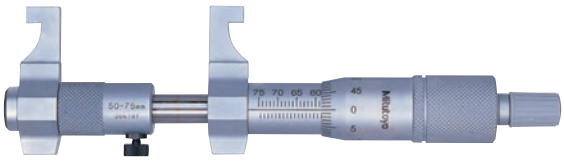
Series 145

The Caliper Jaw Inside Micrometer offers you the following benefits:

- Carbide measuring faces
- A setting standard (optional) is needed to accurately set the micrometer to the reference point.



145-185



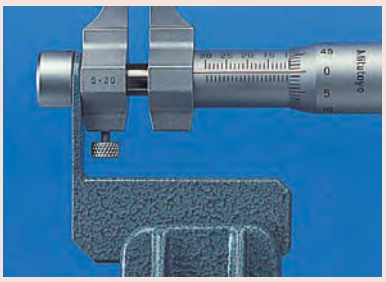
145-187

Specifications

Scale	Thimble and sleeve satin chrome finish, ø18 mm
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measuring face	Carbide tipped
Measuring force	1-6 N
Delivered	Including box, key

Optional accessories

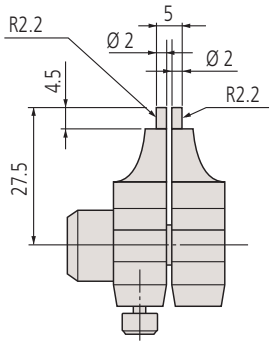
No.	Description
300400	Holder for Series 145
300401	Cap for Series 145



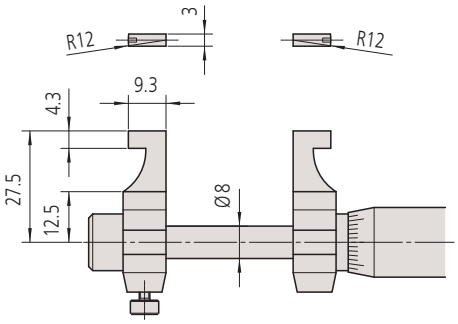
Holder and cap for: 145-185, 145-186

Metric

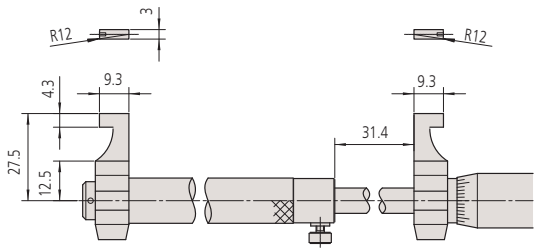
No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Mass [g]
145-185	5 - 30	0,01 mm	±5 µm	130
145-186	25 - 50	0,01 mm	±6 µm	140
145-187	50 - 75	0,01 mm	±7 µm	160
145-188	75 - 100	0,01 mm	±8 µm	180
145-189	100 - 125	0,01 mm	±9 µm	210
145-190	125 - 150	0,01 mm	±9 µm	230
145-191	150 - 175	0,01 mm	±10 µm	250
145-192	175 - 200	0,01 mm	±10 µm	270
145-217	200 - 225	0,01 mm	±11 µm	310
145-218	225 - 250	0,01 mm	±11 µm	330
145-219	250 - 275	0,01 mm	±12 µm	350
145-220	275 - 300	0,01 mm	±12 µm	370



145-185



145-186



50-300 mm

All products to be sold to commercial customers.
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Tubular Inside Micrometers Individual

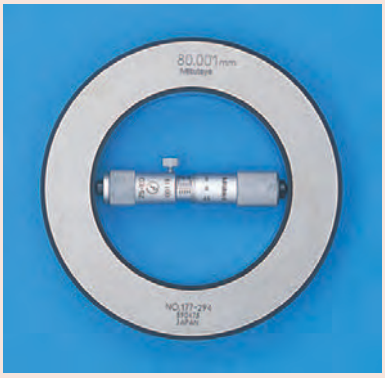
Series 133

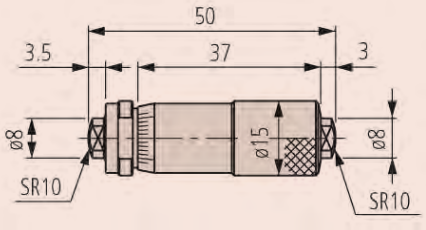
This is a standard single rod type inside micrometer (individual unit), with the following features:

- Standard single rod.
- Carbide measuring faces.

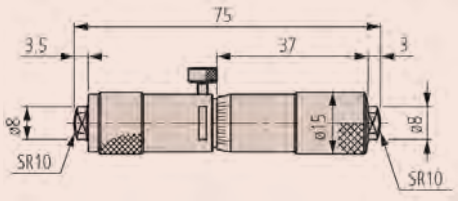
Specifications

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

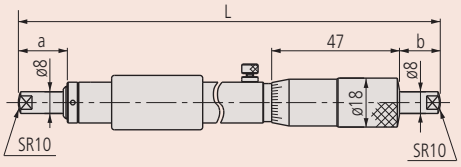




133-143



133-144



100-1000 mm

133-143 - 133-152

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	a [mm]	b [mm]	L [mm]	Mass [g]
133-143	50 - 75	0,01mm	±3 µm				50
133-144	75 - 100	0,01mm	±4 µm				75
133-145	100 - 125	0,01mm	±5 µm	5	3	100	130
133-146	125 - 150	0,01mm	±5 µm	5	3	125	160
133-147	150 - 175	0,01mm	±5 µm	18	15	150	170
133-148	175 - 200	0,01mm	±5 µm	18	15	175	180
133-149	200 - 225	0,01mm	±5 µm	18	15	200	200
133-150	225 - 250	0,01mm	±6 µm	18	15	225	210
133-151	250 - 275	0,01mm	±6 µm	18	15	250	235
133-152	275 - 300	0,01mm	±6 µm	18	15	275	245
133-153	300 - 325	0,01mm	±7 µm	18	15	300	265
133-154	325 - 350	0,01mm	±7 µm	18	15	325	285
133-155	350 - 375	0,01mm	±7 µm	18	15	350	300
133-156	375 - 400	0,01mm	±8 µm	18	15	375	315
133-157	400 - 425	0,01mm	±8 µm	18	15	400	330
133-158	425 - 450	0,01mm	±8 µm	18	15	425	340
133-159	450 - 475	0,01mm	±9 µm	18	15	450	360
133-160	475 - 500	0,01mm	±9 µm	18	15	475	370
133-161	500 - 525	0,01mm	±9 µm	18	15	500	390
133-162	525 - 550	0,01mm	±10 µm	18	15	525	400
133-163	550 - 575	0,01mm	±10 µm	18	15	550	410
133-164	575 - 600	0,01mm	±10 µm	18	15	575	415
133-165	600 - 625	0,01mm	±11 µm	18	15	600	430
133-166	625 - 650	0,01mm	±11 µm	18	15	625	450
133-167	650 - 675	0,01mm	±11 µm	18	15	650	470
133-168	675 - 700	0,01mm	±12 µm	18	15	675	480
133-169	700 - 725	0,01mm	±12 µm	18	15	700	500
133-170	725 - 750	0,01mm	±12 µm	18	15	725	510
133-171	750 - 775	0,01mm	±13 µm	18	15	750	520
133-172	775 - 800	0,01mm	±13 µm	18	15	775	540
133-173	800 - 825	0,01mm	±13 µm	18	15	800	555
133-174	825 - 850	0,01mm	±14 µm	18	15	825	570
133-175	850 - 875	0,01mm	±14 µm	18	15	850	590
133-176	875 - 900	0,01mm	±14 µm	18	15	875	600
133-177	900 - 925	0,01mm	±15 µm	18	15	900	620
133-178	925 - 950	0,01mm	±15 µm	18	15	925	630
133-179	950 - 975	0,01mm	±15 µm	18	15	950	650
133-180	975 - 1000	0,01mm	±16 µm	18	15	975	670

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Tubular Inside Micrometer Sets

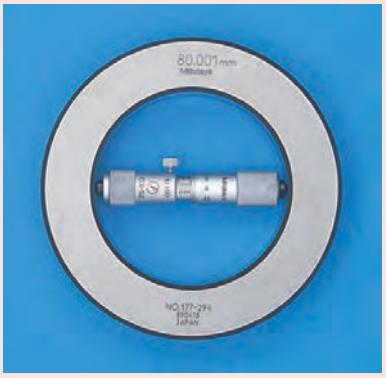
Series 133

This is a standard single rod type inside micrometer (boxed set), with the following features:

- Standard single rod.
- Carbide measuring faces.

Specifications

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



Metric

Micrometer set

No.	Range [mm]	Graduation	Models included	Mass [g]
133-901	50 - 150	0,01mm	133-143, 133-144, 133-145, 133-146	415
133-902	50 - 300	0,01mm	133-143, 133-144, 133-145133-146 133-147, 133-148, 133-149, 133-150, 133-151, 133-152	1655

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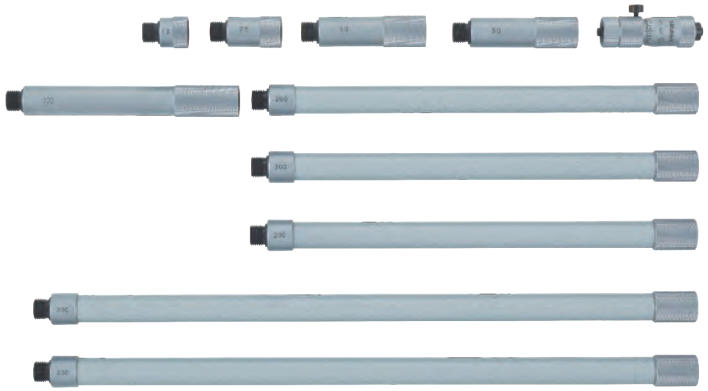
Tubular Inside Micrometers with Extensions

Series 137

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

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



137-205

Specifications

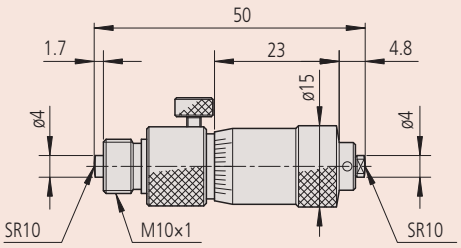
Scale	Thimble and sleeve satin chrome finish, ø15 mm
Measuring spindle	Spindle pitch 0,5 mm
Extension	ø12,5 mm
Delivered	Including box, key, extensions, micrometer head

Optional accessories

No.	Description
137-011	Inside Micrometer, Hardened Face, 50-63mm
137-013	Inside Micrometer, Carbide-tipped, 50-63mm

Consumable spares

No.	Description
980505	Extension Rod for Series 137, 13mm, Hardened Face
980507	Extension Rod for Series 137, 25mm, Hardened Face
980509	Extension Rod for Series 137, 50mm, Hardened Face
980511	Extension Rod for Series 137, 100mm, Hardened Face
980515	Extension Rod for Series 137, 200mm, Hardened Face
980517	Extension Rod for Series 137, 300mm, Hardened Face
980519	Extension Rod for Series 137, 337, 13mm, Carbide Tipped
980521	Extension Rod for Series 137, 337, 25mm, Carbide Tipped
980523	Extension Rod for Series 137, 337, 50mm, Carbide Tipped
980525	Extension Rod for Series 137, 337, 100mm, Carbide Tipped
980529	Extension Rod for Series 137, 337, 200mm, Carbide Tipped
980531	Extension Rod for Series 137, 337, 300mm, Carbide Tipped



Micrometer Head for series 137

Metric — With carbide measuring surface

No.	Range [mm]	Measuring span	Graduation	Spindle feed error [µm]	Limit of error	Extension rods	Mass [g]
137-206	50 - 150	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	3 (13, 25, 50 mm)	145
137-207	50 - 300	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	5 (13, 25, 50 (2 pcs.), 100 mm)	305
137-208	50 - 500	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	6 (13, 25, 50 (2 pcs.), 100, 200 mm)	460
137-209	50 - 1000	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)	845
137-210	50 - 1500	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	10 (13, 25, 50 (2 pcs.) 100, 200 (3 pcs.), 300 mm (2 pcs.))	1225

Metric — With hardened measuring surface

No.	Range [mm]	Measuring span	Graduation	Spindle feed error [µm]	Limit of error	Extension rods	Mass [g]
137-201	50 - 150	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	3 (13, 25, 50 mm)	145
137-202	50 - 300	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	5 (13, 25, 50 (2 pcs.), 100 mm)	305
137-203	50 - 500	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	6 (13, 25, 50 (2 pcs.), 100, 200 mm)	460
137-204	50 - 1000	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	8 (13, 25, 50 (2 pcs.), 100, 200 (2 pcs.), 300 mm)	845
137-205	50 - 1500	13 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	10, 13, 25, 50 (2 pcs.), 100, 200 (3 pcs.), 300 mm (2 pcs.)	1225

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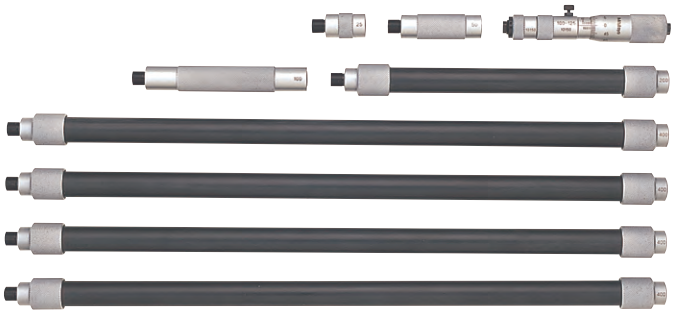
Tubular Inside Micrometers with Extensions

Series 139

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

- Interchangeable extensions in a hollow pipe design.

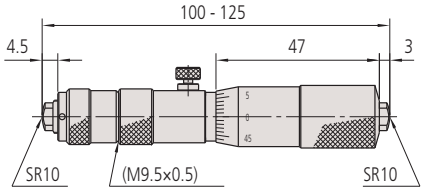


139-177

139-203

Metric

No.	Range [mm]	Measuring span	Graduation	Spindle feed error [µm]	Limit of error	Extension rods	Mass [g]
139-173	100 - 500	25 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	4 (25, 50, 100, 200 mm)	490
139-174	100 - 900	25 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	5 (25, 50, 100, 200, 400 mm)	790
139-175	100 - 1300	25 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	6 (25, 50, 100, 200, 400 mm (2 pcs.))	1090
139-176	100 - 1700	25 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	7 (25, 50, 100, 200, 400 mm (3 pcs.))	1390
139-177	100 - 2100	25 mm	0,01 mm	3	±(3+number of rods+max. measurement length/50) µm	8 (25, 50, 100, 200, 400 mm (4 pcs.))	1690
139-203	40 - 300	10 mm	0,01 mm	6	±(6+max. measurement length/50) µm	8 (10, 20, 30, 60, 90, 110, 120, 130 mm)	240
139-204	100 - 1000	25 mm	0,01 mm	6	±(6+max. measurement length/50) µm	10 (25, 50, 75, 150, 225, 300, 350, 400, 425, 450 mm)	770



139-001

Specifications

Scale	Thimble and sleeve satin chrome finish, ø18 mm ø13 mm (139-203, 139-204)
Measuring spindle	Spindle pitch 0,5 mm
Measuring face	Carbide
Extension	ø17 mm ø10 mm (139-203, 139-204)
Delivered	Including box, key, extensions, micrometer head

Standard accessories

No.	Description
139-001	Tubular Inside Micrometer, 100-125mm, for 139-173 to 139-177
139-003	Tubular Inside Micrometer 100-110mm, for 139-203
139-005	Tubular Inside Micrometer 100-125mm, for 139-204

Consumable spares

No.	Description
981003	Extension Rod for Series 139, 339, 25mm
981005	Extension Rod for Series 139, 339, 50mm
981007	Extension Rod for Series 139, 339, 100mm
981009	Extension Rod for Series 139, 339, 200mm
981011	Extension Rod for Series 139, 339, 400mm
981981	Extension Rod 10mm, for 139-203
981982	Extension Rod 20mm, for 139-203
981983	Extension Rod 30mm, for 139-203
981984	Extension Rod 60mm, for 139-203
981985	Extension Rod 90mm, for 139-203
981986	Extension Rod 110mm, for 139-203
981987	Extension Rod 120mm, for 139-203
981988	Extension Rod 130mm, for 139-203
981991	Extension Rod 25mm, for 139-204
981993	Extension Rod 75mm, for 139-204
981994	Extension Rod 150mm, for 139-204
981995	Extension Rod 225mm, for 139-204
981996	Extension Rod 300mm, for 139-204
981997	Extension Rod 350mm, for 139-204
981998	Extension Rod 400mm, for 139-204
981999	Extension Rod 425mm, for 139-204
982000	Extension Rod 450mm, for 139-204

139-001

139-005

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Tubular Inside Micrometers with Extensions

Series 140

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

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

Specifications

Scale	Thimble and sleeve satin chrome finish, ø21 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring face	Carbide
Extension	ø32 mm
Delivered	Including box, key

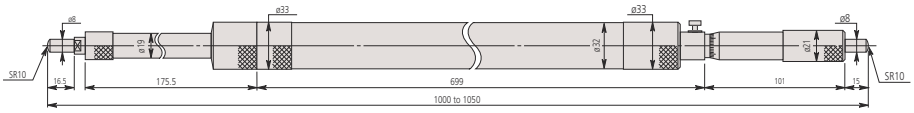
Consumable spares

No.	Description
04GZA394	Extension Rod 50mm, for Series 140
04GZA396	Extension Rod 100mm, for Series 140
04GZA398	Extension Rod 200mm, for Series 140
04GZA400	Extension Rod 500mm, for Series 140
04GZA402	Extension Rod 1000mm, for Series 140

140-158

Metric

No.	Range [mm]	Measuring span	Graduation	Spindle feed error [µm]	Limit of error	Extension rods	Mass [g]
140-157	1000 - 2000	50 mm	0,01 mm	6	±(7+number of rods+max. measurement length/50) µm	5 (50, 100 (2 pcs.) 200, 500 mm)	3700
140-158	1000 - 3000	50 mm	0,01 mm	6	±(7+number of rods+max. measurement length/50) µm	6 (50, 100 (2 pcs.), 200, 500, 1000 mm)	5200
140-159	1000 - 4000	50 mm	0,01 mm	6	±(7+number of rods+max. measurement length/50) µm	7 (50, 100 (2 pcs.), 200, 500, 1000 mm (2 pcs.))	6700
140-160	1000 - 5000	50 mm	0,01 mm	6	±(7+number of rods+max. measurement length/50) µm	8 (50, 100 (2 pcs.) 200, 500, 1000 mm (3 pcs.))	8260



Micrometer Head for series 140

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Digimatic Tubular Inside Micrometers with Extensions

Series 337

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

- Interchangeable extensions with cylindrical gage rods are spring-mounted in protective sleeves so you can extend the measuring range.
- Carbide measuring faces.
- Digimatic type, with data output.
- It has excellent resistance against water and dust (IP65 protection level) enabling you to use it in machining situations that include splashing coolant fluid.

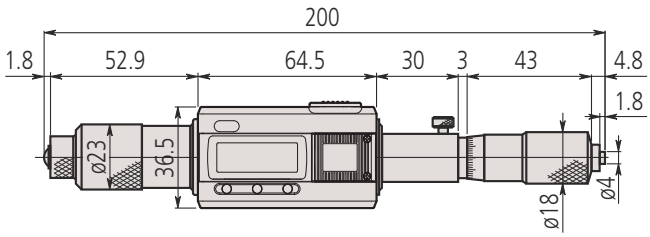
Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000021605

IP65

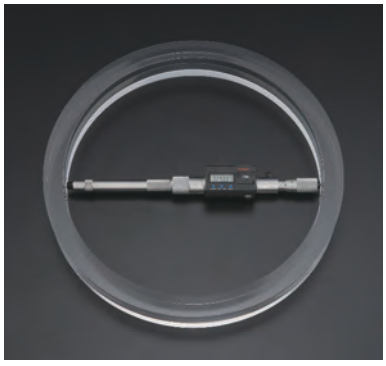
337-301

Metric

No.	Range [mm]	Measuring span	Digital step	Spindle feed error [µm]	Limit of error	Extension rods	Mass [g]
337-301	200 - 1000	25 mm	0,001 mm	3	±(3+number of rods+max. measurement length/50) µm	6 (25, 50, 100 (2 pcs.), 200, 300 mm)	1040
337-302	200 - 1500	25 mm	0,001 mm	3	±(3+number of rods+max. measurement length/50) µm	7 (25, 50, 100, 200, 300 (3 pcs.))	1410



Micrometer Head for series 337



Functions	Series 337
DATA/HOLD	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
2 x PRESET	●
Data output	●

Specifications

Scale	Thimble and sleeve satin chrome finish, ø18 mm
Display	LCD, character height 7,5 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring face	Carbide
Extension	ø12,5 mm
Power supply	1 battery SR-44
Delivered	Including box, key, 1 battery, extensions, micrometer head

Standard accessories

No.	Description
337-101	Digital Tubular Inside Micrometer (Rod), 200-225mm, Digimatic, IP65

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

No.	Description
980521	Extension Rod for Series 137, 337, 25mm, Carbide Tipped
980523	Extension Rod for Series 137, 337, 50mm, Carbide Tipped
980525	Extension Rod for Series 137, 337, 100mm, Carbide Tipped
980529	Extension Rod for Series 137, 337, 200mm, Carbide Tipped
980531	Extension Rod for Series 137, 337, 300mm, Carbide Tipped
938882	Battery SR44 1,5 V

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Digimatic Tubular Inside Micrometers with Extensions

Functions	Series 339
DATA/HOLD	●
ABS / INC (INC ZERO)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Function lock	●
2 x PRESET	●
Data output	●

Series 339

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

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

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000021605
IP65

Specifications

Scale	Thimble and sleeve satin chrome finish, ø18 mm
Display	LCD, character height 7,5 mm
Measuring spindle	Spindle pitch 0,5 mm
Measuring face	Carbide
Extension	ø17 mm
Power supply	1 battery SR-44
Delivered	Including box, key, 1 battery, extensions, micrometer head

Standard accessories

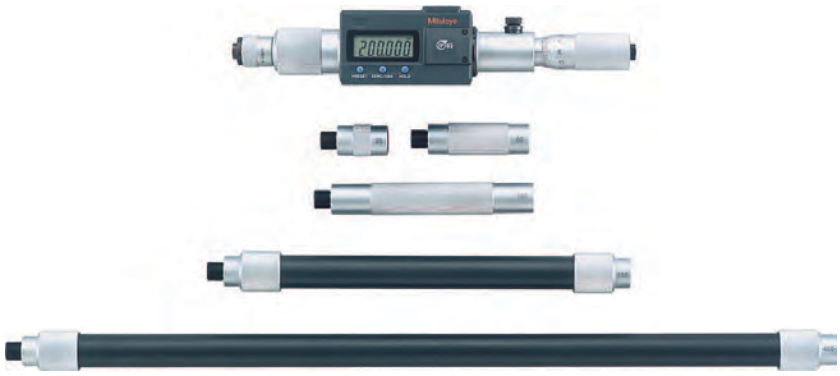
No.	Description
339-101	Digital Tubular Inside Micrometer (Pipe), 200-225mm, IP65

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790B	U-WAVE-T Connection Cable B, with Data Button IP Micrometer Type

Consumable spares

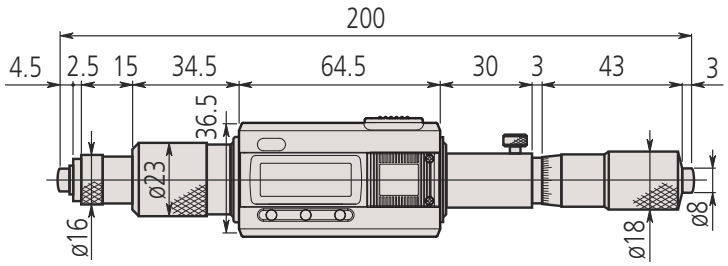
No.	Description
938882	Battery SR44 1,5 V
981003	Extension Rod for Series 139, 339, 25mm
981005	Extension Rod for Series 139, 339, 50mm
981007	Extension Rod for Series 139, 339, 100mm
981009	Extension Rod for Series 139, 339, 200mm
981011	Extension Rod for Series 139, 339, 400mm



339-301

Metric

No.	Range [mm]	Measuring span	Digital step	Spindle feed error [µm]	Limit of error	Extension rods	Mass [g]
339-301	200 - 1000	25 mm	0,001 mm	3	±(3+number of rods+max. measurement length/50) µm	5 (25, 50, 100, 200, 400 mm)	1050
339-302	200 - 2000	25 mm	0,001 mm	3	±(3+number of rods+max. measurement length/50) µm	8 (25, 50, 100, 200 (2 pcs.), 400 mm (3 pcs.))	1800



Micrometer Head for series 339

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Mitutoyo

Inside Micrometers with Interchangeable Rod

Series 141

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

- Interchangeable measuring rods and spacers achieve the full specified measuring range.
- Each interchangeable rod is marked with its measuring range.
- An extension handle to help you measure deep bores is included in sets up to 300 mm range.

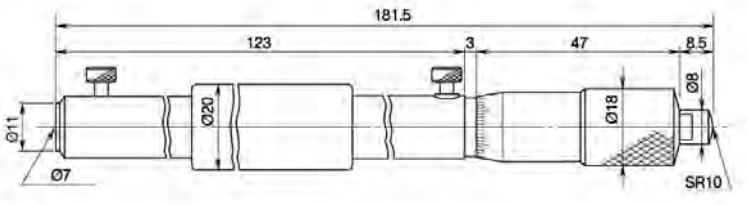
141-205

Metric — With carbide measuring surface

No.	Range [mm]	Measuring span	Graduation	Spindle feed error [µm]	Extension collar	Interchangeable rod	Accessories: inside micrometer (standard in the set) No.	Mass [g]
141-103	25 - 50	7 mm	0,01 mm	3	1 (6 mm)	2 (38, 50 mm)	141-003	60
141-211	50 - 200	13 mm	0,01 mm	3	1 (12 mm)	3 (100, 150, 200 mm)	141-027	125
141-212	50 - 300	13 mm	0,01 mm	3	1 (12 mm)	5 (100, 150, 200, 250, 300 mm)	141-027	275

Metric — With hardened steel measuring surface

No.	Range [mm]	Measuring span	Graduation	Spindle feed error [µm]	Extension collar	Interchangeable rod	Accessories: inside micrometer (standard in the set) No.	Mass [g]
141-101	25 - 50	7 mm	0,01 mm	3	1 (6 mm)	2 (38, 50 mm)	141-001	60
141-205	50 - 200	13 mm	0,01 mm	3	1 (12 mm)	3 (100, 150, 200 mm)	141-025	125
141-206	50 - 300	13 mm	0,01 mm	3	1 (12 mm)	5 (100, 150, 200, 250, 300 mm)	141-025	275
141-117	200 - 500	25 mm	0,01 mm	3	2 (25/50 mm)	3 (300, 400, 500 mm)	141-009	520
141-118	200 - 1000	25 mm	0,01 mm	3	2 (25/50 mm)	8 (300, 400, 500, 600, 700, 800, 900, 1000 mm)	141-009	1940



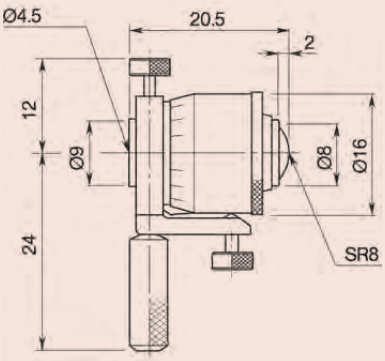
141-009

Specifications

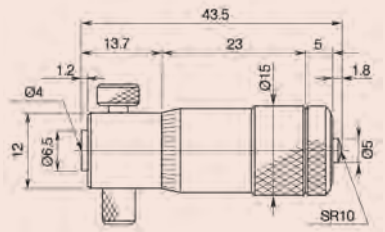
Scale	Thimble and sleeve satin chrome finish
Measuring spindle	With spindle lock, spindle pitch 0,5 mm
Measuring face	Hardened or carbide tipped
Delivered	Including box, key

When using one of the extension rods supplied

141-101 with extensionl handle



141-001, 141-003



141-025, 141-027

All products to be sold to commercial customers.
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Bore Gauges for Extra Small Holes

Specifications

Delivered	In box including plastic cover for Dial Indicator

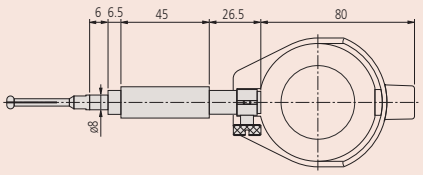
Optional accessories

No.	Description
215-120-10	Stand for Bore Gauge Series 526
543-310B-10	Digital Indicator, Bore Gauge ID-C, 12,7mm, 0,001mm, Flat Back Plate
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4

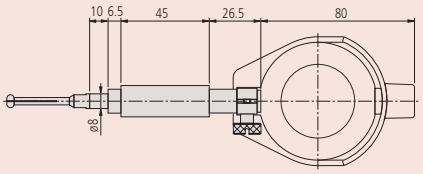
Setting rings are optional accessories. See Series 177 for details.

215-120-10

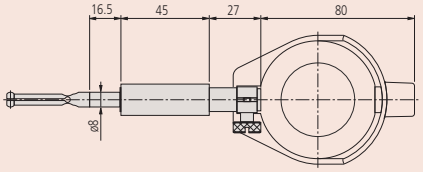
543-310B-10



0,95 - 4 mm



3,7 - 7,3 mm



7 - 18 mm

Series 526 Bore Gauge

This is a two point split contact point ideally suited to smaller bore measurements.
It offers you the following benefits:

- A precision bore gauge so you can make quick and accurate measurements of small hole diameters (0,95-18 mm).
- You can replace the analogue indicator fitted to this instrument with a customer-supplied Digimatic indicator if you need.
- The contact point is hard chrome coated.

526-127-20

Metric

No.	Range [mm]	Graduation	Accuracy [µm]	Repeatability	Measuring depth	No. Dial Indicator	Number of anvils	Mass [g]
526-173-20	0,95 - 1,55	0,01mm	4	2 µm	11,5 mm	2046AB	5	240
526-163-20	1,5 - 3,95	0,01mm	4	2 µm	17,5-22,5 mm (1)	2046AB	9	240
526-153-20	3,7 - 7,3	0,01mm	4	2 µm	32 mm	2046AB	7	240
526-126-20	7 - 10	0,01mm	4	2 µm	40-56 mm (2)	2046AB	6	300
526-127-20	10 - 18	0,01mm	6	2 µm	62 mm	2046AB	8	366
526-172-20	0,95 - 1,55	0,001mm	4	2 µm	11,5 mm	2109AB-10	5	240
526-162-20	1,5 - 3,95	0,001mm	4	2 µm	17,5-22,5 mm (1)	2109AB-10	9	240
526-152-20	3,7 - 7,3	0,001mm	4	2 µm	32 mm	2109AB-10	7	240
526-124-20	7 - 10	0,001mm	4	2 µm	40-56 mm (2)	2109AB-10	6	300
526-125-20	10 - 18	0,001mm	6	2 µm	62 mm	2109AB-10	8	366

(1) Holes Ø ≤ 2,25 mm : measuring depth 17,5 mm / holes Ø > 2,25 mm : measuring depth 22,5 mm
(2) Holes Ø ≤ 8 mm : measuring depth 40 mm / holes Ø > 8 mm : measuring depth 56 mm

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Bore Gauges for Extra Small Holes

Contact Point for Series 526

Split-ball probes 0,95-1,15 mm up to 6,7-7,3 mm range are protected by a diamond-like DLC coating.

Split-ball probes 7-18 mm are hard chrome plated

DLC Black Diamond:

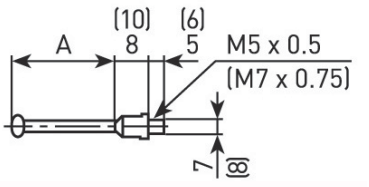
- Extremely high wear protection, due to low frictional resistance
- Safety due to high hardness and resistance
- Safety due to sustained accuracy and precision

10AAP247A

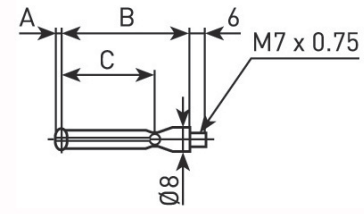
10AAP248B

Replacement contact points

No.	Range [mm]	Marking on the measuring head (engraved)	A [mm]	B [mm]	C [mm]
10AAP247A	0,95 - 1,15	1	11,5		
10AAP247B	1,07 - 1,25	1,1	11,5		
10AAP247C	1,17 - 1,35	1,2	11,5		
10AAP247D	1,27 - 1,45	1,3	11,5		
10AAP247E	1,37 - 1,55	1,4	11,5		
10AAP248A	1,5 - 1,9	1,75	17,5		
10AAP248B	1,8 - 2,2	2	17,5		
10AAP248C	2,05 - 2,45	2,25	17,5		
10AAP248D	2,25 - 2,75	2,5	22,5		
10AAP248E	2,5 - 3	2,75	22,5		
10AAP248F	2,75 - 3,25	3	22,5		
10AAP248G	3 - 3,5	3,25	22,5		
10AAP248H	3,25 - 3,75	3,5	22,5		
10AAP248J	3,5 - 4	3,75	22,5		
10AAP249A	3,7 - 4,3	4	32		
10AAP249B	4,2 - 4,8	4,5	32		
10AAP249C	4,7 - 5,3	5	32		
10AAP249D	5,2 - 5,8	5,5	32		
10AAP249E	5,7 - 6,3	6	32		
10AAP249F	6,2 - 6,8	6,5	32		
10AAP249G	6,7 - 7,3	7	32		
102469	7 - 7,5	1	1,8	40	29,2
102470	7,5 - 8	2	1,8	40	29,2
102471	8 - 8,5	3	1,8	40	29,2
102472	8,5 - 9	4	1,8	40	29,2
102473	9 - 9,5	5	1,8	40	29,2
102474	9,5 - 10	6	1,8	40	29,2
102454	10 - 11	1	2,1	46	38
102455	11 - 12	2	2,7	46	38
102456	12 - 13	3	2,7	46	38
102457	13 - 14	4	2,7	46	38
102458	14 - 15	5	2,7	46	38
102459	15 - 16	6	2,7	46	38
102460	16 - 17	7	2,7	46	38
102461	17 - 18	8	2,7	46	38

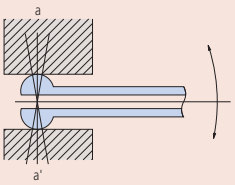


526-162-20, 526-163-20, 526-172-20, 526-173-20
( ) 526-152-20, 526-153-20



526-124-20, 526-125-20, 526-126-20, 526-127-20

526-153-20



Positioning of Bore Gauges
The contact points have a large curvature, simplifying positioning for bore diameter measurement (in the direction a-a')

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Bore Gauges for Small Holes

Series 511

These are bore gauges that automatically self-centre via a centring bridge.
They offer you the following benefits:

- A long plunger stroke gives you amazing accuracy.
- Interchangeable washers 0,5 mm thick are supplied as standard accessories, so you can enable setting in small steps.
- Contact points are carbide (>18 mm range), giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.

Specifications

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

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
543-310B-10	Digital Indicator, Bore Gauge ID-C, 12,7mm, 0,001mm, Flat Back Plate

543-310B-10

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

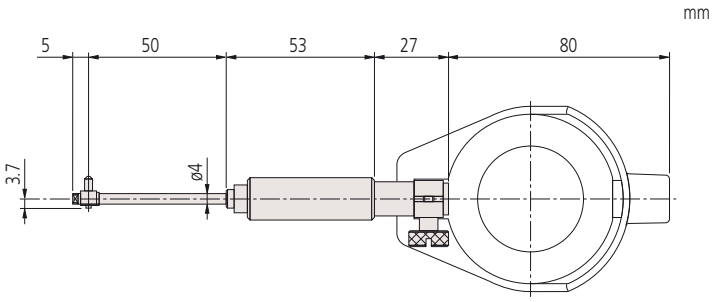
511-204-20

6 - 10mm

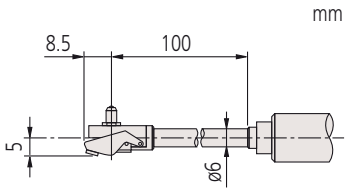
10 - 18.5mm

Metric

No.	Range [mm]	Graduation	Stroke of contact point [mm]	Measuring depth	No. Dial Indicator	Number of anvils	Mass [g]
511-210-20	6 - 10	0,001 mm	0,5	50 mm	2109AB-10	9	255
511-211-20	6 - 10	0,01 mm	0,5	50 mm	2046AB	9	255
511-203-20	10 - 18,5	0,001 mm	0,6	100 mm	2109AB-10	9	268
511-204-20	10 - 18,5	0,01 mm	0,6	100 mm	2046AB	9	264



6-10 mm



10-18,5 mm

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Bore Gauges

Series 511

This is a short range application Bore Gauge Set that automatically self-centres via a centring bridge and offers you the following benefits:

- It reduces the influence of heat from the operator's hand by 50% by making the grip hollow structured, thereby retaining high accuracy measurement.
- Interchangeable washers (0,5 mm thick) are supplied as standard accessories, so you can enable setting in small steps.
- Contact points are carbide (>18 mm range), giving you high durability and wear resistance.

511-712-20

511-713-20

Metric

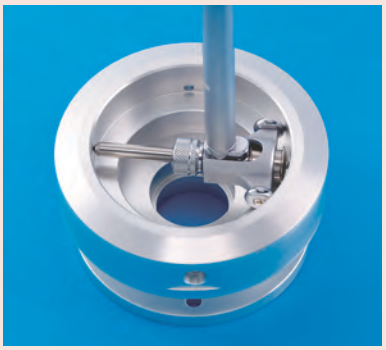
No.	Range [mm]	Graduation	Stroke of contact point	Measuring depth	No. Dial Indicator	Number of anvils	Mass [g]
511-721-20	18 - 35	0,001 mm	1,2 mm	100 mm	2109AB-10	9	330
511-722-20	35 - 60	0,001 mm	1,2 mm	150 mm	2109AB-10	6	400
511-723-20	50 - 150	0,001 mm	1,6 mm	150 mm	2109AB-10	11	420
511-724-20	100 - 160	0,001 mm	1,6 mm	150 mm	2109AB-10	13	480
511-725-20	160 - 250	0,001 mm	1,6 mm	250 mm	2109AB-10	6	850
511-726-20	250 - 400	0,001 mm	1,6 mm	250 mm	2109AB-10	5	945
511-711-20	18 - 35	0,01 mm	1,2 mm	100 mm	2046AB	9	330
511-712-20	35 - 60	0,01 mm	1,2 mm	150 mm	2046AB	6	400
511-713-20	50 - 150	0,01 mm	1,6 mm	150 mm	2046AB	11	420
511-714-20	100 - 160	0,01 mm	1,6 mm	150 mm	2046AB	13	480
511-715-20	160 - 250	0,01 mm	1,6 mm	250 mm	2046AB	6	850
511-716-20	250 - 400	0,01 mm	1,6 mm	250 mm	2046AB	5	945

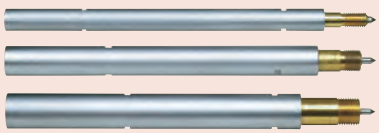
Specifications

Accuracy	2 µm
Repeatability	0,5 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description
953549	Extension Rod Series 511, 125mm, 9mm Rod Diameter
953550	Extension Rod Series 511, 250mm, 9mm Rod Diameter
953551	Extension Rod Series 511, 500mm, 9mm Rod Diameter
953552	Extension Rod Series 511, 125mm, 12mm Rod Diameter
953553	Extension Rod Series 511, 250mm, 12mm Rod Diameter
953554	Extension Rod Series 511, 500mm, 12mm Rod Diameter
953555	Extension Rod Series 511, 750mm, 12mm Rod Diameter
953556	Extension Rod Series 511, 1000mm, 12mm Rod Diameter
953557	Extension Rod Series 511, 125mm, 15mm Rod Diameter
952361	Extension Rod Series 511, 250mm, 15mm Rod Diameter
953558	Extension Rod Series 511, 500mm, 15mm Rod Diameter
953559	Extension Rod Series 511, 750mm, 15mm Rod Diameter
953560	Extension Rod Series 511, 1000mm, 15mm Rod Diameter
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
543-310B-10	Digital Indicator, Bore Gauge ID-C, 12,7mm, 0,001mm, Flat Back Plate





Extensions for deep-hole measurement (optional accessory)

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

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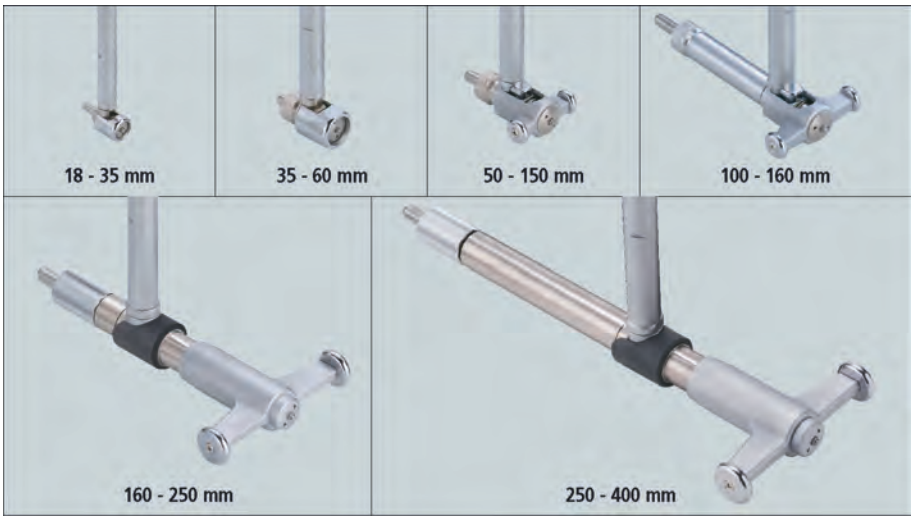
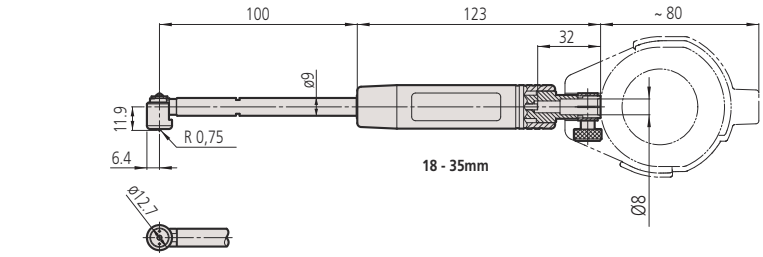
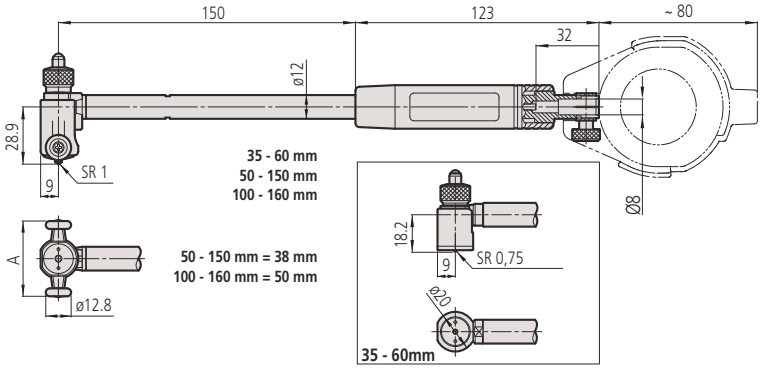
Bore Gauges

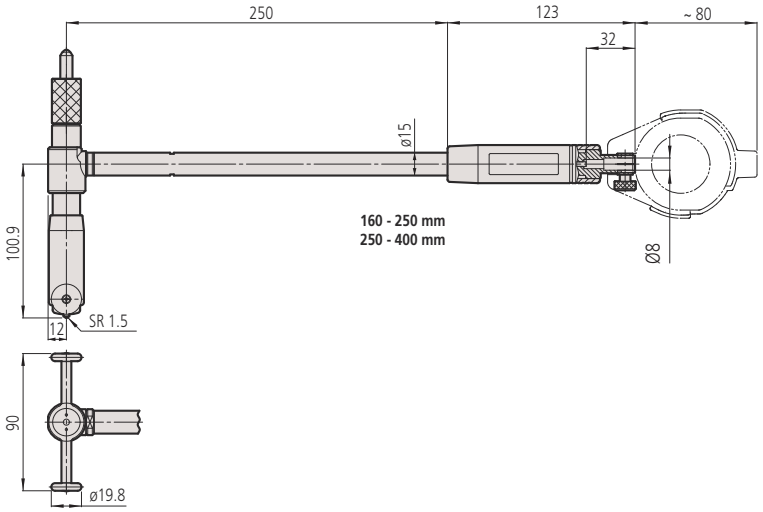
Series 511

Example of measuring heads with different measuring ranges.









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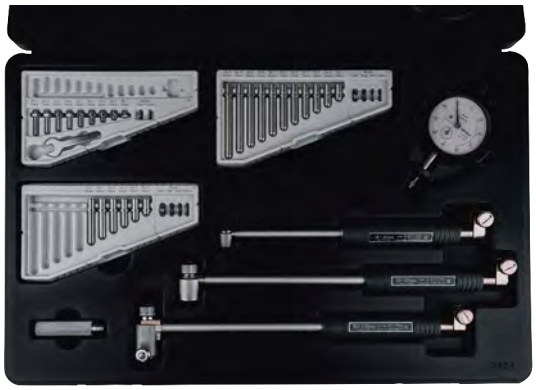
Mitutoyo

Bore Gauges

Series 511

This is a wide range application set of Bore Gauges that automatically self-centres via a centring bridge and offers you the following benefits:

- Carbide for the contact point ensuring high durability and wear resistance
- It reduces the influence of heat from the operator's hand by 50% by making the grip hollow structured, thereby retaining high accuracy measurement.



511-921-20

Indicator 2046AB included in the set 511-921-20

511-922-20

Indicator 2109AB-10 included in the set 511-922-20

511-925-20

Indicator 543-310B-10 included in the set 511-925-20

Metric

No.	Range [mm]	Graduation	Measuring depth	No. Dial Indicator
511-921-20	18 - 150	0,01 mm	100/150 mm	2046AB
511-922-20	18 - 150	0,001 mm	100/150 mm	2109AB-10
511-925-20	18 - 150	0,001 mm	100/150 mm	543-310B-10

Specifications

Accuracy	2 µm
Repeatability	0,5 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Standard accessories

No.	Description
205457	Washer Series 511, 0,5mm, Range 35-160mm
205458	Washer Series 511, 1 mm, Range 35-160mm
205459	Washer Series 511, 2 mm, Range 35-160mm
205460	Washer Series 511, 3 mm, Range 35-160mm
205623	Washer Series 511, 0,5mm, Range 18-35mm
205624	Washer Series 511, 1mm, Range 18-35mm

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4

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Bore Gauges with Micrometer Head

Series 511

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

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

511-826-20

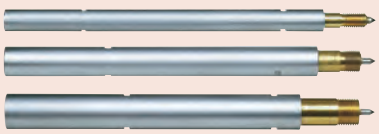
Specifications

Accuracy	2 µm
Repeatability	0,5 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

No.	Description
953552	Extension Rod Series 511, 125mm, 12mm Rod Diameter
953553	Extension Rod Series 511, 250mm, 12mm Rod Diameter
953554	Extension Rod Series 511, 500mm, 12mm Rod Diameter
953555	Extension Rod Series 511, 750mm, 12mm Rod Diameter
953556	Extension Rod Series 511, 1000mm, 12mm Rod Diameter
953557	Extension Rod Series 511, 125mm, 15mm Rod Diameter
952361	Extension Rod Series 511, 250mm, 15mm Rod Diameter
953558	Extension Rod Series 511, 500mm, 15mm Rod Diameter
953559	Extension Rod Series 511, 750mm, 15mm Rod Diameter
953560	Extension Rod Series 511, 1000mm, 15mm Rod Diameter
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
543-310B-10	Digital Indicator, Bore Gauge ID-C, 12,7mm, 0,001mm, Flat Back Plate

543-310B-10



Extensions for deep-hole measurement (optional accessory)

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

Metric

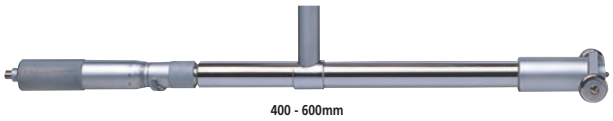
No.	Range [mm]	Graduation	Measuring depth	No. Dial Indicator	Micrometer Head stroke	Sub anvils	Mass [g]
511-823-20	60 - 100	0,001 mm	150 mm	2109AB-10	10 mm	10, 20 mm	430
511-824-20	100 - 160	0,001 mm	150 mm	2109AB-10	13 mm	10, 20, 20 mm	480
511-825-20	150 - 250	0,001 mm	150 mm	2109AB-10	13 mm	10, 20, 20, 50 mm	850
511-826-20	250 - 400	0,001 mm	150 mm	2109AB-10	25 mm	25, 50, 50 mm	950
511-827-20	400 - 600	0,001 mm	250 mm	2109AB-10	50 mm	50, 100 mm	1270
511-828-20	600 - 800	0,001 mm	250 mm	2109AB-10	50 mm	50, 100 mm	1670
511-813-20	60 - 100	0,01 mm	150 mm	2046AB	10 mm	10, 20 mm	430
511-814-20	100 - 160	0,01 mm	150 mm	2046AB	13 mm	10, 20, 20 mm	480
511-815-20	150 - 250	0,01 mm	150 mm	2046AB	13 mm	10, 20, 20, 50 mm	850
511-816-20	250 - 400	0,01 mm	150 mm	2046AB	25 mm	25, 50, 50 mm	950
511-817-20	400 - 600	0,01 mm	250 mm	2046AB	50 mm	50, 100 mm	1270
511-818-20	600 - 800	0,01 mm	250 mm	2046AB	50 mm	50, 100 mm	1670

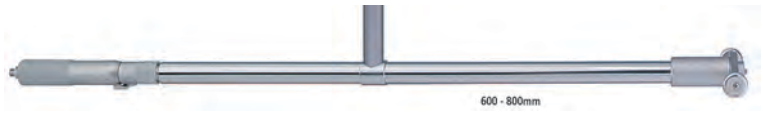
All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

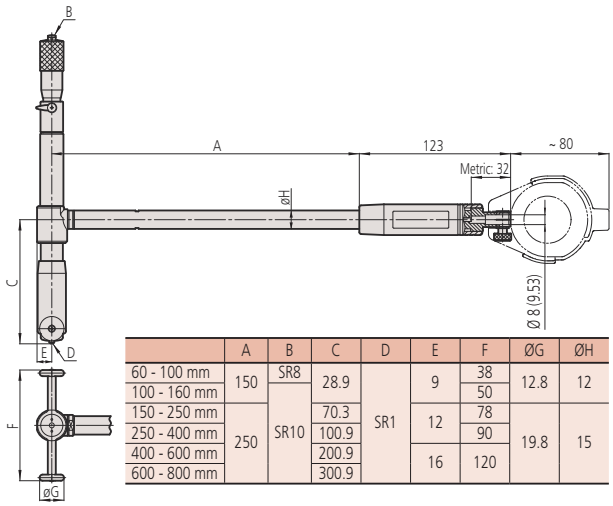
Bore Gauges with Micrometer Head

Series 511

Dimensions





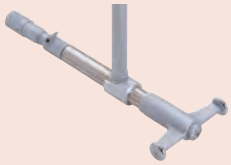


	A	B	C	D	E	F	ØG	ØH
60 - 100 mm	150	SR8	28.9	SR1	9	38	12.8	12
100 - 160 mm						50		
150 - 250 mm	250	SR10	70.3		12	78	19.8	15
250 - 400 mm			100.9			90		
400 - 600 mm			200.9		16	120		
600 - 800 mm			300.9					

60 - 100 mm

100 - 160 mm

150 - 250 mm



250 - 400 mm

Extension Rods

Accessories for Bore Gauges

These extension rods help you with deep-hole measurement, and offer you the following benefits:

- Using a single, longer extension rod rather than several short ones reduces error. When several extension rods are joined together there is the possibility of small errors arising from the extra joints involved. Therefore it is good practice not to connect more than 2 rods to a bore gauge at any one time.
- If you are using an extension rod longer than 500mm, use the bore gauge in the vertical orientation.

953549

953552

953557

No.	Applicable Range	Extension rod diameter	Length [mm]
953549	18-35 mm	9 mm	125
953550	18-35 mm	9 mm	250
953551	18-35 mm	9 mm	500
953552	35-160 mm	12 mm	125
953553	35-160 mm	12 mm	250
953554	35-160 mm	12 mm	500
953555	35-160 mm	12 mm	750
953556	35-160 mm	12 mm	1,000
953557	150-800 mm	15 mm	125
952361	150-800 mm	15 mm	250
953558	150-800 mm	15 mm	500
953559	150-800 mm	15 mm	750
953560	150-800 mm	15 mm	1,000

All products to be sold to commercial customers.
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Bore Gauges Short Length Type

Series 511

This is a compact and lightweight bore gauge due to the short length below the grip.
It offers you the following benefits:

- A long plunger stroke gives you amazing accuracy.
- Contact points are carbide giving you high durability and wear resistance.
- A large grip reduces heat transfer from the operator by 50%.

Specifications

Accuracy	2 µm
Repeatability	0,5 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

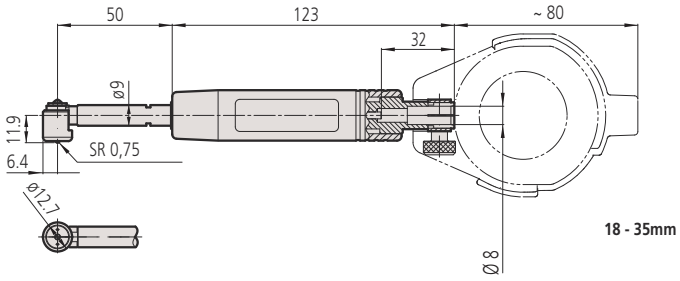
No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
543-310B-10	Digital Indicator, Bore Gauge ID-C, 12,7mm, 0,001mm, Flat Back Plate

543-310B-10

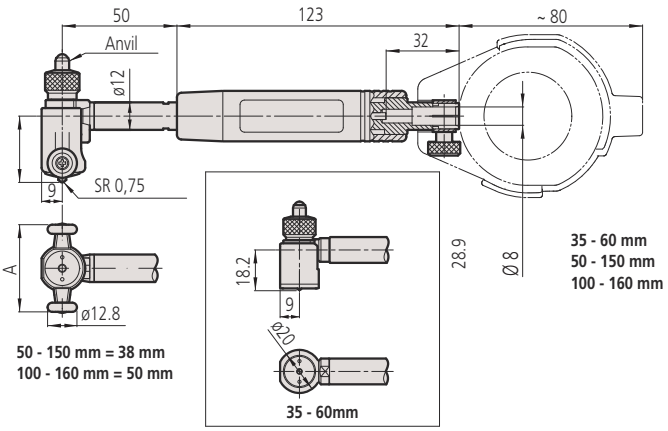
511-766-20

Metric

No.	Range [mm]	Graduation	Stroke of contact point	Measuring depth	No. Dial Indicator	Number of anvils	Mass [g]
511-771-20	18 - 35	0,001 mm	1,2 mm	50 mm	2109AB-10	9	320
511-772-20	35 - 60	0,001 mm	1,2 mm	50 mm	2109AB-10	6	380
511-773-20	50 - 150	0,001 mm	1,6 mm	50 mm	2109AB-10	11	400
511-774-20	100 - 160	0,001 mm	1,6 mm	50 mm	2109AB-10	13	460
511-766-20	18 - 35	0,01 mm	1,2 mm	50 mm	2046AB	9	320
511-767-20	35 - 60	0,01 mm	1,2 mm	50 mm	2046AB	6	380
511-768-20	50 - 150	0,01 mm	1,6 mm	50 mm	2046AB	11	400
511-769-20	100 - 160	0,01 mm	1,6 mm	50 mm	2046AB	13	460



18 - 35mm



50 - 150 mm = 38 mm
100 - 160 mm = 50 mm

35 - 60mm

35 - 60 mm
50 - 150 mm
100 - 160 mm

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

All products to be sold to commercial customers.
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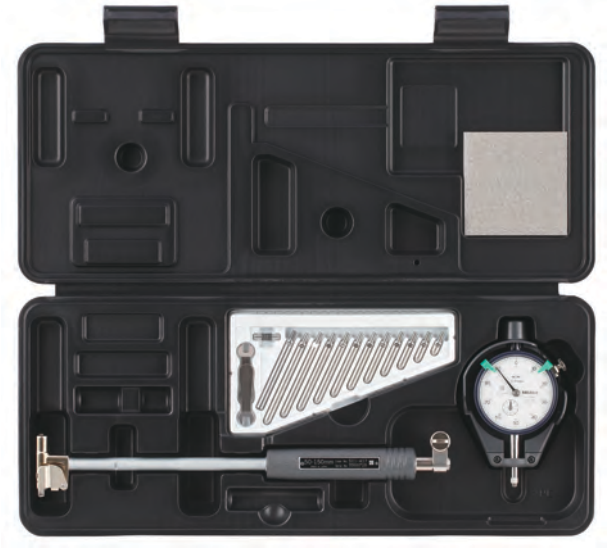
Bore Gauges for Blind Holes

Series 511

This is a bore gauge for measuring blind holes that offers you the following benefits:

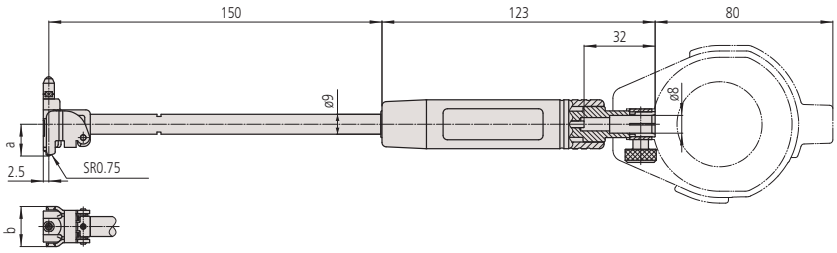
- You can measure the inside diameter close to the bottom of blind holes.
- Contact points are carbide giving you high durability and wear resistance.



511-427-20
with optional limit hands (green)

Metric

No.	Range [mm]	Graduation	Stroke of contact point	Measuring depth	No. Dial Indicator	a [mm]	b [mm]	Mass [g]
511-425-20	15 - 35	0,01 mm	1,2 mm	150 mm	2046AB	9,9	10,6	350
511-426-20	35 - 60	0,01 mm	1,2 mm	150 mm	2046AB	14,3	18	370
511-427-20	50 - 150	0,01 mm	1,2 mm	150 mm	2046AB	22,7	22	380
511-435-20	15 - 35	0,001 mm	1,2 mm	150 mm	2109AB	9,9	10,6	350
511-436-20	35 - 60	0,001 mm	1,2 mm	150 mm	2109AB	14,3	18	370
511-437-20	50 - 150	0,001 mm	1,2 mm	150 mm	2109AB	22,7	22	380

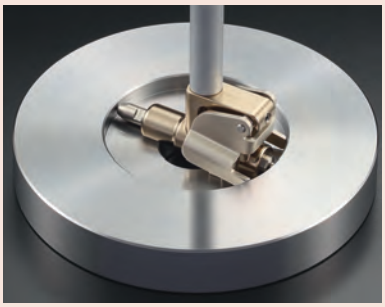


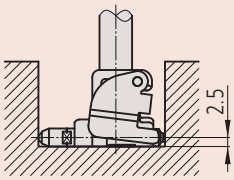
Specifications

Accuracy	4 µm
Repeatability	1 µm
Delivered	Including box, dial indicator, plastic cover for indicator

Optional accessories

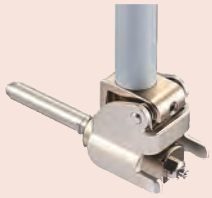
No.	Description
953549	Extension Rod Series 511, 125mm, 9mm Rod Diameter
953550	Extension Rod Series 511, 250mm, 9mm Rod Diameter
953551	Extension Rod Series 511, 500mm, 9mm Rod Diameter
543-310B-10	Digital Indicator, Bore Gauge ID-C, 12,7mm, 0,001mm, Flat Back Plate
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4



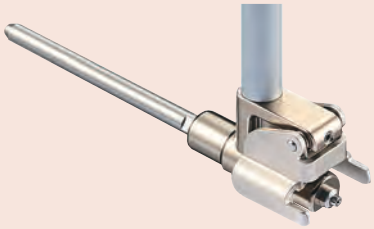


For blind holes with minimum depth 2,5 mm

15 - 35 mm



35 - 60 mm



50 - 150 mm

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

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ABSOLUTE Digimatic Bore Gauges

Functions	Series 511
ON/OFF	●
DATA (output with cable) / HOLD (display value)	●
PRESET 3x	●
MIN Value Hold	●
GO/±NG judgement	●

Specifications

Accuracy	0,003 mm (excluding quantizing error)
Repeatability	0,002 mm
Display	LCD character height 7,5 mm
Measuring force	≤5 N
Sampling Frequency	50 times/sec*
Power supply	2 batteries SR-44
Battery life	2000 hours

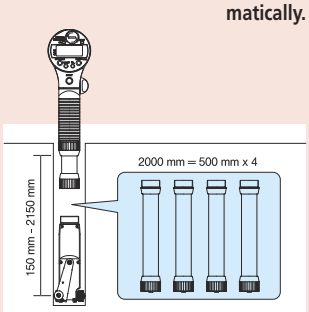
Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
21DZA089	Extension Rod, Series 511, 250mm
21DZA081	Extension Rod, Series 511, 500mm

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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



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

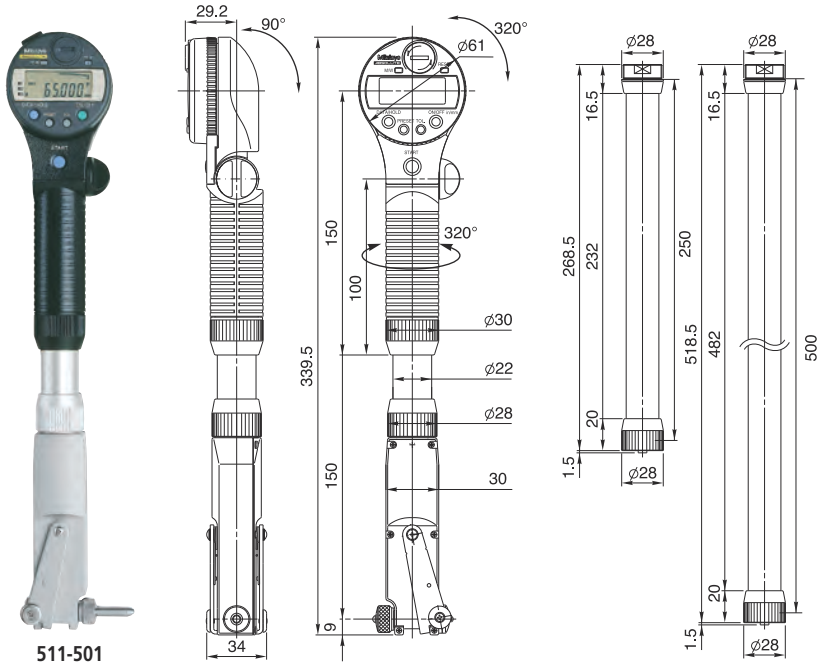
*if the detecting speed is >50 µm/s the peak value may not be displayed correctly

Series 511

ABSOLUTE® IP53

This is a Digimatic bore gauge that lets you take digital inside measurements with amazing accuracy even at the maximum 2 m depth.
The ABSOLUTE Digimatic Bore Gauge offers you the following benefits:

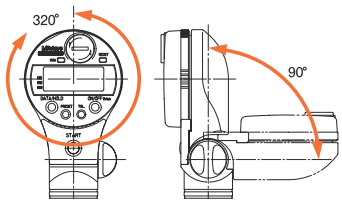
- Precision bore gauge lets you easily measure the diameter of deep bores without loss of accuracy.
- You can store and recall up to 3 sets of master values and upper/lower tolerance values at the push of a button.
- GO/±NG judgement can be set.
- Up to max. four extension rods (250 or 500 mm) can be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



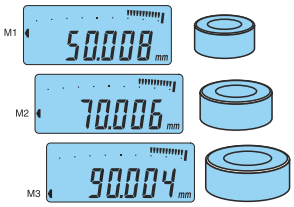
511-501

Metric

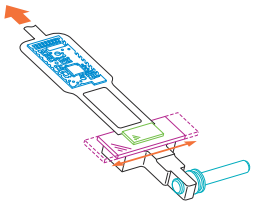
No.	Range [mm]	Digital step	Stroke of contact point	Number of anvils	Mass [g]
511-501	45 - 100	0,001 mm	1,2 mm	12	500
511-502	100 - 160	0,001 mm	1,2 mm	13	570



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



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



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

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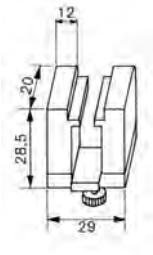
Mitutoyo

Bore Gauge Checker

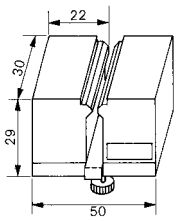
Series 515

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

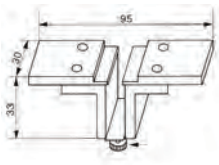
515-590
+ gauge block (optional)



940088



940089



940090

Metric

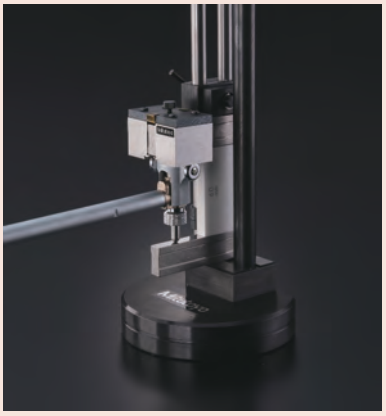
No.	Applicable Range	Mass [kg]
515-590	18-400 mm	4,51

Specifications

Delivered	Delivery as complete set in soft box

Standard accessories

No.	Description
940088	Receiver for Bore Gauge Checker, 18-35mm/35-60mm
940089	Receiver for Bore Gauge Checker, 50-100mm/100-160mm
940090	Receiver for Bore Gauge Checker, 100-250mm/250-400mm
630030	Flat Jaws for Bore Gauge Checker, 2 pcs.



Gauge Sets

Series 155 - Telescopic Gauge Set

- Self-centering and satin chrome finish.
- Constant spring force on to the measuring surface. Locked in position by knurled lockscrew.

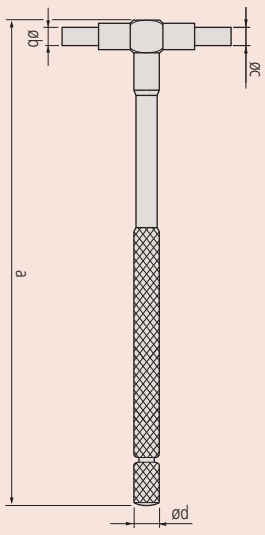
155-905

Metric

No.	Range	Gauges included	a [mm]	b [mm]	c [mm]	d [mm]	Mass [g]
155-905	8-12,7 mm	155-127	110	4	3	5	15
	12,7-19 mm	155-128	110	5	3,5	5,5	25
	19-32 mm	155-129	110	5	3,5	5,5	35
	32-54 mm	155-130	150	7,5	6	8	75
	54-90 mm	155-131	150	7,5	6	8	80
	90-150 mm	155-132	150	7,5	6	8	100

Specifications

Delivered	Including plastic wallet



All products to be sold to commercial customers.
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Setting Rings

Specifications

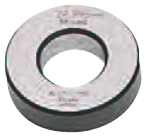
Delivered	Without certificate of inspection

Series 177 - Metric Type

- Used for quick and accurate setting of 2-Point Inside Measuring Instruments and 2-Point/3-Point Inside Micrometers
- Nominal diameter is marked in 0,001 mm increments
- Steel Setting Rings are available from 1 mm up to 300 mm and Ceramic Setting Rings from 4 mm up to 45 mm

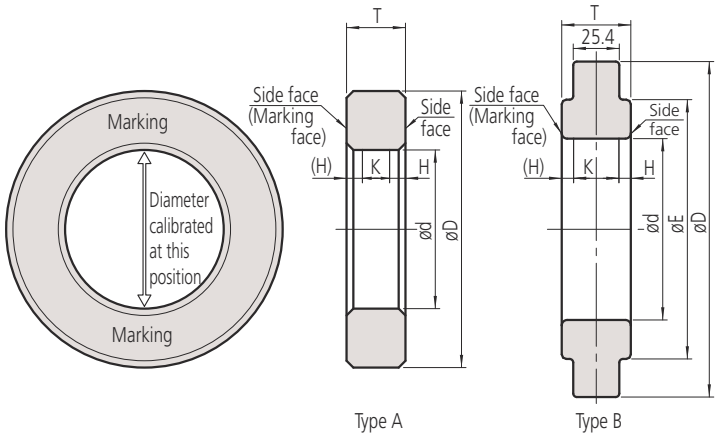
177-424

177-432



177-139

177-300



Metric Ceramic

No.	Nominal size ød [mm]	Type	D [mm]	T [mm]	Tolerance nominal size / marked diameter [µm]	Uncertainty of marked diameter [µm]	Roundness / Cylindricity [µm]	H [mm]	Warranted calibration surface K [mm]
177-418	4	A	25	7	±10	1,5	1	1.7	3.6
177-420	6	A	25	7	±10	1,5	1	1.7	3.6
177-423	8	A	32	10	±10	1,5	1	2.0	6.0
177-424	10	A	32	10	±10	1,5	1	2.0	6.0
177-425	12	A	32	10	±10	1,5	1	2.0	6.0
177-427	16	A	45	10	±10	1,5	1	2.0	6.0
177-429	20	A	45	10	±10	1,5	1	2.0	6.0
177-430	25	A	53	15	±10	1,5	1	3.2	8.6
177-431	30	A	71	15	±10	1,5	1	3.2	8.6
177-432	35	A	71	15	±10	1,5	1	3.2	8.6
177-433	40	A	71	15	±10	1,5	1	3.2	8.6
177-434	45	A	85	15	±10	1,5	1	3.7	7.6

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Setting Rings

Metric

Steel

No.	Nominal size ød [mm]	Type	D [mm]	E [mm]	T [mm]	Tolerance nominal size / marked diameter [µm]	Uncertainty of marked diameter [µm]	Roundness / Cylindricity [µm]	H [mm]	Warranted calibration surface K [mm]
177-220	1	A	20		4	±10	1,5	1	1.6	0.8
177-222	1,1	A	20		4	±10	1,5	1	1.6	0.8
177-225	1,2	A	20		4	±10	1,5	1	1.6	0.8
177-227	1,3	A	20		4	±10	1,5	1	1.6	0.8
177-230	1,4	A	20		4	±10	1,5	1	1.6	0.8
177-236	1,75	A	25		5	±10	1,5	1	1.6	1.8
177-239	2	A	25		5	±10	1,5	1	1.6	1.8
177-242	2,25	A	25		5	±10	1,5	1	1.6	1.8
177-208	2,5	A	25		7	±10	1,5	1	1.7	3.6
177-246	2,75	A	25		7	±10	1,5	1	1.7	3.6
177-248	3	A	25		7	±10	1,5	1	1.7	3.6
177-250	3,25	A	25		7	±10	1,5	1	1.7	3.6
177-252	3,5	A	25		7	±10	1,5	1	1.7	3.6
177-255	3,75	A	25		7	±10	1,5	1	1.7	3.6
177-204	4	A	25		7	±10	1,5	1	1.7	3.6
177-257	4,5	A	25		7	±10	1,5	1	1.7	3.6
177-205	5	A	25		7	±10	1,5	1	1.7	3.6
177-263	5,5	A	25		7	±10	1,5	1	1.7	3.6
177-267	6	A	25		7	±10	1,5	1	1.7	3.6
177-271	6,5	A	25		7	±10	1,5	1	1.7	3.6
177-275	7	A	25		7	±10	1,5	1	1.7	3.6
177-125	8	A	32		10	±10	1,5	1	2.0	6.0
177-279	9	A	32		10	±10	1,5	1	2.0	6.0
177-126	10	A	32		10	±10	1,5	1	2.0	6.0
177-284	12	A	32		10	±10	1,5	1	2.0	6.0
177-132	14	A	38		10	±10	1,5	1	2.0	6.0
177-177	16	A	45		10	±10	1,5	1	2.0	6.0
177-133	17	A	45		10	±10	1,5	1	2.0	6.0
177-285	18	A	45		10	±10	1,5	1	2.0	6.0
177-286	20	A	45		10	±10	1,5	1	2.0	6.0
177-139	25	A	53		15	±10	1,5	1	3.2	8.6
177-288	30	A	71		15	±10	1,5	1	3.2	8.6
177-140	35	A	71		15	±10	1,5	1	3.2	8.6
177-290	40	A	71		15	±10	1,5	1	3.2	8.6
177-178	45	A	85		15	±10	1,5	1	3.7	7.6
177-146	50	A	85		20	±20	1,5	1	3.7	12.6
177-292	60	A	112		20	±20	1,5	1	3.7	12.6
177-314	62	A	112		20	±20	1,5	1,5	3.7	12.6
177-147	70	A	112		20	±20	1,5	1,5	3.7	12.6
177-316	75	A	125		25	±20	1,5	1,5	4.2	16.6
177-294	80	A	125		25	±20	1,5	1,5	4.2	16.6
177-318	87	A	140		25	±20	1,5	1,5	4.2	16.6
177-148	90	A	140		25	±20	1,5	1,5	4.2	16.6
177-296	100	A	160		25	±20	1,5	2	4.2	16.6
177-298	125	B	210	168	38,1	±20	2,5	2	5.3	27.5
177-300	150	B	235	187	38,1	±20	2,5	2	5.3	27.5
177-302	175	B	260	215	38,1	±20	2,5	2,5	5.3	27.5
177-304	200	B	311	244	38,1	±20	2,5	2,5	5.3	27.5
177-306	225	B	337	264	38,1	±20	2,5	2,5	5.3	27.5
177-308	250	B	362	290	38,1	±20	2,5	3	5.3	27.5
177-310	275	B	413	321	38,1	±20	2,5	3	5.3	27.5
177-312	300	B	438	340	38,1	±20	2,5	3	5.3	27.5

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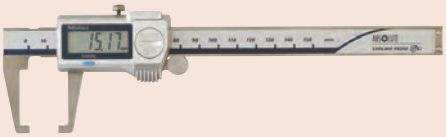
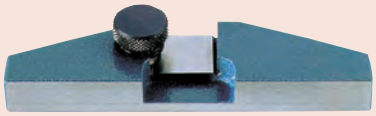
Calipers

Absolute Digimatic Calipers
Page 166

Analog Caliper
Page 178



Special Purpose Calipers
Page 185



Caliper Accessories
Page 201

All products to be sold to commercial customers.
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Mitutoyo

ABSOLUTE Coolant Proof Calipers IP67

Series 500

This IP67 ABSOLUTE digimatic caliper allows reliable measurements in a wide range of situations and offers you the following benefits:

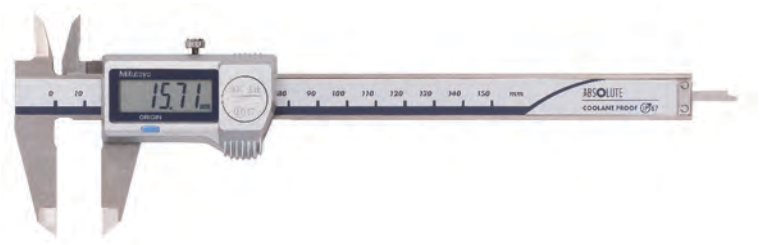
- Excellent resistance against water and dust (IP67 protection level) enabling use in machining situations that include splashing coolant fluid
- It is dustproof, complies with EN60529 and withstands temporary complete immersion in water without suffering any damage.
- ABS (ABSOLUTE) scale requires no origin setting after power-on and has no limit to response speed.

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000045042

ABSOLUTE®

PROPRIETARY INSPECTION CERTIFICATE

IP67



500-706-20

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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm (150, 200 mm) 11 mm (300 mm)
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range

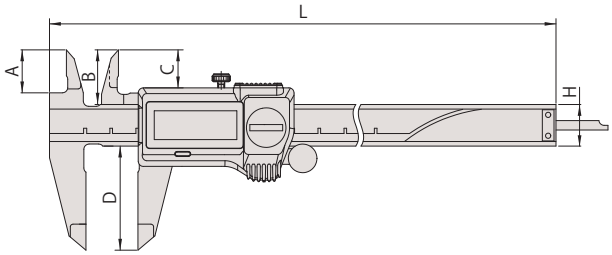
Consumable spares

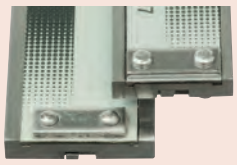
No.	Description
938882	Battery SR44 1,5 V

Metric

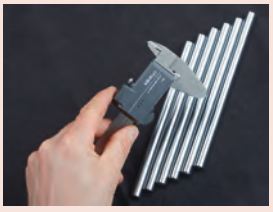
No.	Range [mm]	Depth bar	Thumb roller	Data output	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
500-706-20	0 - 150	flat			±0,02 mm	±0,04 mm	168
500-709-20	0 - 150	Ø 1,9 mm			±0,02 mm	±0,04 mm	168
500-716-20	0 - 150	flat		●	±0,02 mm	±0,04 mm	168
500-702-20	0 - 150	flat	●		±0,02 mm	±0,04 mm	168
500-712-20	0 - 150	flat	●	●	±0,02 mm	±0,04 mm	168
500-719-20	0 - 150	Ø 1,9 mm	●	●	±0,02 mm	±0,04 mm	168
500-707-20	0 - 200	flat			±0,02 mm	±0,04 mm	198
500-717-20	0 - 200	flat		●	±0,02 mm	±0,04 mm	198
500-703-20	0 - 200	flat	●		±0,02 mm	±0,04 mm	198
500-713-20	0 - 200	flat	●	●	±0,02 mm	±0,04 mm	198
500-708-20	0 - 300	flat			±0,03 mm	±0,05 mm	345
500-718-20	0 - 300	flat		●	±0,03 mm	±0,05 mm	345
500-704-20	0 - 300	flat	●		±0,03 mm	±0,05 mm	350
500-714-20	0 - 300	flat	●	●	±0,03 mm	±0,05 mm	350

No.	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-706-20	233	16,5	21	14,6	40	16
500-709-20	233	16,5	21	14,6	40	16
500-716-20	233	16,5	21	14,6	40	16
500-702-20	233	16,5	21	14,6	40	16
500-712-20	233	16,5	21	14,6	40	16
500-719-20	233	16,5	21	14,6	40	16
500-707-20	290	20	24,5	18,1	50	16
500-717-20	290	20	24,5	18,1	50	16
500-703-20	290	20	24,5	18,1	50	16
500-713-20	290	20	24,5	18,1	50	16
500-708-20	404	22	27,5	19,8	64	20
500-718-20	404	22	27,5	19,8	64	20
500-704-20	404	22	27,5	19,8	64	20
500-714-20	404	22	27,5	19,8	64	20

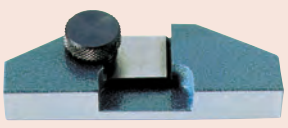




Beam 150 and 200 mm or 300 mm



With Wireless System U-WAVE fit



050083-10

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ABSOLUTE Coolant Proof Calipers IP67 with Carbide Tipped Jaws

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

Specifications

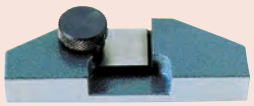
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



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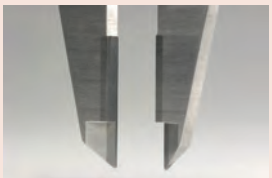


Carbide-tipped jaws

Series 500

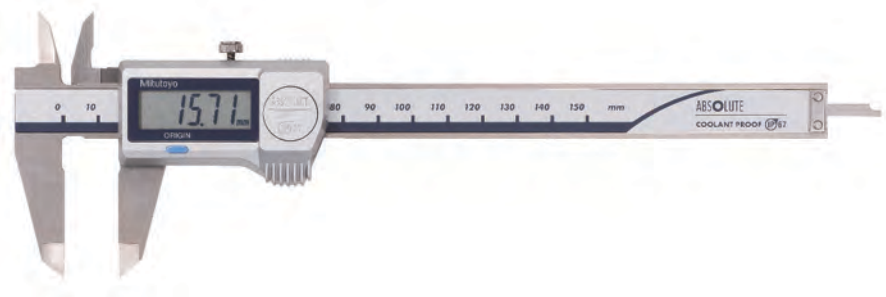
Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000045042

ABSOLUTE®

IP67

These robust calipers have carbide-tipped jaws and allow reliable measurements in a wide range of situations.
The ABSOLUTE Digimatic Carbide Caliper IP67 offers you the following benefits:

- Excellent resistance against water and dust (IP67 protection level) enabling use in machining situations that include splashing coolant fluid.
- Dustproof, complies with EN60529 withstands temporary complete immersion in water without suffering any damage
- Extraordinarily long battery life.



500-727-20

Metric — Carbide-tipped jaws for outside/inside measurement

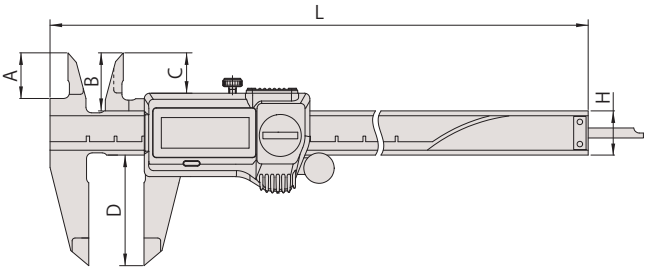
No.	Range [mm]	Depth bar	Thumb roller	Data output	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
500-727-20	0 - 150	flat		●	±0,02 mm	±0,04 mm	164
500-723-20	0 - 150	flat	●	●	±0,02 mm	±0,04 mm	168
500-728-20	0 - 200	flat		●	±0,02 mm	±0,04 mm	194
500-724-20	0 - 200	flat	●	●	±0,02 mm	±0,04 mm	198

No.	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-727-20	233	16,5	21	14,6	40	16
500-723-20	233	16,5	21	14,6	40	16
500-728-20	290	20	24,5	18,1	50	16
500-724-20	290	20	24,5	18,1	50	16

Metric — Carbide-tipped jaws for outside measurement

No.	Range [mm]	Depth bar	Thumb roller	Data output	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
500-721-20	0 - 150	flat	●	●	±0,02 mm	±0,04 mm	168
500-722-20	0 - 200	flat	●	●	±0,02 mm	±0,04 mm	198

No.	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-721-20	233	16,5	21	14,6	40	16
500-722-20	290	20	24,5	18,1	50	16



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Mitutoyo

ABSOLUTE AOS Digimatic Calipers

Series 500

ABSOLUTE®

This digimatic caliper allows you to take reliable measurements and offers you the following benefits:

- AOS (Advanced Onsite Sensor) induction type encoder used in top-of-the-line ABS coolant-proof calipers
- Thanks to the adoption of the electromagnetic induction type ABS encoder, this caliper can be used without concern for contamination on the scale face during measurement. Detection signal is not affected by dirt (water, oil, etc.) on surface of a scale.
- ABS (ABSOLUTE) scale requires no origin setting after power-on and has no limit to response speed.

500-181-30

Functions	Series 500
ORIGIN (ABS-Zero)	●
ON/OFF	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm (150, 200 mm) 11 mm (300 mm)
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF300	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
959143	Data Hold Unit
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range

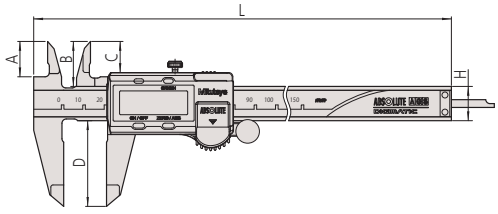
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Metric

No.	Range [mm]	Depth bar	Thumb roller	Data output	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
500-180-30	0 - 100	Ø 1,9 mm			±0,02 mm	±0,04 mm	143
500-201-30	0 - 100	Ø 1,9 mm		●	±0,02 mm	±0,04 mm	143
500-150-30	0 - 100	Ø 1,9 mm	●	●	±0,02 mm	±0,04 mm	143
500-181-30	0 - 150	flat			±0,02 mm	±0,04 mm	168
500-184-30	0 - 150	Ø 1,9 mm			±0,02 mm	±0,04 mm	168
500-161-30	0 - 150	flat		●	±0,02 mm	±0,04 mm	168
500-203-30	0 - 150	Ø 1,9 mm		●	±0,02 mm	±0,04 mm	168
500-151-30	0 - 150	flat	●	●	±0,02 mm	±0,04 mm	168
500-158-30	0 - 150	Ø 1,9 mm	●	●	±0,02 mm	±0,04 mm	168
500-182-30	0 - 200	flat			±0,02 mm	±0,04 mm	194
500-162-30	0 - 200	flat		●	±0,02 mm	±0,04 mm	194
500-152-30	0 - 200	flat	●	●	±0,02 mm	±0,04 mm	198
500-205-30	0 - 300	flat		●	±0,03 mm	±0,05 mm	345
500-153-30	0 - 300	flat	●	●	±0,03 mm	±0,05 mm	350

No.	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-180-30	182	16,5	21	14,5	40	16
500-201-30	182	16,5	21	14,5	40	16
500-150-30	182	16,5	21	14,5	40	16
500-181-30	233	16,5	21	14,5	40	16
500-184-30	233	16,5	21	14,5	40	16
500-161-30	233	16,5	21	14,5	40	16
500-203-30	233	16,5	21	14,5	40	16
500-151-30	233	16,5	21	14,5	40	16
500-158-30	233	16,5	21	14,5	40	16
500-182-30	290	20	24,5	18	50	16
500-162-30	290	20	24,5	18	50	16
500-152-30	290	20	24,5	18	50	16
500-205-30	404	22	27,5	19,8	64	20
500-153-30	404	22	27,5	19,8	64	20



Round depth bar type

Caliper with Wireless System U-WAVE fit

050083-10

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ABSOLUTE AOS Digimatic Calipers with Carbide Tipped Jaws

Functions	Series 500
ORIGIN (ABS-Zero)	●
ON/OFF	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●

Specifications

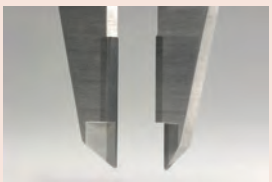
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

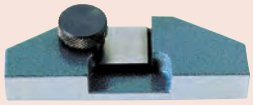
No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF300	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
959143	Data Hold Unit
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Carbide-tipped jaws



050083-10

Series 500

ABSOLUTE®

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

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

500-233-30

Metric — Carbide-tipped jaws for outside/inside measurement

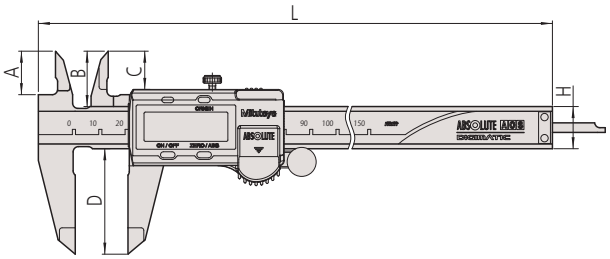
No.	Range [mm]	Depth bar	Thumb roller	Data output	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
500-234-30	0 - 150	Flat		●	±0,02 mm	±0,04 mm	168
500-155-30	0 - 150	Flat	●	●	±0,02 mm	±0,04 mm	168
500-236-30	0 - 200	Flat		●	±0,02 mm	±0,04 mm	194
500-157-30	0 - 200	Flat	●	●	±0,02 mm	±0,04 mm	194

No.	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-234-30	233	16,5	21	14,5	40	16
500-155-30	233	16,5	21	14,5	40	16
500-236-30	290	20	24,5	18	50	16
500-157-30	290	20	24,5	18	50	16

Metric — Carbide-tipped jaws for outside measurement

No.	Range [mm]	Depth bar	Thumb roller	Data output	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
500-233-30	0 - 150	Flat		●	±0,02 mm	±0,04 mm	168
500-154-30	0 - 150	Flat	●	●	±0,02 mm	±0,04 mm	168
500-235-30	0 - 200	Flat		●	±0,02 mm	±0,04 mm	194
500-156-30	0 - 200	Flat	●	●	±0,02 mm	±0,04 mm	194

No.	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-233-30	233	16,5	21	14,5	40	16
500-154-30	233	16,5	21	14,5	40	16
500-235-30	290	20	24,5	18	50	16
500-156-30	290	20	24,5	18	50	16



All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Mitutoyo

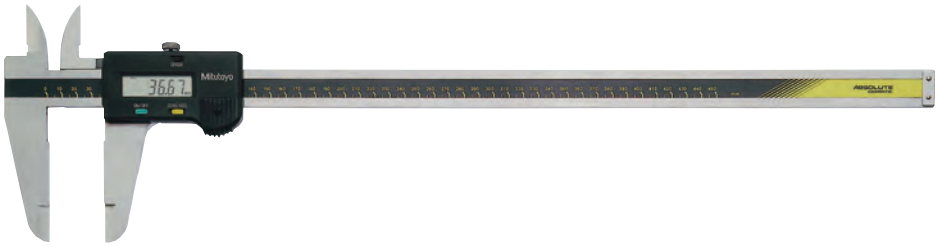
ABSOLUTE Digimatic Calipers for Long Range

Series 500

ABSOLUTE®

This digimatic caliper allows you to take reliable measurements and offers you the following benefits:

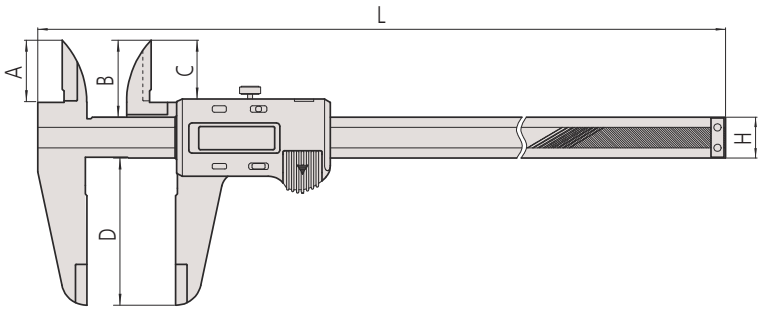
- It has a robust design (6 x 25 mm beam) for large measuring ranges.
- ABSOLUTE System delivers reliable measurements.
- The slider provides smooth, stable and comfortable operation.
- Character height: 10 mm.



500-500-10

Metric

No.	Range [mm]	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]
500-500-10	0 - 450	±0,05 mm	±0,07 mm	1170	630	38	47	35,9	90	25
500-501-10	0 - 600	±0,05 mm	±0,07 mm	1350	780	38	47	35,9	90	25
500-502-10	0 - 1000	±0,07 mm	±0,09 mm	3300	1240	50	60	49,8	130	32



Functions	Series 500
ORIGIN (ABS-Zero)	●
ON/OFF	●
Low voltage alarm	●
Data output	●

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 10 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 20000 hours under normal use

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
959143	Data Hold Unit

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

ABSOLUTE Digimatic Calipers with Nib Style Jaws

Series 550

This is a Digimatic caliper with nib-style jaws that lets you measure inside dimensions.
It offers you the following benefits:

- Rounded measuring surfaces enable you to measure inside dimensions.
- ABSOLUTE System delivers reliable measurements.

Dust- and Water-Protected
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ABSOLUTE
IP67

550-301-20
550-331-20

Functions	Series 550: 550-203-10 up to 550-207-10	550-301-20	550-331-20
ORIGIN (ABS-Zero)	●	●	●
PRESET			●
ON/OFF	●		
Auto Power OFF after 20 min. non use		●	●
Low voltage alarm	●	●	●
Data output	●	●	●

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height: 9 mm (200 mm), 11 mm (300 mm), 10 mm (>300 mm)
Delivered	In a case, including 1 battery
OFFSET	10 mm (IP67 type only)
Battery life	Approx. 5 years, 3,5 years (>300 mm)

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
959143	Data Hold Unit

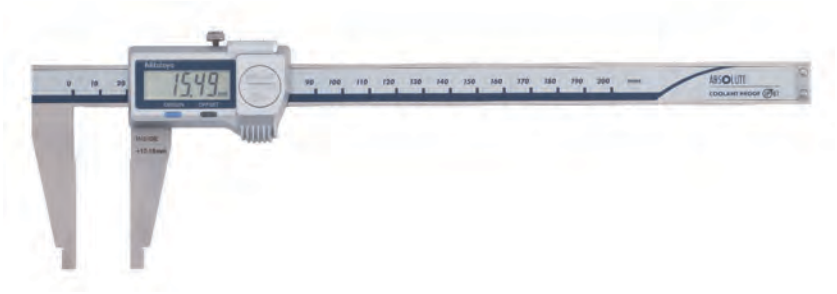
Optional accessories for IP67

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

With Wireless System U-WAVE fit
(0-200 mm and 0-300 mm only)



550-301-20

Metric — IP67 model

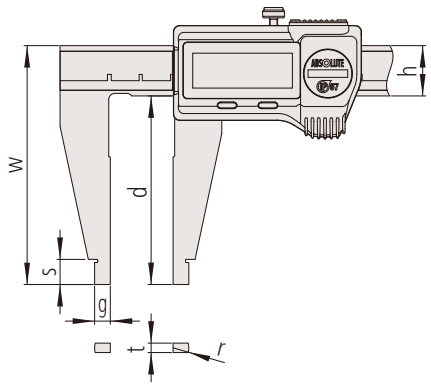
No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
550-301-20	0 - 200	10,1 mm	±0,03 mm	±0,03 mm	180
550-331-20	0 - 300	10,1 mm	±0,04 mm	±0,04 mm	365

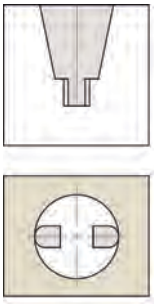
No.	d [mm]	g [mm]	s [mm]	w [mm]	h [mm]	t [mm]	R [mm]
550-301-20	60	5	8	76	16	3	5
550-331-20	75	5	12	95	20	3,8	5

Metric — Non IP67 model

No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
550-203-10	0 - 450	20,1 mm	±0,05 mm	±0,05 mm	1110
550-205-10	0 - 600	20,1 mm	±0,05 mm	±0,05 mm	1290
550-207-10	0 - 1000	20,1 mm	±0,07 mm	±0,07 mm	3350

No.	d [mm]	g [mm]	s [mm]	w [mm]	h [mm]	t [mm]	R [mm]
550-203-10	100	10	18	125	25	6	10
550-205-10	100	10	18	125	25	6	10
550-207-10	140	10	24	172	32	8	10





Round surfaces of jaws for measuring inside dimensions

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Mitutoyo

ABSOLUTE Digimatic Calipers with Nib Style and Standard Jaws

Series 551

This is a Digimatic caliper with nib-style and standard jaws.
It offers you the following benefits:

- Knife-shaped measuring surfaces allow you to take outside measurements.
- Rounded measuring surfaces enable you to measure inside dimensions.
- ABSOLUTE System delivers reliable measurements.

Dust- and Water-Protected

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ABSOLUTE®

IP67

551-301-20
551-331-20

551-301-20

Functions	Series 551		
	551-204-10 up to 551-207-10	551-301-20	551-331-20
ORIGIN (ABS-Zero)	●	●	●
PRESET			●
ON/OFF	●		
Auto Power OFF after 20 min. non use		●	●
Low voltage alarm	●	●	●
Data output	●	●	●

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height: 9 mm (200 mm), 11 mm (300 mm), 10 mm (>300 mm)
Delivered	In a case, including 1 battery
OFFSET	10 mm (IP67 type only)
Battery life	Approx. 5 years, 3,5 year (>300 mm)

Metric — IP67 model

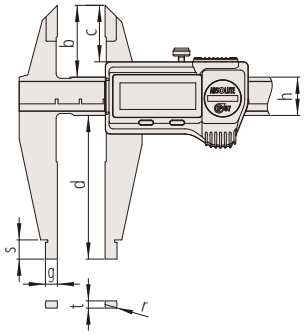
No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
551-301-20	0 - 200	10,1 mm	±0,03 mm	±0,03 mm	190
551-331-20	0 - 300	10,1 mm	±0,04 mm	±0,04 mm	400

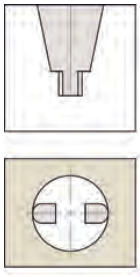
No.	b [mm]	c [mm]	d [mm]	g [mm]	s [mm]	h [mm]	t [mm]	R [mm]
551-301-20	30	23,6	60	5	8	16	3	5
551-331-20	40	32,2	90	5	10	20	3,8	5

Metric — Non IP67 model

No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
551-204-10	0 - 500	20,1 mm	±0,06 mm	±0,06 mm	1060
551-206-10	0 - 750	20,1 mm	±0,06 mm	±0,06 mm	1410
551-207-10	0 - 1000	20,1 mm	±0,07 mm	±0,07 mm	3430

No.	b [mm]	c [mm]	d [mm]	g [mm]	s [mm]	h [mm]	t [mm]	R [mm]
551-204-10	56	44,9	150	10	18	25	6	10
551-206-10	56	44,9	150	10	18	25	6	10
551-207-10	56	43,8	150	10	20	32	8	10





Round surface of jaws for measuring inside dimensions

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
959143	Data Hold Unit

Optional accessories for IP67

No.	Description
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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ABSOLUTE Digimatic Carbon Fibre Calipers IP66

Functions	Series 552
DATA (output with cable) / HOLD (display value)	●
ORIGIN (ABS-Zero)	●
PRESET	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

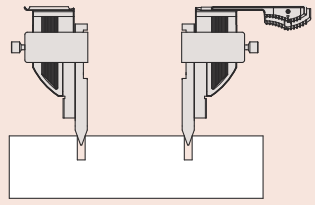
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 10 mm
Delivered	In a case, including 1 battery
OFFSET	20 mm
Battery life	Approx. 5000 hours

Optional accessories

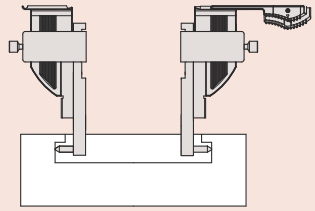
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type
914055	Center to Center Jaws Series 552, 2 pcs., (≥10,1mm) Metric
914057	Inside Groove Jaws Series 552, 2 pcs., Metric
914053	Holders (Clamps) Series 552, 2 pcs., 450 and 600mm Range
914054	Holders (Clamps) Series 552, 2 pcs., >600mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



hole center to center



inside goove diameter

Series 552

This is a lightweight standard model of Digimatic caliper with steel jaws.
It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP66 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.

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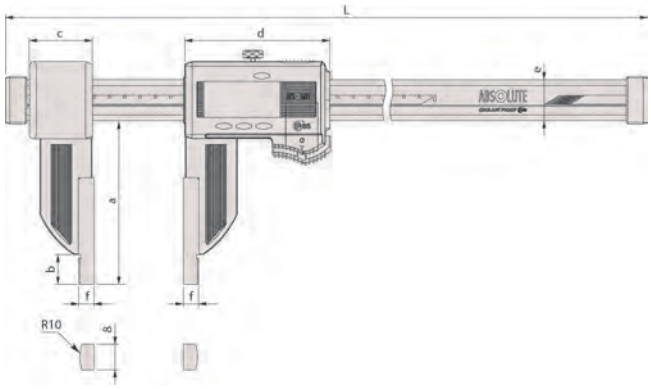
ABSOLUTE® IP66

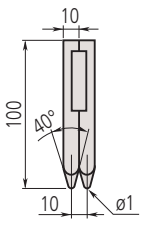
552-304-10

Metric

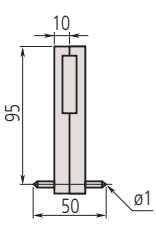
No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
552-302-10	0 - 450	20,1 mm	±0,04 mm	±0,04 mm	715
552-303-10	0 - 600	20,1 mm	±0,04 mm	±0,04 mm	790
552-304-10	0 - 1000	20,1 mm	±0,05 mm	±0,05 mm	1760
552-305-10	0 - 1500	20,1 mm	±0,09 mm	±0,09 mm	2160
552-306-10	0 - 2000	20,1 mm	±0,12 mm	±0,12 mm	2560

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]
552-302-10	640	100	18	41,2	91,8	25	10
552-303-10	790	100	18	41,2	91,8	25	10
552-304-10	1230	150	24	62,8	113,8	32	10
552-305-10	1740	150	24	62,8	113,8	32	10
552-306-10	2250	150	24	62,8	113,8	32	10





914055



914057

914053

914054

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Mitutoyo

ABSOLUTE Digimatic Carbon Fibre Calipers IP66 with Ceramic Jaws

Series 552

This is a lightweight standard model of Digimatic caliper with ceramic jaws.
It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP66 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.

Safety Dust- and Water-Protected
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www.tuv.com ID 0000022582

ABSOLUTE®
IP66

Functions	Series 552
DATA (output with cable) / HOLD (display value)	●
ORIGIN (ABS-Zero)	●
PRESET	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

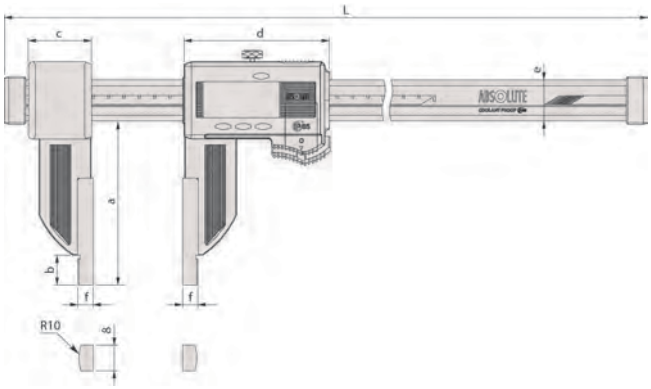
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 10 mm
Delivered	In a case, including 1 battery
OFFSET	20 mm
Battery life	Approx. 5000 hours

552-156-10

Metric

No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
552-155-10	0 - 450	20,1 mm	±0,04 mm	±0,04 mm	715
552-156-10	0 - 600	20,1 mm	±0,04 mm	±0,04 mm	790

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]
552-155-10	640	100	18	41,2	91,8	25	10
552-156-10	790	100	18	41,2	91,8	25	10

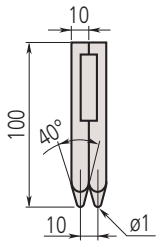


Optional accessories

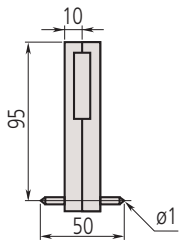
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type
914055	Center to Center Jaws Series 552, 2 pcs., (≥10,1mm) Metric
914057	Inside Groove Jaws Series 552, 2 pcs., Metric
914053	Holders (Clamps) Series 552, 2 pcs., 450 and 600mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



914055



914057

914053

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ABSOLUTE Digimatic Carbon Fibre Calipers IP66 with Extra Long Jaws

Functions	Series 552
ORIGIN (ABS-Zero)	●
PRESET	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 10 mm
Delivered	In a case, including 1 battery
OFFSET	20 mm
Battery life	Approx. 5000 hours

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 552

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ABSOLUTE® IP66

This is a lightweight standard model of Digimatic caliper with extra-long jaws.
It offers you the following benefits:

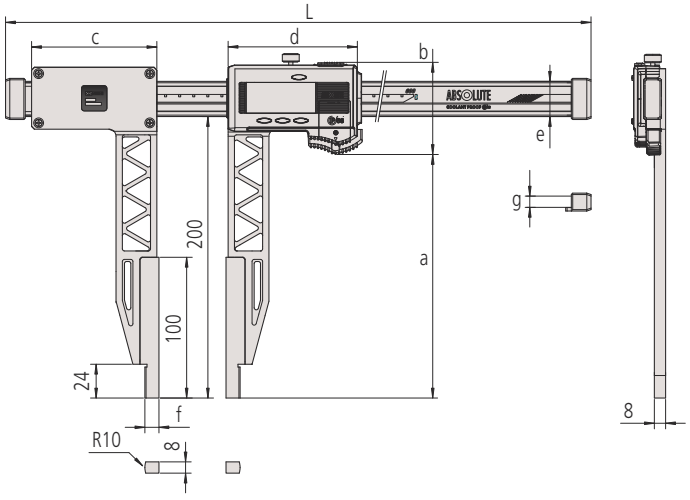
- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP66 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.

552-151-10

Metric

No.	Range [mm]	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
552-150-10	0 - 450	20,1 mm	±0,06 mm	±0,06 mm	1215
552-151-10	0 - 600	20,1 mm	±0,06 mm	±0,06 mm	1290
552-152-10	0 - 1000	20,1 mm	±0,07 mm	±0,07 mm	2090
552-153-10	0 - 1500	20,1 mm	±0,11 mm	±0,11 mm	2490
552-154-10	0 - 2000	20,1 mm	±0,14 mm	±0,14 mm	2890

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]
552-150-10	680	173	65,5	89	91,8	25	10	8
552-151-10	830	173	65,5	89	91,8	25	10	8
552-152-10	1280	170,5	73	110	113,8	32	10	12
552-153-10	1790	170,5	73	110	113,8	32	10	12
552-154-10	2300	170,5	73	110	113,8	32	10	12



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Mitutoyo

ABSOLUTE Digimatic Carbon Fibre Calipers IP66 for Interchangeable Jaws/ Scriber

Series 552

This is a lightweight standard model of Digimatic caliper with optional interchangeable jaws.
It offers you the following benefits:

- Its ultra-lightweight design (with carbon fibre reinforced material) reduces total weight by up to 50%.
- It has excellent resistance against water and dust (IP66 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Direct readout of inside measurements from the LCD (you can easily set the offset value by using the offset button).
- Preset function lets you set a desired starting point.

Safety Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000022582

ABSOLUTE®
IP66

552-182-10
with optional accessories 07CZA056

Functions	Series 552
ORIGIN (ABS-Zero)	●
PRESET	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 10 mm
Delivered	In a case, including 1 battery, scriber clamps (2 pcs.)
OFFSET	20 mm
Battery life	Approx. 5000 hours

Standard accessories

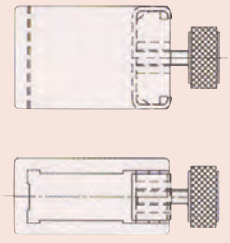
No.	Description
05GZA033	Scriber Clamp, for 9x9mm Scriber

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



05GZA033

Metric

No.	Range [mm]	Max. Permissible Error E MPE	Mass [g]
552-181-10	0 - 450	±0,04 mm	650
552-182-10	0 - 600	±0,04 mm	725
552-183-10	0 - 1000	±0,05 mm	1480
552-184-10	0 - 1500	±0,09 mm	1880
552-185-10	0 - 2000	±0,12 mm	2280

Standard contact point	Measuring range		**0-450 mm** / 0-18"	**0-650 mm** / 0-24"	**0-1000 mm** / 0-40"	**0-1500 mm** / 0-60"	**0-2500 mm** / 0-80"
	Combination error		**± 0,06** / ± 0.0025"	**± 0,06** / ± 0.0025"	**± 0,07** / ± 0.0030"	**± 0,11** / ± 0.0045"	**± 0,14** / ± 0.0055"
Inside Point type	Measuring range (mm)	IN	**50-500 mm**	**50-650 mm**	**50-1050 mm**	**50-1550 mm**	**50-2550 mm**
		OUT	**0-450 mm**	**0-600 mm**	**0-1000 mm**	**0-1500 mm**	**0-2500 mm**
	Measuring range (in)	IN	**50,8-500,8 mm** / 2-20"	**50,8-650,8 mm** / 2-26"	**50,8-1050,8 mm** / 2-42"	**50,8-1550,8 mm** / 2-62"	**50,8-2550,8 mm** / 2-82"
		OUT	**0-450 mm** / 0-18"	**0-600 mm** / 0-24"	**0-1000 mm** / 0-40"	**0-1500 mm** / 0-60"	**0-2500 mm** / 0-80"
	Combination error		**± 0,09 mm** / ± 0.0035"	**± 0,09 mm** / ± 0.0035"	**± 0,10 mm** / ± 0.0040"	**± 0,14 mm** / ± 0.0055"	**± 0,17 mm** / ± 0.0070"
Centerline type	Measuring range (mm)		**30-480 mm**	**30-630 mm**	**30-1030 mm**	**30-1530 mm**	**30-2030 mm**
	Measuring range (in)		**30,48-480,8 mm** / 1.2-19.2"	**30,48-630,48 mm** / 1.2-25.2"	**30,48-1030,48 mm** / 1.2-41.2"	**30,48-1530,48 mm**	**30,48-2030,48 mm**
	Combination error		**± 0,08 mm** / ± 0.0030"	**± 0,08 mm** / ± 0.0030"	**± 0,09 mm** / ± 0.0035"	**± 0,13 mm** / ± 0.0055"	**± 0,16 mm** / ± 0.0065"
Scriber type	Measuring range (mm)		**30-480 mm**	**30-630 mm**	**30-1030 mm**	**30-1530 mm**	**30-2030 mm**
	Measuring range (in)		**30,48-480,8 mm** / 1.2-19.2"	**30,48-630,48 mm** / 1.2-25.2"	**30,48-1030,48 mm** / 1.2-41.2"	**30,48-1530,48 mm** / 1.2-61.2"	**30,48-2030,48 mm** / 1.2-81.2"
	Combination error		**± 0,10** / ± 0.0040"	**± 0,10** / ± 0.0040"	**± 0,11** / ± 0.0045"	**± 0,15** / ± 0.0060"	**± 0,18** / ± 0.0070"
Surface Plate type + Scriber	Measuring range		**0-450 mm** / 0-17"	**0-600 mm** / 0-23.7"	**0-1000 mm** / 0-39.4"	**0-1500 mm** / 0-59.4"	**0-2500 mm** / 0-79.6"
	Combination error		**± 0,10** / ± 0.0040"	**± 0,10** / ± 0.0040"	**± 0,11** / ± 0.0045"	**± 0,15** / ± 0.0060"	**± 0,18** / ± 0.0070"
Surface Plate type + Inside Point type	Measuring range (mm)		**25-475 mm**	**25-625 mm**	**25-1025 mm**	**25-1525 mm**	**25-2025 mm**
			0-450 mm	**0-600 mm**	**0-1000 mm**	**0-1500 mm**	**0-2000 mm**
	Measuring range (in)		**25,4-475,4 mm** / 1-19"	**25,4-625,4 mm** / 1-24"	**25,4-1025,4 mm** / 1-41"	**25,4-1525,4 mm** / 1-62"	**25,4-2025,4 mm** / 1-81"
			0-450 mm / 0-18"	**0-600 mm** / 0-24"	**0-1000 mm** / 0-40"	**0-1500 mm** / 0-60"	**0-2000 mm** / 0-80"
	Combination error		**± 0,12 mm** / ± 0.0025"	**± 0,12 mm** / ± 0.0050"	**± 0,13 mm** / ± 0.0055"	**± 0,17 mm** / ± 0.0070"	**± 0,20 mm** / ± 0.0080"
Surface Plate type + Center Line type	Measuring range (mm)		**15-465 mm**	**15-615 mm**	**15-1015 mm**	**15-1515 mm**	**15-2015 mm**
			15,254-465,24 mm / 0,6-18.6"	**15,24-615,24 mm** / 0,6-24.6"	**15,24-1015,24 mm** / 0,6-40.6"	**15,24-1515,24 mm** / 0,6-60.6"	**15,24-2015,24 mm** / 0,6-80.6"
	Combination error		**± 0,11 mm**/ ± 0.0045"	**± 0,11 mm**/ ± 0.0045"	**± 0,12 mm**/ ± 0.0050"	**± 0,16 mm**/ ± 0.0066"	**± 0,19 mm**/ ± 0.0075"

Accuracy with different Interchangeable Jaws

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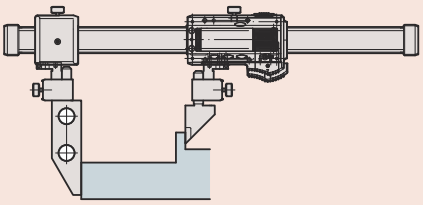
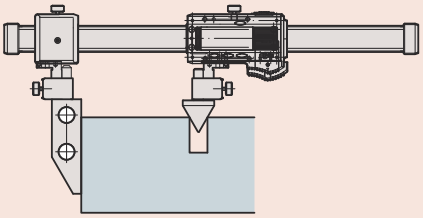
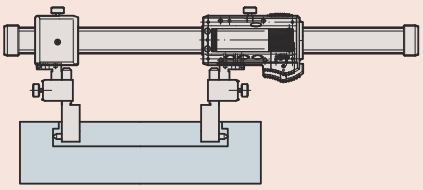
ABSOLUTE Digimatic Carbon Fibre Calipers IP66 for Interchangeable Jaws/ Scriber



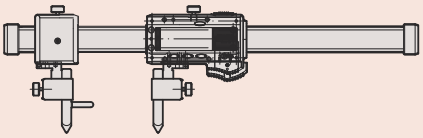
Surface plate type + Standard type



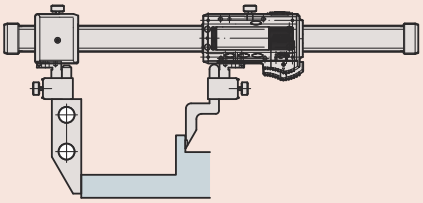
Surface plate type + Centrerline type



Inside point type



Scriber type



Surface plate type + Scriber for height gages

Series 552

Interchangeable jaws (optional)

07CZA056

07CZA057

07CZA044

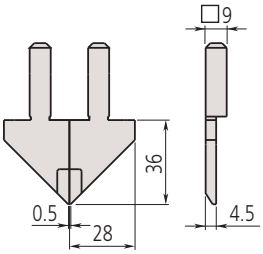
07CZA058

07CZA055

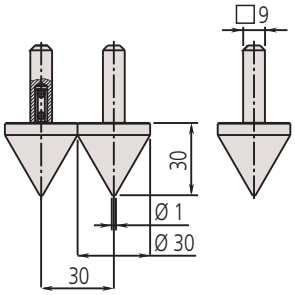
07GZA000.

Metric

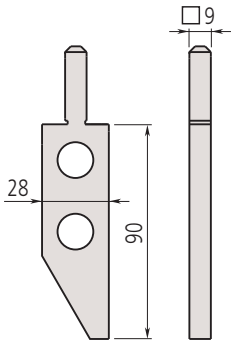
No.	Type	Mass [g]
07CZA056	Standard (pair)	90,6
07CZA057	Centreline (pair)	119,6
07CZA044	Surface plate (1 piece)	191,3
07CZA058	Inside point (pair)	98,8
07CZA055	Scriber (pair)	63,2
07GZA000.	Scriber for height gauges (1 piece)	120



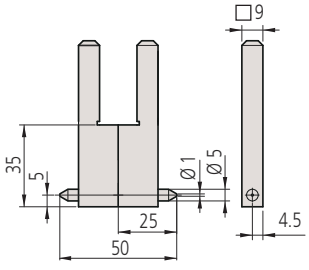
Standard type



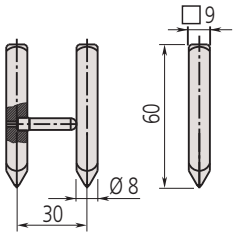
Centreline type



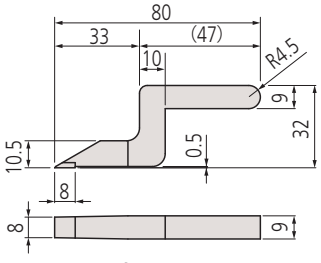
Surface plate type



Inside point type



Scriber type



Scriber for height gages

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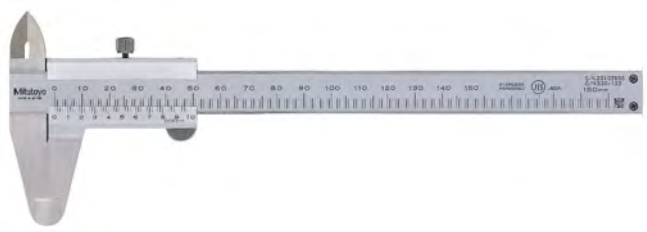
Mitutoyo

Vernier Calipers

Series 530

This is a standard type of vernier caliper that offers you the following benefits:

- Main scale and vernier scale satin chrome finish gives you high readability.
- Raised sliding surfaces.



530-122

Metric

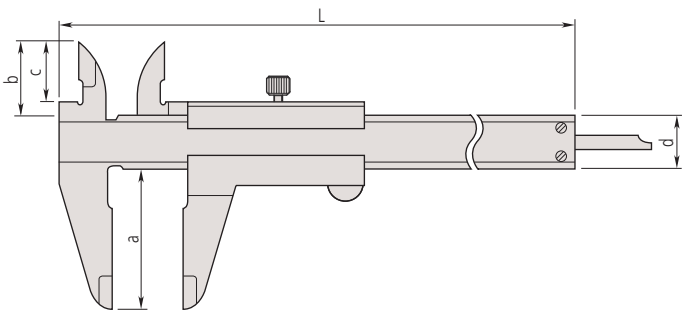
Metric

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
530-122	0 - 150	0,02 mm	flat	±0,03 mm	±0,05 mm	143	229	40	21	17	16
530-123	0 - 200	0,02 mm	flat	±0,03 mm	±0,05 mm	180	288	50	24,5	20,5	16
530-124	0 - 300	0,02 mm	flat	±0,04 mm	±0,06 mm	355	404	64	27,5	22	20
530-100	0 - 100	0,05 mm	Ø 1,9 mm	±0,05 mm	±0,07 mm	128	182	40	21,5	17	16
530-102	0 - 150	0,05 mm	Ø 1,9 mm	±0,05 mm	±0,07 mm	144	229	40	21	17	16
530-101	0 - 150	0,05 mm	flat	±0,05 mm	±0,07 mm	143	229	40	21	17	16
530-108	0 - 200	0,05 mm	flat	±0,05 mm	±0,07 mm	180	288	50	24,5	20,5	16
530-109	0 - 300	0,05 mm	flat	±0,08 mm	±0,1 mm	355	404	64	27,5	22	20
530-501	0 - 600	0,05 mm	without	±0,1 mm	±0,12 mm	1300	780	90	47	38	25
530-502	0 - 1000	0,05 mm	without	±0,15 mm	±0,17 mm	3300	1240	130	60	50	32

Metric/Inch

Metric/Inch

No.	Range ["]	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
530-312	0 - 6	0 - 150	0,02 mm/ 0,001"	flat	±0,03 mm	±0,05 mm	143	229	40	21	17	16
530-118	0 - 8	0 - 200	0,02 mm/ 0,001"	flat	±0,03 mm	±0,05 mm	180	288	50	24,5	20,5	16
530-119	0 - 12	0 - 300	0,02 mm/ 0,001"	flat	±0,04 mm	±0,06 mm	355	404	64	27,5	22	20
530-104	0 - 6	0 - 150	0,05 mm/ 1/128"	flat	±0,05 mm	±0,07 mm	143	229	40	21	17	16
530-316	0 - 6	0 - 150	0,05 mm/ 1/128"	flat	±0,05 mm	±0,07 mm	145	229	40	21	17	16
530-114	0 - 8	0 - 200	0,05 mm/ 1/128"	flat	±0,05 mm	±0,07 mm	180	288	50	24,5	20,5	16
530-115	0 - 12	0 - 300	0,05 mm/ 1/128"	flat	±0,08 mm	±0,1 mm	355	404	64	27,5	22	20

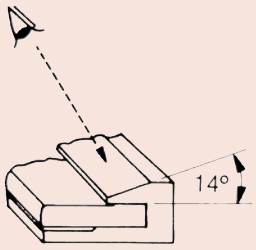


Specifications

Delivered	In a box

Optional accessories

No.	Description
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range



Easy reading due to vernier scales inclined by 14 degrees

Metr.ISO-Gew			
Nenn est. ext. extr. ϕ mm	Stg. Passo Paso mm	Kern fond int. nucleo ϕ mm	Bohr trap meche broca ϕ mm
3	0.5	2.46	2.5
4	0.7	3.24	3.3
5	0.8	4.13	4.2
6	1	4.92	5
8	1.25	6.65	6.8
10	1.5	8.38	8.5
12	1.75	10.11	10.2
16	2	13.84	14
20	2.5	17.29	17.5
Whitworth			
ϕ in.	Gg/in.	ϕ mm	ϕ mm
1/4	20	4.72	5.0
5/16	18	6.13	6.4
3/8	16	7.49	7.7
1/2	12	9.99	10.25
5/8	11	12.92	13.25
3/4	10	15.8	16.25
7/8	9	18.61	19
1	8	21.34	21.75
101995			

530-316 only

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Vernier Calipers with Carbide Tipped Jaws

Series 530

These Vernier Calipers have carbide-tipped jaws and offers you the following benefits:
- Main scale and vernier scale satin chrome finish gives you high readability.
- Raised sliding surfaces.

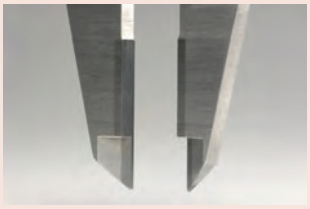
530-320

Specifications

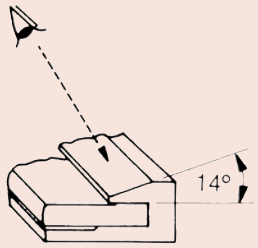
Delivered	In a box

Optional accessories

No.	Description
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range



Carbide-tipped measuring surfaces



Easy reading due to vernier scales inclined by 14 degrees

Metric

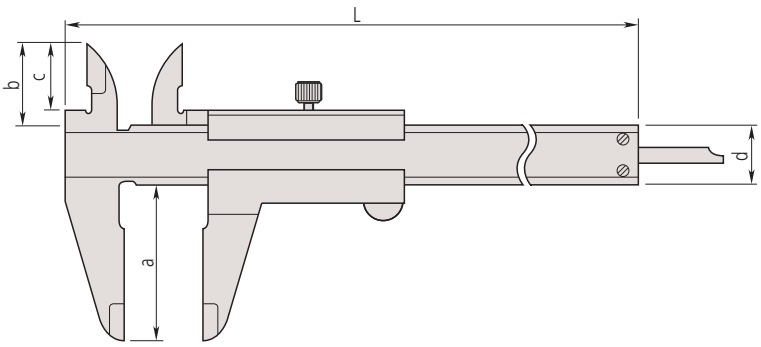
Carbide-tipped jaws for outside/inside measurement

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
530-335	0 - 150	0,05 mm	flat	±0,05 mm	±0,07 mm	145	229	40	21	17	16

Metric

Carbide-tipped jaws for outside measurement

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
530-320	0 - 150	0,05 mm	flat	±0,05 mm	±0,07 mm	145	229	40	21	17	16
530-321	0 - 200	0,05 mm	flat	±0,05 mm	±0,07 mm	181	288	50	24,5	20,5	16
530-322	0 - 300	0,05 mm	flat	±0,08 mm	±0,1 mm	355	404	64	27,5	22	20



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Mitutoyo

Vernier Calipers with Thumb Clamp

Series 531

These Vernier Calipers with thumb clamp only moves when you depress the spring-loaded thumb grip.

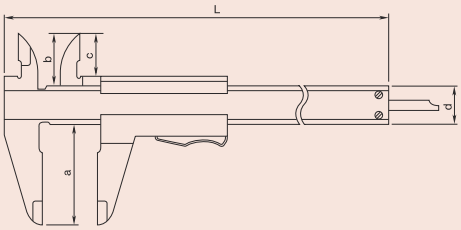
531-122

Specifications

Delivered	In a box

Optional accessories

No.	Description
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range



Metric

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
531-101	0 - 150	0,05 mm	flat	±0,05 mm	±0,07 mm	142	229	40	21,5	17	16
531-102	0 - 200	0,05 mm	flat	±0,05 mm	±0,07 mm	175	288	50	25	20,5	16
531-103	0 - 300	0,05 mm	flat	±0,08 mm	±0,1 mm	360	403	64	27,5	22	20

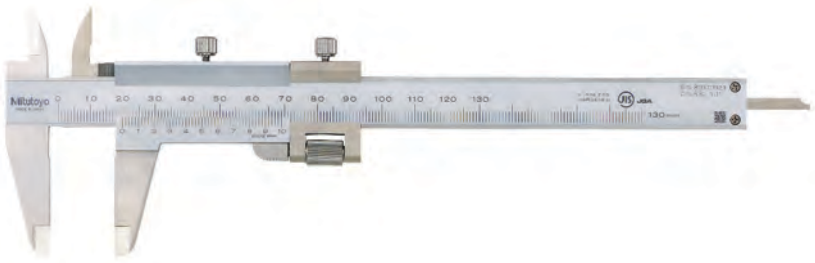
Metric/Inch

No.	Range ["]	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
531-122	0 - 6	0 - 150	0,05 mm/ 1/128"	flat	±0,05 mm	±0,07 mm	142	229	40	21,5	17	16
531-108	0 - 8	0 - 200	0,05 mm/ 1/128"	flat	±0,05 mm	±0,07 mm	175	288	50	25	20,5	16
531-109	0 - 12	0 - 300	0,05 mm/ 1/128"	flat	±0,08 mm	±0,1 mm	360	403	64	27,5	22	20

Vernier Calipers with Fine Adjustment

Series 532

These Vernier Calipers have fine-adjustment to help you with slider positioning.



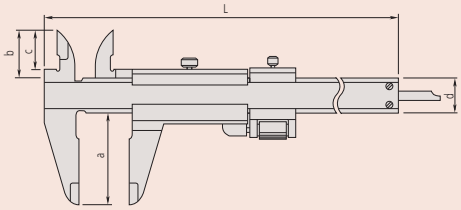
532-101

Specifications

Delivered	In a box

Optional accessories

No.	Description
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range



Metric

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
532-101	0 - 130	0,02 mm	flat	±0,03 mm	±0,05 mm	165	229	40	21,5	17	16
532-102	0 - 180	0,02 mm	flat	±0,03 mm	±0,05 mm	202	288	50	25	20,5	16
532-103	0 - 280	0,02 mm	flat	±0,04 mm	±0,06 mm	395	403	64	27,5	22	20

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Dial Calipers

Series 505

These dial calipers allows you to take reliable measurements and offers you the following benefits:

- Ultra-smooth sliding and high shock protection.
- Easy to read dial with large character height.

505-730

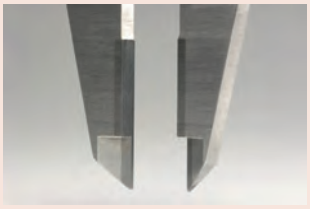
505-732

Specifications

Delivered	In a case

Optional accessories

No.	Description
050083-10	Depth Base Attachment for Caliper, 75mm width, 75mm width for 100, 150, 200mm Range
050084-10	Depth Base Attachment for Caliper, 100mm width for 100, 150, 200mm Range
050085-10	Depth Base Attachment for Caliper, 125mm width for 300mm Range



Carbide tipped jaws outside
505-734 / 505-735

Carbide tipped jaws inside and outside
505-735

Metric

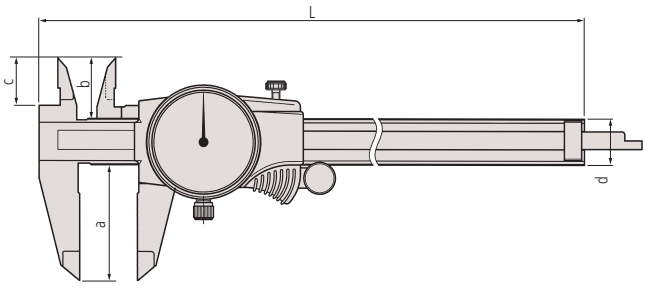
No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
505-730	0 - 150	0,02 mm 2 mm/rev	flat	±0,03 mm	±0,05 mm	175	231	40	21	16,5	16
505-732	0 - 150	0,01 mm 1 mm/rev	flat	±0,02 mm	±0,04 mm	176	231	40	21	16,5	16
505-731	0 - 200	0,02 mm 2 mm/rev	flat	±0,03 mm	±0,05 mm	185	288	50	24,5	20	16
505-733	0 - 200	0,01 mm 1 mm/rev	flat	±0,03 mm	±0,05 mm	186	288	50	24,5	20	16
505-745	0 - 300	0,02 mm 2 mm/rev	flat	±0,04 mm	±0,06 mm	370	404	64	27,5	22	20

Metric Carbide-tipped jaws for outside/inside measurement

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
505-735	0 - 150	0,02 mm 2mm/rev	flat	±0,03 mm	±0,05 mm	175	231	40	21	16,5	16

Metric Carbide-tipped jaws for outside measurement

No.	Range [mm]	Graduation	Depth bar	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
505-734	0 - 150	0,02 mm 2 mm/rev	flat	±0,03 mm	±0,05 mm	175	231	40	21	16,5	16



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Vernier Calipers with Nib Style and Standard Jaws

Series 533

These vernier calipers with nib style and standard jaws let you take easy, metric measurements
They offer you the following benefits:

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

533-404
Without fine adjustment

Metric

With fine adjustment

No.	Range [mm]	Graduation	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
533-504	0 - 500	0,02 mm	20,1 mm	±0,05 mm	±0,05 mm	1250
533-505	0 - 750	0,02 mm	20,1 mm	±0,06 mm	±0,06 mm	1550
533-506	0 - 1000	0,02 mm	20,1 mm	±0,07 mm	±0,07 mm	3450

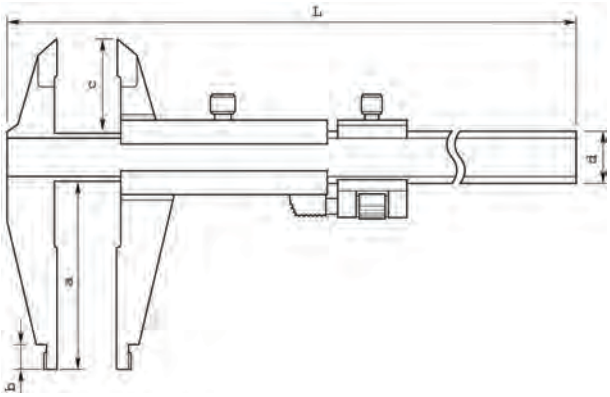
No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
533-504	680	150	15	56	25
533-505	963	150	15	56	25
533-506	1230	150	20	56	32

Metric

Without fine adjustment

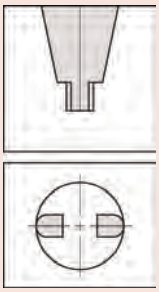
No.	Range [mm]	Graduation	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
533-404	0 - 500	0,05 mm	20,1 mm	±0,1 mm	±0,1 mm	1200
533-405	0 - 750	0,05 mm	20,1 mm	±0,12 mm	±0,12 mm	1500
533-406	0 - 1000	0,05 mm	20,1 mm	±0,15 mm	±0,15 mm	3300

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
533-404	680	150	15	56	25
533-405	963	150	15	56	25
533-406	1230	150	20	56	32



Specifications

Delivered	In a box



Round surface of jaws for measuring inside dimensions

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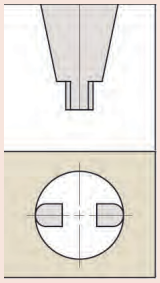
Vernier Calipers with Nib Style Jaws

Specifications

Delivered	In a box

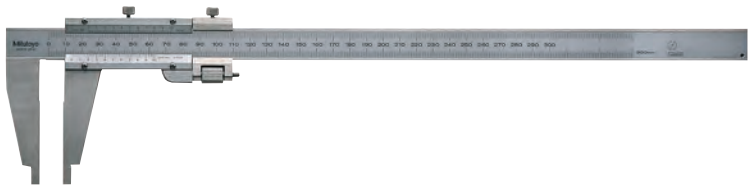


Rounded outside measuring surfaces for measuring inside dimensions

Series 160

These vernier calipers with nib style jaws come with or without fine adjustment.
They offer you the following benefits:

- For the metric only models the top offset vernier scale allows you to directly read the inside dimensions without having to add the nib widths.
- Main scale and vernier scale satin chrome finish gives you high readability.



160-127

160-101

Metric — With fine adjustment

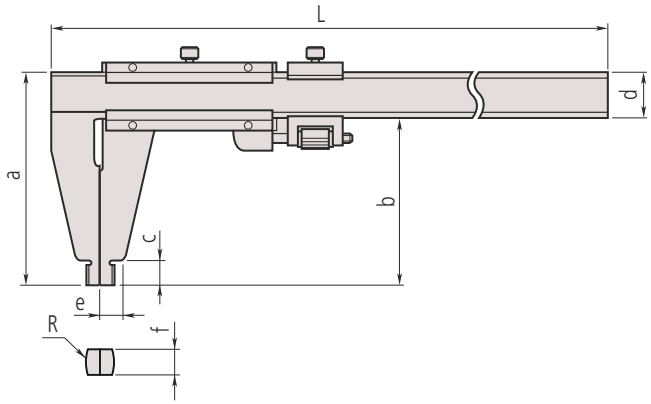
No.	Range [mm]	Graduation	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
160-127	0 - 300	0,02 mm	10,1 mm	±0,04 mm	±0,04 mm	450
160-128	0 - 450	0,02 mm	20,1 mm	±0,05 mm	±0,05 mm	1200
160-101	0 - 600	0,02 mm	20,1 mm	±0,05 mm	±0,05 mm	1400
160-104	0 - 1000	0,02 mm	20,1 mm	±0,07 mm	±0,07 mm	3500

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	R [mm]
160-127	445	95	75	12	20	10	38	5
160-128	630	125	100	18	25	14,8	6	10
160-101	780	125	100	18	25	14,8	6	10
160-104	1240	172	140	24	32	17	8	10

Metric — Without fine adjustment

No.	Range [mm]	Graduation	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
160-130	0 - 450	0,05 mm	20,1 mm	±0,1 mm	±0,1 mm	1100
160-131	0 - 600	0,05 mm	20,1 mm	±0,1 mm	±0,1 mm	1300
160-132	0 - 1000	0,05 mm	20,1 mm	±0,15 mm	±0,15 mm	3300

No.	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	R [mm]
160-130	630	125	100	18	25	14,8	6	10
160-131	780	125	100	18	25	14,8	6	10
160-132	1240	172	140	24	32	17	8	10



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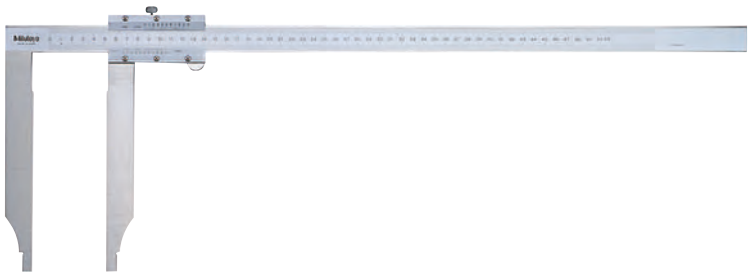
Vernier Calipers with Long Jaws

Series 534

These vernier calipers with long jaws come with or without fine adjustment and let you measure hard-to-reach features.
They offer you the following benefits:

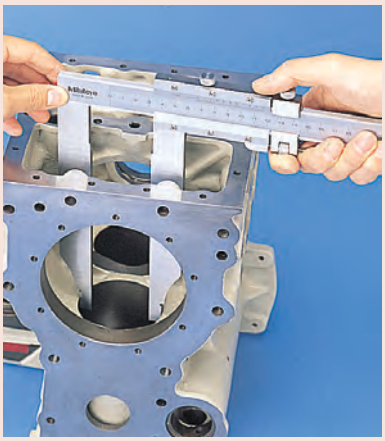
- Long jaws enable you to measure hard-to-reach workpiece features.
- The top offset vernier scale allows you to directly read the inside dimensions without having to add the jaw blade width.

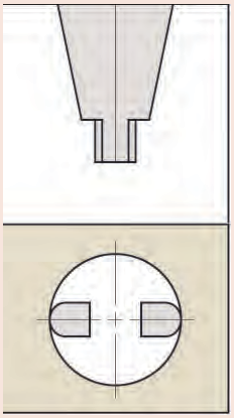


534-110

Specifications

Delivered	In a box





Rounded outside measuring surfaces for measuring inside dimensions

Metric — With fine adjustment

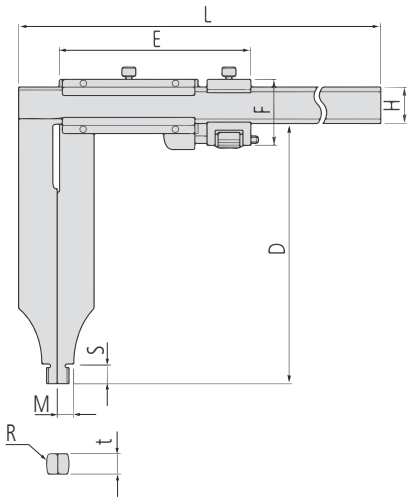
No.	Range [mm]	Graduation	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
534-113	0 - 300	0,02 mm	10,1 mm	±0,04 mm	±0,04 mm	460
534-114	0 - 500	0,02 mm	20,1 mm	±0,06 mm	±0,06 mm	1500
534-115	0 - 750	0,02 mm	20,1 mm	±0,08 mm	±0,08 mm	2900
534-116	0 - 1000	0,02 mm	20,1 mm	±0,1 mm	±0,1 mm	3500

No.	L [mm]	D [mm]	E [mm]	F [mm]	H [mm]	R [mm]	M [mm]	S [mm]	t [mm]
534-113	445	90	76,6	38	20	5	7	12	3,8
534-114	682	200	89	51	25	10	12	18,5	6
534-115	995	200	150	62,5	32	10	12	18,5	6
534-116	1230	200	150	62,5	32	10	12	18,5	8

Metric — Without fine adjustment

No.	Range [mm]	Graduation	Inside measuring from	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
534-109	0 - 300	0,05 mm	10,1 mm	±0,07 mm	±0,07 mm	400
534-110	0 - 500	0,05 mm	20,1 mm	±0,13 mm	±0,13 mm	1400

No.	L [mm]	D [mm]	E [mm]	H [mm]	R [mm]	M [mm]	S [mm]	t [mm]
534-109	445	90	76,5	20	5	7	12	3,8
534-110	682	200	89	25	10	12	18,5	6



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ABSOLUTE Digimatic Calipers with Constant Measuring Force

Functions	Series 573
ORIGIN (ABS-Zero)	●
ON/OFF	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
Data output	●

Specifications

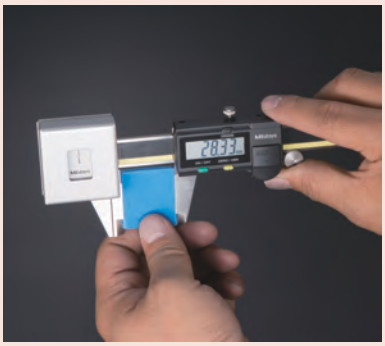
Digital step	0,01 mm
Max. response speed	Unlimited
Measuring force	0.5-1 N
Jaw retraction	0,3 mm
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 18000 hours

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF300	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
959143	Data Hold Unit

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



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

Series 573

ABSOLUTE®

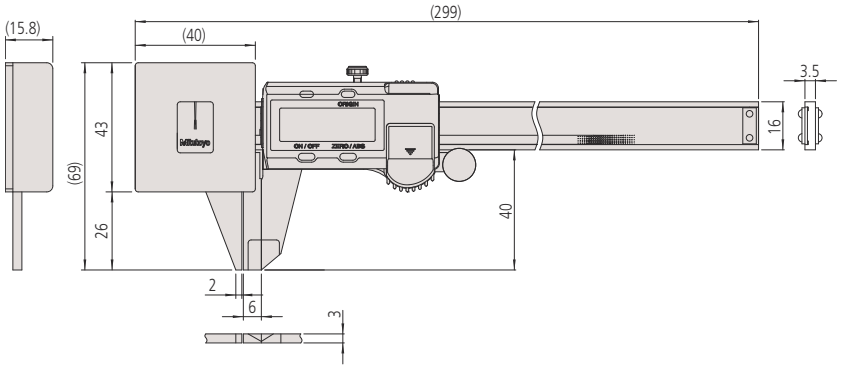
The ABSOLUTE Digimatic calipers have a load cell and help you measure elastic workpieces.
They offer you the following benefits:

- Due to their low and constant measuring force these calipers are ideal for measuring elastic workpieces such as plastic and rubber parts that standard calipers cannot measure accurately.
- Large character height (alleviation of fatigue with the high-contrast LCD)
- The ABS (ABSOLUTE) scale requires no origin setting after power-on and also has no limit to response speed.
- Extraordinary battery life.

573-191-30

Metric

No.	Range [mm]	Max. Permissible Error E MPE	Mass [g]
573-191-30	0 - 180	±0,05 mm	253



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Mitutoyo

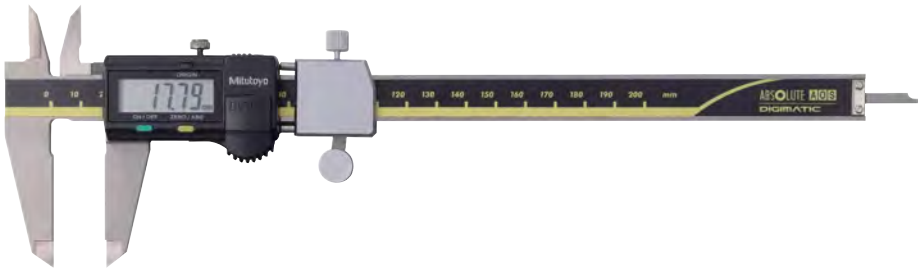
ABSOLUTE Digimatic Calipers for Tolerance Measurement

Series 573

ABSOLUTE®

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

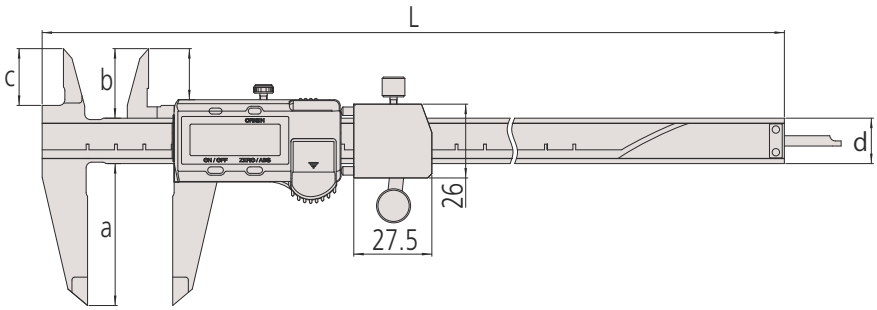
- Large character height (alleviation of fatigue with the high-contrast LCD)
- The ABS (ABSOLUTE) scale requires no origin setting after power-on and also has no limit to response speed.
- Extraordinary battery life.



573-182-30

Metric

No.	Range [mm]	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]
573-181-30	0 - 100	±0,02 mm	±0,04 mm	213	233	40	21	16,5	16
573-182-30	0 - 150	±0,02 mm	±0,04 mm	233	290	50	24,5	20	16



Functions	Series 573
ORIGIN (ABS-Zero)	●
ON/OFF	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
Data output	●

Specifications

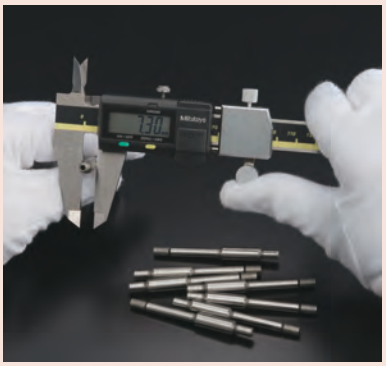
Digital step	0,01 mm
Max. response speed	Unlimited
Measuring force	7-14 N
Jaw retraction	2 mm
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 18000 hours

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
959143	Data Hold Unit

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



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Scribing Calipers with Carbide Tipped Jaws

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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm (150, 200 mm) 11 mm (300 mm)
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

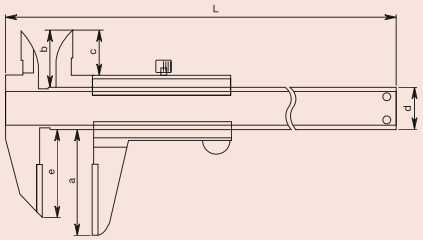
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Specifications

Delivered	In a case



Series 573

These Calipers are designed for scribing tasks.

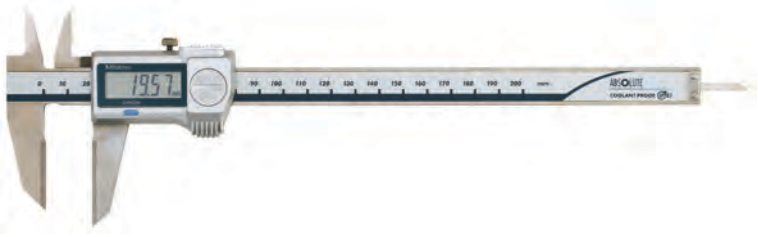
Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000045042

ABSOLUTE®

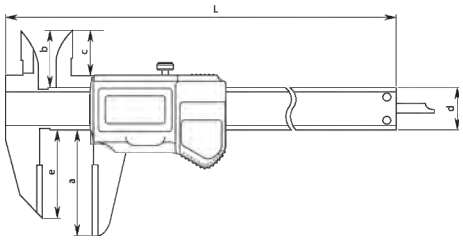
IP67



573-677-20

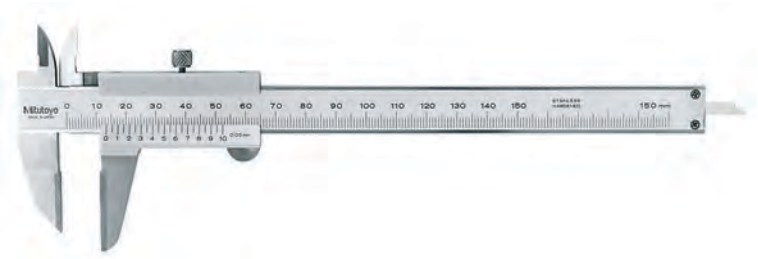
Metric

No.	Range [mm]	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
573-676-20	0 - 150	±0,02 mm	±0,04 mm	166	229	46	21,5	17	16	33
573-677-20	0 - 200	±0,02 mm	±0,04 mm	196	288	50	25	20,5	16	43
573-679-20	0 - 300	±0,03 mm	±0,05 mm	360	404	64	27,5	22	20	54



Series 536

These Calipers are designed for scribing tasks.



536-221

Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
536-221	0 - 150	0,05 mm	±0,05 mm	±0,07 mm	150	229	40	21,5	17	16	33
536-222	0 - 200	0,05 mm	±0,05 mm	±0,07 mm	180	288	50	25	20,5	16	43
536-223	0 - 300	0,05 mm	±0,08 mm	±0,1 mm	400	403	64	27,5	22	20	54

All products to be sold to commercial customers.
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Mitutoyo

Offset Calipers

Series 573

These offset calipers enable you to measure stepped workpieces.
They offer you the following benefits:

- You can adjust the beam-mounted jaw to facilitate measurement of stepped sections and hard-to-reach workpiece features.

Dust- and Water-Protected

TÜVRheinland CERTIFIED

www.tuv.com ID 0000045042

ABSOLUTE®

IP67

573-602-20

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

Specifications

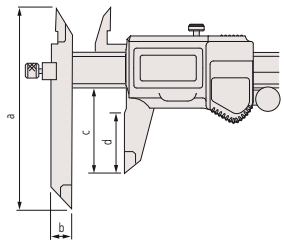
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm (150 mm, 200 mm) 11 mm (300 mm)
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Metric — Without thumb roller

No.	Range [mm]	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	a [mm]	b [mm]	c [mm]	d [mm]
573-611-20	0 - 150	±0,02 mm	±0,04 mm	168	95	10	40	30
573-612-20	0 - 200	±0,02 mm	±0,04 mm	198	95	10	50	38,5
573-614-20	0 - 300	±0,03 mm	±0,05 mm	380	135	15	64	51

Metric — With thumb roller

No.	Range [mm]	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	a [mm]	b [mm]	c [mm]	d [mm]
573-601-20	0 - 150	±0,02 mm	±0,04 mm	168	95	10	40	30
573-602-20	0 - 200	±0,02 mm	±0,04 mm	198	95	10	50	38,5
573-604-20	0 - 300	±0,03 mm	±0,05 mm	970	135	15	64	51



Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 536

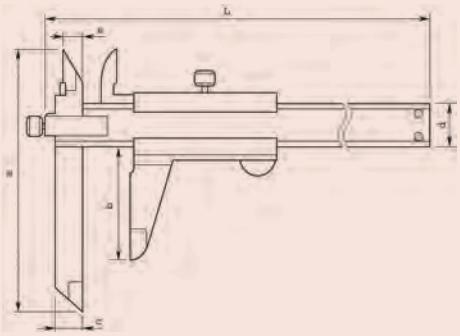
These Offset Calipers enables you to measure stepped workpieces and offers you the following benefits:

- The beam-mounted jaw is adjustable to facilitate the measurement of stepped sections and hard-to-reach workpiece features.

536-101

Specifications

Delivered	In a case



Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
536-101	0 - 150	0,05 mm	±0,05 mm	±0,07 mm	150	229	95	40	10	16	7,5
536-102	0 - 200	0,05 mm	±0,05 mm	±0,07 mm	200	286	95	50	10	16	8,5
536-103	0 - 300	0,05 mm	±0,08 mm	±0,1 mm	400	403	135	64	15	20	12

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Offset Centerline Calipers

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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm (150 mm, 200 mm) 11 mm (300 mm)
Delivered	In a case, including 1 battery
OFFSET	10 mm
Battery life	Approx. 5 years under normal use

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 573

These offset centreline calipers enable you to measure centre to centre distance.
They offer you the following benefits:

- Specially designed for hole centre-to-centre measurements in the same plane, or between offset planes.
- You can also measure from an edge to a hole centre.

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ABSOLUTE® IP67

573-606-20

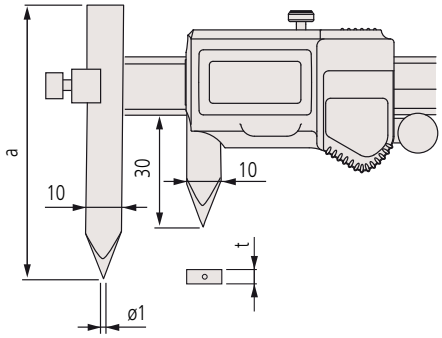
Metric — Without thumb roller

No.	Range [mm]	Max. Permissible Error S MPE	Mass [g]	a [mm]	t [mm]
573-615-20	10,1 - 160	±0,03 mm	157	75	3,5
573-616-20	10,1 - 210	±0,03 mm	177	75	3,5
573-618-20	10,1 - 300	±0,04 mm	335	100	3,8

Metric — With thumb roller

No.	Range [mm]	Max. Permissible Error S MPE	Mass [g]	a [mm]	t [mm]
573-605-20	10,1 - 160	±0,03 mm	157	75	3,5
573-606-20	10,1 - 210	±0,03 mm	177	75	3,5
573-608-20	10,1 - 300	±0,04 mm	340	100	3,8

mm



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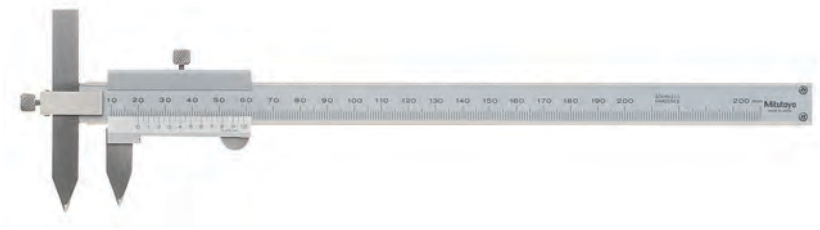
Mitutoyo

Offset Centerline Calipers

Series 536

This Offset Centerline Caliper enables you to measure center-to-center distance and offers you the following benefits:

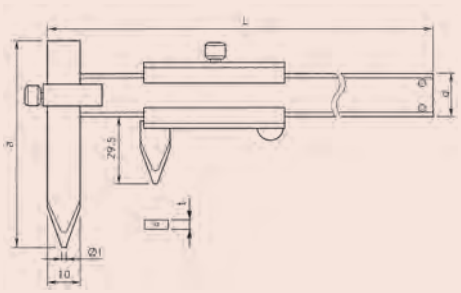
- Center-to-center measurements for holes on the same plane or between offset planes.
- Edge to center measurements.



536-106

Specifications

Delivered | In a case



Metric

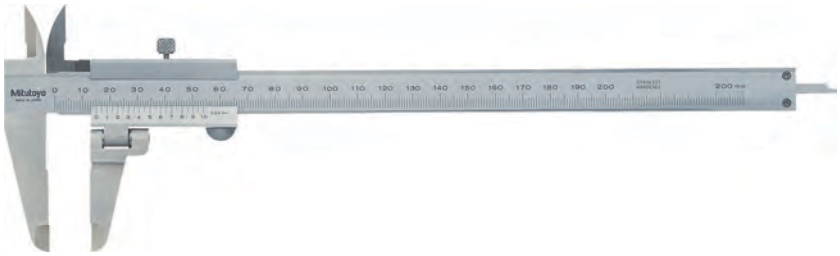
No.	Range [mm]	Graduation	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	d [mm]	t [mm]
536-105	10,1 - 150	0,05 mm	±0,05 mm	140	229	75	16	3
536-106	10,1 - 200	0,05 mm	±0,05 mm	160	282	75	16	3
536-107	10,1 - 300	0,05 mm	±0,08 mm	320	383	100	20	3,8

Swivel Calipers

Series 536

These Vernier Calipers have a swivelling jaw. They offer you the following benefits:

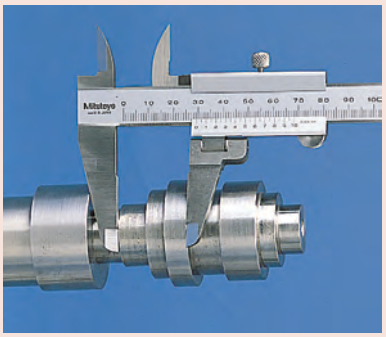
- You can rotate the moving jaw to measure sectioned shafts.
- With depth bar.



536-212

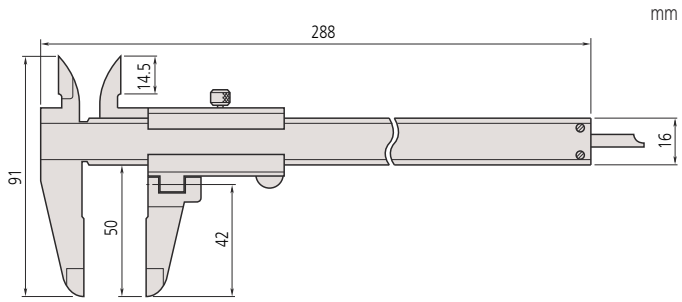
Specifications

Delivered | In a case



Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Remarks	Mass [g]
536-212	0 - 200	0,05 mm	±0,05 mm	±0,07 mm	Swivel range ±90°	190



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ABSOLUTE Digimatic Back-Jaw Centreline Calipers

Functions	Series 573
ORIGIN (ABS-Zero)	●
PRESET	●
ABS / INC (INC ZERO)	●
Low voltage alarm	●
Data output	●

Specifications

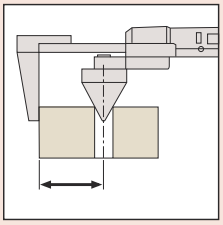
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 11 mm
Delivered	In a case, including 1 battery
OFFSET	10 mm
Battery life	Approx. 5 years under normal use

Optional accessories

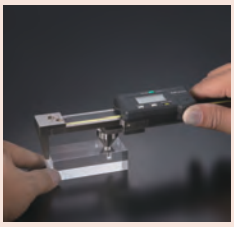
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type

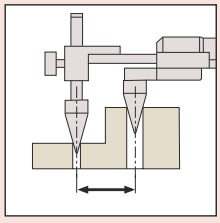
Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Edge-to-center type





Centre-to-centre type

Series 573

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

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

Dust- and Water-Protected

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ABSOLUTE®

IP67

573-716-20
Centre-to-centre type

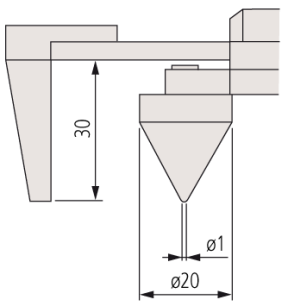
573-718-20
Edge-to-centre type

Metric — Centre-to-centre type

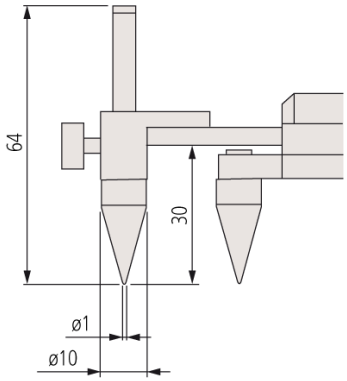
No.	Range [mm]	Max. Permissible Error S MPE	Mass [g]
573-716-20	10,1 - 200	±0,1 mm	465
573-717-20	10,1 - 300	±0,15 mm	550

Metric — Edge-to-centre type

No.	Range [mm]	Max. Permissible Error S MPE	Mass [g]
573-718-20	10,1 - 200	±0,1 mm	470
573-719-20	10,1 - 300	±0,15 mm	555



573-718-20
573-719-20



573-716-20
573-717-20

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Mitutoyo

Point Calipers

Series 573

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

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

Dust- and Water-Protected
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ABSOLUTE® IP67

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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

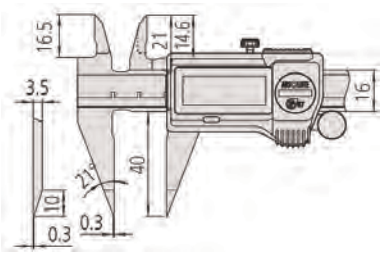
573-621-20
Fine measuring jaws

Metric — Fine measuring jaws

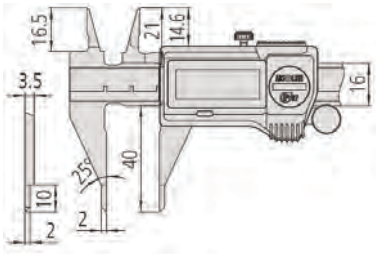
No.	Range [mm]	Thumb roller	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
573-621-20	0 - 150	●	±0,02 mm	±0,04 mm	163
573-622-20	0 - 150		±0,02 mm	±0,04 mm	163

Metric — Pointed measuring jaws

No.	Range [mm]	Thumb roller	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
573-625-20	0 - 150	●	±0,02 mm	±0,04 mm	163
573-626-20	0 - 150		±0,02 mm	±0,04 mm	163



Fine measuring jaws



Pointed measuring jaws

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

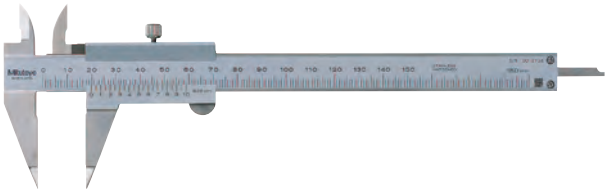
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 536

These Vernier Point Calipers have extra fine ground measuring jaws. It offers you the following benefits:

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

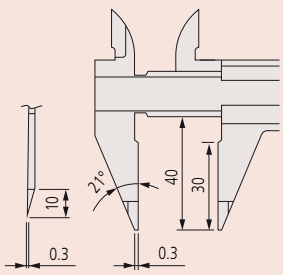


536-121

Specifications

Delivered	In a case

mm



Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
536-121	0 - 150	0,05 mm	±0,05 mm	±0,07 mm	150

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Blade Calipers

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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

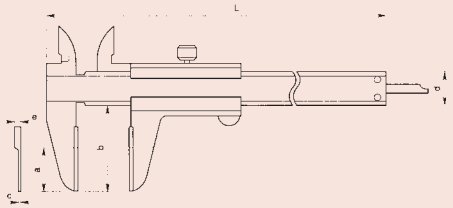
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Specifications

Delivered	In a case

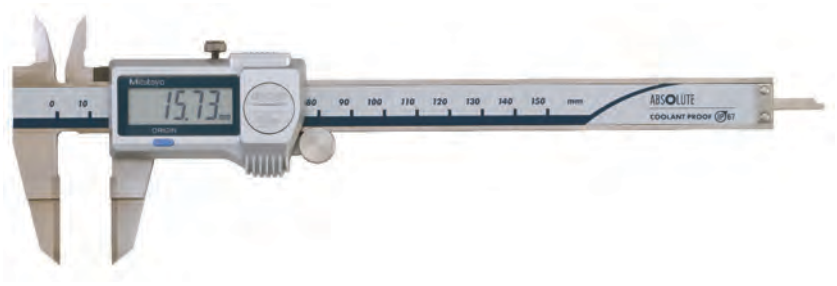


Series 573

A Mitutoyo waterproof digital caliper suitable for use in the presence of coolant or cutting oil. Equipped with special thin-ended jaws for outside measurement.
ABSOLUTE System scale for error free, high-speed measurement. SPC data output.

TÜVRheinland CERTIFIED Dust- and Water-Protected www.tuv.com ID 0000045042

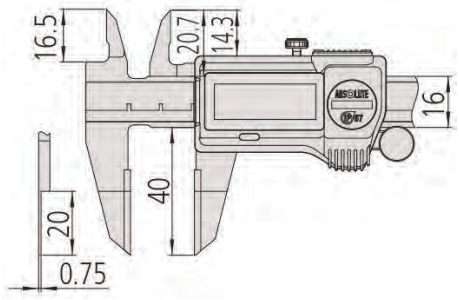
ABSOLUTE® IP67



573-634-20

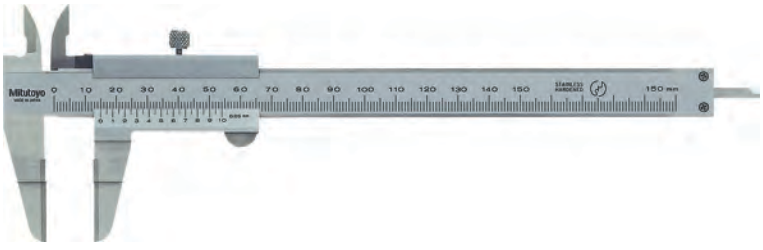
Metric

No.	Range [mm]	Thumb roller	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]
573-634-20	0 - 150	●	±0,02 mm	±0,04 mm	168
573-635-20	0 - 150		±0,02 mm	±0,04 mm	168



Series 536

These Blade Calipers have thin measuring jaws. They offer you the following benefits:
- The thin blade-type jaws fit into very small grooves making it much easier for you to obtain many previously difficult outside measurements.
- The outside measuring faces are carbide.



536-134

Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Max. Permissible Error S MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
536-134	0 - 150	0,05 mm	±0,05 mm	±0,07 mm	140	229	20	40	0,75	16	3
536-135	0 - 200	0,05 mm	±0,05 mm	±0,07 mm	180	286	25	50	0,75	16	3
536-136	0 - 300	0,05 mm	±0,08 mm	±0,1 mm	420	403	30	64	1	16	3,8

All products to be sold to commercial customers.
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Mitutoyo

Neck Calipers

Series 573

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

- You can measure wall thickness inside bores and recesses.

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ABSOLUTE® IP67

573-651-20

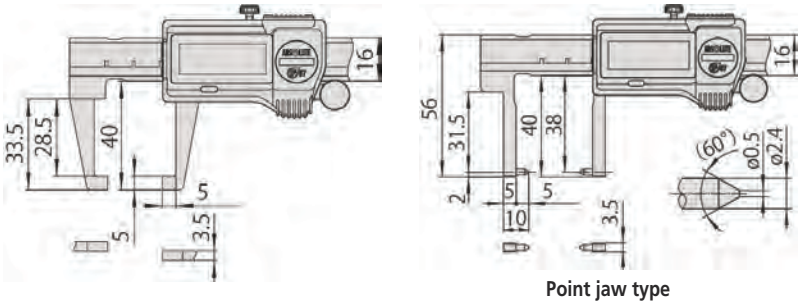
573-652-20
Point jaw type

Metric

No.	Range [mm]	Thumb roller	Max. Permissible Error E MPE	Mass [g]
573-651-20	0 - 150	●	±0,03 mm	157
573-653-20	0 - 150		±0,03 mm	157

Metric Point jaw type

No.	Range [mm]	Thumb roller	Max. Permissible Error E MPE	Mass [g]
573-652-20	0 - 150	●	±0,03 mm	157
573-654-20	0 - 150		±0,03 mm	157



Point jaw type

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

Specifications

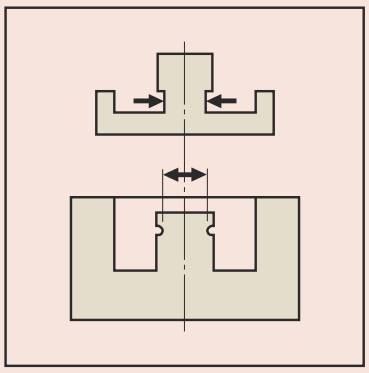
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



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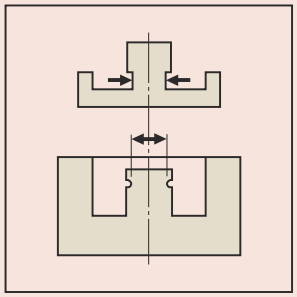
Neck Calipers

Specifications

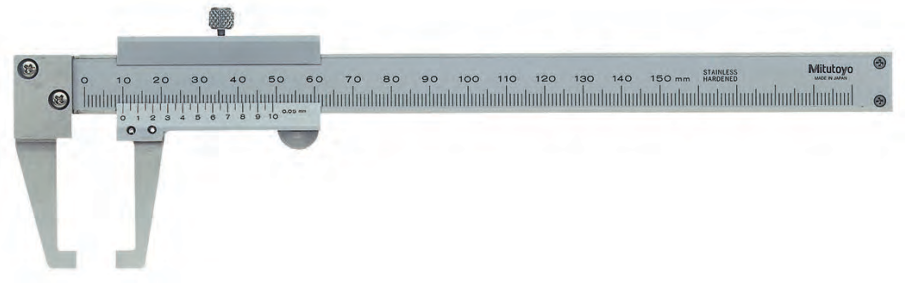
Delivered	In a case



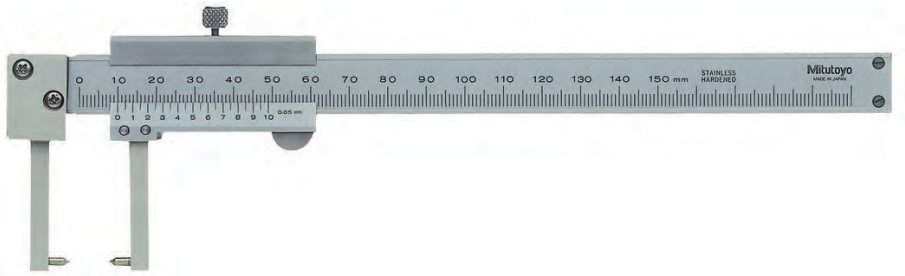
Series 536

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

- You can measure wall thickness inside bores and recesses.



536-151



536-152
Point jaw type

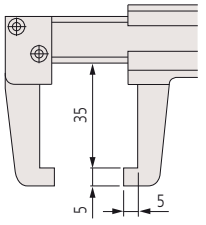
Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Mass [g]
536-151	0 - 150	0,05 mm	±0,05 mm	140

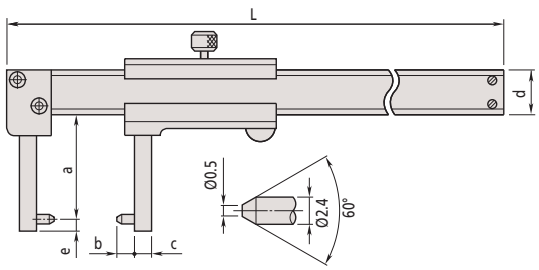
Metric Point jaw type

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
536-152	0 - 150	0,05 mm	±0,05 mm	140	229	38	5	5	16	2

mm



536-151



536-152
Point jaw type

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Knife-Edge Calipers

Series 573

These Digital Knife Edge Caliper offer you the following benefits:
- Specially designed to let you take inside measurements in hard-to-reach places.
- With long narrow jaws.

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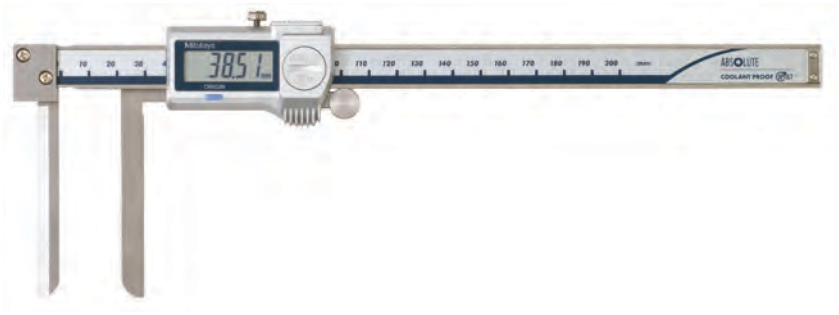
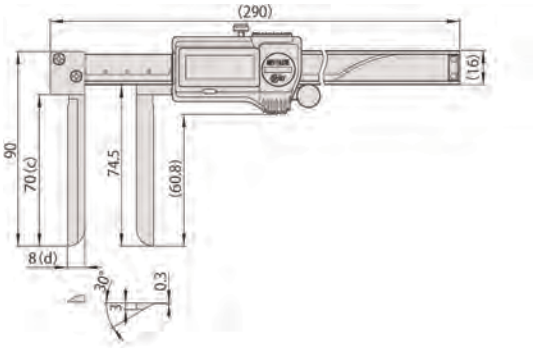
IP67



573-642-20

Metric

No.	Range [mm]	Thumb roller	Max. Permissible Error S MPE	Mass [g]
573-642-20	10,1 - 200	●	±0,05 mm	227
573-643-20	10,1 - 200		±0,05 mm	227



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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

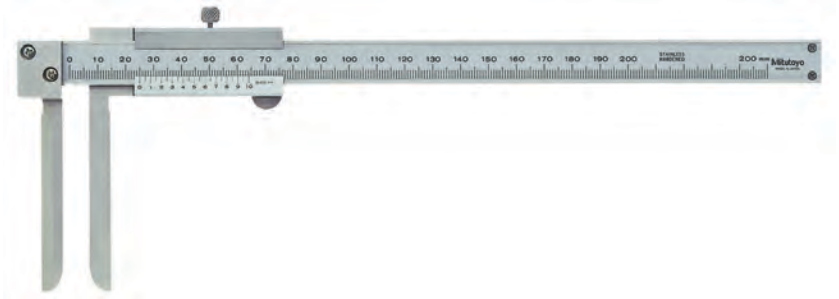
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 536

This Analog Knife Edge Caliper offer you the following benefits:
- Specially designed to let you take inside measurements in hard-to-reach places.
- With long narrow jaws.



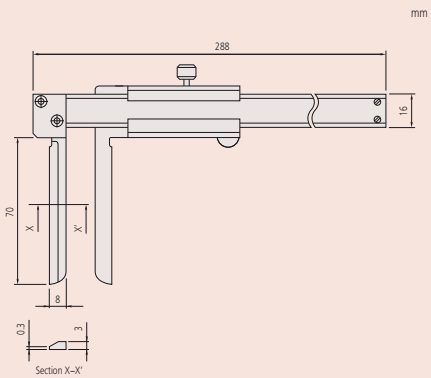
536-142

Metric

No.	Range [mm]	Graduation	Max. Permissible Error S MPE	Mass [g]
536-142	10,1 - 200	0,05 mm	±0,12 mm	210

Specifications

Delivered	In a case



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Inside Calipers

Series 573

These inside calipers enable measurements inside a groove
They offer you the following benefits:
- Specially designed for measurements in hard-to-reach places.

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

Specifications

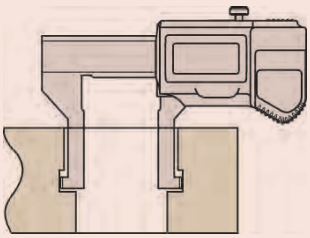
Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



573-645-20

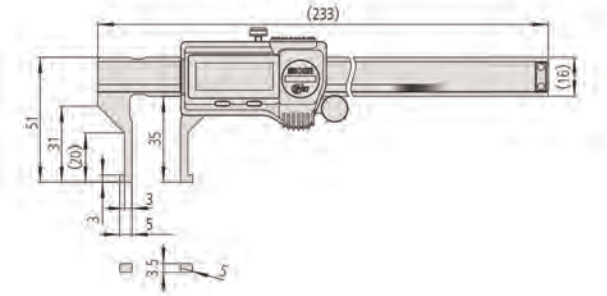
573-646-20
Point jaw type

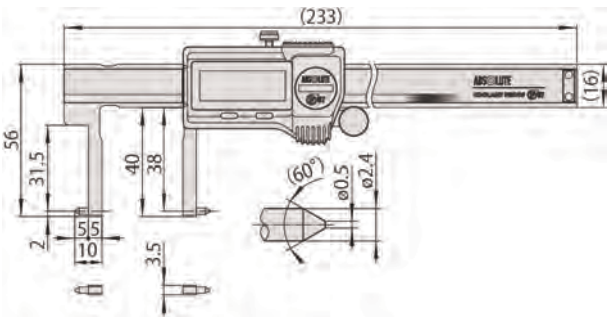
Metric

No.	Range [mm]	Thumb roller	Max. Permissible Error S MPE	OFFSET	Mass [g]
573-645-20	10,1 - 160	●	±0,05 mm	10 mm	147
573-647-20	10,1 - 160		±0,05 mm	10 mm	147

Metric Point jaw type

No.	Range [mm]	Thumb roller	Max. Permissible Error S MPE	OFFSET	Mass [g]
573-646-20	20,1 - 170	●	±0,03 mm	20 mm	157
573-648-20	20,1 - 170		±0,03 mm	20 mm	157





Point jaw type

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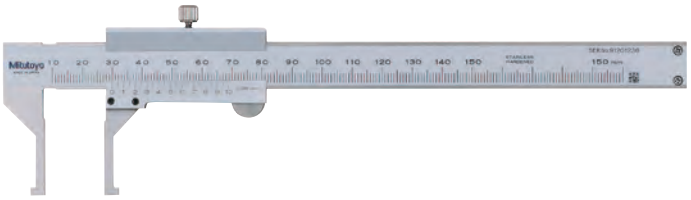
Mitutoyo

Inside Calipers

Series 536

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

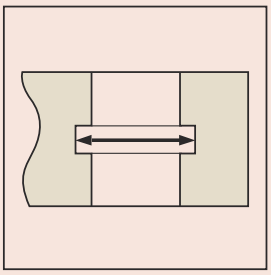


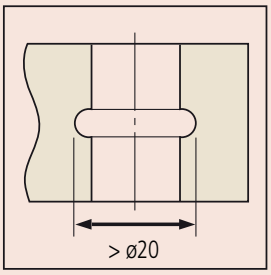
536-145

536-146
Point jaw type

Specifications

Delivered	In a case



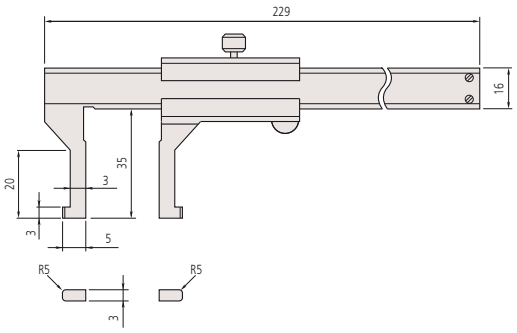


Metric

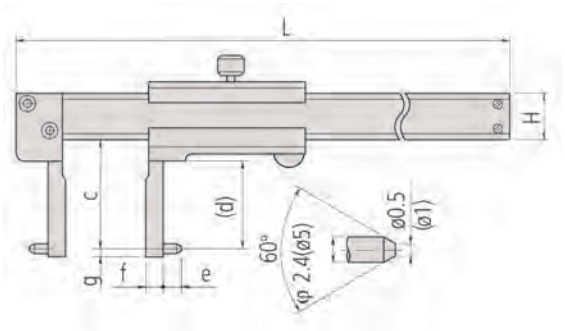
No.	Range [mm]	Graduation	Max. Permissible Error S MPE	Mass [g]
536-145	10,1 - 150	0,05 mm	±0,05 mm	130

Metric Point jaw type

No.	Range [mm]	Graduation	Max. Permissible Error S MPE	Mass [g]	L [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	H [mm]
536-146	20,1 - 150	0,05 mm	±0,05 mm	140	229	38	31	5	5	2	16
536-147	30,1 - 300	0,05 mm	±0,08 mm	370	403	98	89	5	10	2	20
536-148	70,1 - 450	0,05 mm	±0,1 mm	1250	610	145	136	10	25	5	25
536-149	70,1 - 600	0,05 mm	±0,12 mm	1430	750	145	136	10	25	5	25



536-145



Point jaw type

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Tube Thickness Calipers

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

Specifications

Digital step	0,01 mm
Max. response speed	Unlimited
Display	LCD, character height 9 mm
Delivered	In a case, including 1 battery
Battery life	Approx. 5 years under normal use

Optional accessories

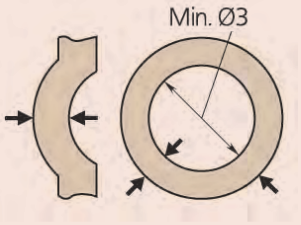
No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Specifications

Delivered	In a case



Series 573

These tube thickness calipers are designed especially for round-shaped workpieces.
They offer you the following benefits:

- The beam-mounted jaw is a round bar that lets you easily measure tube wall thickness.

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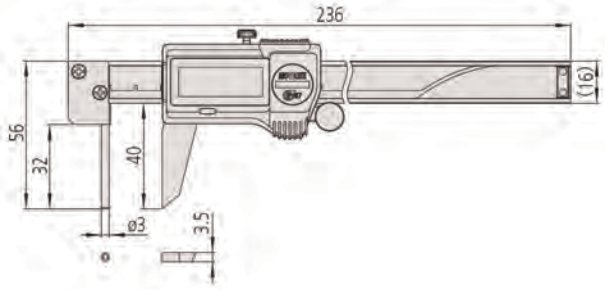
ABSOLUTE® IP67

573-661-20

Metric

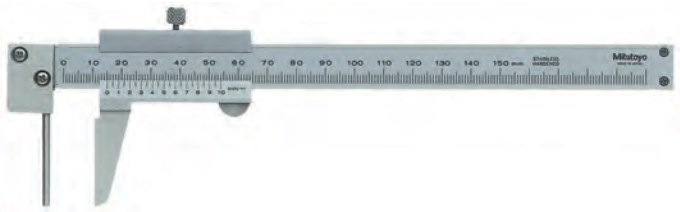
No.	Range [mm]	Thumb roller	Max. Permissible Error E MPE	Mass [g]
573-661-20	0 - 150	●	±0,05 mm	167
573-662-20	0 - 150		±0,05 mm	167



Series 536

These Tube Thickness Calipers are designed especially for round-shaped workpieces.
They offer you the following benefits:

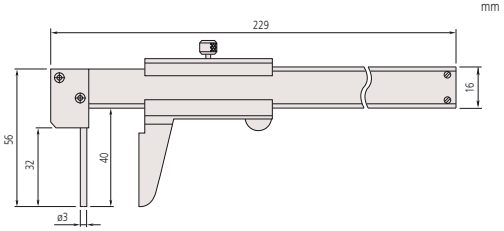
- The beam-mounted jaw is a round bar that lets you easily measure tube wall thickness.



536-161

Metric

No.	Range [mm]	Max. Permissible Error E MPE	Graduation	Mass [g]
536-161	0 - 150	±0,05 mm	0,05	150



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Mitutoyo

Vernier Hook Type Calipers

Series 536

These Vernier Hook Type Calipers enable you to measure the width of grooves and lands inside bores and recesses.

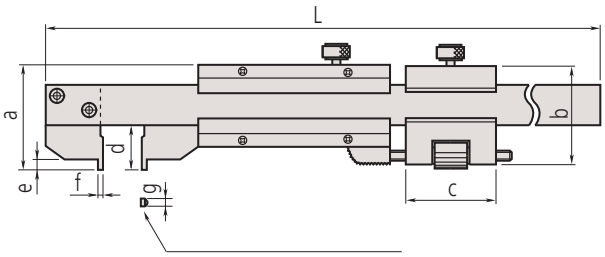
536-171

536-172

Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Max. Permissible Error S MPE
536-171	0 - 200	0,02 mm	±0,03 mm	±0,03 mm
536-172	0 - 200	0,02 mm	±0,03 mm	±0,03 mm

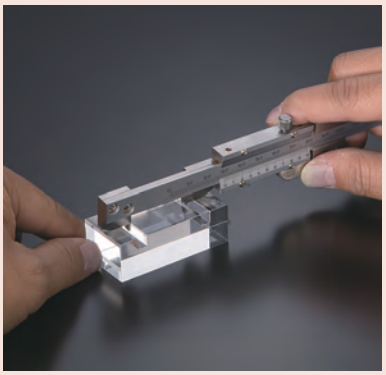
No.	Mass [g]	L [mm]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]
536-171	170	320	28			12	4	5	3,5
536-172	200	320	28	28,5	20	12	4	1	3,5

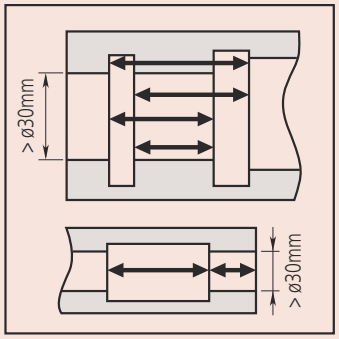


Measuring face
536-171: Radius 5 mm
536-172: flat

Specifications

Delivered	In a case





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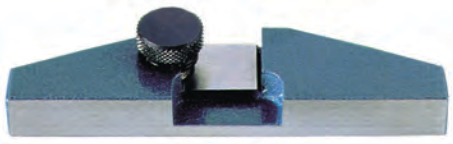
Optional Accessories for Calipers

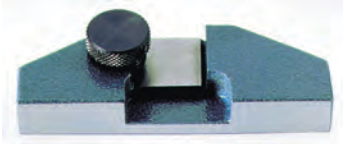
Depth base attachment

This is an optional depth base attachment for calipers.
It offers you the following benefits:

- For digital, vernier and dial calipers which have a depth measuring bar.
- Finely ground base surface.
- Secure locking clamp.



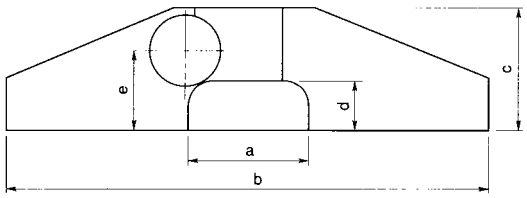
050084-10



050083-10

Metric

No.	Applicable measuring range of caliper	Mass [g]	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]
050083-10	100, 150 and 200 mm	130	25	75	24,5	9	16
050084-10	100, 150 and 200 mm	160	25	100	24,5	9	16
050085-10	300 mm	270	30	125	28,5	11,5	20



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Depth Micrometers
Page 203

Depth Calipers and Depth Gauges
Page 206

Depth Caliper Accessories
Page 216

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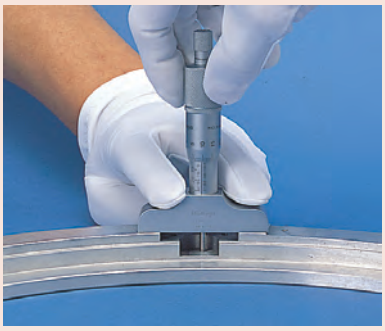
Depth Micrometers without Interchangeable Rods

Specifications

Measuring face	Hardened, precision ground, micro-lap finish
Measuring span	25 mm
Base	Hardened tool steel
Scale	Thimble and sleeve satin chrome finish, ∅ 18 mm
Measuring force	5-10 N
Delivered	Including box and key
Spindle pitch	0,5 mm



Series 128

This Depth Micrometer offers you the following benefits:

- ∅4 mm measuring rod.
- Ratchet stop provides you with constant measuring force.
- Measuring rod lock.
- Carbide-tipped measuring rod model is available.

128-101

128-102

Metric

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness base	Flatness rod	Parallelism base/rod	Base (W x T)	Mass [g]
128-101	0 - 25	0,01 mm	± 3 µm	1,3 µm	0,3 µm	5 µm	63,5 x 16 mm	200
128-102	0 - 25	0,01 mm	± 3 µm	2 µm	0,3 µm	5 µm	101,6 x 16 mm	250

Metric Carbide-tipped measuring rod

No.	Range [mm]	Graduation	Max. Permissible Error J MPE	Flatness base	Flatness rod	Parallelism base/rod	Base (W x T)	Mass [g]
128-103	0 - 25	0,01 mm	± 3 µm	1,3 µm	0,3 µm	5 µm	63,5 x 16 mm	200
128-104	0 - 25	0,01 mm	± 3 µm	2 µm	0,3 µm	5 µm	101,6 x 16 mm	250

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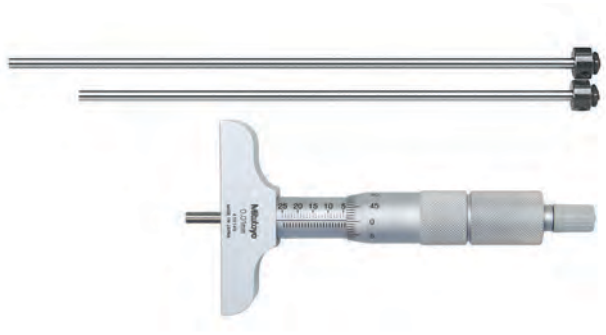
Depth Micrometers with Interchangeable Rods

Series 129

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

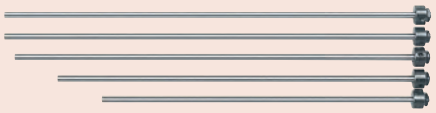
- ∅4 mm interchangeable rods, with lapped measuring surfaces, enable you to make wide-range measurement.
- The ratchet stop provides constant measuring force.
- Measuring rod lock.



129-110

Specifications

Measuring span	25 mm
Spindle pitch	0,5 mm
Measuring face	Hardened, precision ground, micro-lap finish
Base	Hardened tool steel
Scale	Thimble and sleeve satin chrome finish ∅18 mm
Measuring force	5-10 N
Delivered	Including box and key



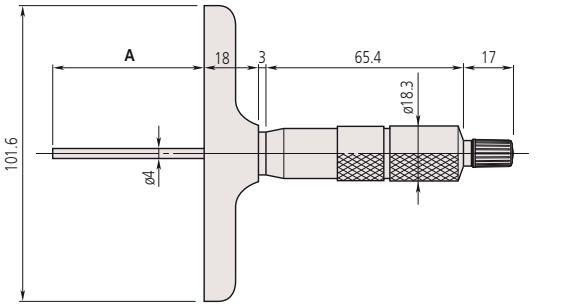
Metric — Base 101,6 x 16 mm

No.	Range [mm]	Graduation	Spindle feed error [µm]	Zero point errors of rods	Flatness base	Flatness rod	Parallelism base/rod	Number of rods	Mass [g]
129-155	0 - 25	0,01 mm	3	±3 µm	2 µm	0,3 µm	5 µm	1	290
129-113	0 - 50	0,01 mm	3	±3 µm	2 µm	0,3 µm	5 µm	2	310
129-114	0 - 75	0,01 mm	3	±3 µm	2 µm	0,3 µm	6 µm	3	330
129-115	0 - 100	0,01 mm	3	±4 µm	2 µm	0,3 µm	6 µm	4	355
129-116	0 - 150	0,01 mm	3	±4 µm	2 µm	0,3 µm	7 µm	6	410
129-153	0 - 300	0,01 mm	3	±6 µm	2 µm	0,3 µm	10 µm	12	640

Metric — Base 63,5 x 16 mm

No.	Range [mm]	Graduation	Spindle feed error [µm]	Zero point errors of rods	Flatness base	Flatness rod	Parallelism base/rod	Number of rods	Mass [g]
129-154	0 - 25	0,01 mm	3	±3 µm	1,3 µm	0,3 µm	5 µm	1	240
129-109	0 - 50	0,01 mm	3	±3 µm	1,3 µm	0,3 µm	5 µm	2	260
129-110	0 - 75	0,01 mm	3	±3 µm	1,3 µm	0,3 µm	6 µm	3	280
129-111	0 - 100	0,01 mm	3	+-4 µm	1,3 µm	0,3 µm	6 µm	4	310
129-112	0 - 150	0,01 mm	3	+-4 µm	1,3 µm	0,3 µm	7 µm	6	370
129-152	0 - 300	0,01 mm	3	±6 µm	1,3 µm	0,3 µm	10 µm	12	600

mm



A = Range

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Digimatic Depth Micrometers with Interchangeable Rod

Functions	Series 329
DATA (output with cable) / HOLD (display value)	●
Lock function	●
Auto Power OFF after 20 min. non use	●
2 x PRESET	●
Low voltage alarm	●
Data output	●
ABS / INC (INC ZERO)	●

Specifications

Measuring span	25 mm
Spindle pitch	0,5 mm
Measuring face	Hardened, precision ground, micro-lap finish
Base	Hardened tool steel
Scale	Thimble and sleeve satin chrome finish, ∅18 mm
Power supply	1 battery SR-44
Measuring force	5-10 N
Battery life	Approx. 2,4 years
Delivered	Including box, key and 1 battery

Optional accessories

No.	Description
05CZA662	Digimatic Cable with Data Button IP Type, 1m, Micrometer Type
05CZA663	Digimatic Cable with Data Button IP Type, 2m, Micrometer Type
06AFM380B	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Micrometer Type
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Series 329

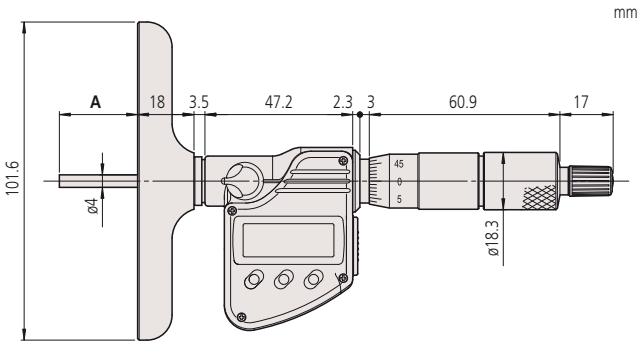
This interchangeable rod type micrometer can be used for wide range measurements.
It offers you the following benefits:

- ∅4 mm interchangeable rods, with lapped measuring surfaces, enable you to make wide-range measurement.
- The ratchet stop provides constant measuring force.
- Measuring rod lock.

329-250-30

Metric

No.	Range [mm]	Digital step	Spindle feed error [µm]	Zero point errors of rods	Flatness base	Flatness rod	Parallelism base/rod	Base (W x T)	Number of rods	Mass [g]
329-250-30	0 - 150	0,001 mm	3	±4 µm	2 µm	0,3 µm	7 µm	101,6 x 16 mm	6	540
329-251-30	0 - 300	0,001 mm	3	±6 µm	2 µm	0,3 µm	10 µm	101,6 x 16 mm	12	790



A = Range

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ABSOLUTE Digimatic Indicator Depth Gauges

Series 547

ABSOLUTE®

This ABSOLUTE Digimatic Indicator Depth Gauge offers you the following benefits:

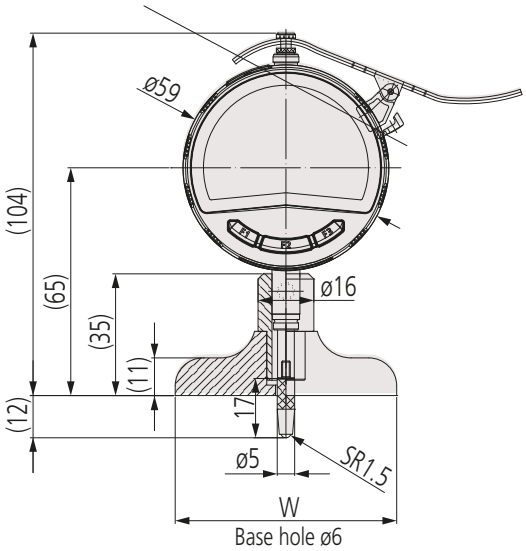
- It is equipped with the ABSOLUTE Digimatic Indicator ID-C.
- Bidirectional communication e.g. to perform parameter setting from a PC (Digimatic S 1 interface) is possible.
- It has a hardened, precision ground and micro-lapped reference face on its base.

Metric — With indicator No. 543-700BD

No.	Range [mm]	Digital step	Base (W x T)	Accuracy	Base flatness	Mass [g]
547-251A	0 - 200	0,001 mm	63,5 x 16 mm	± 5 µm	2 µm	285
547-252A	0 - 200	0,001 mm	101,6 x 16 mm	± 5 µm	2 µm	335

Metric — With indicator No. 543-710BD

No.	Range [mm]	Digital step	Base (W x T)	Accuracy	Base flatness	Mass [g]
547-211A	0 - 200	0,01 mm	63,5 x 16 mm	± 20 µm	5 µm	280
547-212A	0 - 200	0,01 mm	101,6 x 16 mm	± 20 µm	5 µm	330



Functions	Series 547
DATA/HOLD	●
PRESET	●
ON/OFF	●
Lock function	●
GO/±NG judgement	●
MAX/MIN/RANGE	●
ZERO/ABS	●
ABS / INC (INC ZERO)	●
Analog bar resolution selection	●
Auto Power OFF setting	●
Calculation function (with formula)	●
Customizing keys	●
Counting direction switchable	●
Calibration warning function	●

Specifications

Stroke	12,7 mm
Scale	Capacitance type ABSOLUTE linear encoder
Contact point	Carbide ball
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery CR-2032
Measuring force	≤ 1,5 N
Battery life	Approx. 7000 hours
Delivered	Including box, CR-2032 battery, battery lid opener and extensions 10, 20, 30 (2 pcs.), 100 mm

Optional accessories

No.	Description
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth
02AZG011	U-WAVE-T Connection Cable SF, for Digimatic S1 Interface

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
21JAA224	Contact Element Ball Point, M2,5x0,45, 17mm Length, Carbide, Metric

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Dial Indicator Depth Gauges

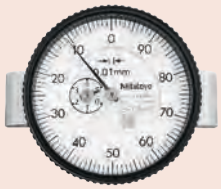
Series 7

This rectangular base dial indicator depth gauge offers you the following benefits:

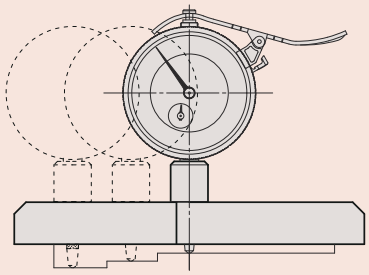
- It has a hardened, precision ground and micro-lapped reference face on its base.

Optional accessories

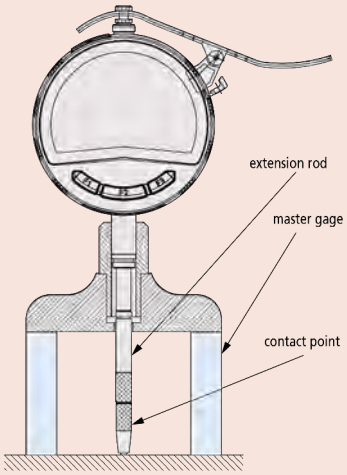
No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4



7231A



7220A and 7221A allow the mounting position of a dial indicator to be varied.



7231A

7210A

7211A

7214A

7220A

7221A

Metric

With back plunger indicator No. 1162A

No.	Range [mm]	Graduation	Accuracy	Measuring force [N]	Base (W x T)	Stroke [mm]	Base flatness [µm]	Probe tip	Extension rods	Mass [g]
7231A	0 - 200	0,01 mm	±15 µm	≤ 1,4	63,5 x 16 mm	5	5	Ball, R = 1.5 mm (No. 21JAA224)	10, 20, 30, 30, 100 mm	200

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Dial Indicator Depth Gauges

Metric

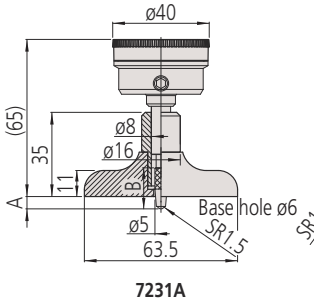
With indicator No. 2902AB

No.	Range [mm]	Graduation	Accuracy	Measuring force [N]	Base (W x T)	Stroke [mm]	Base flatness [µm]	Probe tip	Extension rods	Mass [g]
7210A	0 - 10	0,01 mm	±15 µm	≤ 1,4	40 x 16 mm	10	5	Needle, R = 0.2 mm (No.137413)		205
7211A	0 - 200	0,01 mm	±15 µm	≤ 1,4	63,5 x 16 mm	10	5	Ball, R = 1.5 mm (No. 21JAA224)	10, 20, 30, 30, 100 mm	260
7212A	0 - 200	0,01 mm	±15 µm	≤ 1,4	101,6 x 16 mm	10	5	Ball, R = 1.5 mm (No. 21JAA224)	10, 20, 30, 30, 100 mm	310
7220A	0 - 200	0,01 mm	±15 µm	≤ 1,4	100 x 18 mm	10	5	Ball, R = 1.5 mm (No. 21JAA224)	10, 20, 30, 30, 100 mm	380
7221A	0 - 200	0,01 mm	±15 µm	≤ 1,4	150 x 18 mm	10	5	Ball, R = 1.5 mm (No. 21JAA224)	10, 20, 30, 30, 100 mm	500

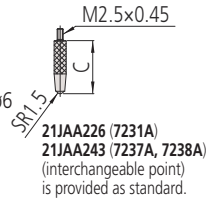
Metric

With indicator No. 2952AB

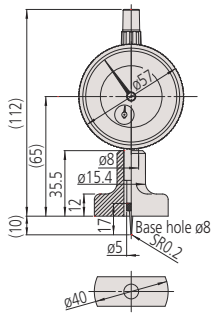
No.	Range [mm]	Graduation	Accuracy	Measuring force [N]	Base (W x T)	Stroke [mm]	Base flatness [µm]	Probe tip	Extension rods	Mass [g]
7213A	0 - 210	0,01 mm	±30 µm	≤ 2,5	63,5 x 16 mm	30	5	Ball, R = 1.5 mm (No. 21JAA225)	30, 60, 90 mm	260
7214A	0 - 210	0,01 mm	±30 µm	≤ 2,5	101,6 x 16 mm	30	5	Ball, R = 1.5 mm (No. 21JAA225)	30, 60, 90 mm	310



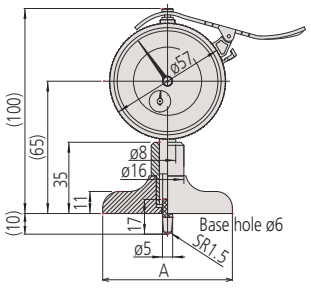
7231A



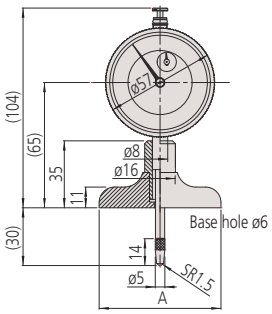
21JAA226 (7231A)
21JAA243 (7237A, 7238A)
(interchangeable point)
is provided as standard.



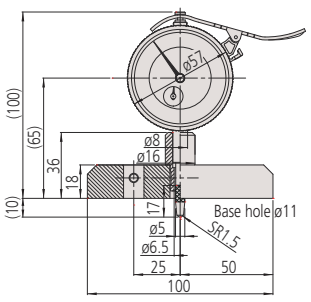
7210A



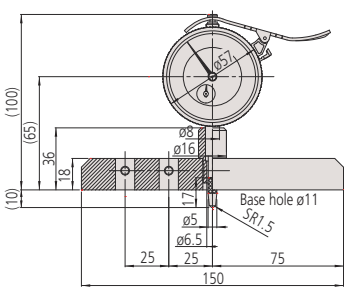
7211A A=63.5 mm
7212A A=101.6 mm



7213A A=63.5 mm
7214A A=101.6 mm



7220A



7221A

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Dial Indicator Depth Gauges

Series 7

This round base type dial indicator depth gauge offers you the following benefits:

- It has a hardened, precision ground and micro-lapped reference face on its base.

7222A

7223A

7224A

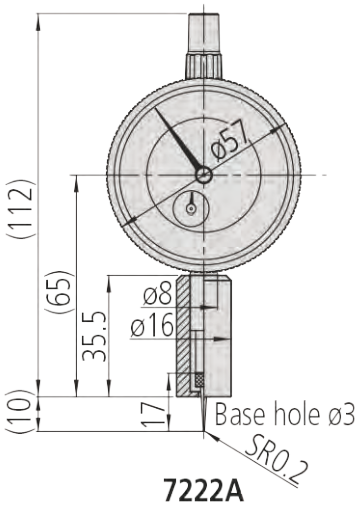
Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

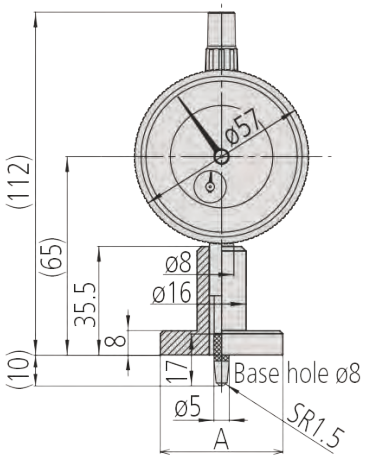
Metric

Round base with indicator No. 2902AB

No.	Range [mm]	Graduation	Accuracy	Measuring force [N]	Base (W x T)	Stroke [mm]	Base flatness [µm]	Probe tip	Mass [g]
7222A	0 - 10	0,01 mm	±15 µm	≤ 1,4	∅ 16 mm	10	5	Needle, R = 0.2 mm (No.137413)	165
7223A	0 - 10	0,01 mm	±15 µm	≤ 1,4	∅ 25 mm	10	5	Ball, R = 1.5 mm (No. 21JAA224)	180
7224A	0 - 10	0,01 mm	±15 µm	≤ 1,4	∅ 40 mm	10	5	Ball, R = 1.5 mm (No. 21JAA224)	195



7222A



7223A A=ø25 mm
7224A A=ø40 mm

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Mitutoyo

ABSOLUTE Digimatic Depth Gauges

Series 571

ABSOLUTE®

This is a standard model Digital Depth Gauge.
It offers you the following benefits:

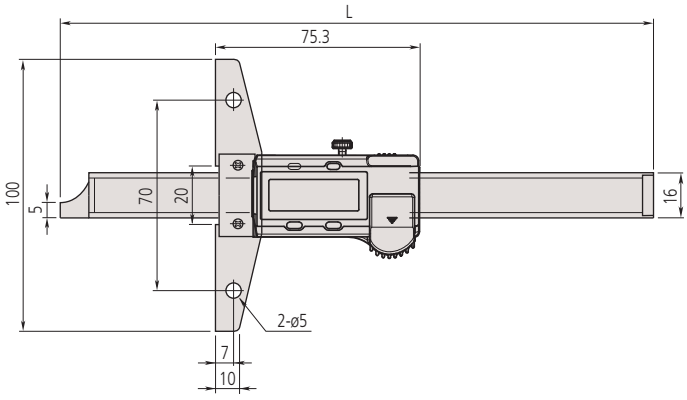
- ABSOLUTE System gives you reliable measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- Large character height makes measurements easy to read.

571-201-30

571-204-10

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	L [mm]	Base (W x T)	Mass [g]
571-201-30	0 - 150	0,01 mm	±0,02 mm	239	100 x 6 mm	207
571-202-30	0 - 200	0,01 mm	±0,02 mm	289	100 x 6 mm	227
571-203-30	0 - 300	0,01 mm	±0,03 mm	403	100 x 6 mm	310
571-204-10	0 - 450	0,01 mm	±0,05 mm	635	250 x 10 mm	1270
571-205-10	0 - 600	0,01 mm	±0,05 mm	785	250 x 10 mm	1400
571-206-10	0 - 750	0,01 mm	±0,06 mm	935	250 x 10 mm	1530
571-207-10	0 - 1000	0,01 mm	±0,07 mm	1200	250 x 10 mm	1760



Up to 300 mm range

Functions	Series 571
ORIGIN (ABS-Zero)	●
ON/OFF	●
Low voltage alarm	●
Data output	●
ABS / INC (INC ZERO)	●

Specifications

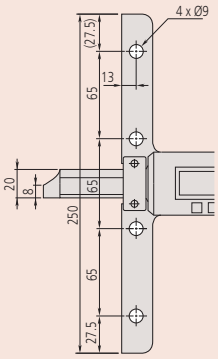
Max. response speed	Unlimited
Power supply	1 battery SR-44
Battery life	Approx. 18000 hours (150, 200 mm) approx. 20000 hours (>200 mm)
Display	LCD, character height 9 mm (150/200/300 mm), 10 mm (>300 mm)
Delivered	In a box including 1 battery

Optional accessories

No.	Description
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF300	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
959143	Data Hold Unit
900370	Extension Base, Depth Gauge, 180mm width for up to 300mm Range
900371	Extension Base, Depth Gauge, 260mm width for up to 300mm Range
900372	Extension Base, Depth Gauge, 320mm width for up to 300mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



> 300 mm range

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ABSOLUTE Digimatic Depth Gauges

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

Specifications

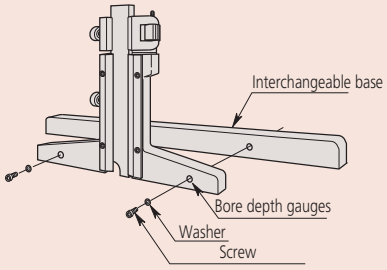
Max. response speed	Unlimited
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Display	LCD, character height 9 mm (150, 200 mm) 11 mm (300 mm)
Delivered	In a box including 1 battery

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
900370	Extension Base, Depth Gauge, 180mm width for up to 300mm Range
900371	Extension Base, Depth Gauge, 260mm width for up to 300mm Range
900372	Extension Base, Depth Gauge, 320mm width for up to 300mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



Mounting the interchangeable base

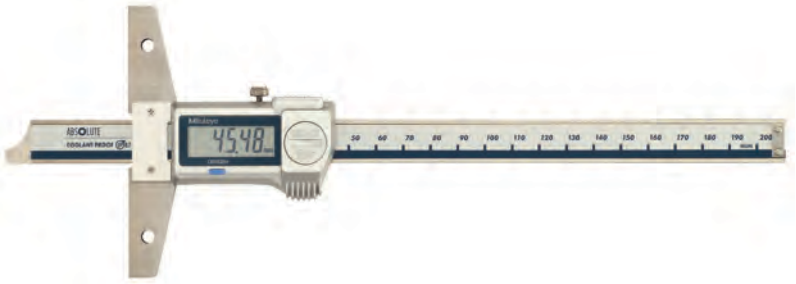
Series 571

Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000045042

ABSOLUTE IP67

This Digital Depth Gauge is IP67 coolant proof and offers you the following benefits:

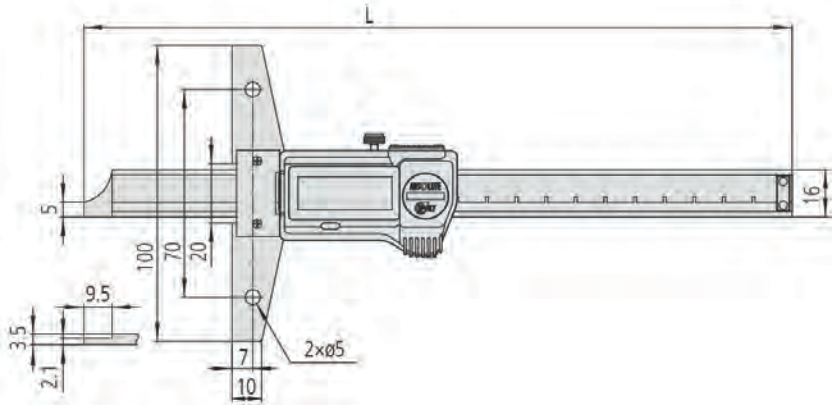
- ABSOLUTE System gives you reliable measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in machining situations that include splashing coolant fluid.
- Extremely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



571-252-20

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	L [mm]	Base (W x T)	Mass [g]
571-251-20	0 - 150	0,01 mm	±0,02 mm	239	100 x 6 mm	199
571-252-20	0 - 200	0,01 mm	±0,02 mm	289	100 x 6 mm	219
571-253-20	0 - 300	0,01 mm	±0,03 mm	403	100 x 6,3 mm	315



Range (L): 0-150 mm, 0-200 mm

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Mitutoyo

ABSOLUTE Digimatic Depth Gauges IP67 Hook/Pin Type

Series 571

This Digital Depth Gauge is IP67 and offers you the following benefits:
- It has excellent resistance against water and dust (IP67 protection level) enabling you to use it in situations that include coolant fluid.
- Direct reading by pressing the OFFSET function, which compensates for the 10 mm width of the hook (hook type).

Dust- and Water-Protected
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ABSOLUTE®
IP67

571-255-20

571-302-20

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

Specifications

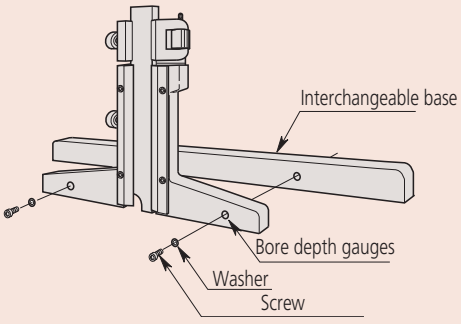
Max. response speed	Unlimited
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Display	LCD, Character Height 9 mm
Delivered	In a case including 1 battery

Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth
900370	Extension Base, Depth Gauge, 180mm width for up to 300mm Range
900371	Extension Base, Depth Gauge, 260mm width for up to 300mm Range
900372	Extension Base, Depth Gauge, 320mm width for up to 300mm Range

Consumable spares

No.	Description
938882	Battery SR44 1,5 V



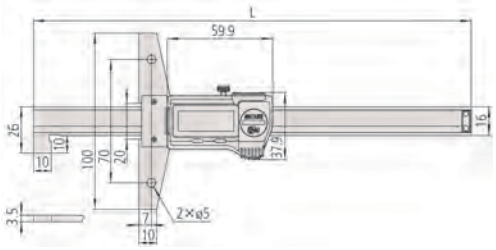
Mounting the interchangeable base

Metric — Hook Type

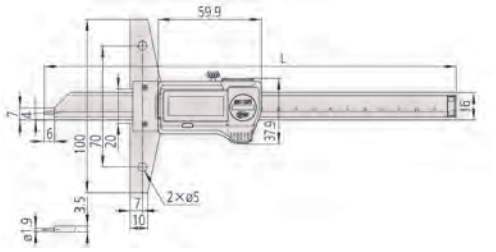
No.	Depth range	Hook range	Digital step	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
571-254-20	10,1-160 mm	0-150 mm	0,01 mm	±0,03 mm	100 x 6 mm	249	216
571-255-20	10,1-210 mm	0-200 mm	0,01 mm	±0,03 mm	100 x 6 mm	299	236

Metric — Pin Type

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
571-301-20	0 - 150	0,01 mm	±0,02 mm	100 x 6 mm	249	207
571-302-20	0 - 200	0,01 mm	±0,02 mm	100 x 6 mm	299	227



Hook Type



Pin Type

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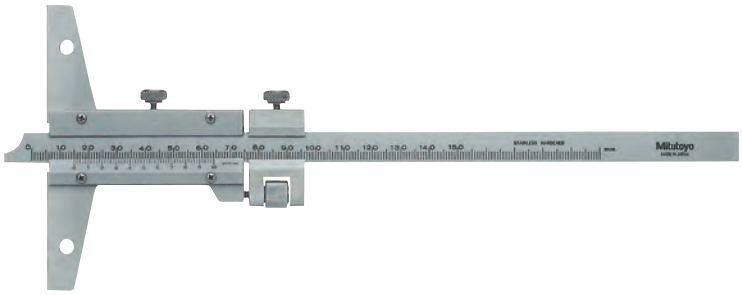
Vernier Depth Gauges

Series 527

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



527-101

Optional accessories

No.	Description
900370	Extension Base, Depth Gauge, 180mm width for up to 300mm Range
900371	Extension Base, Depth Gauge, 260mm width for up to 300mm Range
900372	Extension Base, Depth Gauge, 320mm width for up to 300mm Range

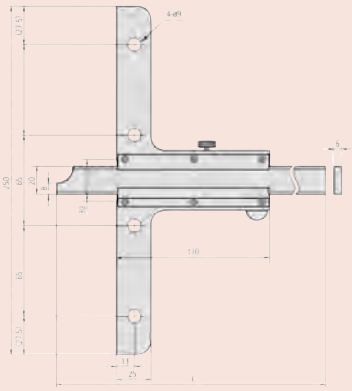
527-201 with 900372

Metric

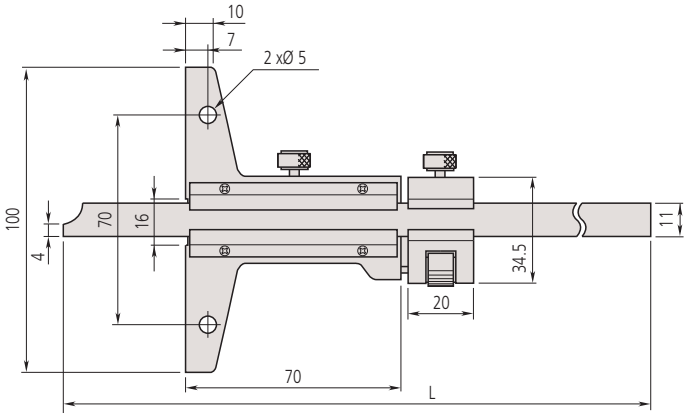
No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
527-201	0 - 150	0,05 mm	±0,05 mm	100 x 6,5 mm	260	240
527-121	0 - 150	0,02 mm	±0,03 mm	100 x 6,5 mm	260	215
527-202	0 - 200	0,05 mm	±0,05 mm	100 x 6,5 mm	310	260
527-122	0 - 200	0,02 mm	±0,03 mm	100 x 6,5 mm	310	230
527-203	0 - 300	0,05 mm	±0,08 mm	100 x 6,5 mm	410	300
527-123	0 - 300	0,02 mm	±0,04 mm	100 x 6,5 mm	410	265
527-204	0 - 600	0,05 mm	±0,1 mm	250 x 10 mm	800	1510
527-205	0 - 1000	0,05 mm	±0,15 mm	250 x 10 mm	1200	1880

Metric With fine adjustment

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
527-101	0 - 150	0,02 mm	±0,03 mm	100 x 6,5 mm	260	280
527-102	0 - 200	0,02 mm	±0,03 mm	100 x 6,5 mm	310	300
527-103	0 - 300	0,02 mm	±0,04 mm	100 x 6,5 mm	410	350
527-104	0 - 600	0,02 mm	±0,05 mm	250 x 10 mm	800	1510
527-105	0 - 1000	0,02 mm	±0,07 mm	250 x 10 mm	1200	1880



Range: 0-600 mm, 0-1000 mm



Range: 0-150 mm, 0-200 mm, 0-300 mm

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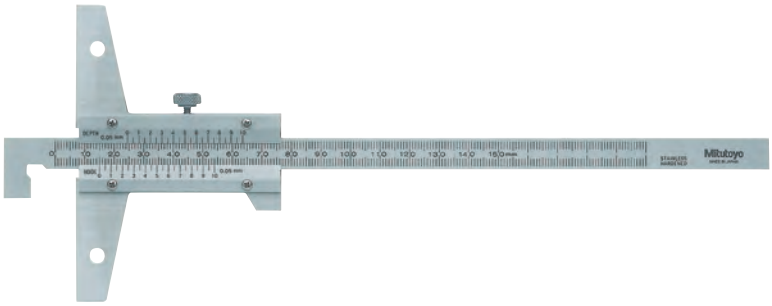
Vernier Depth Gauges Hook Type

Series 527

This hook type vernier depth gauge offers you the following benefits:

- The end of the beam is hook-shaped so you can take depth and thickness measurements of a projected portion or lip in a hole, as well as standard depth measurements.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- Fine adjustment models are available.



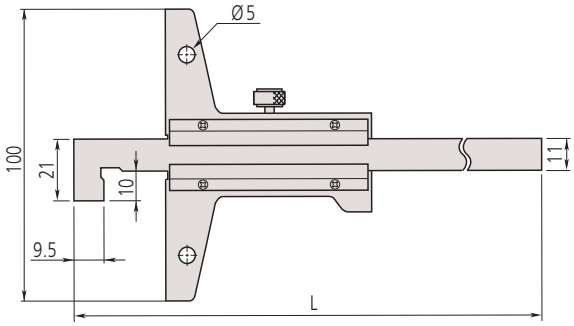
527-401

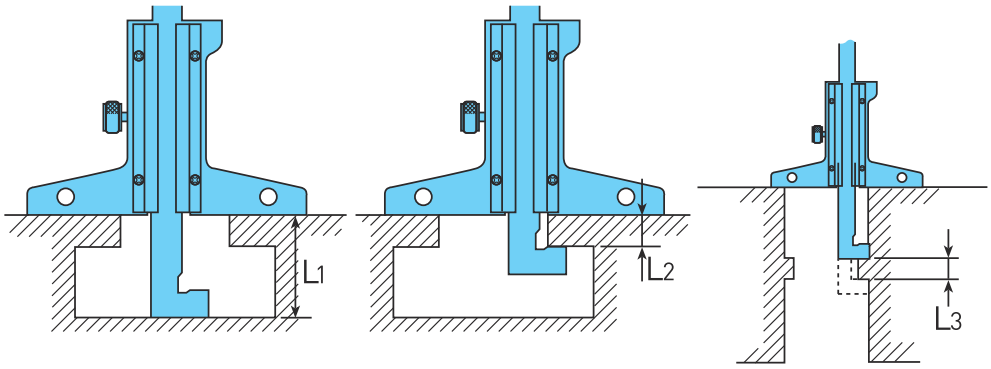
Metric

No.	Depth range	Hook range	Graduation	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
527-401	10,1-150 mm	0-150 mm	0,05 mm	±0,05 mm	100 x 6,5 mm	260	240
527-402	10,1-200 mm	0-200 mm	0,05 mm	±0,05 mm	100 x 6,5 mm	310	240
527-403	10,1-300 mm	0-300 mm	0,05 mm	±0,08 mm	100 x 6,5 mm	410	270

Metric With fine adjustment

No.	Depth range	Hook range	Graduation	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
527-411	10,1-150 mm	0-150 mm	0,02 mm	±0,03 mm	100 x 6,5 mm	260	280
527-412	10,1-200 mm	0-200 mm	0,02 mm	±0,03 mm	100 x 6,5 mm	310	300
527-413	10,1-300 mm	0-300 mm	0,02 mm	±0,04 mm	100 x 6,5 mm	410	350

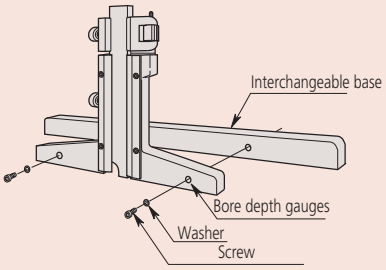




L1 = depth-vernier reading / L2 = hook-vernier reading / L3 = (depth-vernier reading) - (hook-vernier reading)

Optional accessories

No.	Description
900370	Extension Base, Depth Gauge, 180mm width for up to 300mm Range
900371	Extension Base, Depth Gauge, 260mm width for up to 300mm Range
900372	Extension Base, Depth Gauge, 320mm width for up to 300mm Range



Mounting the interchangeable base

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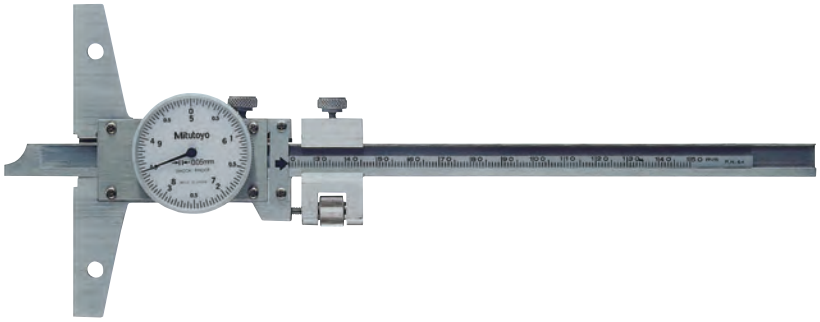
Dial Depth Gauges

Series 527

This dial depth gauge offers you the following benefits:

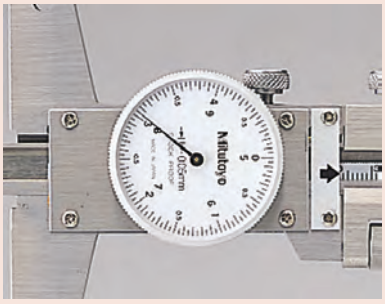
- The dial is very easy-to-read.
- Its base and measuring faces are hardened and micro-lapped for robustness.
- With fine adjustment.

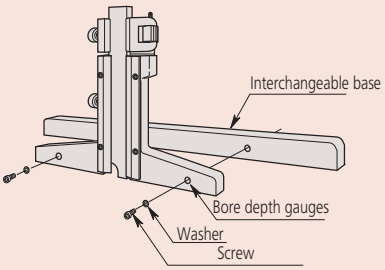


527-301-50

Optional accessories

No.	Description
900370	Extension Base, Depth Gauge, 180mm width for up to 300mm Range
900371	Extension Base, Depth Gauge, 260mm width for up to 300mm Range
900372	Extension Base, Depth Gauge, 320mm width for up to 300mm Range

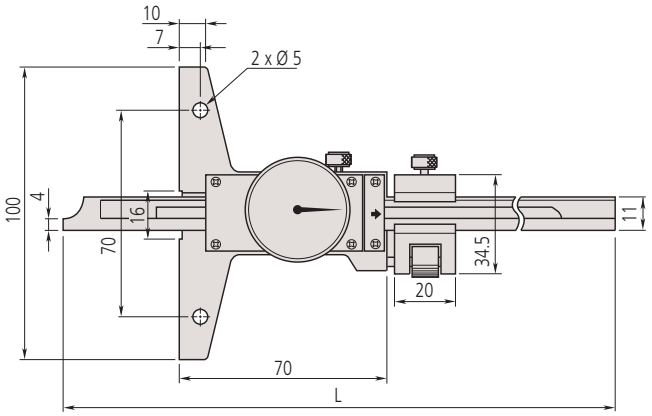




Mounting the interchangeable base

Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Base (W x T)	L [mm]	Mass [g]
527-301-50	0 - 150	0,05 mm	±0,05 mm	100 x 6,5 mm	260	280
527-302-50	0 - 200	0,05 mm	±0,05 mm	100 x 6,5 mm	310	300
527-303-50	0 - 300	0,05 mm	±0,08 mm	100 x 6,5 mm	410	340



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Tyre Tread Depth Gauges

Series 571

This is designed to measure tyre tread depth and offers you the following benefits:

- The ABSOLUTE feature of this gauge keeps track of the origin point (once set) for the entire life of the battery.

Dust- and Water-Protected
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ABSOLUTE®

IP67

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

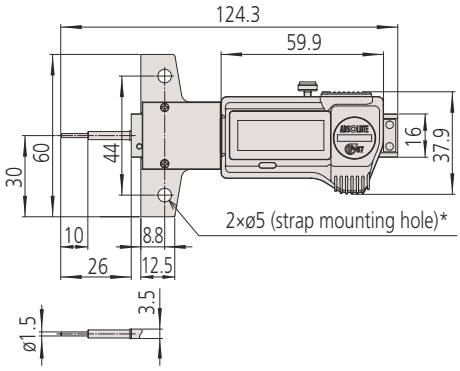
Specifications

Max. response speed	Unlimited
Power supply	1 battery SR-44
Battery life	Approx. 5 years
Display	LCD, character height 9 mm
Delivered	Including 1 battery

571-100-20

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	Base (W x T)	Mass [g]
571-100-20	0 - 25	0,01 mm	±0,02 mm	60 x 6,2 mm	160



Optional accessories

No.	Description
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type
264-620	U-WAVE fit, IP67 Type, Wireless Transmitter for Caliper
264-621	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-625	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Caliper
02AZF310	Connection Unit, U-WAVE fit, U-WAVE fit, U-WAVE fit Bluetooth

* optional extension base is unavailable

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

Optional Accessories for Depth Calipers

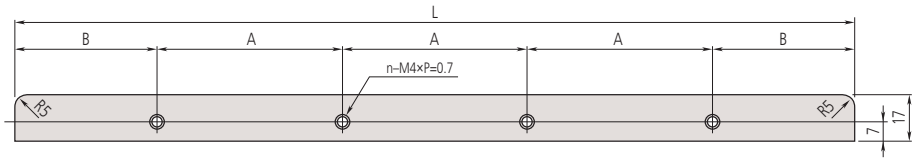
Extension bases

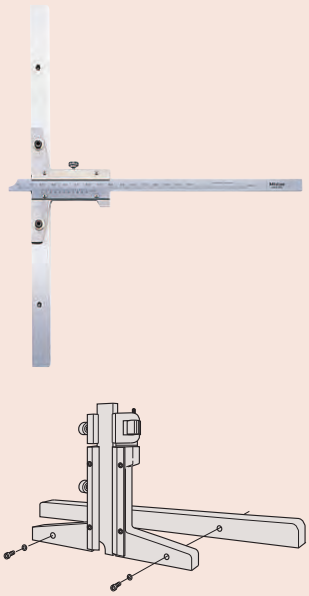
These optional extension bases can be fitted to depth gauge models up to 0-300 mm range. They cannot be attached to 0-600mm or 0-1000 mm range models.

900372

Metric

No.	L [mm]	A [mm]	B [mm]	Number of holes	Mass [g]
900370	180	70	55	2	200
900371	260	35	60	5	270
900372	320	70	55	4	345





Attaching the extension base

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Height Gauges
Page 218

Height Gauge Accessories
Page 224

Height Gauges with Data Processing Unit
Page 226

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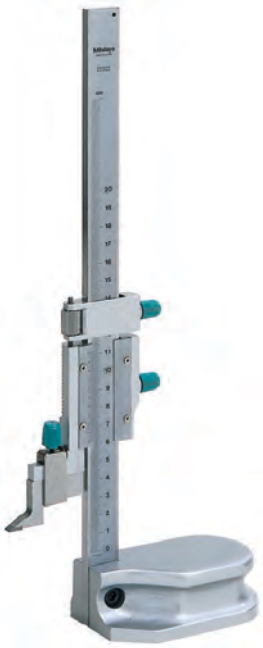
Vernier Height Gauges

Series 514

This vernier height gauge offers you the following benefits:

- You can take accurate and fast readings thanks to the satin chrome finished main and vernier scales.
- A carbide-tipped scriber is provided.

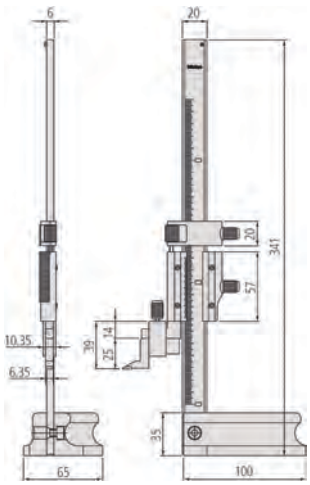


506-207

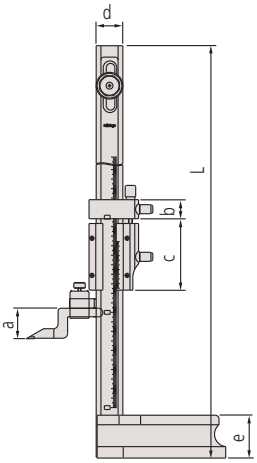
514-102

Metric

No.	Range [mm]	Graduation	Max. Permissible Error E MPE	Fine adjust-ment	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	L [mm]	Mass [kg]
506-207	0 - 200	0,02 mm	±0,03 mm	4 mm						341	1,4
514-102	0 - 300	0,02 mm	±0,04 mm	4 mm	32	20	70	28	45	525	3,1
514-104	0 - 450	0,02 mm	±0,05 mm	4 mm	32	20	70	28	45	675	3,4
514-106	0 - 600	0,02 mm	±0,05 mm	7 mm	32	24	85	35	54	870	7,4
514-108	0 - 1000	0,02 mm	±0,07 mm	6 mm	42	30	110	45	65	1340	20



0 - 200 mm



0 - 300 to 0 - 1000 mm

Specifications

Scale adjustment	15 mm: 300, 450, 600 mm range, 25 mm: 1000 mm range
Delivered	Including scriber & scriber clamp

Standard accessories

No.	Description
05GZA033	Scriber Clamp, for 9x9mm Scriber
900173	Carbide Tipped Scriber, 6,35x12,7mm, 47mm Length
07GZA000	Carbide Tipped Scriber, 9x9mm, 80mm Length
905200	Carbide Tipped Scriber, 9x9mm, 150mm Length
06AGR304	Scriber Clamp with Plastic Screw, for 12,7x6,35 mm Scriber

06AGR304: for 506-207
05GZA033: for 514-102, 514-104, 514-106, 514-108
900173: for 506-207
07GZA000: for 514-102, 514-104, 514-106
905200: for 514-108

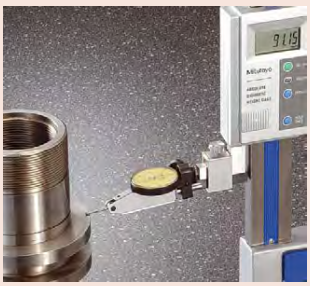
Optional accessories

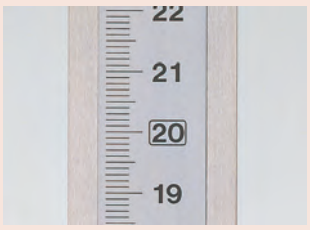
No.	Description
953638	Holding Bar for Swivel Clamp, 9x9mm, 50mm Length
900209	Holding Bar for Swivel Clamp, 9x9mm, 100mm Length
900321	Swivel Clamp, for D=4/8mm, Dovetail
07GZA003	Magnifier for Vernier Height Gauge, 300, 450, 600mm
07GZA015	Magnifier for Vernier Height Gauge, 1000mm

953638: except 506-207
900209: except 506-207
900321: except 506-207

953638

900321





Large graduation

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Dial Height Gauges

Series 192

This Dial Height Gauge offers you the following benefits:

- It allows you easy and error-free reading with both up and down digital counters as well as a dial.
- It comes with a hand wheel so you can easily make rough adjustments.
- A carbide-tipped scriber is provided.

192-130

192-132

192-133

Specifications

Delivered	Including scriber, scriber clamp and cover

Standard accessories

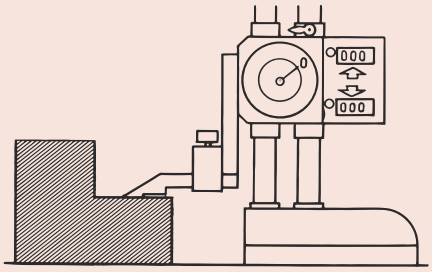
No.	Description
07GZA000	Carbide Tipped Scriber, 9x9mm, 80mm Length
05GZA033	Scriber Clamp, for 9x9mm Scriber
450291	Vinyl Cover Series 192, 300mm
450292	Vinyl Cover Series 192, 600mm
450290	Vinyl Cover Series 192, 1000mm

Optional accessories

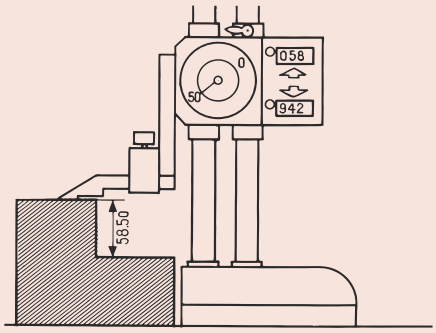
No.	Description
953638	Holding Bar for Swivel Clamp, 9x9mm, 50mm Length
900321	Swivel Clamp, for D=4/8mm, Dovetail

953638

900321



Reset

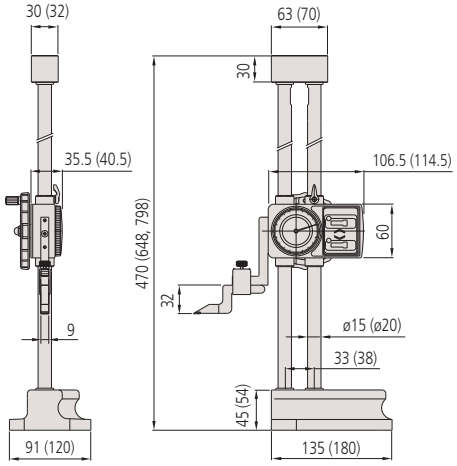


Reading off
Counter : 58,00 mm
Dial Gauge : 0,50 mm

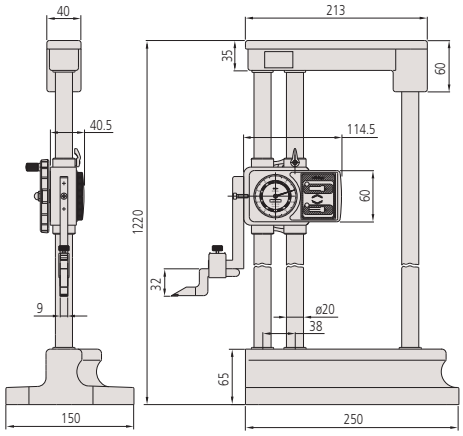
Result : 58,50 mm

Metric

No.	Range [mm]	Digital step	Graduation	Max. Permissible Error E MPE	Mass [kg]
192-130	0 - 300	0,01 mm	0,01 mm	±0,03 mm	4,2
192-131	0 - 450	0,01 mm	0,01 mm	±0,05 mm	9,2
192-132	0 - 600	0,01 mm	0,01 mm	±0,05 mm	9,8
192-133	0 - 1000	0,01 mm	0,01 mm	±0,07 mm	17



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



0 - 1000 mm

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Mitutoyo

ABSOLUTE Digimatic Height Gauges

Series 570

ABSOLUTE®

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

- Its built-in ABSOLUTE linear encoder means you don't have to set the reference point at every power-on, improving reliability as over-speed errors cannot occur.
- Fine-adjustment gives you precise positioning.
- A carbide-tipped scriber is provided.

570-227 570-230

Functions	Series 570
ON/OFF	●
ABS / INC (INC ZERO)	●
PRESET	●
ORIGIN (ABS-Zero)	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●
±SWITCHING	●

Specifications

Scale	ABSOLUTE electrostatic linear encoder
Display	LCD
Max. response speed	Unlimited
Delivered	Including 1 battery, scriber and scriber clamp
Battery life	Approx. 5000 hours

Standard accessories

No.	Description
901338	Scriber Clamp, for 6,35x12,7mm Scriber
05GZA033	Scriber Clamp, for 9x9mm Scriber
900173	Carbide Tipped Scriber, 6,35x12,7mm, 47mm Length
905200	Carbide Tipped Scriber, 9x9mm, 150mm Length

901338, 900173: 570-227
05GZA033, 905200: 570-230

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
953639	Holding Bar for Swivel Clamp, 6,25x12,7mm, 2" Length
953638	Holding Bar for Swivel Clamp, 9x9mm, 50mm Length
900209	Holding Bar for Swivel Clamp, 9x9mm, 100mm Length
900321	Swivel Clamp, for D=4/8mm, Dovetail

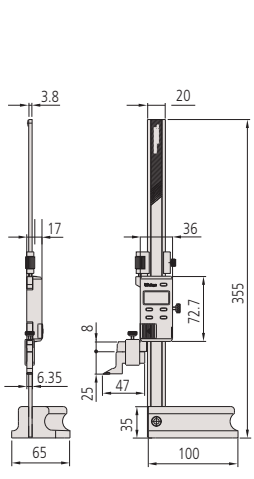
953639: 570-227
953638, 900209: 570-230

Consumable spares

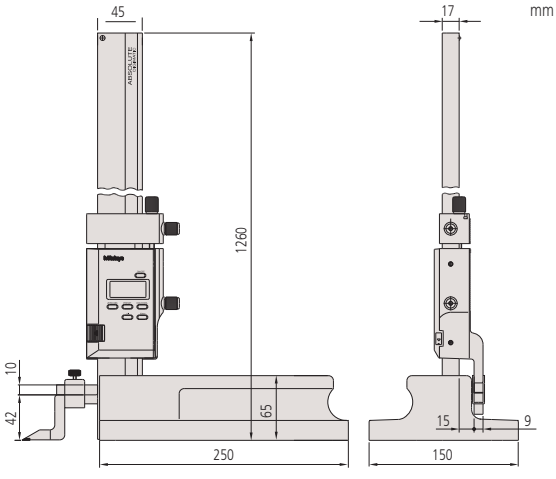
No.	Description
938882	Battery SR44 1,5 V

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	Fine adjustment	Remarks	Mass [kg]
570-227	0 - 200	0,01 mm	±0,03 mm	4 mm	2 x PRESET	1,3
570-230	0 - 1000	0,01 mm	±0,07 mm	6 mm		16,8



0-200 mm



mm

0-1000 mm

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ABSOLUTE Digimatic Height Gauges with Slider Adjustment Wheel

Functions	Series 570
ON/OFF	●
ABS / INC (INC ZERO)	●
ORIGIN (ABS-Zero)	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●

Specifications

Scale	ABSOLUTE electrostatic linear encoder
Display	LCD, character height 11 mm
Max. response speed	Unlimited
Delivered	Including 1 battery, scriber and scriber clamp
Battery life	Approx. 20000 hours

Standard accessories

No.	Description
07GZA000	Carbide Tipped Scriber, 9x9mm, 80mm Length
05GZA033	Scriber Clamp, for 9x9mm Scriber
450291	Vinyl Cover Series 192, 300mm
450292	Vinyl Cover Series 192, 600mm

Optional accessories

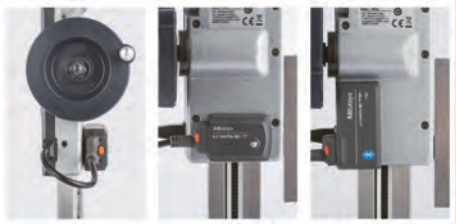
No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
264-624	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Caliper
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
953638	Holding Bar for Swivel Clamp, 9x9mm, 50mm Length
900321	Swivel Clamp, for D=4/8mm, Dovetail

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

953638

900321



Wireless data transmitter can be installed on the back of the display unit with double-sided tape

Series 570

ABSOLUTE®

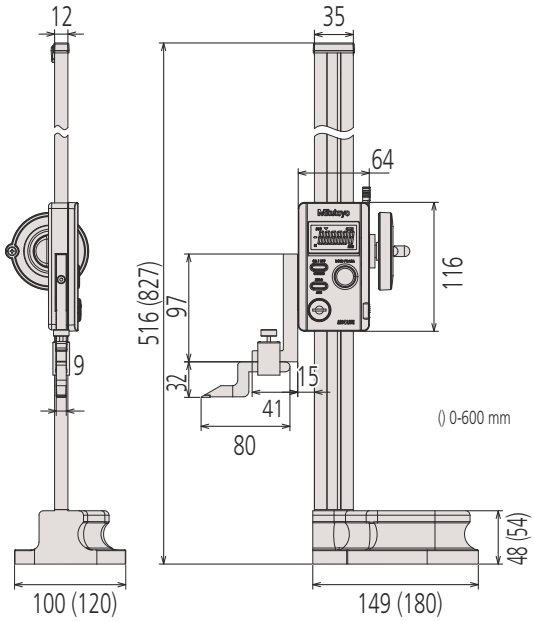
This Digimatic height gauge is very precise and reliable, and offers you the following benefits:

- Its built-in ABSOLUTE linear encoder means you don't have to set the reference point at every power-on, improving reliability as over-speed errors cannot occur.
- It comes with large and smooth-acting slider hand wheel
- A carbide-tipped scriber is provided.
- A large display and buttons for easy operability.

570-402

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	Mass [kg]
570-402	0 - 300	0,01 mm	±0,03 mm	4,6
570-404	0 - 600	0,01 mm	±0,05 mm	6,4



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Mitutoyo

Digimatic Height Gauges Double Column Type

Series 192

This High Accuracy Height Gauge offers you the following benefits:

- Its double-column structure ensures high measuring accuracy.
- Carbide-tipped scriber provided
- Large character height of 11 mm provides good readability.

192-613-10

Functions	Series 192
ON/OFF	●
ABS / INC (INC ZERO)	●
PRESET (2 values)	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●
±SWITCHING	●

Specifications

Display	LCD, character height: 11 mm
Max. response speed	500 mm/s
Delivered	Including scriber, scriber clamp, 1 battery and cover
Battery life	Approx. 3500 hours

Standard accessories

No.	Description
05GZA033	Scriber Clamp, for 9x9mm Scriber
07GZA000	Carbide Tipped Scriber, 9x9mm, 80mm Length
450291	Vinyl Cover Series 192, 300mm
450292	Vinyl Cover Series 192, 600mm
450290	Vinyl Cover Series 192, 1000mm

Optional accessories

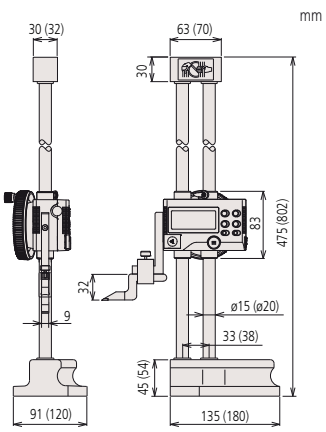
No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
953638	Holding Bar for Swivel Clamp, 9x9mm, 50mm Length
900321	Swivel Clamp, for D=4/8mm, Dovetail

Consumable spares

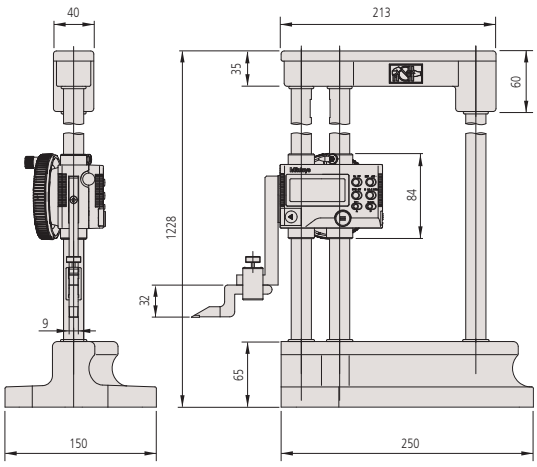
No.	Description
938882	Battery SR44 1,5 V

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	Mass [kg]
192-613-10	0 - 300	0,01/0,005 mm	±0,02 mm	4,7
192-614-10	0 - 600	0,01/0,005 mm	±0,05 mm	8,3
192-615-10	0 - 1000	0,01/0,005 mm	±0,07 mm	15,7



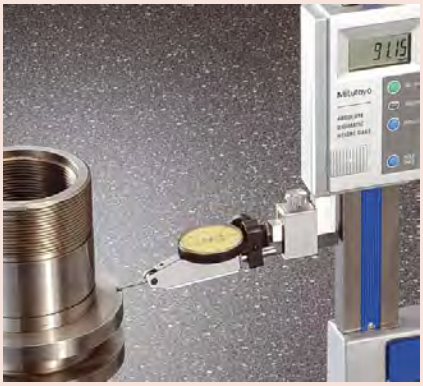
0-300 mm
(0-600 mm)



0-1000 mm

953638

900321



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Digimatic Height Gauges Double Column Type with Touch Trigger Probe Connector

Functions	Series 192
ON/OFF	●
ABS / INC (INC ZERO)	●
PRESET (2 values)	●
Touch-trigger probe	●
Stylus tip diameter compensation	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●
±SWITCHING	●

Specifications

Display	LCD, character height: 11 mm
Max. response speed	500 mm/s
Delivered	Including scriber, scriber clamp, 1 battery and cover
Battery life	Approx. 3500 hours

Standard accessories

No.	Description
05GZA033	Scriber Clamp, for 9x9mm Scriber
905200	Carbide Tipped Scriber, 9x9mm, 150mm Length
450291	Vinyl Cover Series 192, 300mm
450292	Vinyl Cover Series 192, 600mm
450290	Vinyl Cover Series 192, 1000mm

Optional accessories

No.	Description
192-007	Bi-Directional Touch Trigger Probe, for Series 192, Metric
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
953638	Holding Bar for Swivel Clamp, 9x9mm, 50mm Length
900209	Holding Bar for Swivel Clamp, 9x9mm, 100mm Length
900321	Swivel Clamp, for D=4/8mm, Dovetail

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

192-007

Series 192

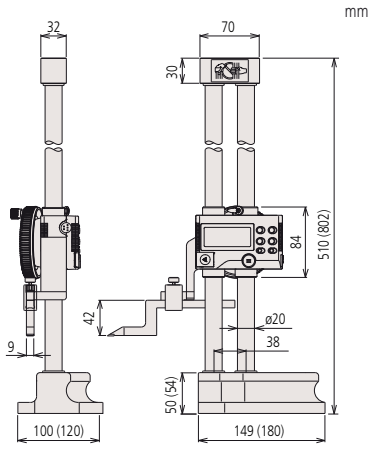
This High Accuracy Height Gauge offers you the following benefits:

- Its double-column structure ensures high measuring accuracy.
- Carbide-tipped scriber provided.
- Large character height of 11 mm provides good readability.

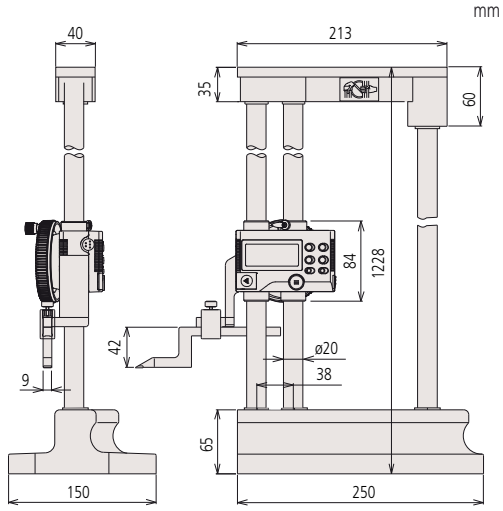
192-663-10

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	Mass [kg]
192-663-10	0 - 300	0,01/0,005 mm	±0,02 mm	5,7
192-664-10	0 - 600	0,01/0,005 mm	±0,04 mm	8,3
192-665-10	0 - 1000	0,01/0,005 mm	±0,06 mm	15,7



0-300 mm
(0-600 mm)



0-1000 mm

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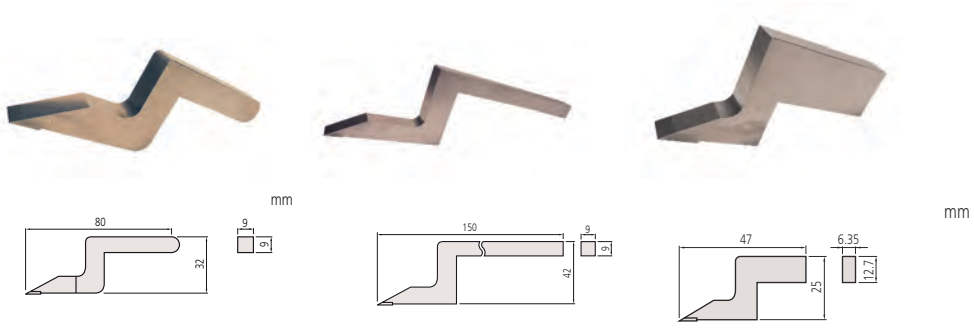
Mitutoyo

Spare Parts for Height Gauges

Standard accessories for Height Gauges

These are optional accessories and spare parts for height gauges, that you can use for different tasks.

- Various accessories are available for using height gauges in different applications.
- Hard-wearing carbide-tipped scribers are available for all height gauges.



07GZA000 **905200** **900173**

05GZA033 **06AGR304**

Carbide-tipped scribers

No.	Applicable height gauges	Remarks
07GZA000	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 514-102, 514-104, 514-106, 514-103, 514-105, 514-107 570-302, 570-304, 570-402, 570-404	Carbide tipped scriber (9 x 9 mm) 80 mm length
905200	192-663-10, 192-664-10, 192-665-10 514-108, 514-109 570-230	Carbide tipped scriber (9 x 9 mm) 150 mm length
900173	570-227, 570-244 506-207, 506-208	Carbide tipped scriber (12,7 x 6,35 mm) 47 mm length

Scriber clamp

No.	Applicable height gauges	Remarks
05GZA033	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 192-663-10, 192-664-10, 192-665-10 514-102, 514-104, 514-106, 514-108 570-230 570-302, 570-304, 570-402, 570-404	Scriber clamp (9 x 9 mm)
06AGR304	570-227, 570-244, 506-207	Scriber clamp with plastic screw (12,7 x 6,35 mm)

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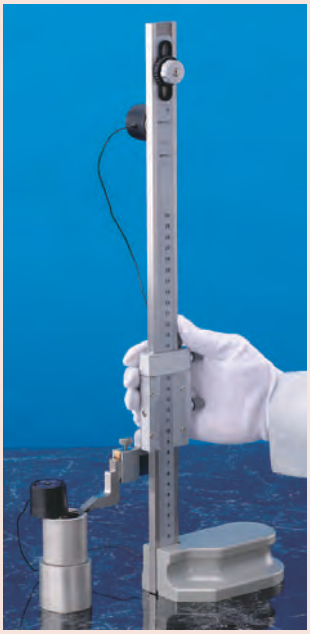
Optional Accessories for Height Gauges

Center master

Depth measurement attachment



Electrical contact sensor

Optional accessories for Height Gauges

These are optional accessories for height gauges, that you can use for different tasks.

- Various accessories are available for using height gauges in different applications.

951144

900764

900872

Center master

No.	Applicable height gauges	Remarks	Measurable hole diameter
951144	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 514-102, 514-103, 514-104, 514-105, 514-106, 514-107 570-302, 570-304, 570-402, 570-404 192-663-10, 192-664-10, 192-665-10 514-108, 514-109	Center master (9 x 9 mm)	1-38 mm

Depth measurement attachment

No.	Applicable height gauges	Remarks
900764	192-130, 192-131, 192-132, 192-133 192-613-10, 192-614-10, 192-615-10 514-102, 514-103, 514-104, 514-105, 514-106, 514-107 570-302, 570-304, 570-402, 570-404 192-663-10, 192-264-10, 192-665-10 514-108, 514-109	Depth measurement attachment (9 mm x 9 mm)
900878	570-227, 570-244 506-207, 506-208 192-150, 192-151, 192-152 192-630-10, 192-631-10, 192-632-10, 192-633-10 570-312, 570-313, 570-314 192-670-10, 192-671-10, 192-672-10, 192-673-10 570-248	Depth measurement attachment (12,7 mm x 6,35 mm)

Electrical contact sensor

No.	Applicable height gauges	Remarks
900872	For all height gauges on a granite surface plate. For electroconductive parts with a sufficient contact surface.	This sensor eliminates errors caused by non-contact of the slider with a workpiece while making measurements.

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Mitutoyo

QM-Height

Series 518

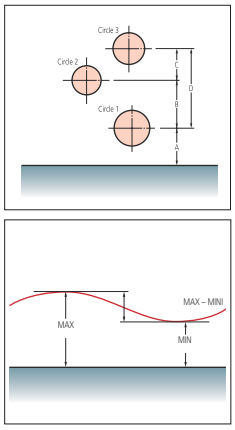
ABSOLUTE®

This is a high precision ABSOLUTE Digital Height Gauge that offers you the following benefits:

- It has a high accuracy, high resolution ABSOLUTE linear encoder for position detection.
- Types with and without pneumatic drive mechanism.
- Automatic running of prelearnt part programs.
- You can easily implement frequently used measurements, such as inside/outside diameter and pitch calculations, by icon-based commands that also support easy one-key operation.
- Extraordinary battery life.
- GO/±NG judgement is performed by setting the upper and lower tolerances.

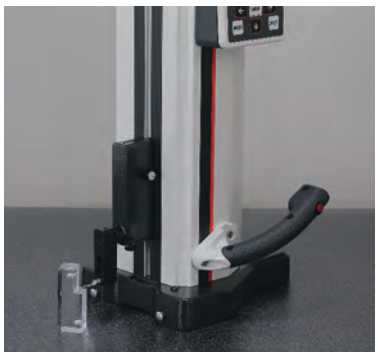
518-244

518-246



Metric

No.	Range	Digital step	Accuracy	Perpendicularity	Repeatability	Air floating	Mass [kg]
518-240	0-350 mm	0,001 mm/0,005 mm	±(2,4+2,1L/600) µm L = Measuring length (mm)	7 µm	(2σ) ≤ 1,8 µm	no	25
518-242	0-600 mm	0,001 mm/0,005 mm	±(2,4+2,1L/600) µm L = Measuring length (mm)	12 µm	(2σ) ≤ 1,8 µm	no	26
518-244	0-350 mm	0,001 mm/0,005 mm	±(2,4+2,1L/600) µm L = Measuring length (mm)	7 µm	(2σ) ≤ 1,8 µm	yes	29
518-246	0-600 mm	0,001 mm/0,005 mm	±(2,4+2,1L/600) µm L = Measuring length (mm)	12 µm	(2σ) ≤ 1,8 µm	yes	30



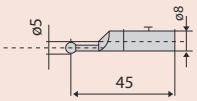
Specifications

Measuring force	1,5 ± 0,5 N
Scale	ABSOLUTE electromagnetic inductive
Display	TN monochrome LCD
Measuring function	1D measurement: height diameter, pitch, Max/Min/TIR (Max-Min), tolerance, preset, data memory
Drive method	Manual
Guiding method	Roller bearing
Power supply	Alkaline battery size AA LR6 (4 pcs.), rechargeable battery size AA Ni-MH (4 pcs.), AC-Adapter (optional)
Battery life	Approx. 1200 h (without air floating) approx. 90 h (with air floating)

Standard accessories

No.	Description
011037	Battery, LR6, 1,5V, 4 pcs.
12AAA715	Setting Block for Height Gauge, Probe Calibration
05HZA148	Ball Offset Probe QM-Height, D=5mm, Standard Accessory

05HZA148



Standard ball probe of 05HZA148

Scan QR Code with your mobile device and watch our product videos on YouTube.

Scan QR Code with your mobile to read the QM-Height leaflet.

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Optional Accessories for QM-Height

Series 518

Optional accessories

No.	Description
06AGZ369D	AC-Adapter, DC 6V 2A, CEE version Germany (Europe)
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type
02AZE990	U-WAVE Transmitter Mounting Plate, for QM-Height
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
06AFZ050	USB Cable 1m, DP-1VA to PC etc., USB Type A to Micro USB Type B Plug

Other probes and data management hardware, see optional accessories for QM-Height and Linear Height.

02AZE990

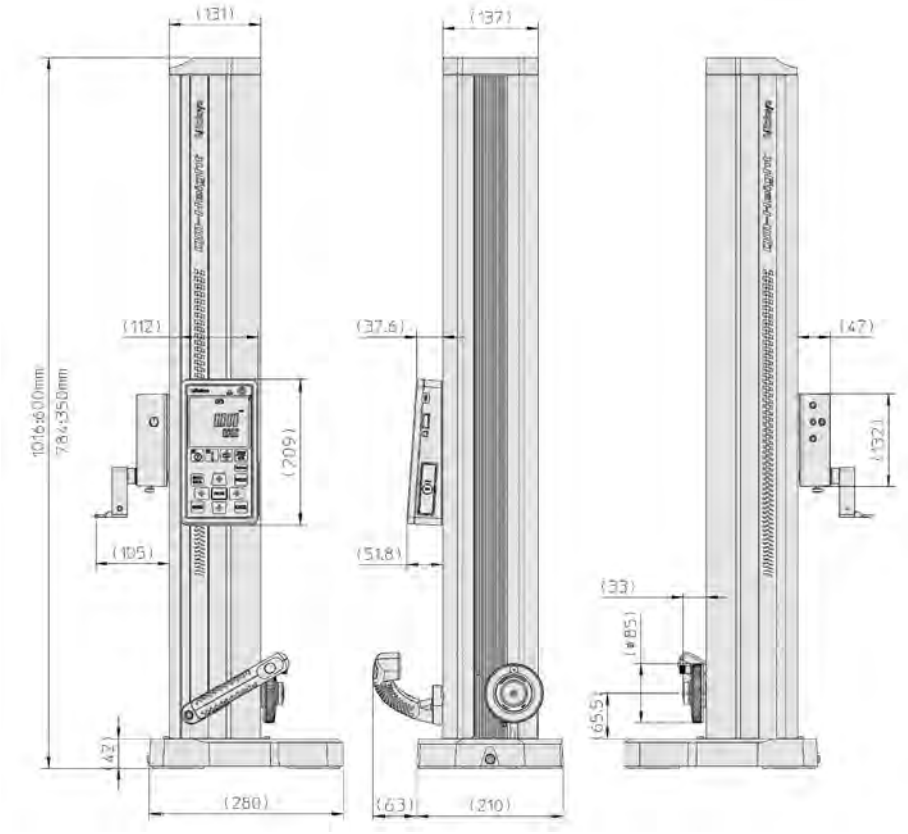
Inside diameter

Outside diameter

936937

06AFM380D

02AZE990



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Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Linear Height LH-600 F/FG

Series 518

The Linear Height LH-600F/FG is a high-end 2D height-measuring instrument exhibiting the perfect combination of intuitive operation and multifunctionality.

- Measurement operations can be performed by using the hybrid controller box with a touch screen and integrated sheet keyboard
- It is capable of measuring with a digital step of 0,1 µm
- Excellent accuracy of (1,1 + 0,6L/600) µm
- Bidirectional Digimatic data output (Digimatic S1)
- Measurement results can be printed from a receipt printer or Digimatic Printer (DP-1VA) and sent to a PC via wireless communication, USB cable or USB-Stick
- Pneumatic drive mechanism
- Automatic running of pre-learned part programs
- Excellent visualization of GO/±NG tolerance comparisons
- Independent operation with rechargeable battery
- LH-Communication Tool Software available online free of charge
- Delivered without power cable
- Dimensions L 492 mm x W 238 mm x H 996 mm

518-360-13

518-361-13 (model with power grip)

Measurements are supported via clear guidance on the large touch panel.

Rear panel

Specifications

Balancing method	Counterbalance
Drive method	Motor-driven (5, 10, 15, 20, 25, 30, 40 mm/s: 7 steps)/ manual
Sliding method	Rolling bearing
Slider balance adjustment method	Manual adjustment by adding/removing auxiliary weights
Scale	Photoelectric INC encoder, STVC-20Z (8,1x10-6/K)
Display	8,4" SVGA touch screen (800x600 dot, LED, with back lightning)
Language for display	English / German / French / Spanish / Italian / Dutch / Portuguese / Swedish / Turkish / Czech / Hungarian / Slovenian / Polish / Russian / Romanian / Bulgarian / Finnish / Traditional Chinese / Simplified Chinese / Korean / Japanese
Adjustment range of display unit orientation	Tilt direction: 0-40°, swivel direction: -30-180°
Power supply	AC adapter 100-240V, 50/60Hz / battery (Ni-MH)
Battery operation time	Approx. 4 hours
Battery charging time	Appr. 3,5 h
Power consumption	Max. 49,9 W
Data output	Yes
Number of stored part programs	50
Preventive maintenance function	Scale status notification, calibration status notification
Measuring force	1 N
Delivered	without power cable (02ZAA021)

Standard accessories

No.	Description
12AAY343	D=5mm Ball Stylus, with Stepped Holder
518-060-13	Probe Diameter Calibration Block, Metric/Inch, for LH-600
12BAS388	Probe Diameter Calibration Block Cover, LH-600F/FG
12AAY658	Probe Diameter Calibration Block Base, LH-600F/FG
12AAF712	Battery Pack, for Height Gauge LH-600 C/D/E/F
223587	Dust Cover LH-600
12BAR507	Touch-Pen
12BAS384	Protective Sheet, Touch Screen LH-600F/FG
357651	AC-Adapter 12V, CEE Type, for SJ-210/SJ-310/LH-600/QM-Data 200
12BAS276	Cap for Conveying Handles, LH-600F/FG
510434	Conveying Handles (2 pcs.), Linear Height, Profile Projector

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Linear Height LH-600 F/FG

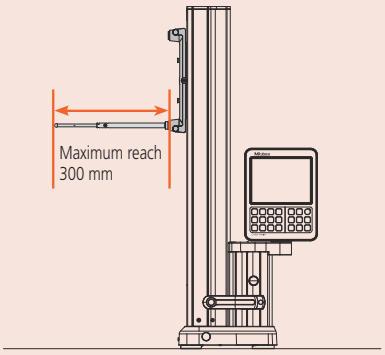
Metric/Inch

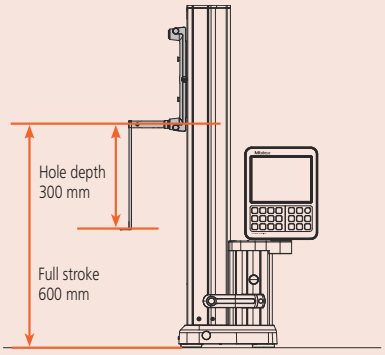
No.	Range [mm]	Slider stroke	Digital step	Remarks
518-360-13	0-977	600 mm	0,0001/ 0,001/ 0,01/ 0,1 mm or 0,000001/ 0,00001/ 0,0001/ 0,001"	Without power grip
518-361-13	0-977	600 mm	0,0001/ 0,001/ 0,01/ 0,1 mm or 0,000001/ 0,00001/ 0,0001/ 0,001"	With power grip

No.	Accuracy	Perpendicularity	Straightness	Repeatability	Air floating	Mass [kg]
518-360-13	±(1,1 + 6L/6000) µm L = length (mm)	5 µm (after compensation)	4 µm (mechanical)	(2σ) Plane : 0,4 µm (2σ) Bore : 0,9 µm	Full-floating (for moving), semi floating (for scanning measurement)	26,1
518-361-13	±(1,1 + 6L/6000) µm L = length (mm)	5 µm (after compensation)	4 µm (mechanical)	(2σ) Plane : 0,4 µm (2σ) Bore : 0,9 µm	Full-floating (for moving), semi floating (for scanning measurement)	26,6

Scan QR Code with your mobile device and watch our product videos on YouTube.

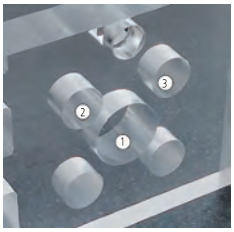
Scan QR Code with your mobile to read the Linear-Height leaflet.

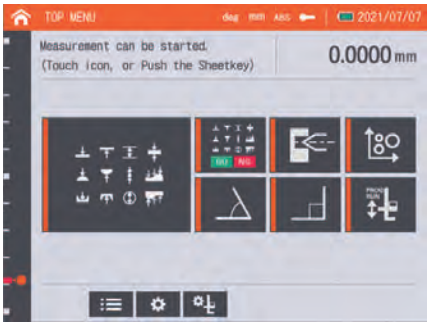




Measurement area with optional probes

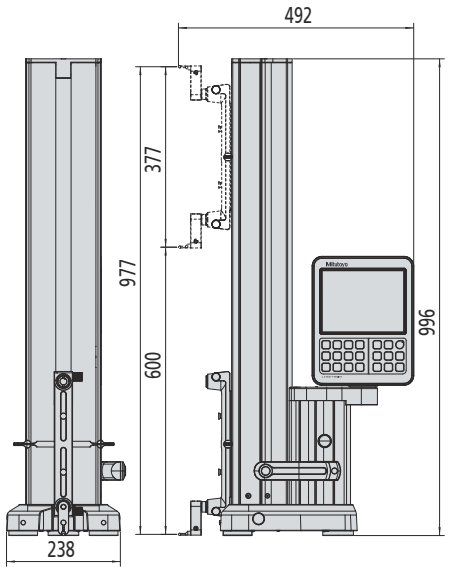
Grafic support for 2D measurement





Home screen

Result screen



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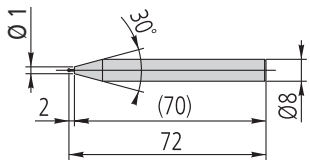
Mitutoyo

Optional Accessories for Linear Height

Series 518



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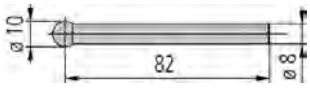

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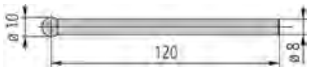

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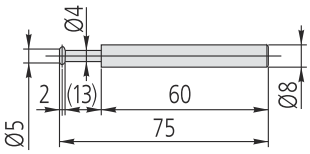

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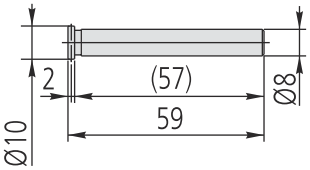

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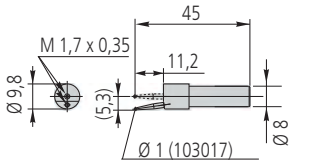

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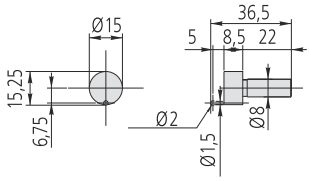

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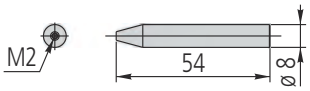

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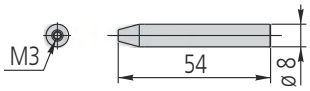

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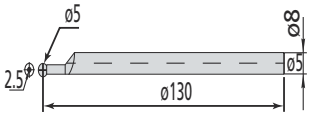

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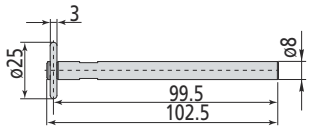

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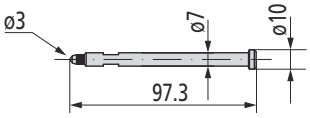

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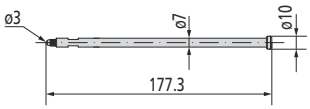

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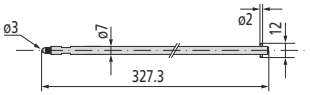

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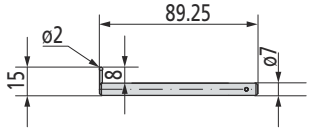

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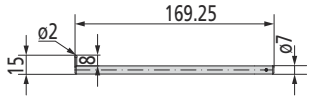

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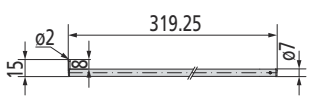

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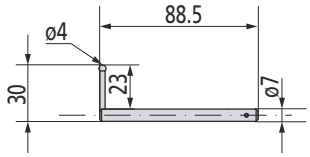

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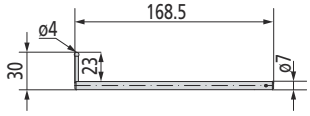

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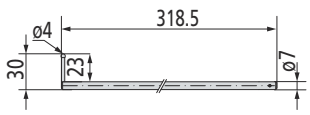
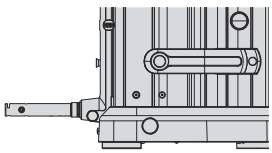
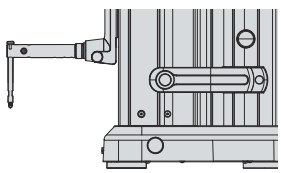


12AAY607

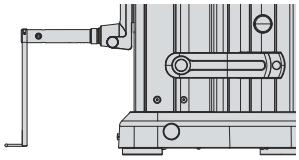
Extension holder
12AAY595 or 12AAY596



Extension holder 100 mm or
200 mm for probes and stylus



12AAY599 + 12AAY595



12AAY606 + 12AAY595

Optional accessories

No.	Description
12AAF666	Ball Probe Coaxial Type, D=1mm, 72mm Length
12AAF668	Ball Probe Coaxial Type, D=10mm, 82mm Length
12AAF669	Ball Probe Coaxial Type, D=10mm, 120mm Length
12AAF670	Disk Probe Coaxial Type, D=5mm, 75mm Length
12AAF671	Disk Probe Coaxial Type, D=10mm, 59mm Length
12AAF672	Ball Probe Eccentric Type, D=1mm
12AAF673	Ball Probe Eccentric Type , D=2mm
226117	CMM Stylus Adapter M2
226118	CMM Stylus Adapter M3
12AAY597	Stylus, Eccentric Type, D=5mm, 130mm Length
12AAY598	Disk Stylus, Coaxial Type, D=25mm, 99,5mm Length
12AAY599	Depth Stylus for Height Gauge, for max. 70mm Depth
12AAY600	Depth Stylus for Height Gauge, for max. 150mm Depth
12AAY601	Depth Stylus for Height Gauge, for max. 300mm Depth
12AAY602	Depth Stylus for Height Gauge, Offset Type, for max. 70mm Depth, D=2mm Ball
12AAY603	Depth Stylus for Height Gauge, Offset Type, for max. 150mm Depth, D=2mm Ball
12AAY604	Depth Stylus for Height Gauge, Offset Type, for max. 300mm Depth, D=2mm Ball
12AAY605	Depth Stylus for Height Gauge, Offset Type, for max. 70mm Depth, D=4mm Ball
12AAY606	Depth Stylus for Height Gauge, Offset Type, for max. 150mm Depth, D=4mm Ball
12AAY607	Depth Stylus for Height Gauge, Offset Type, for max. 300mm Depth, D=4mm Ball
12AAY595	Extension Holder, 100mm, for Height Gauge
12AAY596	Extension Holder, 200mm, for Height Gauge

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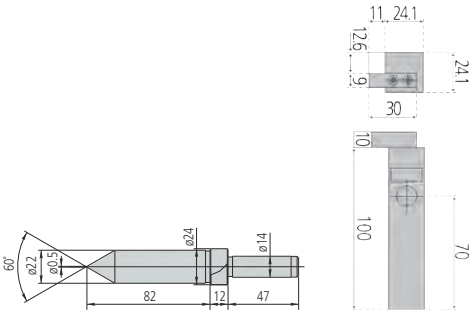
Optional Accessories for Linear Height

Series 518

Optional accessories

No.	Description
12AAC073	Tapered Measuring Insert, D=22mm
12AAA787	Setting Block Linear Height/QM-Height, Probe Calibration and Taper Probe
12AAB136	Cylindrical Probe, D=10mm
K650986	Stylus Kit M3 for Linear Height, with Holder, 6 Probes, 2 Extensions
02ZAA021	Power Cable CEE Type, for Europe (except UK), mandatory for AC-Adapter
12AAY483	Receipt Printer for LH-600F/FG, CEE Type
12AAN052	Printer Paper for 12AAN050, 10 pcs.
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
12AAY486	U-WAVE-T Transmitter Mounting Plate, for LH-600F/FG
02AZG011	U-WAVE-T Connection Cable SF, for Digimatic S1 Interface
12BAF812	USB Cable

K650986



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K650986

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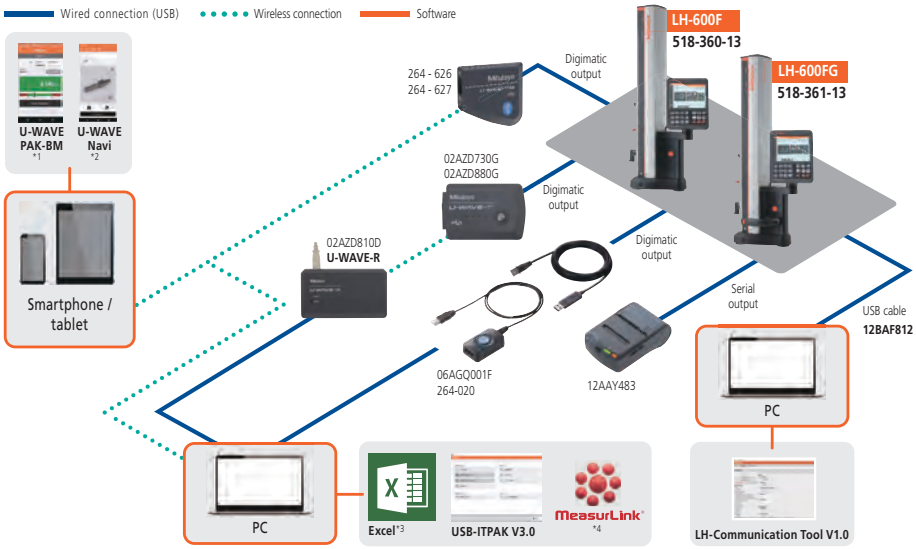

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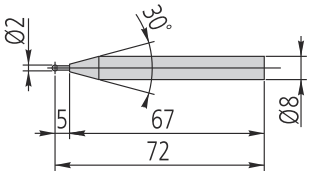
Optional Accessories for QM-Height and Linear Height

Series 518



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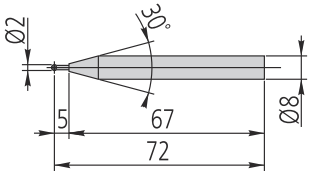

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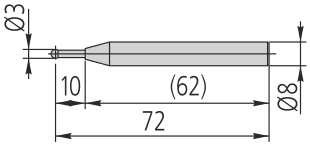

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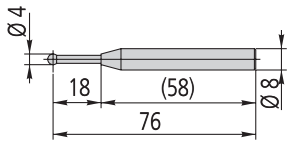

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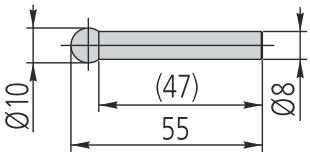

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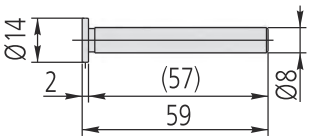

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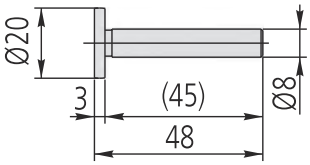

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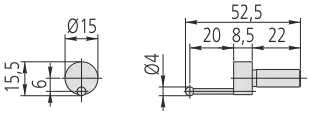

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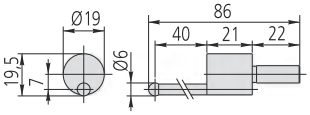

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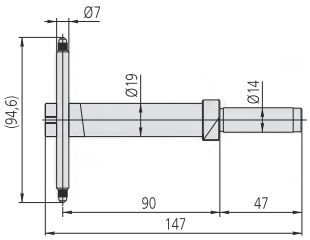

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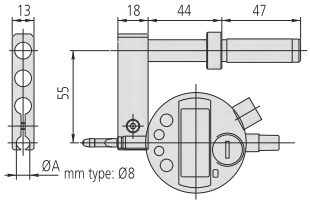

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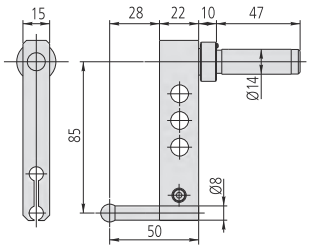

12AAA793

264-020

02AZD880G
(IEEE 802.15.4 Transmitter)

02AZD810D
(IEEE 802.15.4 Receiver)

264-627
(Bluetooth Transmitter)

Optional accessories

No.	Description
957261	Ball Probe Coaxial Type, D=2mm, 72mm Length
12AAF667	Ball Probe Coaxial Type, D=2mm, Ruby, 72mm Length
957262	Ball Probe Coaxial Type, D=3mm, 72mm Length
957263	Ball Probe Coaxial Type, D=4mm, 76mm Length
12AAB552	Ball Probe, Coaxial Type, D=10mm
957264	Disk Probe Coaxial Type, D=14mm, 59mm Length
957265	Disk Probe Coaxial Type, D=20mm, 48mm Length
12AAA788	Ball Probe Eccentric Type , D=4mm
12AAA789	Ball Probe Eccentric Type , D=6mm
12AAC072	Depth Probe for Height Gauge, 90mm Reach
12AAA792	Indicator Holder LH-600, For 8mm Stem
12AAA793	Probe Extension Holder, Height Gauge , 85mm
264-020	USB Input Tool Interface Box, Digimatic/ Digimatic 2/Digimatic S1 Interface
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD810D	U-WAVE-R Receiver, with U-WAVEPAK
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer

For wireless transmitter, use connection cable 02AZG011 for Linear Height and 02AZD790D for QM-Height.

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Indicators and Caliper Gauges

ABSOLUTE Digimatic Indicators
Page 234

Dial Indicators
Page 248

Accessories for Indicator
Page 267

Lever Indicators
Page 274

Accessories for Dial Test Indicators
Page 284

Thickness Gauges, Caliper Gauges, Dial Tension Gauges
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ABSOLUTE Digimatic Indicators ID-SX

Series 543

ABSOLUTE®

IP53

IP42

This is a standard model of indicator that is reliable and easy to use.
The ABSOLUTE Digimatic Indicator ID-S offers you the following benefits:

- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- You can access all functions by using the large, user-friendly buttons on the front of the indicator.
- Large character height of 9 mm provides good readability.
- Exceptional battery life.

543-781B-10 | 543-790B-10 | 543-794B-10

Functions	Series 543
Digimatic data output	●
ON/OFF	●
ORIGIN (ABS-Zero)	●
Counting direction switchable	●

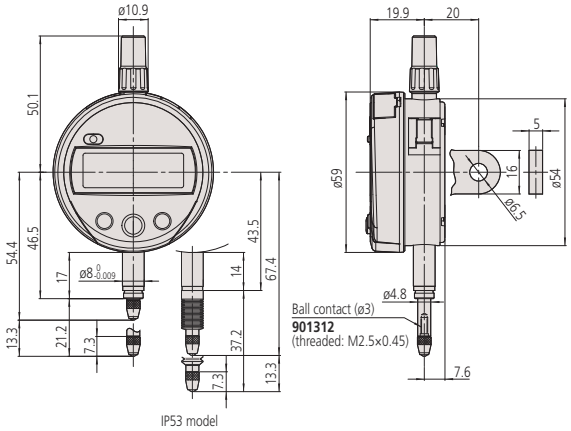
Specifications

Display	LCD, character height 9 mm
Max. response speed	Unlimited
Alarm	Low voltage, counting value composition error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 battery SR-44
Battery life	Approx. 18000 hours (0,001 mm type), approx. 20000 hours (0,01 mm type)

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-781B-10	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤1,5 N	IP42	140
543-781-10	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤1,5 N	IP42	150
543-790B-10	12,7	0,001 mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	140
543-790-10	12,7	0,001 mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	150
543-794B-10	12,7	0,001 mm	0,003 mm	0,002 mm	0,002 mm	≤2,5 N	IP53	140
543-794-10	12,7	0,001 mm	0,003 mm	0,002 mm	0,002 mm	≤2,5 N	IP53	150

No. with "B": flat back plate



IP53 model

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21EZA105	Spindle Lifting Knob, for 12,7mm Range
903594	Air Drive Unit, Indicator/Linear Gauge, for ID-S, ID-C, LGS, 12,7 mm and 0,5" Range
238774	Silicon rubber boot for ID-C, ID-N, ID-S

For USB Input Tool Direct cable:
a footswitch (no. 937179T), a USB- footswitch adapter (no. 06ADV384) and USB-ITPAK Software (no. 06AGR543) are required.
238774 for IP53 model only

Consumable spares

No.	Description
938882	Battery SR44 1,5 V
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21EAA423	NBR Rubber Boot, Digital Gauge Series 543

21EAA423 for IP53 model only

21EZA198

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ABSOLUTE Digimatic Indicators ID-U

Functions	Series 575
Digimatic data output	●
ON/OFF	●
ORIGIN (ABS-Zero)	●
Counting direction switchable	●

Series 575

This is a slim type of digital indicator with a 25 mm range.
The ABSOLUTE Digimatic Indicator ID-U offers you the following benefits:

- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- Its compact design makes it ideal for installing into measuring fixtures.
- Exceptional battery life.

Specifications

Display	LCD, character height 8,5 mm
Max. response speed	Unlimited
Alarm	Low voltage, counting value composition error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 battery SR-44
Battery life	Approx. 20000 hours

Standard accessories

No.	Description
21EAA426	Spindle Lifting Handle, for Indicators

Optional accessories

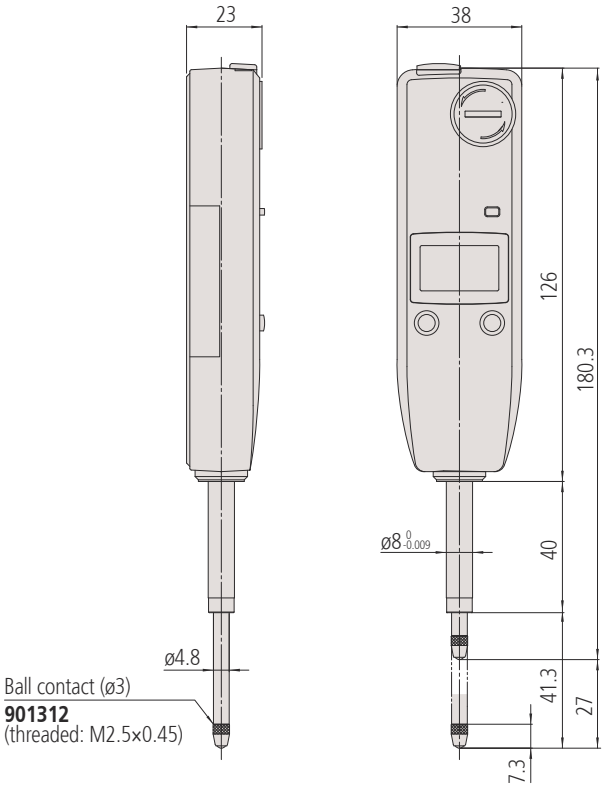
No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm

21JZA295: moving measuring range max. 12mm
For USB Input Tool Direct cable:
a footswitch (no. 937179T), a USB- footswitch adapter (no. 06ADV384) and USB-ITPAK Software (no. 06AGR543) are required.

Consumable spares

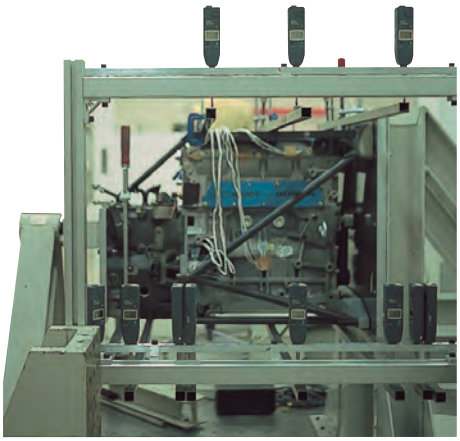
No.	Description
938882	Battery SR44 1,5 V
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

575-121



Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
575-121	25,4	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤1,8 N	IP42	140



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ABSOLUTE Digimatic Indicators ID-C

Series 543

ABSOLUTE®

PROPRIETARY INSPECTION CERTIFICATE

IP42

This is a multifunction standard indicator that is reliable and easy to use.

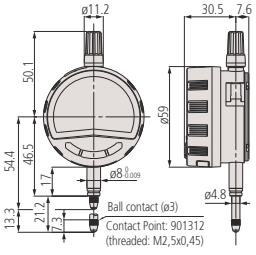
- Bidirectional communication e.g. to perform parameter setting from a PC (Digimatic S 1 interface) is possible.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- Excellent visibility with a large digital/analog display.
- Model with 0,5 µm digital step is available.
- Measurements such as simple calculation and peak detection are possible.
- Equipped with a calibration schedule warning function.
- GO/±NG judgement is performed by setting the upper and lower tolerances.
- Display 330° rotatable.
- A function lock protects the display against unauthorised use.

Functions	Series 543
DATA/HOLD	●
PRESET	●
ON/OFF	●
Function lock	●
GO/±NG judgement	●
MAX/MIN/RANGE	●
ZERO/ABS	●
ABS / INC (INC ZERO)	●
Analog bar resolution selection	●
Auto Power OFF setting	●
Calculation function (with formula)	●
Customizing keys	●
Counting direction switchable	●
Calibration warning function	●

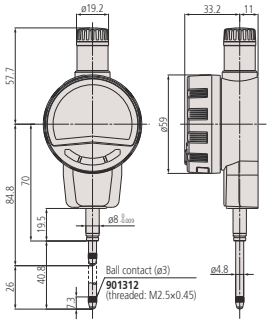
Specifications

Display	LCD, character height 11 mm, rotable 330°
Max. response speed	Unlimited
Measurement frequency (MAX/MIN/RANGE)	50 times/s
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 battery CR-2032
Battery life	Continuous use: approx. 2700h
Delivered	Including CR-2032 battery, battery lid opener, spindle lifting handle (25,4 and 50,8 mm models), weight (low force models), certificate of inspection

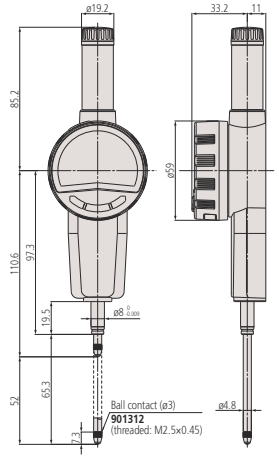
543-700B | 543-715B | 543-720B | 543-730B



12,7 mm models



25,4 mm models



50,8 mm models

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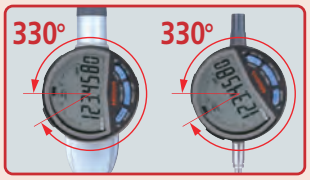
ABSOLUTE Digimatic Indicators ID-C

Optional accessories

No.	Description
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
264-020	USB Input Tool Interface Box, Digimatic/ Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth
02AZG011	U-WAVE-T Connection Cable SF, for Digimatic S1 Interface
02AZG021	U-WAVE-T Connection Cable SF, Footswitch, for Digimatic S1 Interface
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm
21EZA105	Spindle Lifting Knob, for 12,7mm Range
903594	Air Drive Unit, Indicator/Linear Gauge, for ID-S, ID-C, LGS, 12,7 mm and 0,5" Range
21EZA197	Spindle Lifting Knob, for 25,4mm Range
21EZA200	Spindle Lifting Knob, for 50,8mm Range
02ACA571	Auxiliary Spindle Spring, for 25,4mm Range
02ACA773	Auxiliary Spindle Spring, for 50,8mm Range

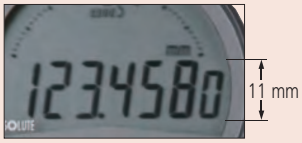
02ACA571 and 02ACA773 : required when orienting the indicator upside down;
02AZF700, 21EZA198, 21JZA295, 21JZA301, 903594
for 12,7 mm model only



330° rotary display

Calibration schedule warning

Scan QR code for Leaflet



Large display

Scan QR code for Video

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-700	12,7	0,0005 mm/0,001 mm/0,01mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	175
543-700B	12,7	0,0005 mm/0,001 mm/0,01mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	165
543-705	12,7	0,0005 mm/0,001 mm/0,01mm	0,003 mm	0,002 mm	0,002 mm	0,4-0,7 N	IP42	170
543-705B	12,7	0,0005 mm/0,001 mm/0,01mm	0,003 mm	0,002 mm	0,002 mm	0,4-0,7 N	IP42	160
543-710	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤0,9 N	IP42	170
543-710B	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤0,9 N	IP42	160
543-715	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	0,2-0,5 N	IP42	165
543-715B	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	0,2-0,5 N	IP42	155
543-720B	25,4	0,0005 mm/0,001 mm/0,01mm	0,003 mm	0,002 mm	0,002 mm	≤1,8 N	IP42	195
543-725B	25,4	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤1,8 N	IP42	190
543-730B	50,8	0,0005 mm/0,001 mm/0,01mm	0,005 mm	0,002 mm	0,002 mm	≤2,3 N	IP42	260
543-735B	50,8	0,01 mm	0,04 mm	0,02 mm	0,01 mm	≤2,3 N	IP42	245

No. with "B": flat back plate

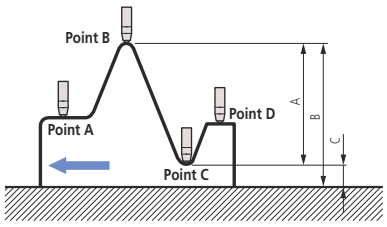
	✓	✓	<= 0,7 N
	✓	✗	<= 0,6 N
	✗	✓	<= 0,4 N
	✗	✗	---

543-705(B)

	✓	✓	<= 0,5 N
	✓	✗	<= 0,4 N
	✗	✓	<= 0,3 N
	✗	✗	<= 0,2 N
	✓	✗	<= 0,3 N

543-715(B)

Setting measuring force on low measuring force models with the help of a spring and/or weight.



Difference/Runout measurement
Example : Indicator travel from points A to D :
Difference (or Total Runout) is displayed as A.
Dimensions B (maximum value) and C (minimum value) can be measured with a simple key sequence.

Application with spindle lifting cable

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Mitutoyo

ABSOLUTE Digimatic Indicators Max/Min/RANGE ID-C

Series 543

This indicator is the MAX/MIN/RANGE value holding function model

It offers the following benefits:

- The MAX/MIN/RANGE (run-out value) can be measured.
- A fast measurement frequency mode(detection cycle 20 ms or 50 times/s) is selectable to measure in the peak detection mode (MAX/MIN/RANGE) more reliably.
- Easy indicator setup via a setup menu.
- Analogue bar graph in the display (12 different scales switchable).
- GO/±NG tolerance judgement function.
- This indicator enables the use of a calculation function for the measured value Ax.
- Coefficient A is freely definable and x = displacement of the plunger.
- A USB interface box can be used to set up the indicator from PC via dedicated software.

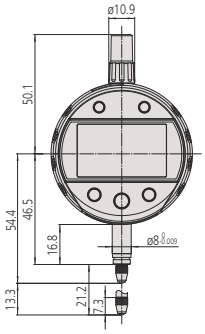
543-300B-10

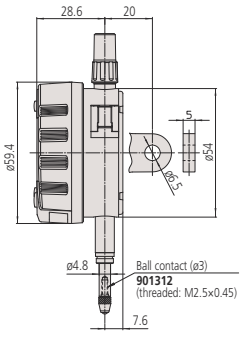
543-300B-10
7001-10

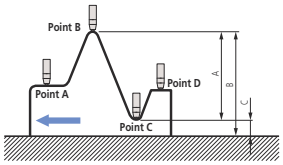
Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-300-10	12,7	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	180
543-300B-10	12,7	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	170

No. with "B": flat back plate







Difference/Runout measurement
Example : Indicator travel from points A to D : Difference (or Total Runout) is displayed as A. Dimensions B (maximum value) and C (minimum value) can be measured with a simple key sequence.

ABSOLUTE®

PROPRIETARY INSPECTION CERTIFICATE

IP42

Functions	Series 543
DATA/HOLD	●
PRESET 3x	●
Digimatic data output	●
ON/OFF	●
Analog bar resolution switchable	●
Function lock	●
GO/±NG judgement	●
Fast measurement mode	●
MAX/MIN/RANGE	●
ABS / INC (INC ZERO)	●
Calculation function (with formula)	●
Counting direction switchable	●

Specifications

Display	LCD, character height: 8 mm, rotatable 330°
Max. response speed	Unlimited
Measurement frequency (MAX/MIN/RANGE)	Standard mode: 10 times/s fast mode: 50 times/s (plunger speed max. 50 µm/s for peak measurement)
Alarm	Low voltage, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 Battery CR-2032
Battery life	Standard mode: approx. 1 year, fast mode: approx. 4,5 month

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21EZA105	Spindle Lifting Knob, for 12,7mm Range
21EZA313	USB Interface for PC Setup, ID-C Indicator

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

ABSOLUTE Digimatic Indicators Calculation ID-C

Functions	Series 543
DATA/HOLD	●
PRESET 3x	●
Digimatic data output	●
ON/OFF	●
Analog bar resolution switchable	●
Function lock	●
GO/±NG judgement	●
Fast measurement mode	●
MAX/MIN/RANGE	●
ABS / INC (INC ZERO)	●
Selectable resolution	●
Calculation function (with formula)	●

Specifications

Digital step	0,0002/ 0,0005/ 0,001/ 0,002/ 0,005/ 0,01/ 0,02/ 0,05/ 0,1/ 0,2/ 0,5/ 1 mm or non-unit (scale resolution is 0,001 mm)
Display	LCD, character height 8 mm, rotatable 330°
Max. response speed	Unlimited
Measurement frequency (MAX/MIN/RANGE)	Standard mode: 10 times/s fast mode: 50 times/s (plunger speed max. 50 µm/s for peak measurement)
Alarm	Low voltage, ABS composition error, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 Battery CR-2032
Battery life	Standard mode: approx. 1 year fast mode: approx. 4,5 month

Series 543

ABSOLUTE®

PROPRIETARY INSPECTION CERTIFICATE

IP42

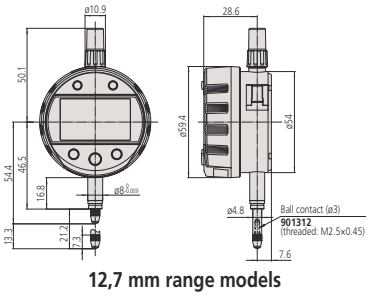
This indicator allows you to use a calculation function for the measured value $Ax+B+Cx^{-1}$

- The integrated calculation formula is useful in a variety of applications (e.g. roll diameter measurement)
- Coefficients A,B and C are freely definable. X = displacement of the plunger
- Analogue bar graph in the display (14 different scales switchable)
- GO/±NG tolerance judgement function
- MAX/MIN/RANGE function to measure peak values
- A fast measurement frequency mode(detection cycle 20 ms or 50 times/s) is selectable to measure in the peak detection mode (MAX/MIN/RANGE) more reliably
- Easy indicator setup via a setup menu
- A USB interface box can be used to set up the indicator from PC via dedicated software

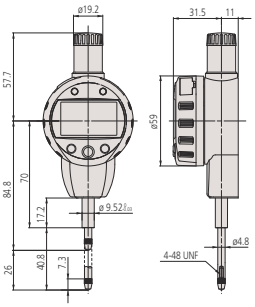
543-340B-10

543-590B-10

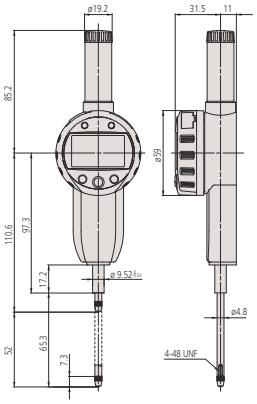
543-595B-10



12,7 mm range models



25,4 mm range models



50,8 mm range models

Metric

No.	Range [mm]	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-340B-10	12,7	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	170
543-590B-10	25,4	0,003 mm	0,002 mm	0,002 mm	≤1,8 N	IP42	190
543-595B-10	50,8	0,006 mm	0,002 mm	0,002 mm	≤2,3 N	IP42	260

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ABSOLUTE Digimatic Indicators Calculation ID-C

K541282

011445 (similar)

Custom-made solution

21FAJ395 (similar)

21FAJ395 (similar)

543-340B-10 with 011445

21FAJ395

21FAJ394

K541281

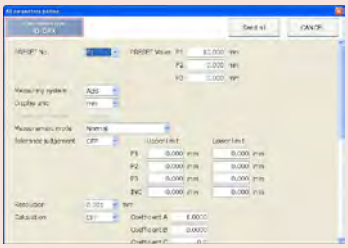
K541282

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21EZA105	Spindle Lifting Knob, for 12,7mm Range
21EZA197	Spindle Lifting Knob, for 25,4mm Range
21EZA200	Spindle Lifting Knob, for 50,8mm Range
21EZA313	USB Interface for PC Setup, ID-C Indicator
21FAJ394	Angle Plate for Calc. ID-C, Radius: 25-70mm
K541281	Angle Plate for Calc. ID-C, Radius: 50-100mm
K541282	Angle Plate for Calc. ID-C, Radius: 100-200mm
21FAJ395	Roll Type Base, outside: 45-140mm / inside: 65-100mm
011445	Inner edge probe, 90°, D=0,5-20mm
011446	Setting Standard for 011445
011447	Inner edge probe, 90°, D=20-40mm
011448	Inner edge probe, 90°, D=40-60mm

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric



Setup software available for download at www.mitutoyo.eu (Registration is required) (optional USB Interface 21EZA313 is neccessary)

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ABSOLUTE Digimatic Indicators Bore Gauge ID-C

Functions	Series 543
DATA/HOLD	●
PRESET 3x	●
MIN Value Hold	●
Digimatic data output	●
ON/OFF	●
Analog bar resolution switchable	●
Function lock	●
GO/±NG judgement	●
Fast measurement mode	●

Specifications

Display	LCD, character height: 8 mm, rotatable 330°
Max. response speed	Unlimited
Measurement frequency (MAX/MIN/RANGE)	Standard mode: 10 times/s fast mode: 50 times/s (plunger speed max. 50 µm/s for peak measurement)
Alarm	Low voltage, composition error, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 Battery CR-2032
Battery life	Standard mode: approx. 1 year fast mode: approx. 4,5 month

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
21EZA313	USB Interface for PC Setup, ID-C Indicator

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

Series 543

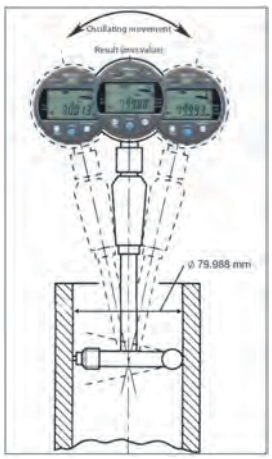
ABSOLUTE

IP42

This indicator is designed for inside diameter measurement applications on bore gauges
It offers the following benefits:

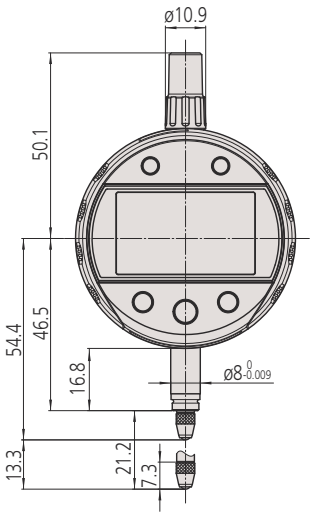
- Minimum value holding function that allows you to easily detect a hole diameter
- Analogue bar graph in the display (12 different scales switchable)
- The analogue bar graph enhances usability by adding a dial gauge “feel” to digital measurement
- GO/±NG tolerance judgement function
- A fast measurement frequency mode(detection cycle 20ms or 50times/s) is selectable to measure in the peak detection mode more reliably
- Easy indicator setup via a setup menu
- A USB interface box can be used to set up the indicator from PC via dedicated software

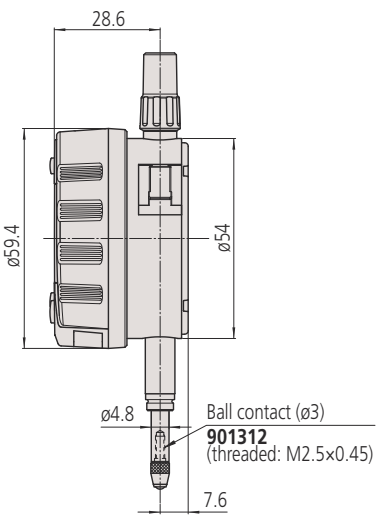
543-310B-10



Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-310B-10	12,7	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤1,5 N	IP42	170





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ABSOLUTE Digimatic Indicators Signal ID-C

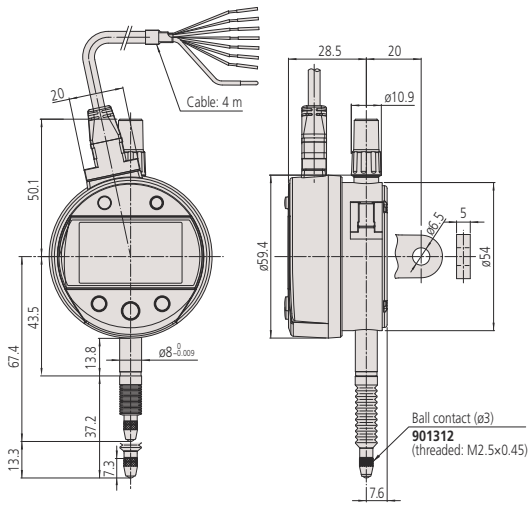
Series 543

ABSOLUTE® IP54

This is an externally-powered Digimatic Indicator with a N-ch open drain –NG, OK, +NG output.

- Dust-protected and protected against splashing water, complying with IEC 60529 (equivalent to IP54)
- Measures MAX/MIN/RANGE (run-out value).
- Saves three different Preset and Tolerance settings.
- Fast measurement frequency mode (detection cycle 50 times/s) for reliable measurement in the peak detection mode (MAX/MIN/RANGE)
- Calculation function Ax. Coefficient A freely definable, x = displacement of the plunger
- Analogue bar graph in the display (12 different scales switchable)
- GO/±NG tolerance judgment function

543-350B-10



Functions	Series 543
PRESET 3x	●
ON/OFF	●
Analog bar resolution switchable	●
Function lock	●
GO/±NG judgement	●
Signal output: (+NG, OK, -NG)	●
Signal input: No-voltage input, (PRESET_RECALL/ZERO, HOLD_RESET)	●
MAX/MIN/RANGE	●
ABS / INC (INC ZERO)	●
GO/±NG judgement via LED	●
Calculation function (with formula)	●
Counting direction switchable	●

Specifications

Display	LCD, character height 8 mm
Max. response speed	Unlimited
Measurement frequency (MAX/MIN/RANGE)	100 times/s (if the plunger speed >0,1 mm/s the peak value could not be displayed correctly.)
Alarm	Counting value composition error, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	DC 5 - 24 V

Optional accessories

No.	Description
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21EZA105	Spindle Lifting Knob, for 12,7mm Range
238774	Silicon rubber boot for ID-C, ID-N, ID-S

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21EAA423	NBR Rubber Boot, Digital Gauge Series 543

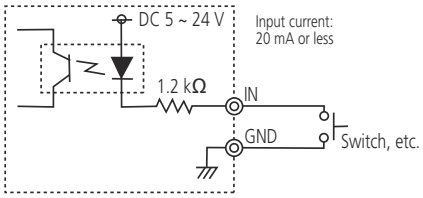
Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-350B-10	12,7	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤2,5 N	IP54	285
543-350-10	12,7	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤2,5 N	IP54	295

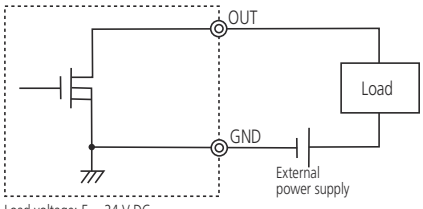
No. with "B": flat back plate

Logic of output signal	Signal name	Tolerance judgment results -NG	OK	+NG	Sensor signal synthesizing error Overflow error of display value
Negative logic	−NG (Orange)	Low	High	High	High
	OK (Green)	High	Low	High	High
	+NG (Brown)	High	High	Low	High
Positive logic	−NG (Orange)	High	Low	Low	Low
	OK (Green)	Low	High	Low	Low
	+NG (Brown)	Low	Low	High	Low

Normal mode, Maximum value detection mode, Minimum value detection mode

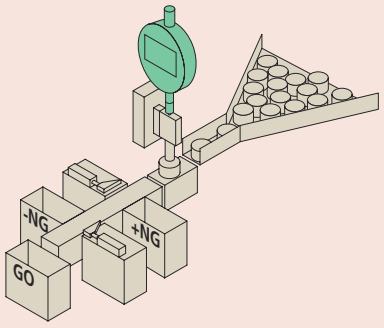


Circuit input



Load voltage: 5 ~ 24 V DC
Maximum load current: 100 mA or less

Circuit output



Application: GO/NG Sorting

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ABSOLUTE Digimatic Indicators ID-N

Functions	Series 543
DATA/HOLD	●
PRESET	●
Digimatic data output	●
ON/OFF	●
GO/±NG judgement	●
External PRESET / ZERO	●
Counting direction switchable	●

Specifications

Display	LCD, character hight: 6,2 mm
Max. response speed	Unlimited
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 battery SR-44
Battery life	Approx. 7000 hours

Optional accessories

No.	Description
21EAA194	Digimatic Cable for ID-N/ ID-B 1m
21EAA190	Digimatic Cable for ID-N/ ID-B 2m
06AFM380G	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straigt IP Type
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF675	U-WAVE fit Transmitter Mounting Plate, for ID-N Digital Indicator
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZE200	U-WAVE Transmitter Mounting Plate, Universal Type
02AZD790G	U-WAVE-T Connection Cable G, Flat Straight IP Type
21EAA210	Digimatic Cable for External Preset/ Zero, 1 m, ID-N/ID-B Indicator
21EAA211	Digimatic Cable for External Preset/ Zero, 2 m, ID-N/ID-B Indicator
21EZA105	Spindle Lifting Knob, for 12,7mm Range
21EZA145	Back Plate with Center Lug ISO Type, for ID-N/ID-B Indicator
238774	Silicon rubber boot for ID-C, ID-N, ID-S

Consumable spares

No.	Description
938882	Battery SR44 1,5 V
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21EAA423	NBR Rubber Boot, Digital Gauge Series 543

21EAA210

Series 543

This is a slim back-plunger model that is highly resilient and robust. The ABSOLUTE Digimatic Indicator ID-N offers you the following benefits:

- It slim body design is ideal for multi-point measurements.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- It has excellent resistance against water and dust (IP66 protection level) allowing you to use it in machining situations that include splashing coolant fluid.
- Switchable display orientation gives you more mounting options.
- You can perform GO/±NG judgement by setting the upper and lower tolerances.

Safety Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000007161

ABSOLUTE® IP66

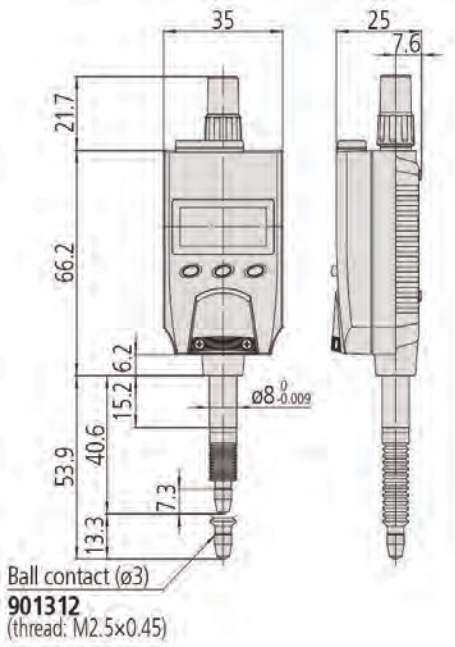
543-575

Flexible installation options switchable display orientation (overhead use)

Wireless transmitter U-WAVE fit 264-623, mounting plate 02AZF675 and connection cable 02AZD790G

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-570	12,7	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤2,5 N	IP66	130
543-575	12,7	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤2,5 N	IP66	130



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ABSOLUTE Digimatic Indicators ID-B

Series 543

This is a back-plunger model that is highly resilient and robust. The ABSOLUTE Digimatic Indicator ID-B offers you the following features:

- It is a back plunger type, with the display viewed from above.
- Its slim body design is ideal for multi-point measurements.
- The ABSOLUTE sensor means you don't have to carry out origin setting every time you power it on, saving you time and hassle.
- It has excellent resistance against water and dust (IP66 protection level) allowing you to use it in machining situations that include splashing coolant fluid.
- You can perform GO/±NG judgement.

Safety Dust- and Water-Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 0000007162

ABSOLUTE®
IP66

543-580

Flexible installation options with switchable display orientation (overhead use)

Functions	Series 543
DATA/HOLD	●
PRESET	●
Digimatic data output	●
ON/OFF	●
GO/±NG judgement	●
External PRESET / ZERO	●
Counting direction switchable	●

Specifications

Remarks	Center-lug back shown is optional
Display	LCD, character height: 6,2 mm
Max. response speed	Unlimited
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	1 battery SR-44
Battery life	Approx. 7000 hours

Optional accessories

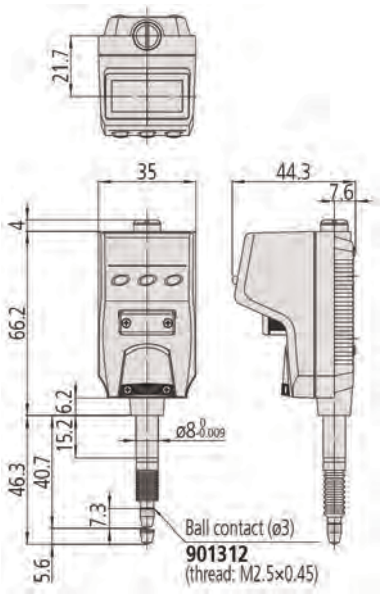
No.	Description
21EAA194	Digimatic Cable for ID-N/ ID-B 1m
21EAA190	Digimatic Cable for ID-N/ ID-B 2m
06AFM380G	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straigt IP Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790G	U-WAVE-T Connection Cable G, Flat Straight IP Type
21EAA211	Digimatic Cable for External Preset/ Zero, 2 m, ID-N/ID-B Indicator
21EAA210	Digimatic Cable for External Preset/ Zero, 1 m, ID-N/ID-B Indicator
21EZA145	Back Plate with Center Lug ISO Type, for ID-N/ID-B Indicator
21EAA212	Silicon Rubber Boot, for ID-B, Series 1/2

Consumable spares

No.	Description
938882	Battery SR44 1,5 V
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-580	5	0,01 mm	0,02 mm	0,02 mm	0,01 mm	≤2 N	IP66	130
543-585	5	0,001 mm/ 0,01 mm	0,003 mm	0,002 mm	0,002 mm	≤2 N	IP66	130



21EAA194

21EAA210

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Digimatic Indicators ID-H

Series 543

This is a superior multi-function indicator that gives you high accuracy and high resolution of 0,0005 mm.
The Digimatic Indicator ID-H offers you the following benefits:

- 2-colour LCD backlight (green and red) provides you with visual GO/±NG tolerance judgement and analogue bar-graph display.
- You can display the maximum, minimum or range (runout value).
- Lifting mechanism over 30 mm with cable release (optional).
- You can carry out zero-setting and presetting with the optional remote controller, without having to touch the indicator.
- The remote control system can be implemented in advance with the built-in RS-232 interface and a PC.
- External power supply via AC-Adapter.

Functions	Series 543
DATA/HOLD	●
PRESET	●
Digimatic data output	●
ON/OFF	●
Analog bar resolution switchable	●
Function lock	●
GO/±NG judgement	●
MAX/MIN/RANGE	●
RS-232C Output/Input	●
RS-232C Input*	●
ZERO SET	●
Selectable resolution	●
Counting direction switchable	●

Specifications

Display	LCD, character height: 9,5 mm
Max. response speed	1000 mm/s
Alarm	Counting value composition error, overflow error, tolerance setting error
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	AC adapter 6 V DC, 2A

Standard accessories

No.	Description
06AGZ369D	AC-Adapter, DC 6V 2A, CEE version Germany (Europe)
137693	Spindle Lifting Handle for Indicator, for Indicators

Optional accessories

No.	Description
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
21EAA130	Cable RS-232C for ID-H Indicator 1m
21EAA131	Cable RS-232C for ID-H Indicator 2m
21EZA099	Remote Controller, for ID-H Indicator
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21EZA101	Spindle Lifting Knob, for ID-H Indicator

21JZA295 : moving measuring range max. 30 mm

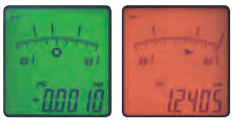
Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

*** RS-232 Input/Output**
Connect this instrument with an external device such as a PC using the RS-232 dedicated cable (optional accessory). With this connection it is possible to perform initial setup of the instrument, control of switching a measurement mode, etc., and processing such as measurement data transfer.

543-561D

21EZA099:
Data export
Reset Max/Min/TIR
Max/Min/TIR switchover
Call PRESET value

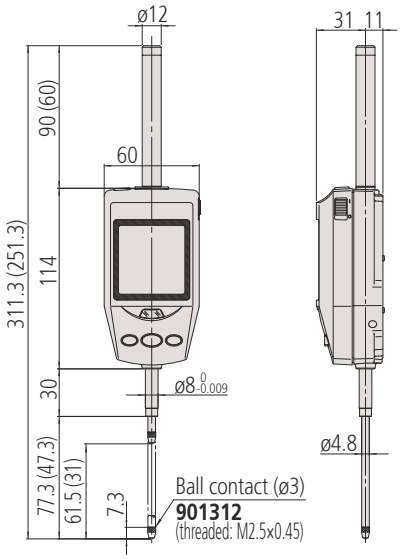


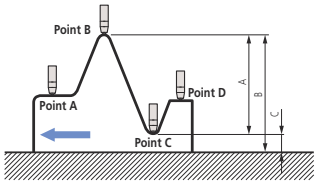
The display switches from green to red backlight if the upper or lower tolerance limit is exceeded

21EZA101

Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-561D	30,4	0,0005mm/0,001 mm	0,0015 mm	0,0015 mm	0,001 mm	≤2 N	IP30	290
543-563D	60,9	0,0005mm/0,001 mm	0,0025 mm	0,0025 mm	0,001 mm	≤2,5 N	IP30	305





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.

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ABSOLUTE Digimatic Indicators ID-F

Series 543

This is a superior multifunction indicator.
The ABSOLUTE Digimatic Indicator ID-F offers you the following benefits:

- Bidirectional Digimatic S1 interface
- Red/Green LCD backlight provides you with visual GO/±NG tolerance judgement
- Analogue bar-graph display
- MAX/MIN/RANGE (runout value) function with a frequency of 500 times/s
- External power supply via AC-Adapter
- High accuracy and 0,5 µm digital step

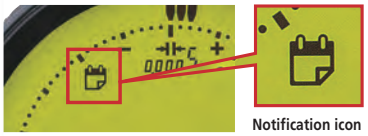
543-855B-D

543-851D

543-853D, 543-857D

Visual tolerance-monitoring

330° rotary mechanism



Calibration schedule warning function

Functions	Series 543
DATA/HOLD	●
PRESET	●
Digimatic data output	●
Digimatic S1 Bidirectional interface	●
ON/OFF	●
Analog bar resolution switchable	●
Function lock	●
GO/±NG judgement	●
MAX/MIN/RANGE	●
ABS / INC (INC ZERO)	●
Selectable resolution	●
Calculation function (with formula)	●
Customizing keys	●
Counting direction switchable	●
Calibration warning function	●

Specifications

Display	LCD with red/green backlight, character height 11 mm
Max. response speed	Unlimited
Measurement frequency (MAX/MIN/RANGE)	500 times/s
Alarm	Setting errors, sensor error, display overflow a.s.o.
Stem ∅	8 mm
Contact point	Carbide ball, thread M 2,5 x 0,45 mm
Power supply	AC adapter 5,9V DC, 2A

Standard accessories

No.	Description
06AGZ369D	AC-Adapter, DC 6V 2A, CEE version Germany (Europe)
21EAA426	Spindle Lifting Handle, for Indicators

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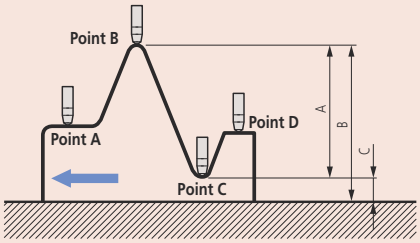
ABSOLUTE Digimatic Indicators ID-F

Optional accessories

No.	Description
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
264-020	USB Input Tool Interface Box, Digimatic/ Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZG011	U-WAVE-T Connection Cable SF, for Digimatic S1 Interface
02AZG021	U-WAVE-T Connection Cable SF, Footswitch, for Digimatic S1 Interface
02AZF670	U-WAVE fit Transmitter Mounting Plate, for ID-C, ID-S and ID-F Digital Indicator
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm
21EZA105	Spindle Lifting Knob, for 12,7mm Range
21EZA197	Spindle Lifting Knob, for 25,4mm Range
21EZA200	Spindle Lifting Knob, for 50,8mm Range
02ACA571	Auxiliary Spindle Spring, for 25,4mm Range
02ACA773	Auxiliary Spindle Spring, for 50,8mm Range

02ACA571 and 02ACA773 : required when orienting the indicator upside down;
21EZA198, 21JZA295, 21JZA301
for 12,7 mm model only



MAX/MIN/RANGE

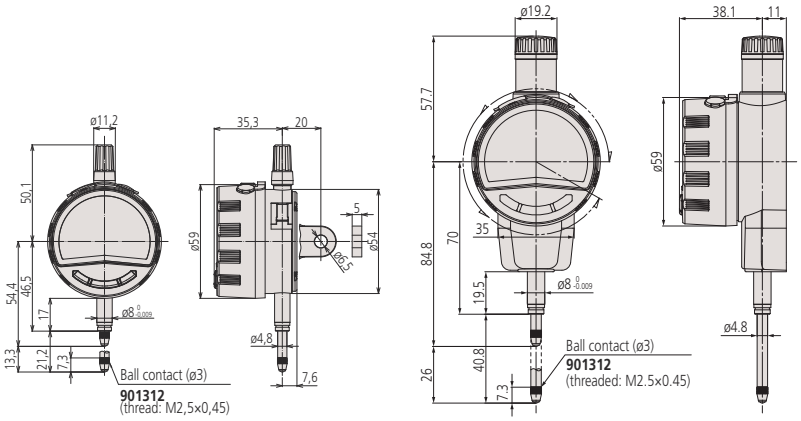
543-853D + 7001-10

Scan the QR Code for the Leaflet

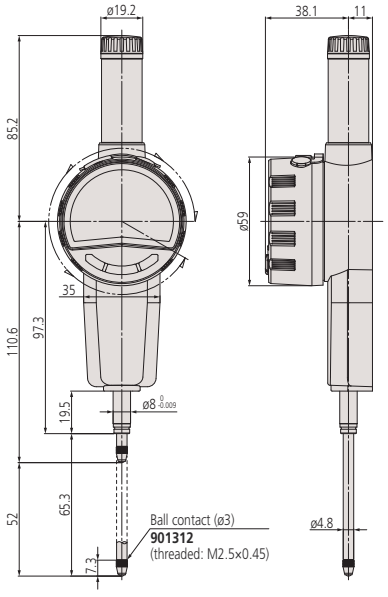
Metric

No.	Range [mm]	Digital step	Max. Permissible Error E MPE	H MPE (Hysteresis)	R MPE (Repeatability)	Measuring force MPL	Protection	Mass [g]
543-855B-D	12,7	0,0005 mm/0,001 mm/0,01 mm	0,0025 mm	0,002 mm	0,002 mm	≤1,5 N	IP30	170
543-855-D	12,7	0,0005 mm/0,001 mm/0,01 mm	0,0025 mm	0,002 mm	0,002 mm	≤1,5 N	IP30	180
543-851D	25,4	0,0005 mm/0,001 mm/0,01 mm	0,0025 mm	0,002 mm	0,002 mm	≤1,8 N	IP30	240
543-853D	50,8	0,0005 mm/0,001 mm/0,01mm	0,004 mm	0,002 mm	0,002 mm	≤2,3 N	IP30	330
543-857D	50,8	0,0005 mm/0,001 mm/0,01mm	0,003 mm	0,002 mm	0,002 mm	≤2,3 N	IP30	330

No. with "B": flat back plate



543-855B-D, 543-855-D **543-851D**



543-853D, 543-857D

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Mitutoyo

Metric Dial Indicators Series 1

Series 1

Compact Type, Extra Small Diameter - Metric

This is a compact, dial indicator with a bezel ∅ 31 / 36 mm. It offers you the following benefits:

- It is ideal for use in applications where space is limited.

Functions	Series 1	
	1003A up to 1911AB-10	1913A-10 1913AB-10
Balanced dial	●	●
Jeweled bearing		●

Consumable spares

No.	Description
21AZA319	Contact Element Ball Point, M2,5x0,45, 8,3 mm Length, Metric

For accessories and contact points, see end of dial indicators section.

1003A(B)

1911A(B)-10

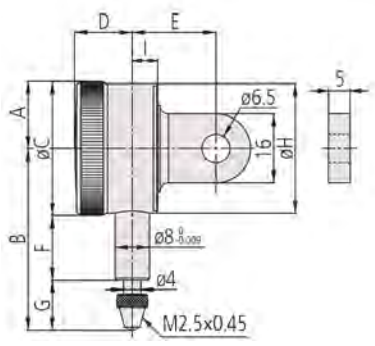
1913A(B)-10

Metric

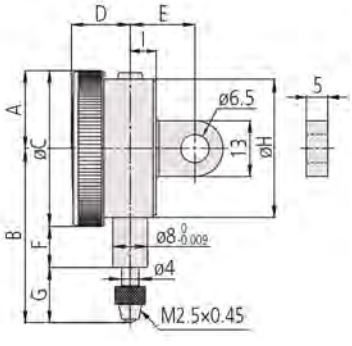
No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]
1003A	4	1 mm	0-50-0	0,01	0,3 - 1,4 N	6	9	10	14	3,5
1003AB	4	1 mm	0-50-0	0,01	0,3 - 1,4 N	6	9	10	14	3,5
1911A-10	2,5	1 mm	0-50-0	0,01	0,3 - 1,8 N	6,5	10	11	13	3,5
1911AB-10	2,5	1 mm	0-50-0	0,01	0,3 - 1,8 N	6,5	10	11	13	3,5
1913A-10	0,5	0,2 mm	0-100-0	0,002	0,3 - 1,8 N	2,5	4,5	5	6	2,5
1913AB-10	0,5	0,2 mm	0-100-0	0,002	0,3 - 1,8 N	2,5	4,5	5	6	2,5

B-type delivered with flat back plate

No.	R MPE (Repeatability) [µm]	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
1003A	3	51	18	40,3	36	13,5	15	9,5	12,8	32	6
1003AB	3	48	18	40,3	36	13,5	15	9,5	12,8	32	6
1911A-10	3	55	15,5	42	31	12,7	19,4	15,1	11,5	30	6
1911AB-10	3	51	15,5	42	31	12,7	19,4	15,1	11,5	30	6
1913A-10	1	55	15,5	39,4	31	12,7	19,4	15,1	8,9	30	6
1913AB-10	1	51	15,5	39,4	31	12,7	19,4	15,1	8,9	30	6



1911A(B)-10
1913A(B)-10



1003A(B)

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Metric Dial Indicators Series 1

Series 1

Compact Type 1 and 3,5 mm Range Small Diameter - Metric

This is a compact, dial indicator with a bezel ∅ 40 mm. It offers you the following benefits:

- It is ideal for use in applications where space is limited.

Functions	Series 1			
	1013A-10 up to 1109AB-10	1041A 1041AB	1040A 1040AB	1124A 1124AB
Balanced dial	●	●		
Continuous dial			●	●
Double scale spacing		●	●	
Shockproof	●			
Jeweled bearing	●			

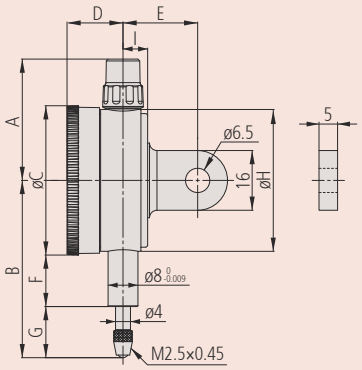
Optional accessories

No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator
21RZA149	Bezel Clamp for Dial Gauge, Series 1
902100	Spindle Lifting Lever, for S-Type and A-Type Series 1
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

For accessories and contact points, see end of dial indicators section.



1109A(B)-10

1013A(B)-10

1124A(B)

1040AB

1041AB

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]
1109A-10	1	0,2 mm	0-100-0	0,001	0,4 - 1,5 N	2,5	4	4,5	5
1109AB-10	1	0,2 mm	0-100-0	0,001	0,4 - 1,5 N	2,5	4	4,5	5
1013A-10	1	0,2 mm	0-100-0	0,002	0,4 - 1,5 N	2,5	4	4,5	6
1013AB-10	1	0,2 mm	0-100-0	0,002	0,4 - 1,5 N	2,5	4	4,5	6
1124A	3,5	0,5 mm	±0-50	0,005	0,4 - 1,4 N	5	8	9	12
1124AB	3,5	0,5 mm	±0-50	0,005	0,4 - 1,4 N	5	8	9	12
1040A	3,5	0,5 mm	±0-50	0,01	0,4 - 1,4 N	5	8	9	12
1040AB	3,5	0,5 mm	±0-50	0,01	0,4 - 1,4 N	5	8	9	12
1041A	3,5	0,5 mm	0-25-0	0,01	0,4 - 1,4 N	5	8	9	12
1041AB	3,5	0,5 mm	0-25-0	0,01	0,4 - 1,4 N	5	8	9	12

B-type delivered with flat back plate

No.	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
1109A-10	2	1	95	32,5	49	40	15	20	13,8	15,2	38	6,6
1109AB-10	2	1	75	32,5	49	40	15	20	13,8	15,2	38	6,6
1013A-10	2	1	95	32,5	49	40	15	20	13,8	15,2	38	6,6
1013AB-10	2	1	75	32,5	49	40	15	20	13,8	15,2	38	6,6
1124A	3	3	90	32,5	46	40	15	20	13,8	12,2	38	6,6
1124AB	3	3	70	32,5	46	40	15	20	13,8	12,2	38	6,6
1040A	3	3	90	32,5	46	40	15	20	13,8	12,2	38	6,6
1040AB	3	3	70	32,5	46	40	15	20	13,8	12,2	38	6,6
1041A	3	3	90	32,5	46	40	15	20	13,8	12,2	38	6,6
1041AB	3	3	70	32,5	46	40	15	20	13,8	12,2	38	6,6

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Metric Dial Indicators Series 1

Series 1

Compact Type 5 mm Range Small Diameter - Metric

This is a compact, dial indicator with a bezel ∅ 40 mm. It offers you the following benefits:

- It is ideal for use in applications where space is limited.

IP63

1044A(B)-60

Functions	Series 1			
	1044A 1044AB	1044A-60 1044AB-60	1044A-15 1044AB-15	1045A 1045AB
Balanced dial				●
Continuous dial	●	●	●	
Jeweled bearing			●	
IP63		●		

1044A(B)
1044A(B)-15

1044A(B)-60
IP63

1045A(B)

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
1044A	5	1 mm	±0-100	0,01	0,4 - 1,4 N
1044AB	5	1 mm	±0-100	0,01	0,4 - 1,4 N
1044A-15	5	1 mm	±0-100	0,01	0,1 - 0,4 N
1044AB-15	5	1 mm	±0-100	0,01	0,1 - 0,4 N
1044A-60	5	1 mm	±0-100	0,01	0,4 - 2 N
1044AB-60	5	1 mm	±0-100	0,01	0,4 - 2 N
1045A	5	1mm	0-50-0	0,01	0,4 - 1,4 N
1045AB	5	1 mm	0-50-0	0,01	0,4 - 1,4 N

1044A(B)-15: Low measuring force model. Use in vertical position only (contact point downward)

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
1044A	5	9	10	12	3	3
1044AB	5	9	10	12	3	3
1044A-15	5	9	10	12	3	3
1044AB-15	5	9	10	12	3	3
1044A-60	5	9	10	12	3	3
1044AB-60	5	9	10	12	3	3
1045A	5	9	10	12	3	3
1045AB	5	9	10	12	3	3

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
1044A	90	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1044AB	70	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1044A-15	90	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1044AB-15	70	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1044A-60	90	32,5	57	40	15	20	12,2	24,8	38	6,6
1044AB-60	70	32,5	57	40	15	20	12,2	24,8	38	6,6
1045A	90	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1045AB	70	32,5	47,5	40	15	20	13,8	13,7	38	6,6

Optional accessories

No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator
21RZA149	Bezel Clamp for Dial Gauge, Series 1
902100	Spindle Lifting Lever, for S-Type and A-Type Series 1
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

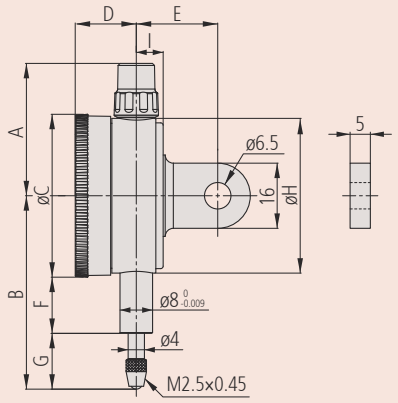
Consumable spares

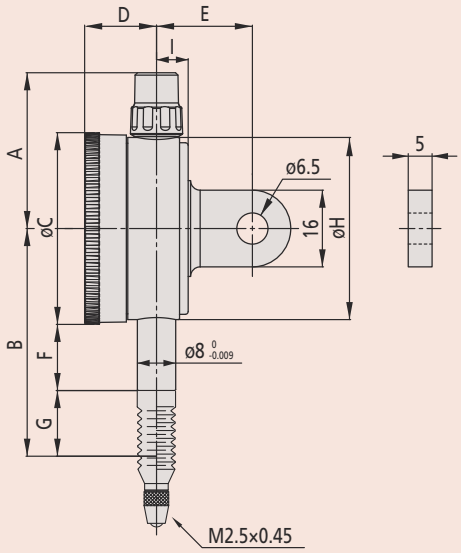
No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64

21AAB562: for 1044A(B)-60 (IP model)

21JZA295 and 21JZA301: not for IP63 type

For accessories and contact points, see end of dial indicators section.





1044A(B)-60

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One Revolution Dial Indicators Series 1

Series 1

This is a compact, metric dial indicator. It offers you the following benefits:

- It eliminates the possibility of reading errors due to miscounting multiple revolutions.

IP52

1900A(B)-72
1929A(B)-62

Functions	Series 1			
	1900A-10 1900AB-10	1900A-72 1900AB-72	1929A 1929AB	1929A-62 1929AB-62
Balanced dial	●	●	●	●
One revolution	●	●	●	●
Shockproof	●	●	●	●
Jeweled bearing	●	●		
IP52		●		●

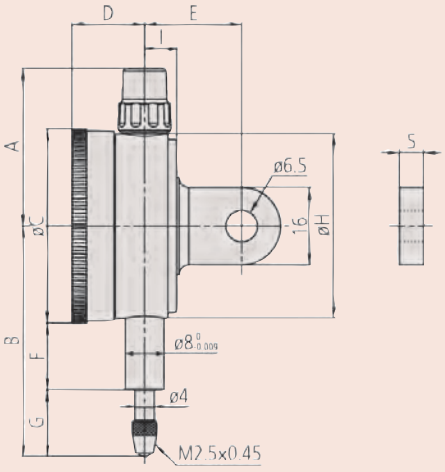
Optional accessories

No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator
21RZA149	Bezel Clamp for Dial Gauge, Series 1
902100	Spindle Lifting Lever, for S-Type and A-Type Series 1
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

For accessories and contact points, see end of dial indicators section.



1929A(B)
1929A(B)-62

1900A(B)-10
1900A(B)-72

Metric

No.	Range [mm]	Plunger Stroke [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
1900A-10	0,1	2	0,14 mm	50-0-50	0,001	0,4 - 1,5 N
1900AB-10	0,1	2	0,14 mm	50-0-50	0,001	0,4 - 1,5 N
1900A-72	0,1	2	0,14 mm	50-0-50	0,001	0,4 - 1,5 N
1900AB-72	0,1	2	0,14 mm	50-0-50	0,001	0,4 - 1,5 N
1929A	1	3,5	1,4 mm	50-0-50	0,01	0,4 - 1,4 N
1929AB	1	3,5	1,4 mm	50-0-50	0,01	0,4 - 1,4 N
1929A-62	1	3,5	1,4 mm	50-0-50	0,01	0,4 - 1,4 N
1929AB-62	1	3,5	1,4 mm	50-0-50	0,01	0,4 - 1,4 N

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
1900A-10	2	4	2	1
1900AB-10	2	4	2	1
1900A-72	2	4	2	1
1900AB-72	2	4	2	1
1929A	5	9	3	3
1929AB	5	9	3	3
1929A-62	5	9	3	3
1929AB-62	5	9	3	3

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
1900A-10	95	32,5	53,5	40	15	20	16,8	16,7	38	6,6
1900AB-10	75	32,5	53,5	40	15	20	16,8	16,7	38	6,6
1900A-72	95	32,5	53,5	40	15	20	16,8	16,7	38	6,6
1900AB-72	75	32,5	53,5	40	15	20	16,8	16,7	38	6,6
1929A	90	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1929AB	70	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1929A-62	90	32,5	47,5	40	15	20	13,8	13,7	38	6,6
1929AB-62	70	32,5	47,5	40	15	20	13,8	13,7	38	6,6

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Mitutoyo

Metric Dial Indicators Series 2

Series 2

Standard Type, 5 mm Range, 0,01 mm Graduation

This is a standard dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed and removed without tools.
- No through screw holes on the frame and secure adhesion between the bezel and the crystal as well as the use of an O-ring prevents water or oil penetration.

IP64

2044A(B)-60

2044A(B)
2044A(B)-09

2044A(B)-60

2045A(B)

Functions	Series 2			
	2044A 2044AB	2044A-60 2044AB-60	2044A-09 2044AB-09	2045A 2045AB
Balanced dial				●
Continuous dial	●	●	●	
Shockproof			●	
IP64		●		

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64

21AAB562: for 2044A(B)-60 (IP model)

21JZA295 and 21JZA301: not for IP64 type

For accessories and contact points, see end of dial indicators section.

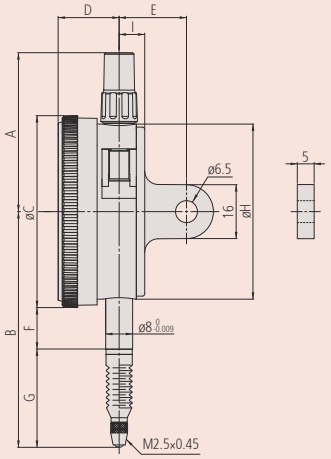
Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2044A	5	1 mm	±0-100	0,01	0,4 - 1,4 N
2044AB	5	1 mm	±0-100	0,01	0,4 - 1,4 N
2044A-09	5	1 mm	±0-100	0,01	0,4 - 1,4 N
2044AB-09	5	1 mm	±0-100	0,01	0,4 - 1,4 N
2044A-60	5	1 mm	±0-100	0,01	0,4 - 2,5 N
2044AB-60	5	1 mm	±0-100	0,01	0,4 - 2,5 N
2045A	5	1 mm	0-50-0	0,01	0,4 - 1,4 N
2045AB	5	1 mm	0-50-0	0,01	0,4 - 1,4 N

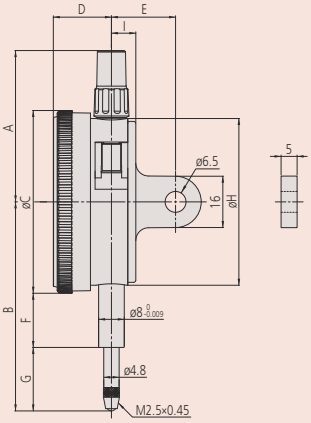
B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
2044A	5	9	10	12	3	3
2044AB	5	9	10	12	3	3
2044A-09	5	9	10	12	3	3
2044AB-09	5	9	10	12	3	3
2044A-60	5	9	10	12	3	3
2044AB-60	5	9	10	12	3	3
2045A	5	9	10	12	3	3
2045AB	5	9	10	12	3	3

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2044A	145	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2044AB	136	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2044A-09	147	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2044AB-09	138	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2044A-60	147	47,2	70	57	18,1	20	12,3	29,2	52	7,6
2044AB-60	138	47,2	70	57	18,1	20	12,3	29,2	52	7,6
2045A	145	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2045AB	136	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6



2044A(B)-60



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Metric Dial Indicators Series 2

Series 2

Standard Type, 10 mm Range, 0,01 mm Graduation

This is a standard dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed and removed without tools.
- No through screw holes on the frame as well as the use of an O-ring prevents water or oil penetration.

IP64

2046A(B)-60

Functions	Series 2						
	2046A 2046AB	2046A-60 2046AB-60	2046A-09 2046AB-09	2310A-10 2310AB-10	2902A 2902AB	2047A 2047AB
Balanced dial						●
Continuous dial	●	●	●	●	●	
Reverse reading					●	
Coaxial revolution counter				●		
Shockproof			●			
Jeweled bearing				●		
IP64		●				

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

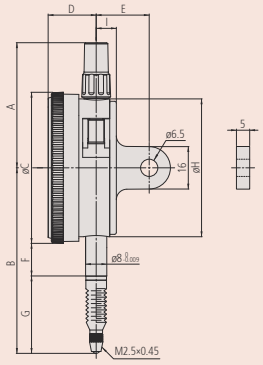
Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64

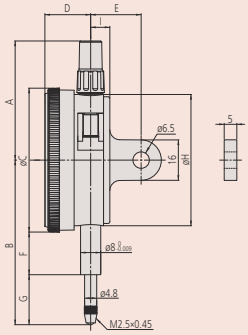
21AAB562: for 2046A(B)-60 (IP model)

21JZA295 and 21JZA301: not for IP64 type

For accessories and contact points, see end of dial indicators section.



2046A(B)-60



2046A(B)
2046A(B)-09

2046A(B)-60

2310A(B)-10

2902A(B)

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]
2046A	10	1 mm	±0-100	0,01	0,4 - 1,4 N	5	9	10	13	3
2046AB	10	1 mm	±0-100	0,01	0,4 - 1,4 N	5	9	10	13	3
2046A-09	10	1 mm	±0-100	0,01	0,4 - 1,4 N	5	9	10	15	3
2046AB-09	10	1 mm	±0-100	0,01	0,4 - 1,4 N	5	9	10	15	3
2046A-60	10	1 mm	±0-100	0,01	0,4 - 2,5 N	5	9	10	13	3
2046AB-60	10	1 mm	±0-100	0,01	0,4 - 2,5 N	5	9	10	13	3
2310A-10	10	1 mm	±0-100	0,01	0,4 - 1,4 N	5	9	10	15	3
2310AB-10	10	1 mm	±0-100	0,01	0,4 - 1,4 N	5	9	10	15	3
2902A	10	1 mm	100-0	0,01	0,4 - 1,4 N	5	9	10	13	3
2902AB	10	1 mm	100-0	0,01	0,4 - 1,4 N	5	9	10	13	3
2047A	10	1 mm	0-50-0	0,01	0,4 - 1,4 N	5	9	10	13	3
2047AB	10	1 mm	0-50-0	0,01	0,4 - 1,4 N	5	9	10	13	3

B-type delivered with flat back plate

No.	R MPE (Repeatability) [µm]	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2046A	3	144	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2046AB	3	135	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2046A-09	3	146	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2046AB-09	3	137	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2046A-60	3	146	47,2	74,7	57	18,1	20	12,3	33,9	52	7,6
2046AB-60	3	137	47,2	74,7	57	18,1	20	12,3	33,9	52	7,6
2310A-10	3	146	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2310AB-10	3	137	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2902A	3	144	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2902AB	3	135	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2047A	3	144	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6
2047AB	3	135	47,2	65,2	57	18,1	20	16,9	19,8	52	7,6

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Mitutoyo

Metric Dial Indicators Series 2

Series 2

Standard Type, 1 mm Range, 0,001 mm Graduation

This is a standard dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed and removed without tools.
- No through screw holes on the frame and secure adhesion between the bezel and the crystal as well as the use of an O-ring prevents water or oil penetration.

IP64

2109A(B)-70
2110A(B)-70

Functions	Series 2			
	2109A-10 2109AB-10	2109A-70 2109AB-70	2110A-10 2110AB-10	2110A-70 2110AB-70
Balanced dial	●	●		
Continuous dial			●	●
Double scale spacing			●	●
Shockproof	●	●	●	●
Jeweled bearing	●	●	●	●
IP64		●		●

2110A(B)-10

2110A(B)-70

2109A(B)-10

2109A(B)-70

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2110A-10	1	0,1 mm	±0-100	0,001	0,4-1,8
2110AB-10	1	0,1 mm	±0-100	0,001	0,4-1,8
2110A-70	1	0,1 mm	±0-100	0,001	0,4-2
2110AB-70	1	0,1 mm	±0-100	0,001	0,4-2
2109A-10	1	0,2 mm	0-100-0	0,001	0,4-1,5
2109AB-10	1	0,2 mm	0-100-0	0,001	0,4-1,5
2109A-70	1	0,2 mm	0-100-0	0,001	0,4-2
2109AB-70	1	0,2 mm	0-100-0	0,001	0,4-2

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
2110A-10	2,5	4	4,5	5	2	1
2110AB-10	2,5	4	4,5	5	2	1
2110A-70	2,5	4	4,5	5	2	1
2110AB-70	2,5	4	4,5	5	2	1
2109A-10	2,5	4	4,5	5	2	1
2109AB-10	2,5	4	4,5	5	2	1
2109A-70	2,5	4	4,5	5	2	1
2109AB-70	2,5	4	4,5	5	2	1

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2110A-10	149	47,2	66,5	57	18,1	20	16,9	21,1	52	7,6
2110AB-10	140	47,2	66,5	57	18,1	20	16,9	21,1	52	7,6
2110A-70	150	47,2	67,5	57	18,1	20	12,3	26,7	52	7,6
2110AB-70	141	47,2	67,5	57	18,1	20	12,3	26,7	52	7,6
2109A-10	148	47,2	60,5	57	18,1	20	16,9	15,1	52	7,6
2109AB-10	139	47,2	60,5	57	18,1	20	16,9	15,1	52	7,6
2109A-70	149	47,2	65,3	57	18,1	20	12,3	24,5	52	7,6
2109AB-70	140	47,2	65,3	57	18,1	20	12,3	24,5	52	7,6

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

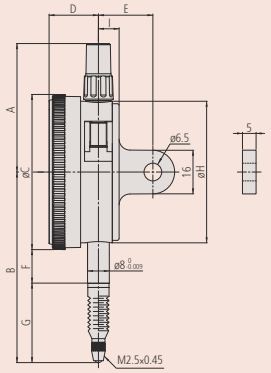
Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64
21AAB563	NBR Rubber Boot, Dial Gauge IP64

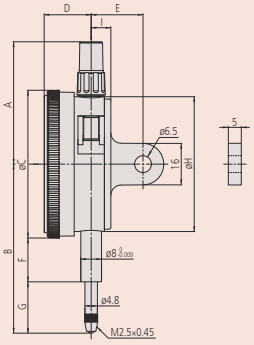
21AAB562: for 2110A(B)-70
21AAB563: for 2109A(B)-70

21JZA295 and 21JZA301: not for IP64 type

For accessories and contact points, see end of dial indicators section.



2110A(B)-70
2109A(B)-70



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Metric Dial Indicators Series 2

Series 2

Standard Type, 2 and 5 mm Range, 0,001 / 0,005 mm Graduation

This is a standard dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed and removed without tools.
- No through screw holes on the frame and secure adhesion between the bezel and the crystal as well as the use of an O-ring prevents water or oil penetration.

Functions	Series 2 2113A-10 2113AB-10	 2119A-10 2119AB-10	 2118A-10 up to 2124AB-10
Balanced dial	●	●	
Continuous dial			●
Shockproof	●		
Jeweled bearing	●	●	●

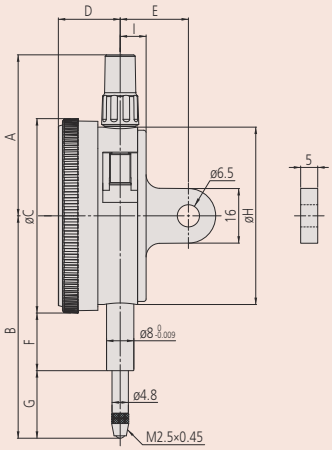
Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

For accessories and contact points, see end of dial indicators section.



2113A(B)-10

2118A(B)-10

2119A(B)-10

2124A(B)-10

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2113A-10	2	0,2 mm	0-100-0	0,001	0,4-1,5
2113AB-10	2	0,2 mm	0-100-0	0,001	0,4-1,5
2118A-10	5	0,2 mm	0-100-100	0,001	0,4-1,5
2118AB-10	5	0,2 mm	0-100-100	0,001	0,4-1,5
2119A-10	5	0,2 mm	0-100-0	0,001	0,4-1,5
2119AB-10	5	0,2 mm	0-100-0	0,001	0,4-1,5
2124A-10	5	0,5 mm	±0-50	0,005	0,4-1,5
2124AB-10	5	0,5 mm	±0-50	0,005	0,4-1,5

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
2113A-10	2,5	4	4,5	7	2	1
2113AB-10	2,5	4	4,5	7	2	1
2118A-10	4	6	6,5	10	2,5	1,5
2118AB-10	4	6	6,5	10	2,5	1,5
2119A-10	4	6	6,5	10	2,5	1,5
2119AB-10	4	6	6,5	10	2,5	1,5
2124A-10	5	9	10	11	3	2
2124AB-10	5	9	10	11	3	2

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2113A-10	148	47,2	61	57	18,1	20	16,9	15,6	52	7,6
2113AB-10	139	47,2	61	57	18,1	20	16,9	15,6	52	7,6
2118A-10	146	47,2	60,7	57	18,1	20	16,9	15,3	52	7,6
2118AB-10	137	47,2	60,7	57	18,1	20	16,9	15,3	52	7,6
2119A-10	146	47,2	60,7	57	18,1	20	16,9	15,3	52	7,6
2119AB-10	137	47,2	60,7	57	18,1	20	16,9	15,3	52	7,6
2124A-10	146	47,2	60,7	57	18,1	20	16,9	15,3	52	7,6
2124AB-10	137	47,2	60,7	57	18,1	20	16,9	15,3	52	7,6

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Dial Indicators with 20 mm Stroke Series 2

Series 2

Standard Type, 20 mm Range, 0,01 mm Graduation

This is a standard dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed and removed without tools.
- No through screw holes on the frame and secure adhesion between the bezel and the crystal as well as the use of an O-ring prevents water or oil penetration.

IP64

2050A(B)-60

Functions	Series 2			
	2050A 2050AB	2050A-19 2050AB-19	2050A-60 2050AB-60	2320A-10 2320AB-10
Continuous dial	●	●	●	●
Coaxial revolution counter				●
Cushioned end point	●	●		●
Shockproof		●		
Jeweled bearing		●		●
IP64			●	

2050A(B)
2050A(B)-19

2050A(B)-60

2320A(B)-10

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB573	NBR Rubber Boot, Dial Gauge IP64, 20 mm Range

21AAB573: for 2050A(B)-60 (IP model)

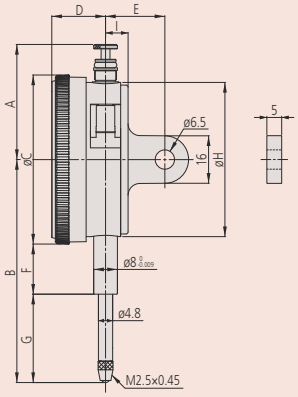
For accessories and contact points, see end of dial indicators section.

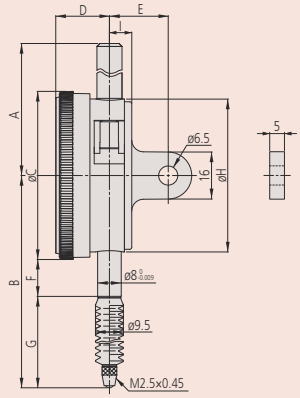
Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]
2050A	20	1 mm	±0-100	0,01	0,4-2	6	10	11	20	4
2050AB	20	1 mm	±0-100	0,01	0,4-2	6	10	11	20	4
2050A-19	20	1 mm	±0-100	0,01	0,4-2	6	10	11	20	4
2050AB-19	20	1 mm	±0-100	0,01	0,4-2	6	10	11	20	4
2050A-60	20	1 mm	±0-100	0,01	0,4-2,5	6	10	11	20	4
2050AB-60	20	1 mm	±0-100	0,01	0,4-2,5	6	10	11	20	4
2320A-10	20	1 mm	±0-100	0,01	0,4-2	6	10	11	20	4
2320AB-10	20	1 mm	±0-100	0,01	0,4-2	6	10	11	20	4

B-type delivered with flat back plate

No.	R MPE (Repeatability) [µm]	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2050A	3	149	38,5	75,2	57	18,1	20	16,9	29,8	52	7,6
2050AB	3	140	38,5	75,2	57	18,1	20	16,9	29,8	52	7,6
2050A-19	3	149	38,5	75,2	57	18,1	20	16,9	29,8	52	7,6
2050AB-19	3	140	38,5	75,2	57	18,1	20	16,9	29,8	52	7,6
2050A-60	3	155	58,2	87,2	57	18,1	20	12,3	46,4	52	7,6
2050AB-60	3	146	58,2	87,2	57	18,1	20	12,3	46,4	52	7,6
2320A-10	3	150	38,5	75,2	57	18,1	20	16,9	29,8	52	7,6
2320AB-10	3	141	38,5	75,2	57	18,1	20	16,9	29,8	52	7,6





2050A(B)-60

All products to be sold to commercial customers.
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Dial Indicators with 30 mm Stroke Series 2

Series 2

Standard Type, 30 mm Range, 0,01 mm Graduation

This is a standard dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed and removed without tools.
- No through screw holes on the frame and secure adhesion between the bezel and the crystal as well as the use of an O-ring prevents water or oil penetration.

	Series 2			
Functions	2052A 2052AB	2052A-19 2052AB-19	2330A-10 2330AB-10	2952A 2952AB
Continuous dial	●	●	●	
Reverse reading				●
Coaxial revolution counter			●	
Cushioned end point	●	●	●	●
Shockproof		●		
Jeweled bearing		●	●	

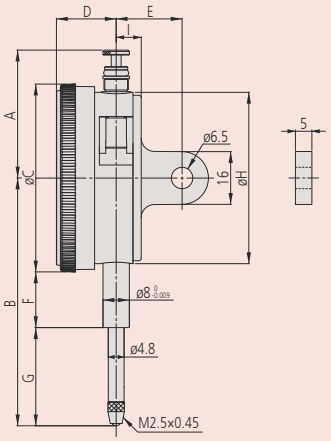
Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

For accessories and contact points, see end of dial indicators section.



2052A(B)
2052A(B)-19

2330A(B)-10

2952A(B)

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]
2052A	30	1 mm	±0-100	0,01	0,4-2,5	7	11	12	25	5
2052AB	30	1 mm	±0-100	0,01	0,4-2,5	7	11	12	25	5
2052A-19	30	1 mm	±0-100	0,01	0,4-2,5	7	11	12	25	5
2052AB-19	30	1 mm	±0-100	0,01	0,4-2,5	7	11	12	25	5
2330A-10	30	1 mm	±0-100	0,01	0,4-2,5	7	11	12	25	5
2330AB-10	30	1 mm	±0-100	0,01	0,4-2,5	7	11	12	25	5
2952A	30	1 mm	100-0	0,01	0,4-2,5	7	11	12	25	5
2952AB	30	1 mm	100-0	0,01	0,4-2,5	7	11	12	25	5

B-type delivered with flat back plate

No.	R MPE (Repeatability) [µm]	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2052A	3	152	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2052AB	3	143	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2052A-19	3	152	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2052AB-19	3	143	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2330A-10	3	153	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2330AB-10	3	144	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2952A	3	152	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6
2952AB	3	143	38,5	88,7	57	18,1	20	16,9	43,3	52	7,6

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Special Dial Indicators Series 2

Series 2

This special dial indicators offer you the following benefits:

- In an adjustable pointer type the pointer can be adjusted independently of the position of the spindle by rotating the top knob.
- In a peak hold type a mechanism holds the pointer and the spindle at the position of maximum depression and hence displays the maximum value.

2048A(B)-10

2046A(B)-80

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2048A-10	10	1 mm	±0-100	0,01	0,4-1,4
2048AB-10	10	1 mm	±0-100	0,01	0,4-1,4
2046A-80	10	1 mm	±0-100	0,01	0,4-5
2046AB-80	10	1 mm	±0-100	0,01	0,4-5

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Mass [g]
2048A-10	5	9	10	15	3	3	144
2048AB-10	5	9	10	15	3	3	135
2046A-80	5	9	10	15	3	3	158
2046AB-80	5	9	10	15	3	3	149

Functions	Series 2	
	2046A-80 2046AB-80	2048A-10 2048AB-10
Continuous dial	●	●
Coaxial revolution counter		●
Peak retaining	●	
Adjustable pointer		●
Jeweled bearing		●

Optional accessories

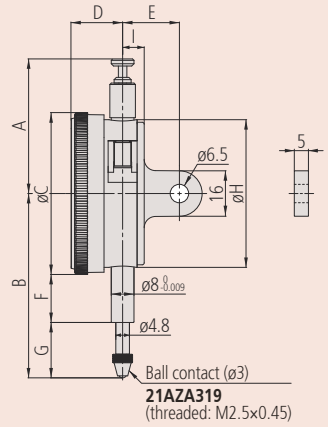
No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

Consumable spares

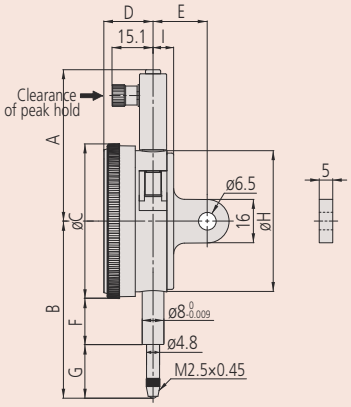
No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AZA319	Contact Element Ball Point, M2,5x0,45, 8,3 mm Length, Metric

901312: for 2046A(B)-80
21AZA319: for 2048A(B)-10

For accessories and contact points, see end of dial indicators section.



2048A(B)-10



2046A(B)-80

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One Revolution Dial Indicators Series 2

Functions	Series 2
One revolution	●
Cushioned end point	●
IP52	●

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
546666	Self-tapping Screw for Plastic, For Dial Gauge

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

For accessories and contact points, see end of dial indicators section.

Series 2

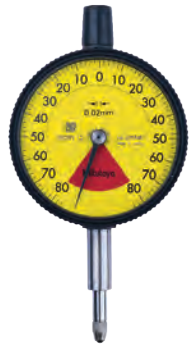
Lightweight type

This is a one revolution dial indicator. It offers you the following benefits:

- Excellent water and drip-proof characteristics
- It eliminates the possibility of reading errors due to miscounting multiple revolutions.

2971AB

2972AB



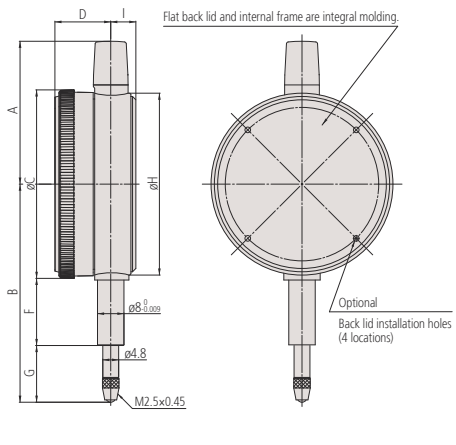
2973AB

Metric

No.	Range [mm]	Plunger Stroke [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2971AB	0,5	3,5	0,7 mm	25-0-25	0,01	0,4-1,4 N
2972AB	1	3,5	1,4 mm	50-0-50	0,01	0,4-1,4 N
2973AB	1,6	3,5	2 mm	80-0-80	0,02	0,4-1,4 N

No.	MPE any 1/10 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
2971AB	5	7	3	3
2972AB	5	7	3	3
2973AB	8	16	4	5

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2971AB	70	43,2	65,6	57	16,9	20,3	16,8	55	7,6
2972AB	70	43,2	66	57	16,9	20,3	17,2	55	7,6
2973AB	75	43,2	66,3	57	16,9	20,3	17,5	55	7,6



When installing an optional back, 4 retaining screws (no. 546666) must also be optained.

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One Revolution Dial Indicators Series 2

Series 2

Graduation 0,01 / 0,1 mm

This is a one revolution dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side. They can be easily installed without tools.
- No through screw holes on the frame and secure adhesion between the bezel and the crystal as well as the use of an O-ring prevents water or oil penetration.

IP52
2929A(B)-62
IP64
2929A(B)-60

Functions	Series 2		
	2928A up to 2959AB	2929A-60 2929AB-60	2929A-62 2929AB-62
One revolution	●	●	●
Shockproof	●	●	●
IP52			●
IP64		●	

2928A(B)

2929A(B)
2929A(B)-62

2929A(B)-60

2959A(B)

Metric

No.	Range [mm]	Plunger Stroke [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2928A	4	10	5 mm	2-0-2	0,1	0,4-1,4 N
2928AB	4	10	5 mm	2-0-2	0,1	0,4-1,4 N
2929A	0,8	5	1 mm	40-0-40	0,01	0,4-1,4 N
2929AB	0,8	5	1 mm	40-0-40	0,01	0,4-1,4 N
2929A-62	0,8	5	1 mm	40-0-40	0,01	0,4-2 N
2929AB-62	0,8	5	1 mm	40-0-40	0,01	0,4-2 N
2929A-60	0,8	5	1 mm	40-0-40	0,01	0,4-2 N
2929AB-60	0,8	5	1 mm	40-0-40	0,01	0,4-2 N
2959A	1,6	5	2 mm	80-0-80	0,01	0,4-1,4 N
2959AB	1,6	5	2 mm	80-0-80	0,01	0,4-1,4 N

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
2928A	15	25	12	20
2928AB	15	25	12	20
2929A	5	7	3	3
2929AB	5	7	3	3
2929A-62	5	7	3	3
2929AB-62	5	7	3	3
2929A-60	5	7	3	3
2929AB-60	5	7	3	3
2959A	5	9	4	3
2959AB	5	9	4	3

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	I [mm]
2928A	145	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2928AB	136	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2929A	145	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2929AB	136	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2929A-62	145	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2929AB-62	136	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2929A-60	146	47,2	70	57	18,1	20	12,3	29,2	7,6
2929AB-60	137	47,2	70	57	18,1	20	12,3	29,2	7,6
2959A	145	47,2	65,2	57	18,1	20	16,9	19,8	7,6
2959AB	136	47,2	65,2	57	18,1	20	16,9	19,8	7,6

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

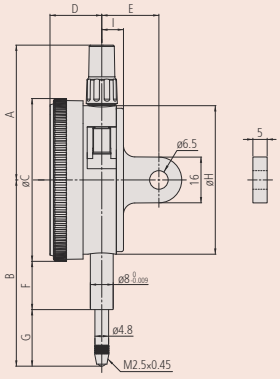
Consumable spares

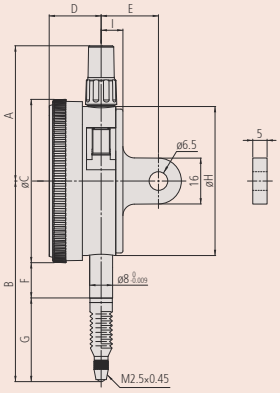
No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64

21AAB562: for 2929A(B)-60 (IP model)

21JZA295 and 21JZA301: not for IP64 type

For accessories and contact points, see end of dial indicators section.





2929A(B)-60

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One Revolution Dial Indicators Series 2

Series 2

Graduation 0,001 mm

This is a one revolution dial indicator. It offers you the following benefits:

- Bezel clamp and lifting lever (optional) can be attached to either right or left side.
- No through screw holes on the frame as well as the use of an O-ring prevents water or oil penetration.
- It eliminates the possibility of reading errors due to miscounting multiple revolutions.

PROPRIETARY INSPECTION CERTIFICATE

IP52
2900A(B)-72

IP64
2900A(B)-70

Functions	Series 2 2900A-10 up to 2901AB-10	2900A-70 2900AB-70	2900A-72 2900AB-72
One revolution	●	●	●
Shockproof	●	●	●
Jeweled bearing	●	●	●
IP52			●
IP64		●	

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4
21JZA295	Spindle Lifting Cable, for Indicator, L=500 mm
21JZA301	Spindle Lifting Cable with Auto Stop, for Indicator, L=300 mm

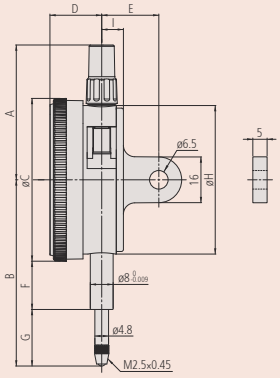
Consumable spares

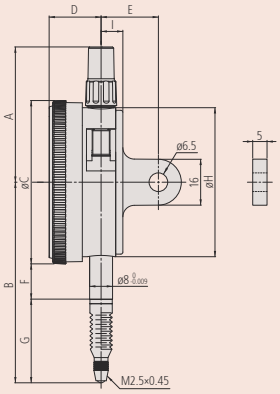
No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AAB562	NBR Rubber Boot, Digital Gauge ID-B, Dial Gauge IP63/IP64

21AAB562: for 2900A(B)-70 (IP model)

21JZA295 and 21JZA301: not for IP64 type

For accessories and contact points, see end of dial indicators section.





2900A(B)-70

2900A(B)-10
2900A(B)-72

2900A(B)-70

2901A(B)-10

Metric

No.	Range [mm]	Plunger Stroke [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2900A-10	0,08	4	0,1 mm	40-0-40	0,001	0,4-1,4 N
2900AB-10	0,08	4	0,1 mm	40-0-40	0,001	0,4-1,4 N
2900A-70	0,08	4	0,1 mm	40-0-40	0,001	0,4-2 N
2900AB-70	0,08	4	0,1 mm	40-0-40	0,001	0,4-2 N
2900A-72	0,08	4	0,1 mm	40-0-40	0,001	0,4-2 N
2900AB-72	0,08	4	0,1 mm	40-0-40	0,001	0,4-2 N
2901A-10	0,16	4,1	0,2 mm	80-0-80	0,001	0,4-1,5 N
2901AB-10	0,16	4,1	0,2 mm	80-0-80	0,001	0,4-1,5 N

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
2900A-10	2	3	2	1
2900AB-10	2	3	2	1
2900A-70	2	3	2	1
2900AB-70	2	3	2	1
2900A-72	2	3	2	1
2900AB-72	2	3	2	1
2901A-10	2	4	2	1
2901AB-10	2	4	2	1

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
2900A-10	149	47,2	66	57	18,1	20	16,9	20,6	52	7,6
2900AB-10	140	47,2	66	57	18,1	20	16,9	20,6	52	7,6
2900A-70	150	47,2	67	57	18,1	20	12,3	26,2	52	7,6
2900AB-70	141	47,2	67	57	18,1	20	12,3	26,2	52	7,6
2900A-72	149	47,2	66	57	18,1	20	16,9	20,6	52	7,6
2900AB-72	140	47,2	66	57	18,1	20	16,9	20,6	52	7,6
2901A-10	149	47,2	66,1	57	18,1	20	16,9	20,7	52	7,6
2901AB-10	140	47,2	66,1	57	18,1	20	16,9	20,7	52	7,6

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Mitutoyo

Metric Dial Indicators with Large Dial Face Series 3

Series 3

This is a standard dial indicator. It offers you the following benefits:
- Large-diameter dial face ø = 78 mm for easy reading
- 0,01 / 0,001 mm graduation

3046A(B)

3047A(B)

3050A(B)

3052A(B)-19

3058A(B)-19

3060A(B)-19

3062A(B)-19

3109A(B)-10

Functions	Series 3					
	3046A 3046AB	3050A 3050AB	3052A-19 up to 3062AB-19	3058A-19 3058AB-19	3047A 3047AB	3109A-10 3109AB-10
Balanced dial					●	●
Continuous dial	●	●	●			
Coaxial revolution counter			●	●		
Cushioned end point		●				
Shockproof			●	●		●
Jeweled bearing			●	●		●

Optional accessories

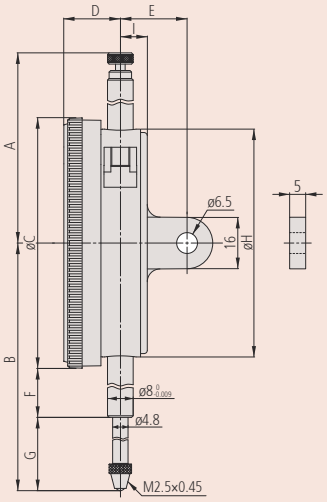
No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AZA319	Contact Element Ball Point, M2,5x0,45, 8,3 mm Length, Metric

901312: for 3046A(B), 3047A(B), 3050A(B), 3109A(B)
21AZA319: for 3052A(B)-19, 3058A(B)-19, 3060A(B)-19, 3062A(B)-19

For accessories and contact points, end of dial indicators section.



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Metric Dial Indicators with Large Dial Face Series 3

Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
3046A	10	1 mm	±0-100	0,01	0,4-1,4
3046AB	10	1 mm	±0-100	0,01	0,4-1,4
3047A	10	1 mm	0-50-0	0,01	0,4-1,4
3047AB	10	1 mm	0-50-0	0,01	0,4-1,4
3050A	20	1 mm	±0-100	0,01	0,4-2
3050AB	20	1 mm	±0-100	0,01	0,4-2
3052A-19	30	1 mm	±0-100	0,01	0,4-2,5
3052AB-19	30	1 mm	±0-100	0,01	0,4-2,5
3058A-19	50	1 mm	±0-100	0,01	0,4-3
3058AB-19	50	1 mm	±0-100	0,01	0,4-3
3060A-19	80	1 mm	±0-100	0,01	0,4-3
3060AB-19	80	1 mm	±0-100	0,01	0,4-3
3062A-19	100	1 mm	±0-100	0,01	0,4-3,5
3062AB-19	100	1 mm	±0-100	0,01	0,4-3,5
3109A-10	1	0,2 mm	0-100-0	0,001	0,4-1,5
3109AB-10	1	0,2 mm	0-100-0	0,001	0,4-1,5

3060A(B)-19 and 3062A(B)-19: use in a vertical position only

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
3046A	5	9	10	15	3	3
3046AB	5	9	10	15	3	3
3047A	5	9	10	15	3	3
3047AB	5	9	10	15	3	3
3050A	8	10	11	20	4	3
3050AB	8	10	11	20	4	3
3052A-19	10	11	12	25	5	3
3052AB-19	10	11	12	25	5	3
3058A-19	10	12	13	30	6	3
3058AB-19	10	12	13	30	6	3
3060A-19	10	14	15	45	9	3
3060AB-19	10	14	15	45	9	3
3062A-19	12	17	20	50	9	3
3062AB-19	12	17	20	50	9	3
3109A-10	2,5	4	4,5	5	2	1
3109AB-10	2,5	4	4,5	5	2	1

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
3046A	252	59,6	75,5	78	17,7	21	15,9	20,6	71	9
3046AB	237	59,6	75,5	78	17,7	21	15,9	20,6	71	9
3047A	252	59,6	75,5	78	17,7	21	15,9	20,6	71	9
3047AB	237	59,6	75,5	78	17,7	21	15,9	20,6	71	9
3050A	272	52,6	94	78	17,7	21	25,9	29,1	71	9
3050AB	257	52,6	94	78	17,7	21	25,9	29,1	71	9
3052A-19	285	72,9	104,3	78	17,7	21	25,9	39,4	71	9
3052AB-19	270	72,9	104,3	78	17,7	21	25,9	39,4	71	9
3058A-19	298	81,9	142,3	78	17,7	21	43,9	59,4	71	9
3058AB-19	283	81,9	142,3	78	17,7	21	43,9	59,4	71	9
3060A-19	314	120,9	202,3	78	17,7	21	73,9	89,4	71	9
3060AB-19	299	120,9	202,3	78	17,7	21	73,9	89,4	71	9
3062A-19	332	141,9	243,3	78	17,7	21	94,9	109,4	71	9
3062AB-19	317	141,9	243,3	78	17,7	21	94,9	109,4	71	9
3109A-10	270	59,6	79	78	17,7	21	15,9	14,1	71	9
3109AB-10	255	59,6	79	78	17,7	21	15,9	14,1	71	9

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Dial Indicators with Extra Large Dial Face Series 4

Series 4

This is a standard dial indicator. It offers you the following benefits:

- Large-diameter dial face ø = 92 mm for easy reading

4046A(B)

Functions	Series 4
Continuous dial	●

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

For accessories and contact points, see end of dial indicators section.

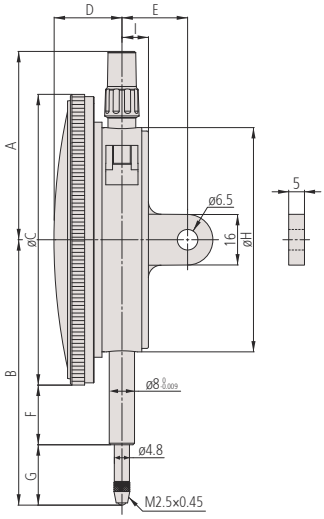
Metric

No.	Range [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
4046A	10	1 mm	±0-100	0,01	0,4-1,4
4046AB	10	1 mm	±0-100	0,01	0,4-1,4

B-type delivered with flat back plate

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
4046A	5	9	10	15	3	3
4046AB	5	9	10	15	3	3

No.	Mass [g]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]
4046A	345	59,6	84	92	21,5	21	18,9	19,1	71	9
4046AB	330	59,6	84	92	21,5	21	18,9	19,1	71	9



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Dial Indicators Back Plunger Type Series 1

Series 1

This is a back plunger, dial indicator with bezel ø 40 mm. It offers you the following benefits:

- It is ideal for use in applications where space is limited.

Functions	Series 1		
	1160A	1960A	1162A
Balanced dial	●	●	
Continuous dial			●
Reverse reading			●
One revolution		●	
Shockproof		●	

Optional accessories

No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator
136568	Holding Bar for Back Plunger Indicator, Ø 8 mm, 81 mm Length
21AAA168	Holding Bar for Back Plunger Indicator, Ø 8 mm, 42 mm Length
136567	Holding Bar for Back Plunger Indicator, Ø 6 mm, 81 mm Length
21AAA166	Holding Bar for Back Plunger Indicator, Ø 6 mm, 42 mm Length

Consumable spares

No.	Description
21AZA319	Contact Element Ball Point, M2,5x0,45, 8,3 mm Length, Metric

For accessories and contact points, see end of dial indicators section.

With optional holding bar

1160A

1162A

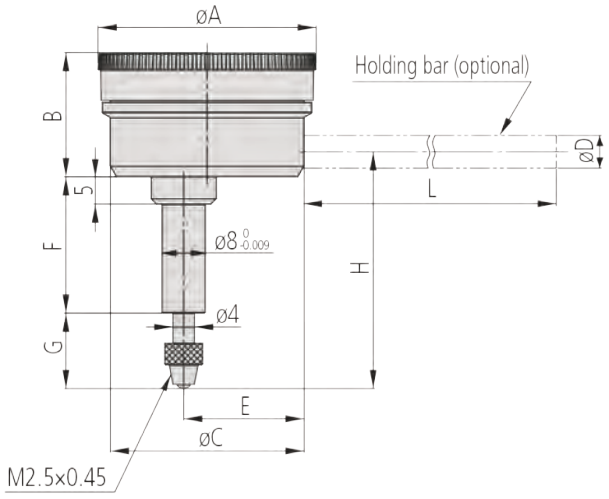
1960A

Metric

No.	Range [mm]	Plunger Stroke [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
1160A	5		1 mm	±0-100	0,01	0,4-1,4 N
1162A	5		1 mm	100-0	0,01	0,4-1,4 N
1960A	1	4	1,27 mm	50-0-50	0,01	0,4-1,4 N

No.	MPE any 1/10 revolution [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
1160A	7	11	12	18	4	3
1162A	7	11	12	18	4	3
1960A	7			15	3,5	3

No.	Mass [g]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]
1160A	80	40	22,7	35,6	24,3	25	13,8	43,3
1162A	80	40	22,7	35,6	24,3	25	13,8	43,3
1960A	80	40	22,7	35,6	24,3	28,7	12,8	46



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Dial Indicators Back Plunger Type Series 2

Series 2

This is a back plunger type dial indicator with bezel ø 57 mm.

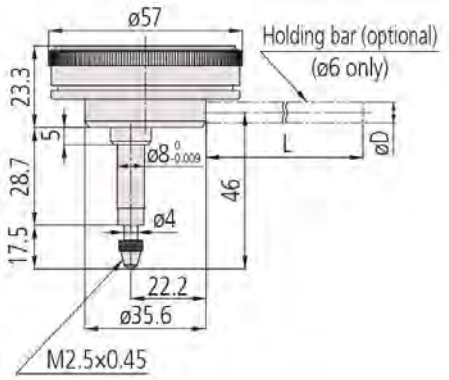
2960A

2990A-10

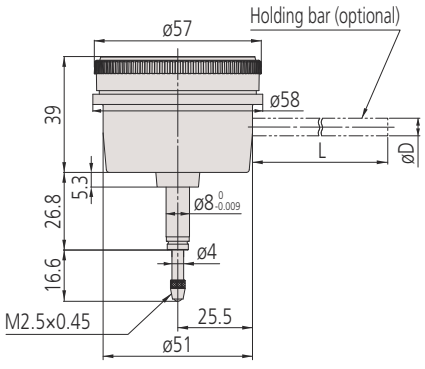
Metric

No.	Range [mm]	Plunger Stroke [mm]	Range per rev.	Dial reading	Graduation [mm]	Measuring force
2960A	1	4	1,27 mm	50-0-50	0,01	0,4-1,4 N
2990A-10	0,1	4	0,14 mm	50-0-50	0,001	0,4-1,5 N

No.	MPE any 1/10 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Mass [g]
2960A	7	15	3,5	3	115
2990A-10	2	4	2	1	205



2960A



2990A-10

Functions	Series 2 2960A	Series 2 2990A-10
Balanced dial	●	●
One revolution	●	●
Shockproof	●	●
Jeweled bearing		●

Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
136568	Holding Bar for Back Plunger Indicator, Ø 8 mm, 81 mm Length
21AAA168	Holding Bar for Back Plunger Indicator, Ø 8 mm, 42 mm Length
136567	Holding Bar for Back Plunger Indicator, Ø 6 mm, 81 mm Length
21AAA166	Holding Bar for Back Plunger Indicator, Ø 6 mm, 42 mm Length

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric
21AZA319	Contact Element Ball Point, M2,5x0,45, 8,3 mm Length, Metric

901312: for 2990A-10
21AZA319: for 2960A

2960A: holding bar 136567 and 21AAA166 only

For accessories and contact points, see end of dial indicators section.

Back plunger indicator with optional holding bar and limit hands.

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Contact Points

Contact Points with Radius

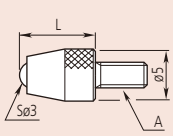
Ball point (901312)

Ball Point with attached ball (101122)

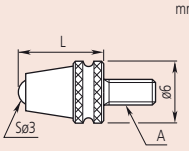
Shell Type Point (101118)

Spherical Point Steel (101119)

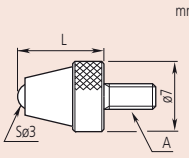
Spherical Point Carbide (120058D)



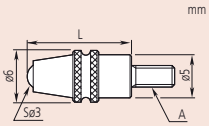
Ball point (901312)



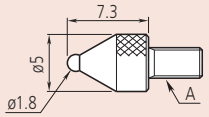
Ball point (902119)



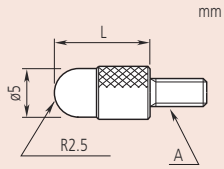
Ball point (21AZA319)



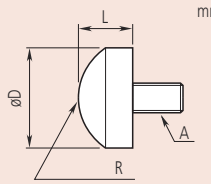
Ball point (21AZA320)



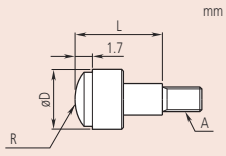
Ball point with attached ball



Shell type point



Spherical point steel



Spherical point carbide

Metric Ball Point

No.	Type	Material	A [mm]	L [mm]
901312		Carbide	M2,5x0,45	7,3
120045D		Carbide	M2,5x0,45	8
902119	Waterproof Type S-Type Series	Carbide	M2,5x0,45	8,3
21AZA319		Carbide	M2,5x0,45	8,3
21AZA320	Waterproof Type S-Type Series	Carbide	M2,5x0,45	12,1
21JAA225		Carbide	M2,5x0,45	14
120049D		Carbide	M2,5x0,45	15
21JAA224		Carbide	M2,5x0,45	17
21AZA321	Waterproof Type S-Type Series	Carbide	M2,5x0,45	19,3
137391		Carbide	M2,5x0,45	20
21JAA226		Carbide	M2,5x0,45	22
120053D		Carbide	M2,5x0,45	25
21AAA252		Carbide	M2,5x0,45	30
901994		Plastic	M2,5x0,45	7,3
120047D		Ruby	M2,5x0,45	8
120051D		Ruby	M2,5x0,45	15
137392		Ruby	M2,5x0,45	20
120055D		Ruby	M2,5x0,45	25
21AAA253		Ruby	M2,5x0,45	30
120046D		Sapphire	M2,5x0,45	8
120050D		Sapphire	M2,5x0,45	15
120054D		Sapphire	M2,5x0,45	25

Metric Ball point with attached ball

No.	Material	A [mm]	D [mm]
21AAA349	Carbide	M2,5x0,45	1
21AAA350	Carbide	M2,5x0,45	1,5
101122	Steel	M2,5x0,45	1,8
21AAA351	Carbide	M2,5x0,45	2,5
21AAA352	Carbide	M2,5x0,45	4

Metric Shell Type Point

No.	Material	A [mm]	L [mm]
101386	Steel	M2,5x0,45	5
101118	Steel	M2,5x0,45	10
137393	Steel	M2,5x0,45	15
101387	Steel	M2,5x0,45	20
101388	Steel	M2,5x0,45	25
21AAA254	Steel	M2,5x0,45	30

Metric Spherical Point

No.	Material	A [mm]	D [mm]	L [mm]	R [mm]
111460	Steel	M2,5x0,45	5,5	3	5
125258	Steel	M2,5x0,45	7,9	5	5
101119	Steel	M2,5x0,45	10	5	7
120058D	Carbide	M2,5x0,45	5,5	5	5
120059D	Carbide	M2,5x0,45	7,5	10	7
120060D	Carbide	M2,5x0,45	10,5	10	10

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Mitutoyo

Contact Points

Contact Points Flat

Cylinder Point (137257)

Flat Point carbide (120056D)

Flat Point steel (131365)

Metric

Cylinder Point

No.	Material	A [mm]	D [mm]	L [mm]
120066D	Carbide	M2,5x0,45	0,45	3
21AAA329	Carbide	M2,5x0,45	0,45	5
120065D	Carbide	M2,5x0,45	1	3
21AAA330	Carbide	M2,5x0,45	1	5
21AAA331	Carbide	M2,5x0,45	1	8
21AAA332	Carbide	M2,5x0,45	1	10
21AAA333	Carbide	M2,5x0,45	1	20
21AAA334	Carbide	M2,5x0,45	1	40
21AAA335	Carbide	M2,5x0,45	1,5	5
21AAA336	Carbide	M2,5x0,45	1,5	10
120064D	Carbide	M2,5x0,45	1,5	13
21AAA337	Carbide	M2,5x0,45	1,5	20
21AAA338	Carbide	M2,5x0,45	1,5	40
137257	Carbide	M2,5x0,45	2	8
21AAA257	Carbide	M2,5x0,45	2	18
21AAA258	Carbide	M2,5x0,45	2	28
21AAA339	Carbide	M2,5x0,45	2	40

Metric

Flat Point carbide

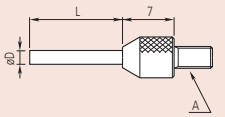
No.	Material	Flatness [µm]	A [mm]	D [mm]	d [mm]	L [mm]
120056D	Carbide	3	M2,5x0,45	5	2	8
120041D	Carbide	3	M2,5x0,45	5,2	4,3	5
120042D	Carbide	3	M2,5x0,45	7	6,5	10
120043D	Carbide	3	M2,5x0,45	10,5	9,5	10
21AZB760	Carbide	5	M2,5x0,45	17	15	10
21AZB761	Carbide	5	M2,5x0,45	22	20	10
21AZB762	Carbide	5	M2,5x0,45	27	25	10
21AZB763	Carbide	5	M2,5x0,45	32	30	10
21AZB754	Carbide	3	M2,5x0,45	7	3	10
21AZB755	Carbide	3	M2,5x0,45	9	4,5	10

Metric

Flat Point steel

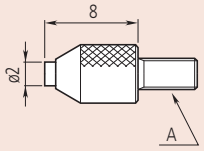
No.	Material	Flatness [µm]	A [mm]	D [mm]	L [mm]
131365	Steel	3	M2,5x0,45	5	8
21AAB715	Steel	3	M2,5x0,45	5	10
101117	Steel	5	M2,5x0,45	10	10
21AAB711	Steel	5	M2,5x0,45	15	10
21AAB712	Steel	5	M2,5x0,45	20	10
21AAB713	Steel	5	M2,5x0,45	25	10
21AAB714	Steel	5	M2,5x0,45	30	10

mm



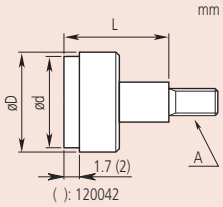
Cylinder Point

mm



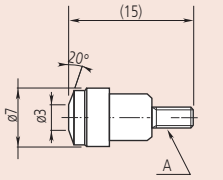
Flat point carbide (120056D)

mm



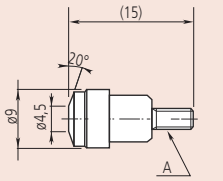
Flat point carbide (120041D)

mm



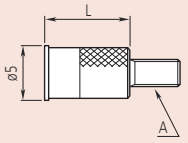
Flat point carbide (21AZB754)

mm



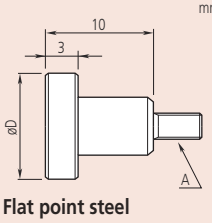
Flat point carbide (21AZB755)

mm



Flat point steel
Flatness 3 µm

mm



Flat point steel
Flatness 5µm

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Contact Points

Contact Points Others

Blade Point (120062D)

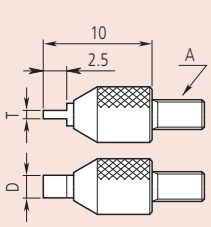
Conical Point (101385)

Knife Edge Point (120067D)

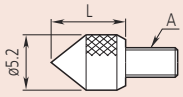
Lever Point (900391)

Needle Point (101121)

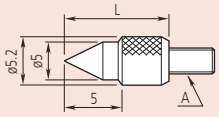
Roller Point (901954)



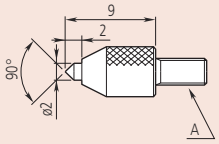
Blade point



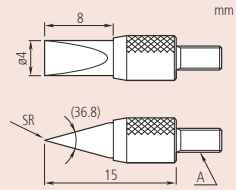
Conical point steel (101385)



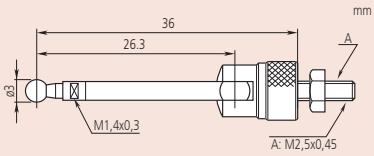
Conical point steel (101120)



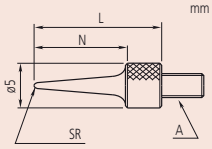
Conical point carbide (120057D)



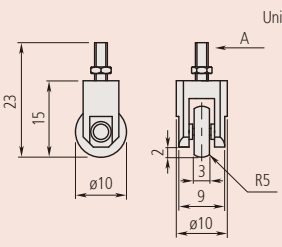
Knife edge point



Lever Point



Needle Point



Roller point

Metric — Blade Point

No.	Material	A [mm]	D [mm]	T [mm]
120061D	Carbide	M2,5x0,45	2	0,4
120062D	Carbide	M2,5x0,45	2	0,6
120063D	Carbide	M2,5x0,45	4	1

Metric — Conical Point

No.	Material	Tip angle	A [mm]	L [mm]
101385	Steel	90°	M2,5x0,45	5
101120	Steel	60°	M2,5x0,45	10
120057D	Carbide	90°	M2,5x0,45	9
120068D	Carbide	90°	M2,5x0,45	15

Metric — Knife Edge Point

No.	Material	A [mm]	R [mm]
120067D	Carbide	M2,5x0,45	0,2

Metric — Lever Point

No.	Material	A [mm]
900391	Steel	M2,5x0,45

Metric — Needle Point

No.	Material	A [mm]	L [mm]	N [mm]	R [mm]
101121	Steel	M2,5x0,45	15	11	0,4
137413	Steel	M2,5x0,45	17	13	0,2
21AAA255	Steel	M2,5x0,45	25	21	0,4
21AAA256	Steel	M2,5x0,45	35	31	0,4

Metric — Roller Point

No.	Material	A [mm]
901954	Steel	M2,5x0,45

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Contact Points

Contact Point Set

Metric

Contact Point Set

No.	Material	Remarks	A [mm]
7822	Steel	Set with 6 contact points (M2,5x0,45): 131365, 101117, 101121, 101119, 101118, 101387	M2,5x0,45

Extension Rods

Extensions

303611

Metric

No.	Material	A [mm]	L [mm]
303611	Steel	M2,5x0,45	10
21AAA259A	Steel	M2,5x0,45	15
303612	Steel	M2,5x0,45	20
21AAA259B	Steel	M2,5x0,45	25
303613	Steel	M2,5x0,45	30
21AAA259C	Steel	M2,5x0,45	35
21AAA259D	Steel	M2,5x0,45	40
21AAA259E	Steel	M2,5x0,45	45
21AAA259F	Steel	M2,5x0,45	50
21AAA259G	Steel	M2,5x0,45	55
304146	Steel	M2,5x0,45	60
21AAA259H	Steel	M2,5x0,45	65
21AAA259J	Steel	M2,5x0,45	70
21AAA259L	Steel	M2,5x0,45	75
21AAA259M	Steel	M2,5x0,45	80
304147	Steel	M2,5x0,45	90
303614	Steel	M2,5x0,45	100
21AAA011	Steel		
21AAA012	Steel		

Bases for Indicators

Bases

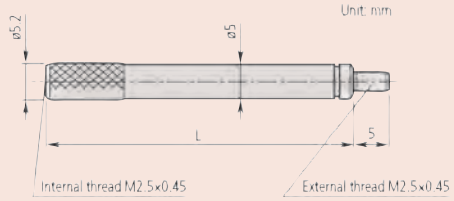
21JZA208

21JZA209

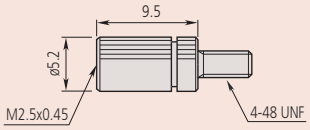
No.	Base (W x T)	Remarks
21JZA208	63,5 x 16 mm	Delivered without set screw for base/indicator
21JZA209	101,6 x 16 mm	Delivered without set screw for base/indicator

Standard accessories

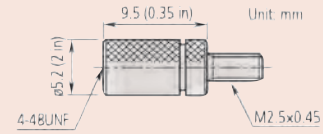
No.	Description
131365	Contact Element Flat, M2,5x0,45, 5mm, Steel, Metric
101117	Contact Element Flat, M2,5x0,45, 10mm, Steel, Metric
101121	Contact Element Needle, M2,5x0,45, R=0,4mm, Steel, Metric
101119	Contact Element Spherical, M2,5x0,45, R=7mm, Steel, Metric
101118	Contact Element Shell, M2,5x0,45, R=2,5mm, 10mm Length, Steel, Metric
101387	Contact Element Shell, M2,5x0,45, R=2,5mm, 20mm Length, Steel, Metric



A = M 2,5 x 0,45 mm (metric)



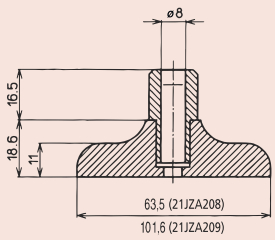
21AAA011
Adapter AGD/ANSI Indicator (INCH) to EN ISO M2,5x0,45 thread



21AAA012
Adapter EN ISO Indicator (Metric) to ANSI/AGD 4-48UNF thread

Optional accessories

No.	Description
21JAA269	Set Screw for Base (Indicator)



Thickness : 16 mm

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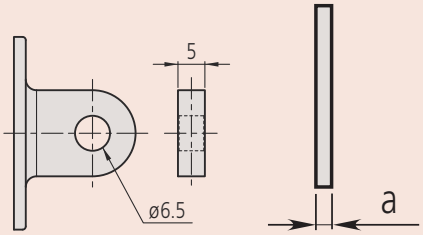
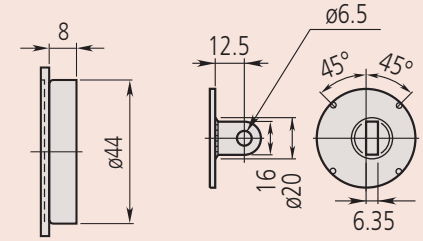
Interchangeable Backs



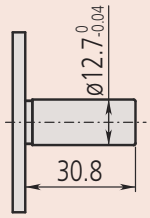
Unit : mm
With centre lug

Unit : mm
Flat back plate

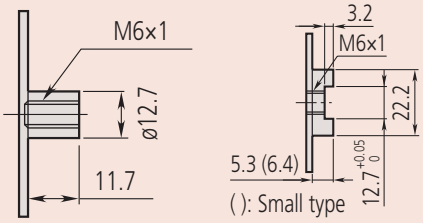


Unit : mm
With magnet

Unit : mm
With laterally offset back lug

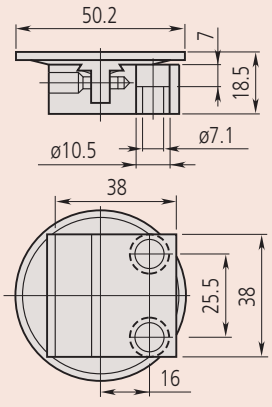


Unit : mm
With post

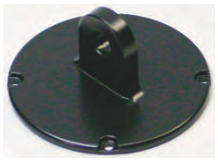


Unit : mm
With screw mount

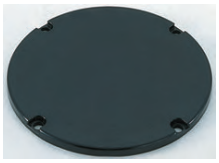
Unit : mm
With adjustable back



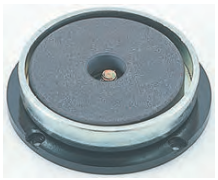
Unit : mm
With adjustable bracket



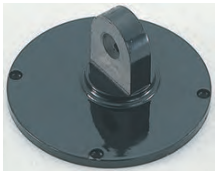
With centre lug



Flat Back Plate



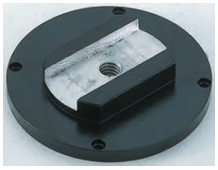
With magnet



With laterally offset back lug

With post

With screw mount



With adjustable back

With rack

With adjustable bracket

No.	For Series	Dimensions [mm]	Remarks
191559	1911AB-10, 1913AB-10, 1921AB-10, 1923AB-10, 1925AB-10	a = 1 mm	Flat back plate
101211	1	a = 2,2 mm	Flat back plate
136872	1 (waterproof)	a = 1,5 mm	Flat back plate
137906	1003A	a = 1 mm	Flat back plate
101039	2/ ID-C/ ID-S/ ID-SS	a = 2,5 mm	Flat back plate
21AZB231	2 (waterproof S type and A type)	a = 2,5 mm	Flat back plate
100836	3/ 4	a = 3 mm	Flat back plate
190561	1911A-10, 1913A-10		Back plate with centre lug
101210	1		Back plate with centre lug
137905	1003A		Back plate with centre lug
101040	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		Back plate with centre lug
21AZB230	2 (waterproof S type and A type)		Back plate with centre lug
100691	3/ 4		Back plate with centre lug
21EZA145	ID-N, ID-B		Back plate with centre lug
900928	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		Back plate with magnet
900929	3/ 4		Back plate with magnet
101167	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		Back plate with laterally offset back lug
193172	1		Back plate with post
101169	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		Back plate with post
193173	1	M 6 x 1	Back plate with screw mount
136023	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	M 6 x 1	Back plate with screw mount
136025	1	M 6 x 1	Back plate with adjustable back
136026	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS	M 6 x 1	Back plate with adjustable back
129902	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		Back plate with rack
901963	2/ ID-C/ ID-F/ ID-H/ ID-S/ ID-SS		Back plate with adjustable bracket

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Mitutoyo

Spindle Lifting Accessories

- The spindle lifting accessories are attached to the indicators for improved inspection efficiency.

21JZA301

21JZA295

Application 21JZA301 and 21JZA295

902100

21AZB149

21AZB150

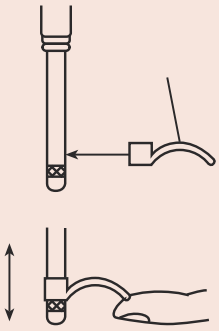
21EZA198

21EZA105

21EZA197

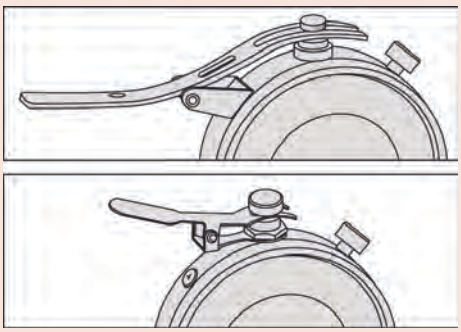
21EZA200

137693



Application 137693

No.	Remarks
21JZA301	Spindle lifting cable without auto-stop function, 500 mm length for all digital indicators with range 12,7 mm (0,5") and ID-U/ID-H indicators except ID-N and ID-B indicators, except all dial indicators with range >10 mm (0,5") except 2048A(B)-10, 2046A(B)-80, 1911A(B)-10, 1913(B)-10, 1921A(B)-10, 1923A(B)-10, 1925A(B)-10, except back plunger dial indicators and waterproof dial indicators, except 2971AB, 2972AB, 2973AB, 2976AB, 2977AB, 2978AB
21JZA295	Spindle lifting cable without auto-stop function, 500 mm length for all digital indicators with range 12,7 mm (0,5") and ID-U/ID-H indicators except ID-N and ID-B indicators, except all dial indicators with range >10 mm (0,5") except 2048A(B)-10, 2046A(B)-80, 1911A(B)-10, 1913(B)-10, 1921A(B)-10, 1923A(B)-10, 1925A(B)-10, except back plunger dial indicators and waterproof dial indicators, except 2971AB, 2972AB, 2973AB, 2976AB, 2977AB, 2978AB
137693	Spindle lifting handle suitable for 4,8 mm spindle (plunger) diameter
902100	Spindle lifting lever S-type and A-type dial indicators Series 1
21AZB149	Spindle lifting lever S-type dial indicators Series 2,3 and 4 up to 10 mm/0,4"
21AZB150	Spindle lifting lever S-type and A-type dial indicators Series 2,3 >10 mm/0,4" up to 20 mm/0,8"
21EZA198	Spindle lifting lever digital indicators ID-C & ID-F (up to 12 mm range), ID-S, ID-SS and A-type dial indicators Series 2, 3 and 4 up to 10 mm/0,5" range
21EZA105	Spindle lifting knob for 12,4 mm digital indicator. This knob allows you to lift the spindle from above by hand.
21EZA197	Spindle lifting knob for 25,4 mm digital indicator. This knob allows you to lift the spindle from above by hand.
21EZA200	Spindle lifting knob for 50,8 mm digital indicator. This knob allows you to lift the spindle from above by hand.
21EZA101	Spindle lifting knob for ID-H digital indicator. This knob allows you to lift the spindle from above by hand.



Application spindle lifting lever

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Other Accessories for Dial Indicator

This accessory is not applicable to 1003A(B), 1911A(B)-10, 1913A(B)-10, 1921A(B)-10, 1923A(B)-10, 1925A(B)-10, 2971AB, 2972AB, 2973AB, 2976AB, 2977AB, 2978AB

Colour-coded Spindle Caps

- 9 colour-coded spindle caps are available for dial indicators with a range of 10 mm or less.

No.	Colour	Remarks
193051	Black	For standard type
193051B	Blue	For standard type
193051D	Orange	For standard type
193051G	Green	For standard type
193051P	Pink	For standard type
193051R	Red	For standard type
193051S	Dark blue	For standard type
193051W	White	For standard type
193051Y	Yellow	For standard type
193595	Black	For waterproof type
193595B	Blue	For waterproof type
193595D	Orange	For waterproof type
193595G	Green	For waterproof type
193595P	Pink	For waterproof type
193595R	Red	For waterproof type
193595S	Dark blue	For waterproof type
193595W	White	For waterproof type
193595Y	Yellow	For waterproof type

Limit Stickers

- 10 pieces per set.

136420

136421

136422

No.	For Series	Colour
136420	Series 2 Dial Indicator 55,6 or 57 mm bezel/outside diameter	Red
136421	Series 2 Dial Indicator 55,6 or 57 mm bezel/outside diameter	Green
136422	Series 2 Dial Indicator 55,6 or 57 mm bezel/outside diameter	Yellow

Tool set

- For repairing analogue dial indicators.

7823EU

No.	Remarks
7823EU	Set with different tools like Pin Remover, Reamers Pointer Removing Tip a.s.o. are included.

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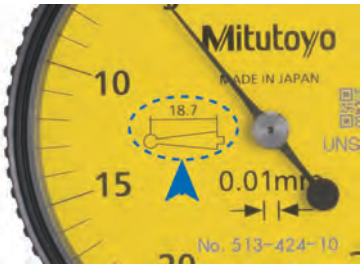
Dial Test Indicators Lever Type

Lever Indicator Overview

Choices of dial position

Our product lineup offers four models, each with a different dial orientation on the frame to allow best readability in any situation.

- Horizontal type: standard model - with dial on the top of the frame
- Vertical type: dial on the end of the frame
- Horizontal (20° tilted face) type: dial on top of the frame, tilted backward by 20°
- Parallel type: dial on the side of the frame



Stylus length is on the dial face

The length of the applied stylus affects the indicator's scale factor. The appropriate length is indicated on the dial face to assist a customer when ordering the correct replacement stylus.

ø8 stem to fit dovetails is a standard accessory

A ø8mm plain stem (21CAB104) for the Metric models that attaches to any dovetail on the frame is supplied as a standard accessory. Other sizes of stem to fit the dovetails are available as optional accessories:
ø4mm stem: 21CAB106
ø6mm stem: 21CAB103

Attachable limit hands

Limit hands (optional) can be attached to the bezel as for dial indicators, allowing easy identification of the upper and lower limits of tolerance.

Improved stylus bearing

The conventional method of mounting the stylus pivot bearing screw in the frame is prone to allowing looseness to develop with prolonged use.
A unique sub-plate structure to house this screw has now been incorporated in all models and eliminates this drawback.

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Lever Indicators Horizontal Type - 0,01 mm

Series 513

This is a Dial Test Indicator (Lever Type) which offers you the following benefits:

- Drastically enhanced durability, sensitivity and visibility.
- Glare-free flat crystal face allows easy reading of graduations.
- O-ring seal on the bezel has the effect of providing smooth rotation and prevents dust and oil from penetrating through to the dial face.
- The stylus length is on the dial face to reorder a replacement
- Multi-layer coatings on the crystal.

Specifications

Contact point	Thread M 1,7 x 0,35

For optional accessories, see end of lever indicators section.

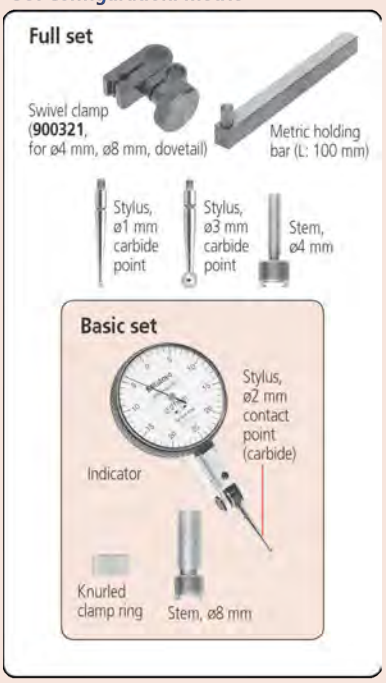
Standard accessories

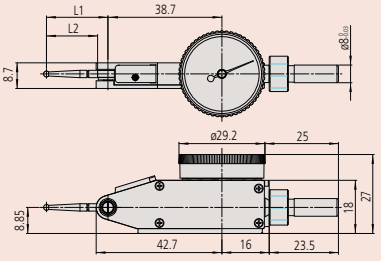
No.	Description
900321	Swivel Clamp, for D=4/8mm, Dovetail
900209	Holding Bar for Swivel Clamp, 9x9mm, 100mm Length

Optional accessories

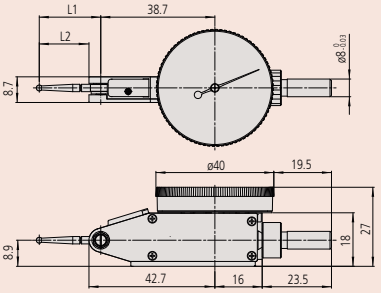
No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator

Set Configuration: Metric





513-466-10E, 513-464-10E



513-404-10E, 513-404-10T, 513-414-10E, 513-414-10T, 513-415-10E, 513-415-10T, 513-424-10E, 513-424-10T, 513-426-10E, 513-474-10E, 513-477-10E, 513-478-10E

513-466-10E

513-424-10E

513-414-10E

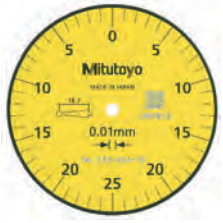
513-464-10E

513-404-10E

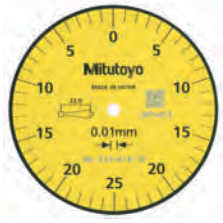
513-415-10E

513-426-10E

513-466-10E



513-424-10E



513-414-10E

513-464-10E

513-404-10E

513-415-10E

513-426-10E

All products to be sold to commercial customers.
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Lever Indicators Horizontal Type - 0,01 mm

Metric

Basic set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-466-10E	0,5	0-25-0	0,01	5			5	3	3
513-424-10E	0,5	0-25-0	0,01	5			5	3	3
513-414-10E	0,5	0-25-0	0,01	5			10	4	3
513-464-10E	0,8	0-40-0	0,01	5	6		8	3	3
513-404-10E	0,8	0-40-0	0,01	5	6		8	3	3
513-415-10E	1	0-50-0	0,01	5	8		1	4	3
513-426-10E	1,5	0-25-0	0,01	5		10	16	4	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-466-10E	0,01-0,3	137557	41	22,2	18,7
513-424-10E	0,01-0,3	137557	45	22,2	18,7
513-414-10E	0,01-0,2	131324	45	37,4	33,9
513-464-10E	0,01-0,3	103006	41	20,9	17,4
513-404-10E	0,01-0,3	103006	45	20,9	17,4
513-415-10E	0,01-0,2	136013	45	44,5	41
513-426-10E	0,01-0,4	137557	45	22,2	18,7

Metric

Basic set - Ruby contact point

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Measuring force [N]
513-478-10E	0,5	0-25-0	0,01	5		5	3	3	0,01-0,3
513-474-10E	0,8	0-40-0	0,01	5	6	8	3	3	0,01-0,3
513-477-10E	1	0-50-0	0,01	5	8	10	4	3	0,01-0,3

No.	Ruby stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-478-10E	21CZA210	45	22,2	18,7
513-474-10E	21CZA201	45	20,9	17,4
513-477-10E	21CZA212	45	44,5	41

Metric

Full set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Measuring force [N]
513-424-10T	0,5	0-25-0	0,01	5		5	3	3	0,01-0,3
513-414-10T	0,5	0-25-0	0,01	5		10	4	3	0,01-0,2
513-404-10T	0,8	0-40-0	0,01	5	6	8	3	3	0,01-0,3
513-415-10T	1	0-50-0	0,01	5	8	8	4	3	0,01-0,2

No.	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-424-10T	137557	45	22,2	18,7
513-414-10T	131324	45	37,4	33,9
513-404-10T	103006	45	20,9	17,4
513-415-10T	136013	45	44,5	41

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Lever Indicators - Horizontal Type - 0,001/0,002 mm

Series 513

This is a Dial Test Indicator (Lever Type) which offers you the following benefits:

- Drastically enhanced durability, sensitivity and visibility.
- Glare-free flat crystal face allows easy reading of graduations.
- O-ring seal on the bezel has the effect of providing smooth rotation and prevents dust and oil from penetrating through to the dial face.
- The stylus length is on the dial face to reorder a replacement.

Specifications

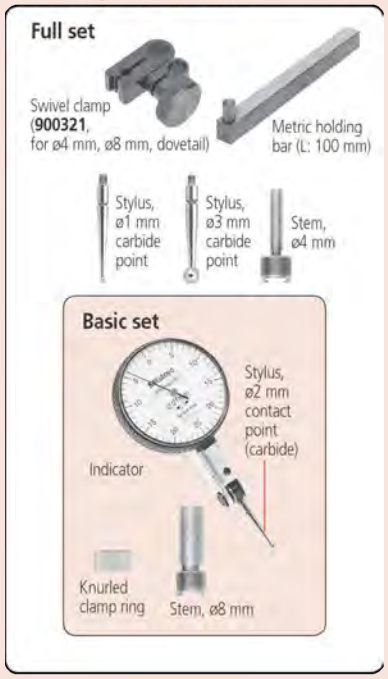
Contact point	Thread M 1,7 x 0,35

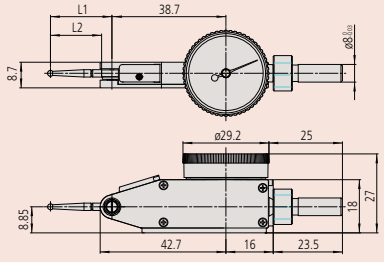
For optional accessories, see end of lever indicators section.

Optional accessories

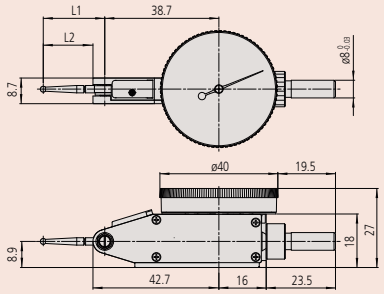
No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator

Set Configuration: Metric



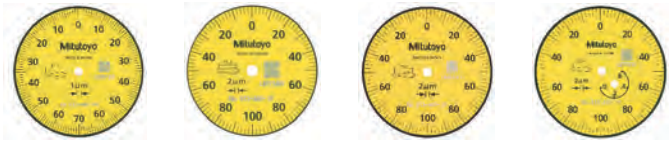


513-465-10E



513-401-10E, 513-405-10E, 513-425-10E, 513-475-10E

513-401-10E | 513-465-10E | 513-405-10E | 513-425-10E



513-401-10E | 513-465-10E | 513-405-10E | 513-425-10E

Metric — Basic set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-401-10E	0,14	0-70-0	0,001	2	3		3	2	1
513-405-10E	0,2	0-100-0	0,002	2	3		3	2	1
513-465-10E	0,2	0-100-0	0,002	2	3		3	2	1
513-425-10E	0,6	0-100-0	0,002	2	3	5	7	4	1

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-401-10E	0,01 - 0,3	103010	45	14,7	11,2
513-405-10E	0,01 - 0,3	103011	45	18,7	15,2
513-465-10E	0,01 - 0,3	103011	41	18,7	15,2
513-425-10E	0,01 - 0,4	103011	45	18,7	15,2

Metric — Basic set - Ruby contact point

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Measuring force [N]
513-471-10E	0,14	0-70-0	0,001	2	3	3	2	1	0,01 - 0,3
513-475-10E	0,2	0-100-0	0,002	2	3	3	2	1	0,01 - 0,3

No.	Ruby stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-471-10E	21CZA209	45	14,7	11,2
513-475-10E	21CZB068	45	18,7	15,2

Metric — Full set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Measuring force [N]
513-405-10T	0,2	0-100-0	0,002	2	3	3	2	1	0,01 - 0,3

No.	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-405-10T	103011	45	18,7	15,2

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Mitutoyo

Lever Indicators and Magnet Stand

Series 513

This is a Dial Test Indicator (Lever Type) including mini magnet stand. It offers you the following benefits:

- It contains various accessories including a mini magnet stand, a swivel clamp and a stem with a knurled clamp ring.

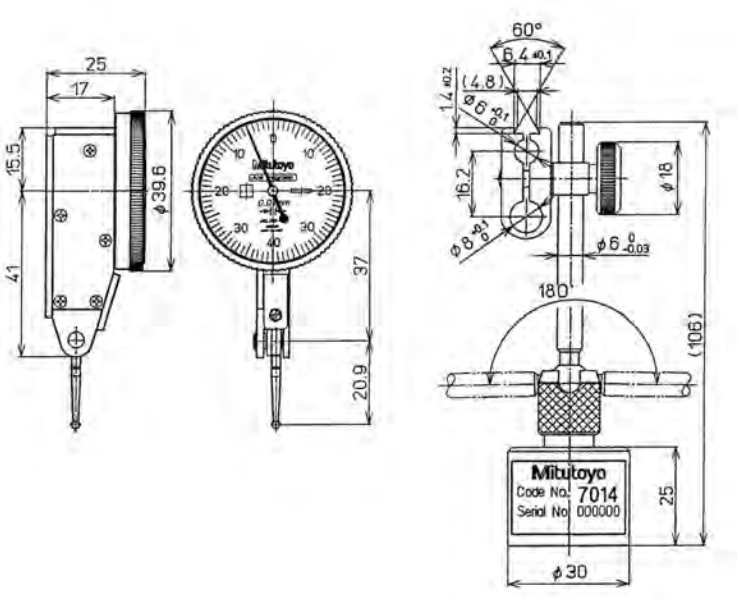
513-908-10E

513-908-10E
Indicator
Centered, bi-directional action for automatic reversal of measuring direction.
Jewelled bearings and precision gears and pinions for smooth, accurate movement and quick response.

Stand
Magnetic force : 150 N.
Mass : 180 g.

Metric

No.	Content of Set	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-908-10E	513-404-10E: Lever Indicator 7014-10: Mini Magnet Stand 902804: Stem with Knurled Clamp Ring	0,8	0-40-0	0,01	5	6	8	3	3



All products to be sold to commercial customers.
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Lever Indicators Horizontal (20° Tilted Face) Type

Series 513

This is a Dial Test Indicator (Lever Type) which offers you the following benefits:

- Drastically enhanced durability, sensitivity and visibility.
- Glare-free flat crystal face allows easy reading of graduations.
- O-ring seal on the bezel has the effect of providing smooth rotation and prevents dust and oil from penetrating through to the dial face.
- The stylus length is on the dial face to reorder a replacement
- Multi-layer coatings on the crystal.

Specifications

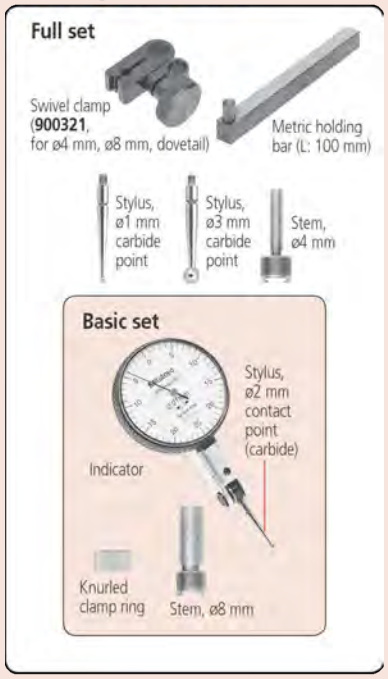
Contact point	Thread M 1,7 x 0,35

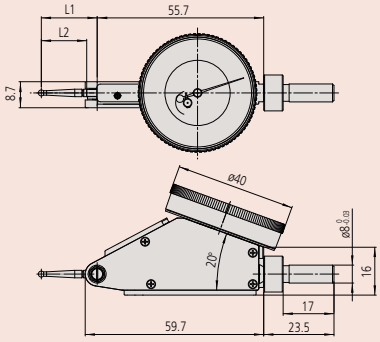
For optional accessories, see end of lever indicators section.

Optional accessories

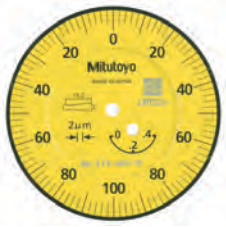
No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator

Set Configuration: Metric





513-445-10E



513-445-10E

513-444-10E

513-444-10E

Metric — Basic set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-445-10E	0,4	0-100-0	0,002	2	3	5	6	4	1
513-444-10E	1,6	0-40-0	0,01	5	8	10	16	4	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-445-10E	0,01-0,3	103011	48	18,7	15,2
513-444-10E	0,01-0,3	103006	48	20,9	17,4

Metric — Full set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE any 1 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-445-10T	0,4	0-100-0	0,002	2	3	5	6	4	1
513-444-10T	1,6	0-40-0	0,01	5	8	10	16	4	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-445-10T	0,01-0,3	103011	48	18,7	15,2
513-444-10T	0,01-0,3	103006	48	20,9	17,4

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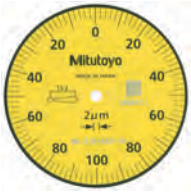
Lever Indicators Vertical Type

Series 513

This is a Dial Test Indicator (Lever Type) which offers you the following benefits:

- Drastically enhanced durability, sensitivity and visibility.
- Glare-free flat crystal face allows easy reading of graduations.
- O-ring seal on the bezel has the effect of providing smooth rotation and prevents dust and oil from penetrating through to the dial face.
- The stylus length is on the dial face to reorder a replacement
- Multi-layer coatings on the crystal.

513-455-10E



513-455-10E

513-454-10E

513-454-10E

Metric Basic set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-455-10E	0,2	0-100-0	0,002	2	3	3	2	1
513-456-10E	0,5	0-100-0	0,01	5		5	3	3
513-454-10E	0,8	0-40-0	0,01	5	6	8	3	3

No.	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-455-10E	103011	46	18,7	15,2
513-456-10E	137557	46	22,2	18,7
513-454-10E	103006	46	20,9	17,4

Metric Full set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-455-10T	0,2	0-100-0	0,002	2	3	3	2	1
513-454-10T	0,8	0-40-0	0,01	5	6	8	3	3

No.	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-455-10T	103011	46	18,7	15,2
513-454-10T	103006	46	20,9	17,4

Specifications

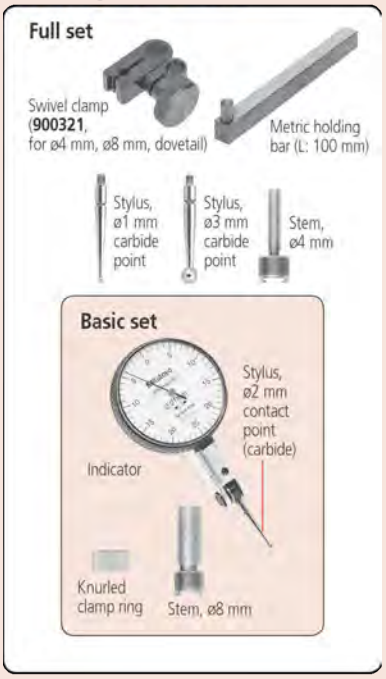
Contact point	Thread M 1,7 x 0,35

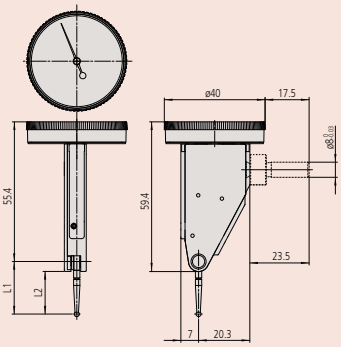
For optional accessories, see end of lever indicators section.

Optional accessories

No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator

Set Configuration: Metric





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Lever Indicators Parallel Type

Series 513

This is a Dial Test Indicator (Lever Type) which offers you the following benefits:

- Drastically enhanced durability, sensitivity and visibility.
- Glare-free flat crystal face allows easy reading of graduations.
- O-ring seal on the bezel has the effect of providing smooth rotation and prevents dust and oil from penetrating through to the dial face.
- The stylus length is on the dial face to reorder a replacement
- Multi-layer coatings on the crystal.

Specifications

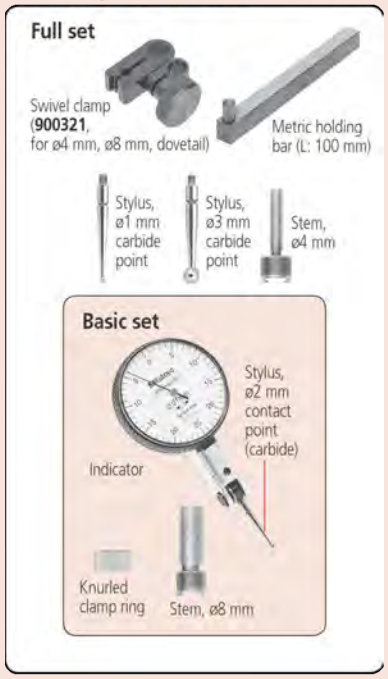
Contact point	Thread M 1,7 x 0,35

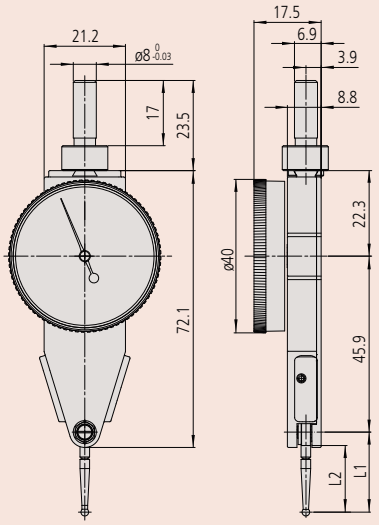
For optional accessories, see end of lever indicators section.

Optional accessories

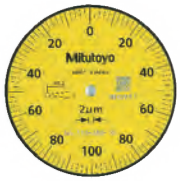
No.	Description
21AAB363	Limit Hands (Green) 2 pcs., Dial Indicator Series 1, Test Indicator

Set Configuration: Metric





513-484-10E



513-485-10E

513-486-10E

513-484-10E

Metric — Basic set

No.	Range [mm]	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Measuring force [N]
513-485-10E	0,2	0,002	2	3	3	2	1	0,01-0,3
513-486-10E	0,5	0,01	5		5	3	3	0,01-0,3
513-484-10E	0,8	0,01	5	6	8	3	3	0,01-0,3

No.	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-485-10E	103011	53	18,7	15,2
513-486-10E	137557	53	22,2	18,7
513-484-10E	103006	53	20,9	17,4

Metric — Full set

No.	Range [mm]	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]	Measuring force [N]
513-484-10T	0,8	0,01	5	6	8	3	3	0,01-0,3

No.	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]
513-484-10T	103006	53	20,9	17,4

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Lever Indicators Universal Type

Series 513

This is a Dial Test Indicator (Lever Type) which offers you the following benefits:

- Drastically enhanced durability, sensitivity and visibility.
- Glare-free flat crystal face allows easy reading of graduations.
- O-ring seal on the bezel has the effect of providing smooth rotation and prevents dust and oil from penetrating through to the dial face.
- The stylus length is on the dial face to reorder a replacement
- Multi-layer coatings on the crystal.

513-304-10E

Metric Basic set

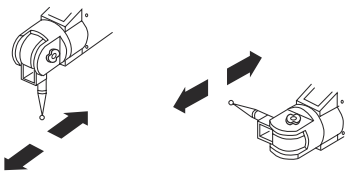
No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-304-10E	0,8 - 0,8	0-40-0	0,01	5	6	8	4	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L [mm]
513-304-10E	0,01-0,3	102825	80	24

Metric Full set

No.	Range [mm]	Dial reading	Graduation [mm]	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	H MPE (Hysteresis) [µm]	R MPE (Repeatability) [µm]
513-304-10T	0,8 - 0,8	0-40-0	0,01	5	6	8	3	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L [mm]
513-304-10T	0,01-0,3	102825	80	24



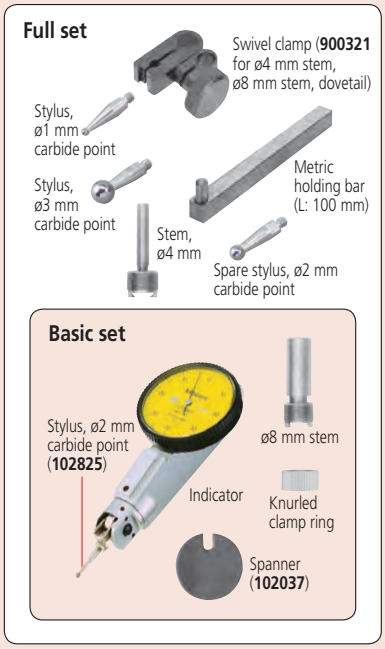
Stylus can be set at any angle while keeping the dial stationary

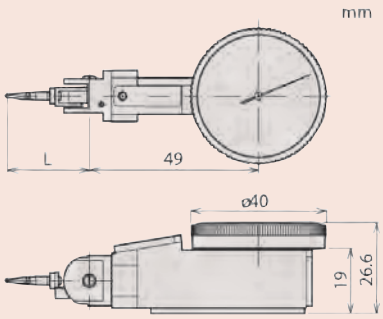
Specifications

Contact point	Thread M 1,4 x 0,3

For optional accessories, see end of lever indicators section.

Set Configuration: Metric





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Lever Indicators Small Type

Series 513

This is a small type Dial Test Indicator (Lever Type) which offers you the following benefits:

- Reversible measuring direction (clutch type)
- Jeweled bearings assure higher sensitivity and accuracy.

513-501-10E

513-514-10E

513-503-10E

513-517-10E

513-515-10E

Specifications

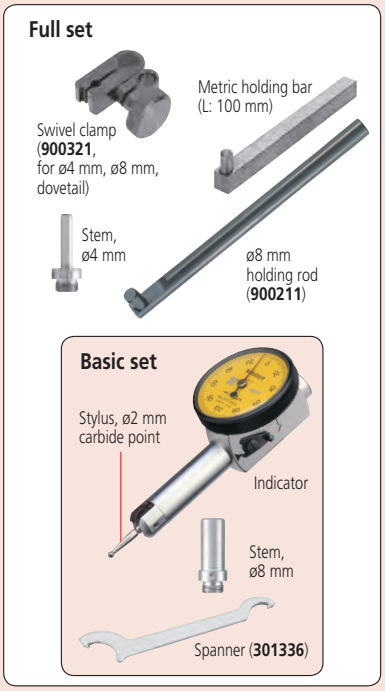
Contact point	Thread M 1,7 x 0,35

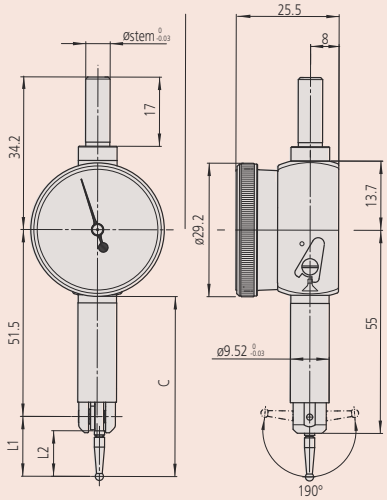
For optional accessories, see end of lever indicators section.

Optional accessories

No.	Description
900322	Swivel Clamp, for D=4/9,52mm, Dovetail

Set Configuration: Metric





513-517-10E (full set)

Metric — Basic set

No.	Range [mm]	Dial reading	Graduation [mm]	H MPE (Hysteresis)	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	R MPE (Repeatability) [µm]
513-501-10E	0,14	0-70-0	0,001	2 mm	2	3	3	1
513-503-10E	0,2	0-100-0	0,002	2 mm	2	3	3	1
513-514-10E	0,5	0-25-0	0,01	4 mm	5		10	3
513-517-10E	0,8	0-40-0	0,01	3 mm	5	6	8	3
513-515-10E	1		0,01	4 mm	5	8	10	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]	C [mm]
513-501-10E	≤ 0,5	136104	50	12,1	8,6	48,7
513-503-10E	≤ 0,4	103010	50	14,7	11,2	51,4
513-514-10E	≤ 0,3	131324	51	36,8	33,3	73,5
513-517-10E	≤ 0,3	103006	50	20,9	17,4	57,6
513-515-10E	≤ 0,3	136013	51	44,5	41	81,2

Metric — Full set

No.	Range [mm]	Dial reading	Graduation [mm]	H MPE (Hysteresis)	MPE any 10 scale divisions [µm]	MPE any 1/2 revolution [µm]	MPE measuring range [µm]	R MPE (Repeatability) [µm]
513-501-10T	0,14	0-70-0	0,001	2 mm	2	3	3	1
513-503-10T	0,2	0-100-0	0,002	2 mm	2	3	3	1
513-514-10T	0,5	0-25-0	0,01	4 mm	5		10	3
513-517-10T	0,8	0-40-0	0,01	3 mm	5	6	8	3
513-515-10T	1	0-50-0	0,01	4 mm	5	8	10	3

No.	Measuring force [N]	Carbide stylus tip ø2 mm No.	Mass [g]	L1 [mm]	L2 [mm]	C [mm]
513-501-10T	≤ 0,5	136104	50	12,1	8,6	48,7
513-503-10T	≤ 0,4	103010	50	14,7	11,2	51,4
513-514-10T	≤ 0,3	131324	51	36,8	33,3	73,5
513-517-10T	≤ 0,3	103006	50	20,9	17,4	57,6
513-515-10T	≤ 0,3	136013	51	44,5	41	81,2

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Mitutoyo

Styli, Stems and Holders

Stylus length affects the scale factor of an indicator, and the styli provided to you as standard give a scale factor of unity.

ø 0,5 mm ball-point

ø 0,7 mm ball-point

ø 1 mm ball-point Carbide

ø 2 mm ball-point Carbide

ø 2 mm ball-point Ruby

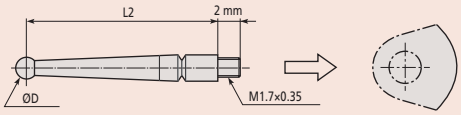
ø 3 mm ball-point Carbide

No.	Standard models	Small type models	L2 [mm]	Ø ball point
190547	●	●	11,2	0,5 mm steel
190549	●	●	17,4	0,5 mm steel
190654	●		18,7	0,5 mm steel
190656	●	●	41	0,5 mm steel
190548	●	●	11,2	0,7 mm steel
190550	●	●	17,4	0,7 mm steel
190653	●		18,7	0,7 mm steel
190655	●	●	41	0,7 mm steel
136756		●	8,6	1 mm carbide
21CZA044	●		9,4	1 mm carbide
103017	●	●	11,2	1 mm carbide
131314	●		15,2	1 mm carbide
103013	●	●	17,4	1 mm carbide
21CZA098		●	17,4	1 mm carbide*3
137558	●		18,7	1 mm carbide
102824	●		6,5	1 mm carbide*2
137746	●	●	33,9	1 mm carbide
131316	●		33,9	1 mm carbide
136235	●	●	41	1 mm carbide
136104		●	8,6	2 mm carbide
21CZA036	●		9,4	2 mm carbide
103010	●	●	11,2	2 mm carbide
103011	●		15,2	2 mm carbide
103006	●	●	17,4	2 mm carbide
21CZA097		●	17,4	2 mm carbide*3
137557	●		18,7	2 mm carbide
102825	●		6,5	2 mm carbide*2
129949	●	●	33,9	2 mm carbide
131324	●		33,9	2 mm carbide
136013	●	●	41	2 mm carbide
21CZA212	●		9,4	2 mm ruby
21CZA209	●	●	11,2	2 mm ruby
21CZB068	●		15,2	2 mm ruby
21CZA201	●	●	17,4	2 mm ruby
21CZA210	●		18,7	2 mm ruby
21CZA211	●	●	41	2 mm ruby
136758		●	8,6	3 mm carbide
21CZA045	●		9,4	3 mm carbide
103018	●	●	11,2	3 mm carbide
131315	●		15,2	3 mm carbide
103014	●	●	17,4	3 mm carbide
21CZA099		●	17,4	3 mm carbide*3
137559	●		18,7	3 mm carbide
102826	●		6,5	3 mm carbide*2
137747	●	●	33,9	3 mm carbide
131317	●		33,9	3 mm carbide
136236	●	●	41	3 mm carbide

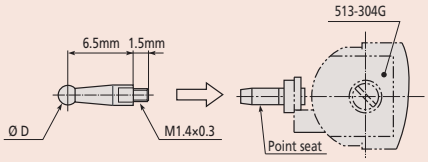
*2 : Used extension 209829 for 513-304-10E, 513-304-10T
*3 : For 513-517W models

Optional accessories

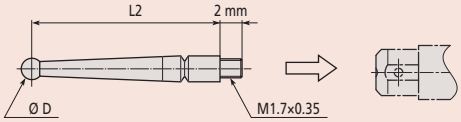
No.	Description
209829	Stylus Extension for Universal Type, Series 513



Styli for standard models



Syli for universal type
513-304-10E, 513-304-10T



Styli for small type models

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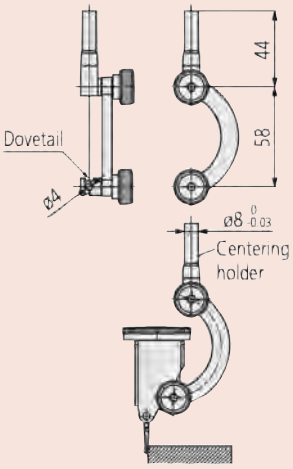
Styli, Stems and Holders

Styli, Stems and Holders

Centering Holder
901959

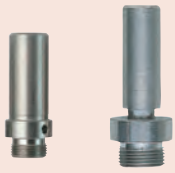


900211

Spanner 102037

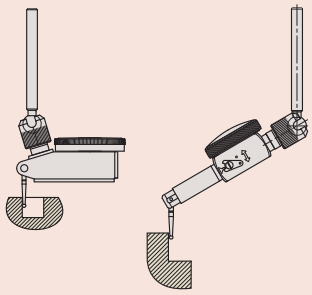
Spanner 301336

190322 21CZB131 21CZB129



102822 102389

Universal Holder



Universal holder with standard type (left)
Universal holder with small type (right)

Centering Holder

No.	Standard models	Stem ∅
901959	●	8 mm

Holding Bars

No.	Standard models	Small type models	Remarks	L [mm]
900211	●	●	ø 8 mm	115 mm
953638	●	●	9 x 9 mm	50 mm
900209	●	●	9 x 9 mm	100 mm

Spanner

No.	Standard models	Small type models
102037	●	
301336		●

Stems

No.	Standard models	Small type models	Stem ∅	Remarks
21CZB131	●		4 mm	Stem with knurled clamp ring
21CZB128	●		6 mm	Stem with knurled clamp ring
21CZB129	●		8 mm	Stem with knurled clamp ring
21CZB130	●		9,52 mm	Stem with knurled clamp ring
21CZB132	●		4 mm, 8 mm	2 stems with knurled clamp ring
21CZB133	●		4 mm, 9,52 mm	2 stems with knurled clamp ring
190322	●			Knurled clamp ring
21CAB106	●		4 mm	Stem
21CAB103	●		6 mm	Stem
21CAB104	●		8 mm	Stem
102036		●	4 mm	Stem
102389		●	6 mm	Stem
102822		●	8 mm	Stem

Swivel Clamps

No.	Standard models	Small type models	Remarks
900321	●	●	For ø 4, 8 mm stems and dovetail

Universal Holder

No.	Standard models	Small type models	Stem ∅
21CZA229	●		6 mm
21CZA233	●		8 mm
21CZA230		●	6 mm
21CZA234		●	8 mm

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Mitutoyo

ABSOLUTE Digimatic Thickness Gauges

Series 547

ABSOLUTE®

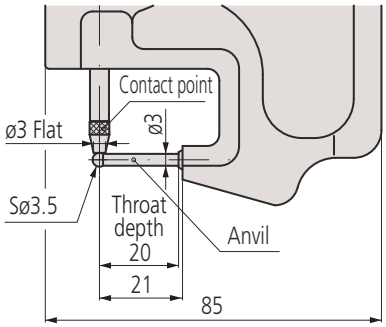
This ABSOLUTE Digimatic Thickness Gauge enables you to measure tube wall thickness.

- Bidirectional communication e.g. to perform parameter setting from a PC (Digimatic S 1 interface) is possible.

547-360A

Metric

No.	Range [mm]	Digital step	Accuracy	Protection	Indicator No.	Max. measuring depth	Measuring force [N]	Type	Mass [g]
547-360A	0 - 10	0,01 mm	±20 µm	IP42	543-710BS	20 mm	≤ 1,5	Anvil D=3,5 mm, contact point D=3 mm (flat)	230



Functions	Series 547
DATA/HOLD	●
PRESET	●
Digimatic data output	●
ON/OFF	●
Function lock	●
GO/±NG judgement	●
ABS / INC (INC ZERO)	●
Calculation function (with formula)	●
Counting direction switchable	●
Digimatic S1 Bidirectional interface	●
Analog bar resolution selection	●
Auto Power OFF setting	●
Analog bar resolution switchable	●
Customizing keys	●
Inch/Metric switchable	●
Calibration warning function	●
Digital step switchable	●

Specifications

Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery CR-2032
Battery life	Continuous use: approx. 2700h

Optional accessories

No.	Description
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4

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ABSOLUTE Digimatic Thickness Gauges

Series 547

ABSOLUTE IP42

This ABSOLUTE Digimatic Thickness Gauge enables you to measure film, paper, etc., with flat contact points.

- Bidirectional communication e.g. to perform parameter setting from a PC (Digimatic S 1 interface) is possible.

Functions	Series 547
DATA/HOLD	●
PRESET	●
Digimatic data output	●
ON/OFF	●
Function lock	●
GO/±NG judgement	●
ABS / INC (INC ZERO)	●
Calculation function (with formula)	●
Counting direction switchable	●
Digimatic S1 Bidirectional interface	●
Analog bar resolution selection	●
Auto Power OFF setting	●
Analog bar resolution switchable	●
Customizing keys	●
Inch/Metric switchable	●
Calibration warning function	●
Digital step switchable	●

Specifications

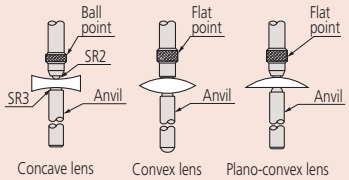
Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error (ID-C only)
Power supply	1 battery CR-2032
Battery life	Continuous use: approx. 2700h

Optional accessories

No.	Description
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4



only for 547-313A

547-301A

547-321A

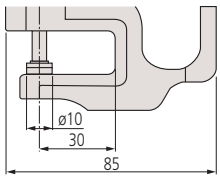
547-313A

547-315A

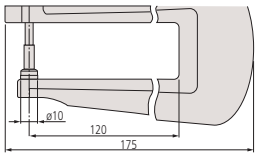
Metric

No.	Range [mm]	Digital step	Accuracy	Parallelism	Protection	Indicator No.	Max. measuring depth
547-301A	0 - 10	0,01 mm	±20 µm	10 µm	IP42	543-710BS	30 mm
547-321A	0 - 10	0,01 mm	±20 µm	10 µm	IP42	543-710BS	120 mm
547-313A	0 - 10	0,01 mm	±20 µm	10 µm	IP42	543-710BS	30 mm
547-315A	0 - 10	0,01 mm	±20 µm	10 µm	IP42	543-710BS	30 mm

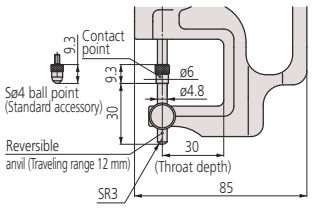
No.	Measuring force [N]	Type	Mass [g]
547-301A	≤ 1,5	Ceramic disc contact points	245
547-321A	≤ 1,5	Ceramic disc contact points and large jaw capacity	385
547-313A	≤ 1,5	Anvils and contact points are interchangeable	265
547-315A	≤ 1,5	Blade steel contact point	260



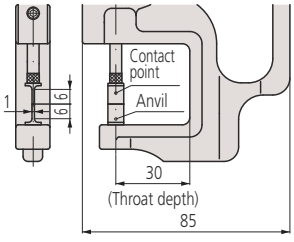
547-301A



547-321A



547-313A



547-315A

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Mitutoyo

ABSOLUTE Digimatic Thickness Gauges

Series 547

ABSOLUTE®

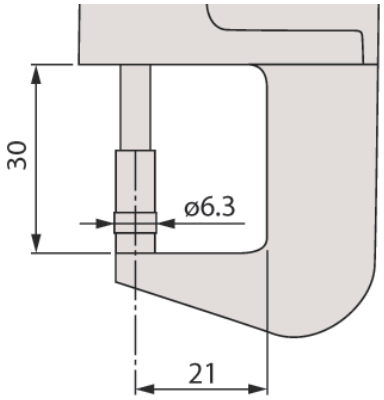
This ABSOLUTE Digimatic Thickness Gauge with 1 µm digital step enables you to measure film, paper, etc., with flat contact points.

- Bidirectional communication e.g. to perform parameter setting from a PC (Digimatic S 1 interface) is possible.

547-401A

Metric

No.	Range [mm]	Digital step	Accuracy	Parallelism	Protection	Indicator No.	Max. measuring depth	Measuring force [N]	Type	Mass [g]
547-401A	0 - 12	0,0005 mm/ 0,001 mm/ 0,1 mm	±3 µm	3 µm	IP42	543-700BS	21 mm	≤ 3,5	D= 6,3 mm carbide tipped	275



547-401A

Functions	Series 547
DATA/HOLD	●
PRESET	●
Digimatic data output	●
ON/OFF	●
Function lock	●
GO/±NG judgement	●
ABS / INC (INC ZERO)	●
Calculation function (with formula)	●
Counting direction switchable	●
Digimatic S1 Bidirectional interface	●
Analog bar resolution selection	●
Auto Power OFF setting	●
Analog bar resolution switchable	●
Customizing keys	●
Inch/Metric switchable	●
Calibration warning function	●
Digital step switchable	●

Specifications

Alarm	Low voltage, counting value composition error, overflow error, tolerance limit setting error
Power supply	1 battery CR-2032
Battery life	Continuous use: approx. 2700h

Optional accessories

No.	Description
06AGL011	Digimatic Cable, Straight, 1m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGL021	Digimatic Cable, Straight, 2m, Digimatic/ Digimatic 2/Digimatic S1 Interface
06AGQ001F	USB Input Tool Direct, Indicator Type, 2m Cable, Digimatic/Digimatic 2/Digimatic S1 Interface
264-623	U-WAVE fit, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-622	U-WAVE fit, IP67 Type, Wireless Transmitter for Micrometer
264-627	U-WAVE fit Bluetooth, Buzzer Type (not IP rated), Wireless Transmitter for Micrometer
264-626	U-WAVE fit Bluetooth, IP67 Type, Wireless Transmitter for Micrometer
02AZF700	Connection Unit Indicator, 12,7mm/0,5" Type, U-WAVE fit, U-WAVE fit Bluetooth

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.
21EZA198	Spindle Lifting Lever, for Digital Indicator, A-Type Dial Indicator Series 2/3/4

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Quick Mini Thickness Gauges

Functions	Series 700
ON/OFF	●
ABS / INC (INC ZERO)	●

Specifications

Display	LCD, character height 9 mm
Power supply	1 Battery SR-44
Battery life	Approx. 5 years

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

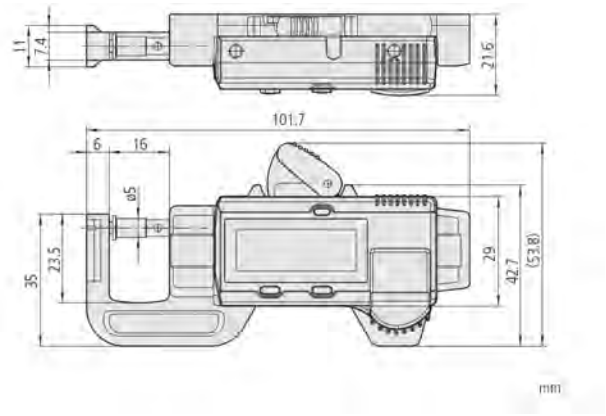
Series 700

ABSOLUTE®

This is a lightweight, palm-sized thickness gauge.

700-119-30

No.	Range [mm]	Digital step	Accuracy	Measuring force [N]	Mass [g]
700-119-30	0 - 12	0,01 mm	±0,02 mm	2	70



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Mitutoyo

Dial Indicator Thickness Gauges

Series 7

This Dial Indicator Thickness Gauge enables you to measure tube wall thickness, film/paper etc. with flat contact points, resp. lens thickness or groove depth.

7313A

7327A

7315A

7321A

7360A

Metric — Adjustable Anvil

No.	Range [mm]	Graduation [mm]	Accuracy	Parallelism	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]
7313A	0 - 10	0,01	±0,015 mm	5 µm	2046AB	30 mm	≤ 1,4	215

Metric — Ceramic disc contact points

No.	Range [mm]	Graduation [mm]	Accuracy	Parallelism	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]
7327A	0 - 1	0,001	±0,005 mm	5 µm	2109AB-10	30 mm	≤ 1,5	225
7301A	0 - 10	0,01	±0,015 mm	5 µm	2046AB	30 mm	≤ 1,4	205
7305A	0 - 20	0,01	±0,02 mm	5 µm	2050AB	30 mm	≤ 2	220

Metric — Knife-edge contact point

No.	Range [mm]	Graduation [mm]	Accuracy	Parallelism	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]
7315A	0 - 10	0,01	±0,015 mm	5 µm	2046AB	30 mm	≤ 1,4	220

Metric — Large jaw capacity and ceramic disc contact points

No.	Range [mm]	Graduation [mm]	Accuracy	Parallelism	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]
7321A	0 - 10	0,01	±0,015 mm	5 µm	2046AB	120 mm	≤ 1,4	355
7323A	0 - 20	0,01	±0,022 mm	5 µm	2050AB	120 mm	≤ 2	355

Metric — Tube thicknesses - Minimum inside diameter 3,5 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Indicator No.	Max. measuring depth	Measuring force [N]	Mass [g]
7360A	0 - 10	0,01	±0,015 mm	2046AB	20 mm	≤ 1,4	200

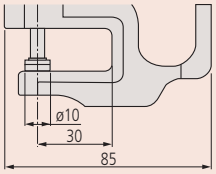
Optional accessories

No.	Description
21AZB195	Limit Hands (green) 2pcs, Dial Indicator Series 2/3/4
21AZB148	Bezel Clamp for Dial Gauge, Metric, Series 2/3/4

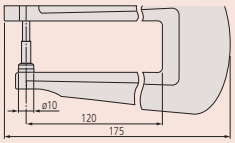
Consumable spares

No.	Description
21AZB149	Spindle Lifting Lever, for S-Type Series 2,3,4 up to 10mm/0,4"
21AZB150	Spindle Lifting Lever, for S-Type Series 2,3 >10/0,4" up to 20mm/0,8"

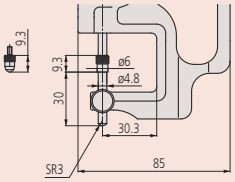
21AZB149 : for 7301A/7327A/7321A/7313A/7315A/7360A
21AZB150 : for 7305A/7323A



7327A / 7301A / 7305A



7321A / 7323A



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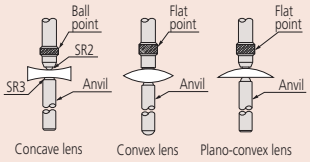
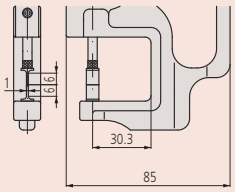
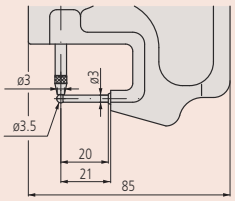




7315A



7360A

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Internal Dial Caliper Gauges

Internal Dial Caliper Gauges Metric

This analog Internal Dial Caliper Gauge offers you the following benefits:
- Excellent resistance against water and dust (IP65 protection level)
- Optimized measuring force
- Ergonomically designed to lie securely in your hand when measuring

Optional accessories

No.	Description
63AAA437	Holder for Digital Caliper Gauge, for 209-901 up to 209-922
011530	Holder for Digital Caliper Gauge, for 209-300 up to 209-457 except: 209-310, -311, -312, -361, -362, -363

209-301

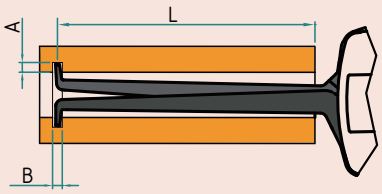
209-303

209-305

209-902

209-310

209-300



L=Maximum reach of contact arms over workpiece
A=Maximum groove depth
B=Minimum groove width

63AAA437

209-901

Metric — Measuring contacts: carbide ball Ø 0,6 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-301	5 - 15	0,005	0,015 mm	0,8-1,2	160	Fig. 4	2,3	0,8	35

Metric — Measuring contacts: carbide ball Ø 1,5 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-901	15 - 65	0,05	0,05 mm	0,9-1,9	355	Fig. 4	5,5	1,9	188

Metric — Measuring contacts: carbide ball Ø 1 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-302	10 - 30	0,01	0,03 mm	1,1-1,6	180	Fig. 4	5,2	1,2	85
209-303	20 - 40	0,01	0,03 mm	1,1-1,6	180	Fig. 2	7	1,2	85
209-304	30 - 50	0,01	0,03 mm	1,1-1,6	185	Fig. 2	7	1,2	85
209-305	40 - 60	0,01	0,03 mm	1,1-1,6	195	Fig. 3	8,3	1,2	85
209-306	50 - 70	0,01	0,03 mm	1,1-1,6	195	Fig. 3	8,3	1,2	85
209-307	60 - 80	0,01	0,03 mm	1,1-1,6	200	Fig. 3	8,3	1,2	85
209-308	70 - 90	0,01	0,03 mm	1,1-1,6	200	Fig. 3	8,3	1,2	85
209-309	80 - 100	0,01	0,03 mm	1,1-1,6	200	Fig. 3	8,3	1,2	85

Metric — Measuring contacts: carbide ball Ø 2 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-902	40 - 90	0,05	0,05 mm	0,9-1,9	370	Fig. 3	8,3	2,4	192
209-903	70 - 120	0,05	0,05 mm	0,9-1,9	380	Fig. 3	8,3	2,4	192

Metric — Measuring contacts: carbide bevel (R: 0,1 mm)

No.	Range [mm]	Graduation [mm]	Accuracy	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-300	2,5 - 12,5	0,005	0,015 mm	0,8-1,2	155	Fig. 1	0,7	0,4	12

Metric — Measuring contacts: interchangeable, carbide ball Ø 1 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-310	50 - 100	0,01	0,03 mm	1,1-1,6	220	Fig. 5	8,3	1,2	85
209-311	90 - 140	0,01	0,03 mm	1,1-1,6	230	Fig. 5	8,3	1,2	85
209-312	130 - 180	0,01	0,03 mm	1,1-1,6	230	Fig. 5	8,3	1,2	85

Figure 1

Figure 2

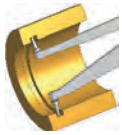


Figure 3

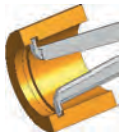


Figure 4

Figure 5

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Internal Digimatic Caliper Gauges

Series 209

- Digital Caliper Gauge enables measurements in hard-to-reach places
- Excellent resistance against water and dust IP67 level

209-945

Measuring contacts: carbide ball Ø 0,6 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-935	5 - 15	0,015 mm	IP67	0,8-1,2	260	Fig. 4	2,3	0,8	35

Measuring contacts: carbide ball Ø 1,3 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-944	13 - 43	0,04 mm	IP67	1,2-1,7	360	Fig. 4	5,7	1,5	127

Measuring contacts: carbide ball Ø 1,5 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-945	15 - 65	0,05 mm	IP67	1-1,8	415	Fig. 2	5,5	1,9	188
209-946	30 - 60	0,04 mm	IP67	1,2-1,7	370	Fig. 3	6,2	1,8	132

Measuring contacts: carbide ball Ø 1 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-936	10 - 30	0,03 mm	IP67	1,1-1,6	270	Fig. 4	5,2	1,2	85
209-937	20 - 40	0,03 mm	IP67	1,1-1,6	270	Fig. 2	7	1,2	85
209-938	30 - 50	0,03 mm	IP67	1,1-1,6	275	Fig. 2	7	1,2	85
209-939	40 - 60	0,03 mm	IP67	1,1-1,6	285	Fig. 3	8,3	1,2	85
209-940	50 - 70	0,03 mm	IP67	1,1-1,6	285	Fig. 3	8,3	1,2	85
209-941	60 - 80	0,03 mm	IP67	1,1-1,6	290	Fig. 3	8,3	1,2	85
209-942	70 - 90	0,03 mm	IP67	1,1-1,6	290	Fig. 3	8,3	1,2	85

Measuring contacts: carbide ball Ø 2 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-947	50 - 80	0,04 mm	IP67	1,2-1,7	370	Fig. 3	8,3	2,4	132
209-948	70 - 100	0,04 mm	IP67	1,2-1,7	375	Fig. 3	8,3	2,4	132
209-949	90 - 120	0,04 mm	IP67	1,2-1,7	380	Fig. 3	8,3	2,4	132
209-950	40 - 90	0,05 mm	IP67	1-1,8	420	Fig. 3	8,3	2,4	192

Measuring contacts: carbide bevel (R = 0,1 mm)

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-934	2,5 - 12,5	0,03 mm	IP67	0,8-1,2	245	Fig. 1	0,7	0,4	12

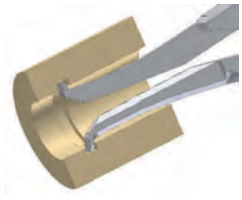


Figure 1

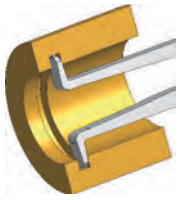


Figure 2

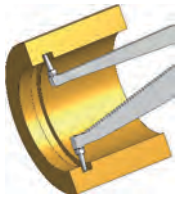


Figure 3

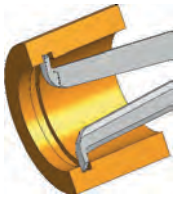


Figure 4

Functions	Series 209
Auto Power OFF after 1/5/10 min. non use	●
OFFSET	●
Analog bar resolution switchable	●
mm/inch conversion	●
HOLD	●
SET key	●
DATA key	●
DATA-Logger (100 measured values)	●
ABS/INC switchable	●
Max. reading	●
Min. reading	●
Tolerance LED (green/red)	●
Tolerance judgement	●

Specifications

Digital step	0,001 / 0,002 / 0,005 / 0,01 / 0,02 / 0,05 mm
Power supply	2 batteries LR3 (AAA)

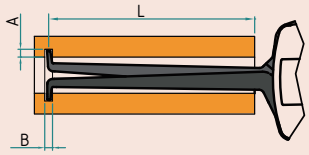
Optional accessories

No.	Description
011551	Digimatic Interface Series 209, Digital Caliper Gauge
937387	Digimatic Cable, Round 6-Pin Type, 1m
965013	Digimatic Cable, Round 6-Pin Type, 2m
06AFM380E	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Round 6-Pin Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790E	U-WAVE-T Connection Cable E, Round 6-Pin Type
63AAA438	Holder for Digital Caliper Gauge, for 209-930 up to 209-958

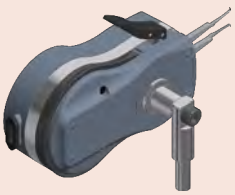
Consumable spares

No.	Description
011511-1	Battery LR03 (AAA), 4x

209-935



L=Maximum reach of contact arms over workpiece
A=Maximum groove depth
B=Minimum groove width



63AAA438

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External Dial Caliper Gauges

External Dial Caliper Gauges Metric

This analog External Dial Caliper Gauge offers you the following benefits:

- Excellent resistance against water and dust (IP65 protection level)
- Optimized measuring force
- Ergonomically designed to lie securely in your hand when measuring

209-405

Optional accessories

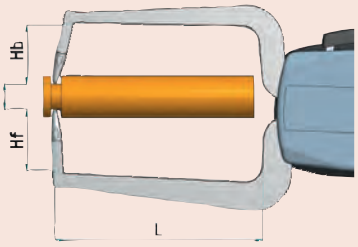
No.	Description
63AAA437	Holder for Digital Caliper Gauge, for 209-901 up to 209-922
011530	Holder for Digital Caliper Gauge, for 209-300 up to 209-457 except: 209-310, -311, -312, -361, -362, -363

209-402

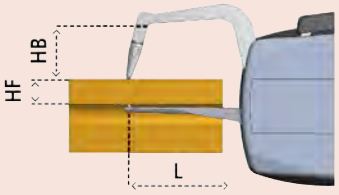
209-401

209-406

209-403



Figures 1/2/5



Figures 3/4/6

L=Maximum reach of contact arms over workpiece
Hb=Maximum penetration depth of upper contact
Hf=Maximum penetration depth of lower contact

Metric — Measuring contacts: bevel radius 0,4 mm (209-405), 0,75 mm (209-921)

No.	Range [mm]	Graduation [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-405	0 - 20	0,01	0,03 mm	IP 65	1,1-1,6	210	Fig. 1	24,6	24,6	85
209-921	0 - 50	0,05	0,05 mm	IP 65	0,8-1,7	430	Fig. 1	30	30	167

Metric — Measuring contacts: carbide ball Ø 1,5 mm, Ø 3 mm (209-911)

No.	Range [mm]	Graduation [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-400	0 - 10	0,005	0,015 mm	IP 65	0,8-1,2	165	Fig. 4	19,1	0,9	35
209-402	0 - 10	0,005	0,015 mm	IP 65	0,8-1,2	170	Fig. 2	19,1	18,6	35
209-404	0 - 20	0,01	0,03 mm	IP 65	1,1-1,6	210	Fig. 2	24,7	24,6	85
209-407	0 - 20	0,01	0,03 mm	IP 65	1,1-1,6	200	Fig. 4	24,7	2,5	85
209-911	0 - 50	0,05	0,05 mm	IP 65	0,8-1,7	430	Fig. 2	30	30	167

Metric — Measuring contacts: carbide ball Ø 1,5 mm / bevel radius 0,4 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-401	0 - 10	0,005	0,015 mm	IP 65	0,8-1,2	165	Fig. 6	18,8	0,9	35
209-406	0 - 20	0,01	0,03 mm	IP 65	1,1-1,6	200	Fig. 3	24,7	2,5	80

Metric — Measuring contacts: carbide ball Ø 3 mm/ carbide ball Ø 3 mm, bevel radius 0,75 mm (209-922)

No.	Range [mm]	Graduation [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-912	0 - 50	0,05	0,05 mm	IP 65	0,8-1,7	400	Fig. 4	30	4,6	169
209-922	0 - 50	0,05	0,05 mm	IP 65	0,8-1,7	400	Fig. 3	30	4,6	169

Metric — Measuring contacts: disk measuring faces Ø 6 mm

No.	Range [mm]	Graduation [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-403	0 - 10	0,005	0,02 mm	IP 65	0,8-1,2	175	Fig. 5	21,7	14,8	36

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

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External Digimatic Caliper Gauges

Series 209

- Digital Caliper Gauge enables measurements in hard-to-reach places
- Excellent resistance against water and dust IP67 level

209-930

209-933

209-951

209-952

Metric/Inch Bevel radius 0,75 / carbide ball ø3 mm + bevel radius 0,75 (209-958)

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-957	0 - 50	0,06 mm	IP67	0,8-1,7	490	Fig. 5	30	30	167
209-958	0 - 50	0,06 mm	IP67	0,8-1,7	460	Fig. 6	30	4,3	169

Metric/Inch Measuring contacts: carbide ball Ø 1,5 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-930	0 - 10	0,015 mm	IP67	0,8-1,2	240	Fig. 1	19,1	18,6	36
209-932	0 - 20	0,03 mm	IP67	1,1-1,6	270	Fig. 1	24,7	24,6	81
209-943	0 - 10	0,015 mm	IP67	0,8-1,2	255	Fig. 2	19,1	9	36
209-933	0 - 20	0,03 mm	IP67	1,1-1,6	430	Fig. 2	24,7	2,5	86

Metric/Inch Measuring contacts: carbide ball Ø 3 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-951	0 - 30	0,04 mm	IP67	0,9-1,6	430	Fig. 1	30	30	114
209-952	0 - 30	0,04 mm	IP67	0,9-1,6	410	Fig. 2	30	4	116
209-954	0 - 50	0,05 mm	IP67	0,8-1,7	490	Fig. 1	30	30	167
209-955	0 - 50	0,05 mm	IP67	0,8-1,7	460	Fig. 2	30	4,3	169

Metric/Inch Measuring contacts: disk measuring faces Ø 50 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-953	0 - 30	0,06 mm	IP67	0,9-1,6	430	Fig. 4	36	24	116
209-956	0 - 50	0,06 mm	IP67	0,8-1,7	500	Fig. 4	36	24	167

Metric/Inch Measuring contacts: disk measuring faces Ø 6 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-931	0 - 10	0,02 mm	IP67	0,8-1,2	245	Fig. 3	21,7	14,8	36

Figure 1

Figure 2

Figure 3

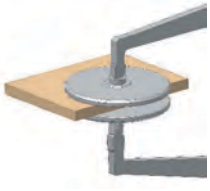


Figure 4

Figure 5

Figure 6

Functions	Series 209
Analog bar resolution switchable	●
Auto Power OFF after 1/5/10 min. non use	●
OFFSET	●
mm/inch conversion	●
HOLD	●
SET key	●
DATA key	●
DATA-Logger (100 measured values)	●
ABS/INC switchable	●
Max. reading	●
Min. reading	●
Tolerance LED (green/red)	●
Tolerance judgement	●

Specifications

Digital step	0,001 / 0,002 / 0,005 / 0,01 / 0,02 / 0,05 mm
Power supply	2 batteries LR3 (AAA)

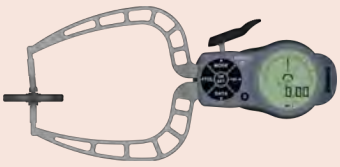
Optional accessories

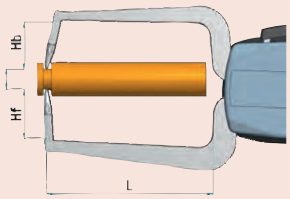
No.	Description
011551	Digimatic Interface Series 209, Digital Caliper Gauge
937387	Digimatic Cable, Round 6-Pin Type, 1m
965013	Digimatic Cable, Round 6-Pin Type, 2m
06AFM380E	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Round 6-Pin Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790E	U-WAVE-T Connection Cable E, Round 6-Pin Type
63AAA438	Holder for Digital Caliper Gauge, for 209-930 up to 209-958
63AAA437	Holder for Digital Caliper Gauge, for 209-901 up to 209-922

Consumable spares

No.	Description
011511-1	Battery LR03 (AAA), 4x

209-931


209-953



L=Maximum reach of contact arms over workpiece
Hb=Maximum penetration depth of upper contact
Hf=Maximum penetration depth of lower contact

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Internal / External Digimatic Caliper Gauges
Power Supply: Wireless Charging

Series 209

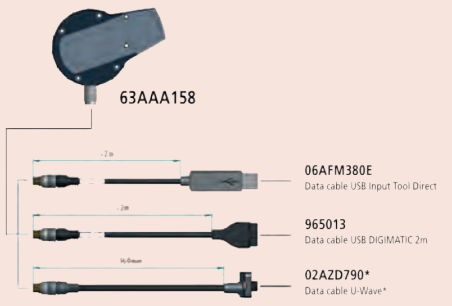
Functions	Series 209
Analog bar resolution switchable	●
Auto Power OFF after 1/5/10 min. non use	●
OFFSET	●
mm/inch conversion	●
HOLD	●
SET key	●
DATA key	●
DATA-Logger (100 measured values)	●
ABS/INC switchable	●
Max. reading	●
Min. reading	●
Tolerance LED (green/red)	●
Tolerance judgement	●

Specifications

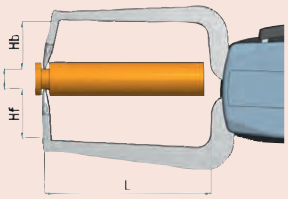
Digital step	0,001 / 0,002 / 0,005 / 0,01 mm
Power supply	Lithium-Polymer power pack

Optional accessories

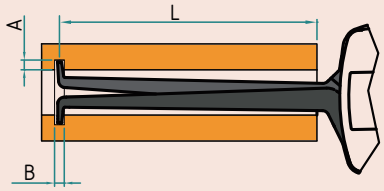
No.	Description
63AAA158	Digimatic Interface Adapter, Series 209
937387	Digimatic Cable, Round 6-Pin Type, 1m
965013	Digimatic Cable, Round 6-Pin Type, 2m
06AFM380E	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Round 6-Pin Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790E	U-WAVE-T Connection Cable E, Round 6-Pin Type
63AAA439	Holder for Digital Caliper Gauge, for 209-925 up to 209-929



63AAA158



L=Maximum reach of contact arms over workpiece
Hb=Maximum penetration depth of upper contact
Hf=Maximum penetration depth of lower contact



L=Maximum reach of contact arms over workpiece
A=Maximum groove depth
B=Minimum groove width

209-927

209-928

209-929

209-925

209-926

Metric/Inch

1. Measuring contacts: carbide R = 0,12 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-927	2,5 - 12,5	0,01 mm	IP 67	0,8-1,3	160	Fig. 4	0,7	0,6	12

Metric/Inch

2. Measuring contacts: carbide ball Ø 0,6 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-928	5 - 20	0,01 mm	IP 67	0,8-1,3	160	Fig. 3	2,2	0,8	44

Metric/Inch

3. Measuring contacts: carbide ball Ø 1 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	A [mm]	B [mm]	L [mm]
209-929	10 - 25	0,01 mm	IP 67	0,8-1,3	160	Fig. 3	4	1,5	46

Metric/Inch

4. Measuring contacts: carbide ball Ø 1,5 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-925	0 - 15	0,01 mm	IP 67	1,3-1,5	170	Fig. 2	17	17	45

Metric/Inch

5. Measuring contacts: carbide R = 0,4 mm

No.	Range [mm]	Accuracy	Protection	Measuring force [N]	Mass [g]	Type	Hb [mm]	Hf [mm]	L [mm]
209-926	0 - 15	0,015 mm	IP 67	1,3-1,5	170	Fig. 1	12	12	45

Figure 1

Figure 2

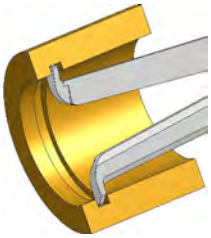


Figure 3

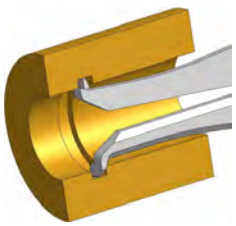


Figure 4

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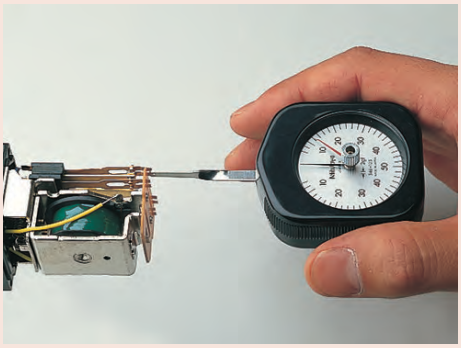
Mitutoyo

Dial Tension Gauges

Series 546



This Dial Tension Gauge has a range of applications, offering you the following benefits:

- You can set micro switches, relay springs and valves.
- It enables you testing the measuring force of dial indicators.
- You can also use it for adjusting tension and compression springs.
- A divided dial plate allows you to make measurements in both directions.

546-112

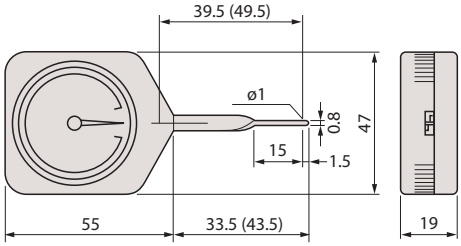
546-137

Peak Hold

No.	Range [N]	Graduation	Accuracy	Mass [g]
546-133	0,01 - 0,1	5 mN	½ graduation	56
546-134	0,03 - 0,3	10 mN	½ graduation	56
546-135	0,06 - 0,5	0,02 N	½ graduation	56
546-136	0,1 - 1	0,05 N	½ graduation	56
546-137	0,15 - 1,5	0,05 N	½ graduation	56
546-138	0,3 - 3	0,1 N	½ graduation	56
546-139	0,6 - 5	0,2 N	½ graduation	56

Standard

No.	Range [N]	Graduation	Accuracy	Mass [g]
546-112	0,006 - 0,05	2 mN	½ graduation	56
546-113	0,01 - 0,1	5 mN	½ graduation	56
546-114	0,03 - 0,3	10 mN	½ graduation	56
546-115	0,06 - 0,5	0,02 N	½ graduation	56
546-116	0,1 - 1	0,05 N	½ graduation	56
546-117	0,15 - 1,5	0,05 N	½ graduation	56
546-118	0,3 - 3	0,1 N	½ graduation	56
546-119	0,6 - 5	0,2 N	½ graduation	56



Dimensions in brackets refer to No. 546-112, 546-113, 546-133

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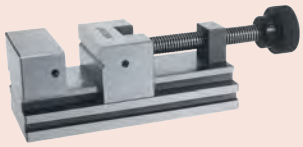
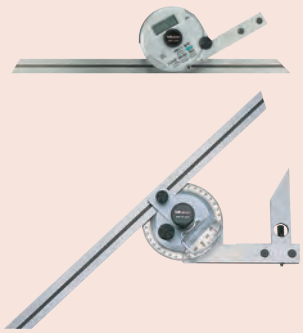
Auxiliary Equipment and Miscellaneous

Indicator Stands
Page 298

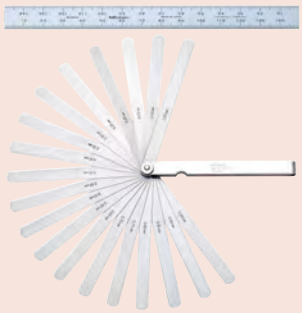


Precision Vices
Page 308

Plates and Granite Squares
Page 310



Angle Measurement and Squares
Page 313



Feeler Gauges, Rules, Knife Edges
Page 316

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Mitutoyo

Gauge Stands with Hardened Steel Anvils

Series 519, Series 7

This gauge stand with hardened steel anvil offers you the following benefits:

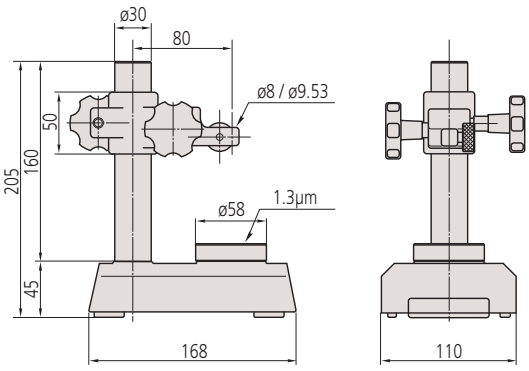
- Standard version with round anvil

7001-10

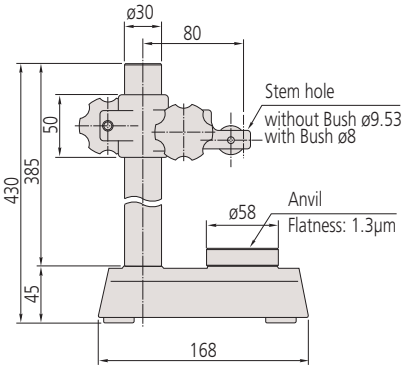
7002-10

519-109-10

No.	Effective table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Measuring table	Fine adjustment	Stem hole ø	Perpendicularity table-stem hole [mm/mm]	Table flatness	Mass [kg]
7001-10	Ø 58	30	95	Serrated (101462)	1 mm	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	0,4/100	1,3 µm	4
7002-10	Ø 58	30	95	Flat (101461)	1 mm	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	0,4/100	1,3 µm	4
519-109-10	Ø 58	30	318	Serrated (101462)	1 mm	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	0,4/100	1,3 µm	6



7001-10, 7002-10



519-109-10

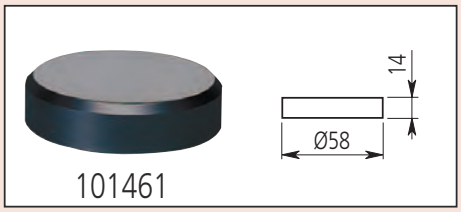
Standard accessories

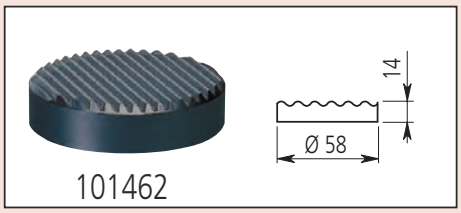
No.	Description
101461	Flat Anvil for Gauge Stand, Ø58mm
101462	Serrated Anvil for Gauge Stand, Ø58mm
21JAA316	Stem Bush for Gauge Stand, 9,53mm to 8mm

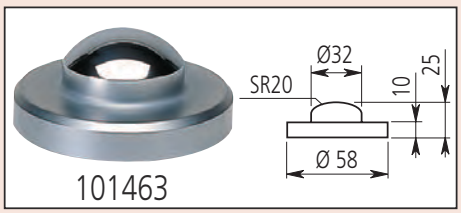
Optional accessories

No.	Description
101463	Convex Anvil for Gauge Stand, Ø58mm

101461 for 7002-10
101462 for 7001-10, 519-109-10







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Gauge Stands with Hardened Steel Anvils

Series 215, Series 7

This gauge stand with hardened steel anvil offers you the following benefits:

- Standard version with square anvil

7007-10

215-405-10

215-505-10

Standard accessories

No.	Description
21JAA316	Stem Bush for Gauge Stand, 9,53mm to 8mm
21JAA329	Stem Bush for Gauge Stand, 20mm to 8mm
21JAA330	Stem Bush for Gauge Stand, 20mm to 9,53mm

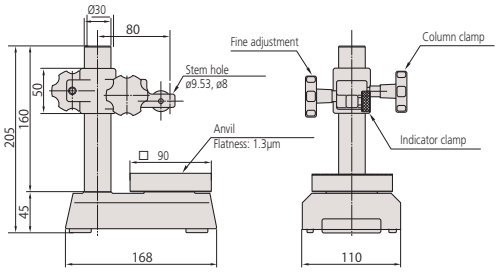
21JAA316 only for 7007-10 + 215-405-10
21JAA329 and 21JAA330 only for 215-505-10

Optional accessories

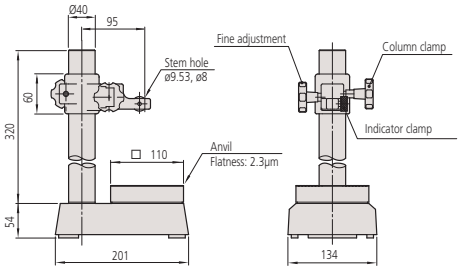
No.	Description
21JAA331	Stem Bush for Gauge Stand, 20mm to 15mm

21JAA331 : only for 215-505-10

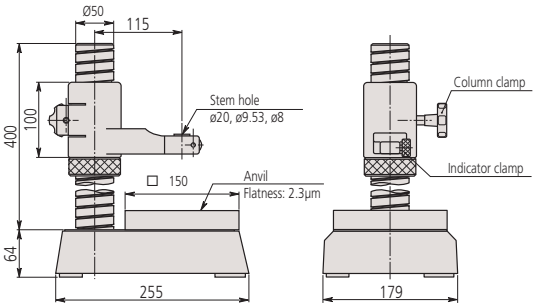
No.	Effective table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Fine adjustment	Stem hole ø	Perpendicularity table-stem hole [mm/mm]	Table flatness	Mass [kg]
7007-10	90 x 90	30	90	1 mm	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	0,4/100	1,3 µm	5
215-405-10	110 x 110	40	235	1 mm	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	0,4/100	2,3 µm	10,9
215-505-10	150 x 150	50	275	Screw on column	ø 20 mm, ø 3/8" / **9,53 mm**, 8 mm with bush (standard accessory)	0,4/100	2,3 µm	19,7



7007-10



215-405-10



215-505-10

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Mitutoyo

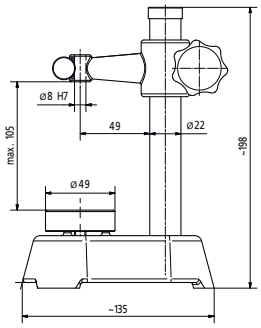
Gauge Stands with Hardened Steel Anvils

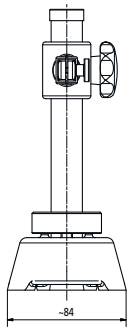
Series 913

Standard version

- Simple standard version.

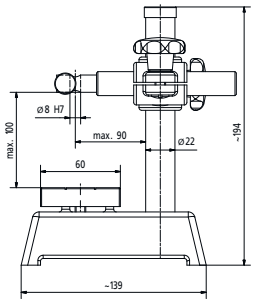
913-101

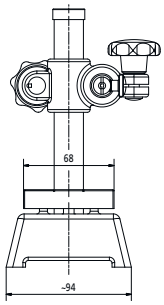




913-101

913-102





913-102

No.	Effective table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Stem hole ø	Mass [kg]
913-101	ø 50	22	100	8 mm	2,3
913-102	60 x 70	22	100	8 mm	3,6

Optional accessories

No.	Description
913-201	Horizontal Holder, for 913-101, 913-102

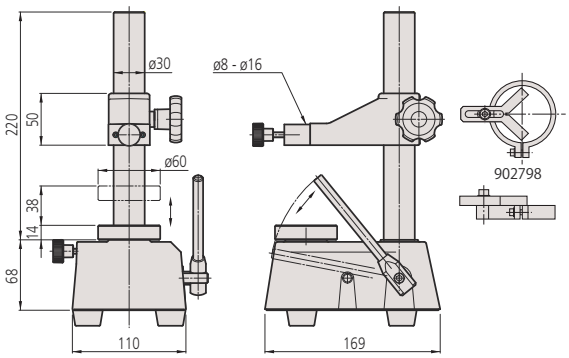
913-201

Stands for Precision Bore Gauges

Series 215

- For efficient measurement of multiple small holes with a bore gauge Series 526

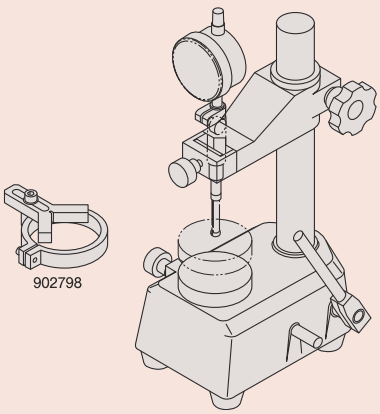
215-120-10



No.	Maximum measuring height [mm]	Measuring stroke [mm]	Effective table dimensions [mm]	Mass [kg]
215-120-10	110	max.38	Ø 60	6,5

Optional accessories

No.	Description
902798	V-Attachment for 215-120-10, Stand for Bore Gauge



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Gauge Stands with Granite Bases

Series 912

This gauge stand with granite base offers you the following benefits:

- The base stays free of burrs due to its fine grain composition and the base will stay free of corrosion

912-101

No.	Base size [mm]	Effective table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Throat [mm]	Arm ø [mm]	Stem hole ø	Table flatness	Mass [kg]
912-101	150 x 100 x 40	100 x 100	16	180	150	16	8 mm	2 µm	3

Series 912

This gauge stand with granite base offers you the following benefits:

- The base is made of granite that stays free of burrs due to its fine grain composition and the base will stay free of corrosion

912-105

No.	Base size [mm]	Effective table dimensions [mm]	Column Ø [mm]	Max. measurement height [mm]	Throat [mm]	Fine adjustment [mm]	Stem hole ø	Table flatness	Mass [kg]
912-105	260 x 140 x 50	200 x 140	35	180	120	8	8 mm	2 µm	9,5

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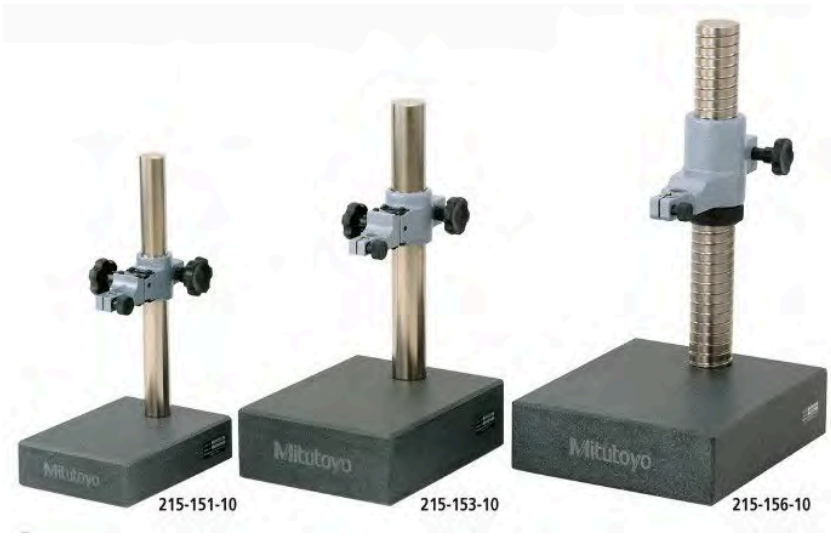
Gauge Stands with Granite Bases

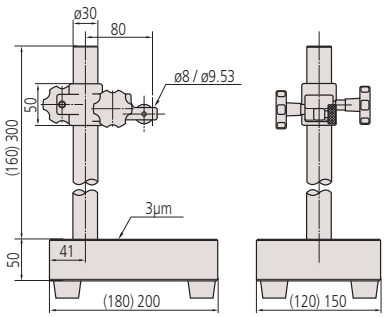
Series 215

This gauge stand with granite base offers you the following benefits:

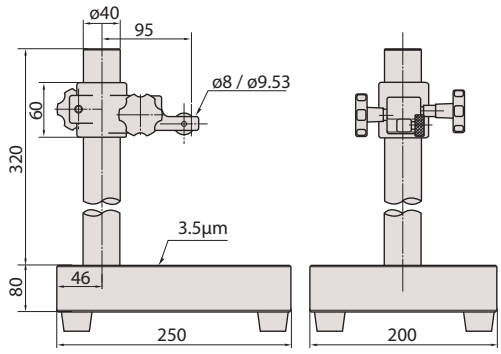
- The base is made of granite that stays free of burrs due to its fine grain composition and the base will stay free of corrosion



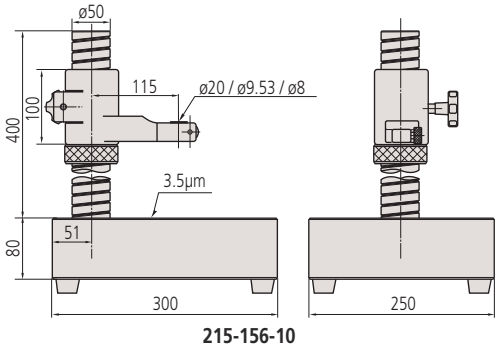
No.	Column Ø [mm]	Max. measure-ment height [mm]	Fine ad-justment [mm]	Stem hole ø	Table flatness	Perpendicu-larity table-stem hole [mm/mm]	Mass [kg]
215-150-10	30	120	1	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	3 µm	0,2/100	5,4
215-151-10	30	260	1	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	3 µm	0,2/100	7,5
215-153-10	40	250	1	ø 3/8" / **9,53 mm** , 8 mm with bush (standard accessory)	3,5 µm	0,2/100	16
215-156-10	50	300	1	ø 20 mm, ø 3/8" / **9,53 mm** 8 mm with bush (standard accessory)	3,5 µm	0,2/100	27,5



215-151-10 (215-150-10)



215-153-10



215-156-10

Standard accessories

No.	Description
21JAA316	Stem Bush for Gauge Stand, 9,53mm to 8mm
21JAA329	Stem Bush for Gauge Stand, 20mm to 8mm
21JAA330	Stem Bush for Gauge Stand, 20mm to 9,53mm

21JAA316 for 215-150-10, 215-151-10, 215-153-10
21JAA329 and 21JAA330 for 215-156-10

Optional accessories

No.	Description
21JAA331	Stem Bush for Gauge Stand, 20mm to 15mm

only for 215-156-10

215-150-10

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Jointed Magnetic Stands

Series 011

- With mechanical locking system and fine adjustment
- Allows a dial indicator to be fixed in any position.

011533

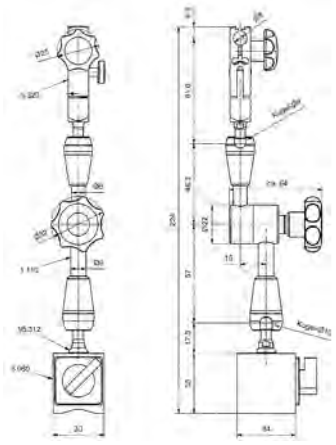
011358

011359

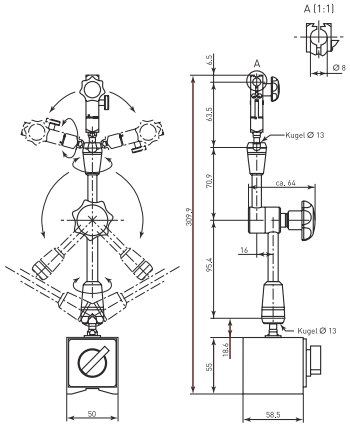
011360

No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH)	Total height [mm]	Fine adjustment
011533	magnetic	300	36 x 30 x 35 mm	220	with fine feed wheel 1,3 mm/rotation
011358	magnetic	750	58,5 x 50 x 55 mm	310	with fine feed wheel 1,3 mm/rotation
011359	magnetic	750	58,5 x 50 x 55 mm	397	with fine feed wheel 1,3 mm/rotation
011360	magnetic	900	73 x 50 x 55 mm	517	with fine feed wheel 1,3 mm/rotation

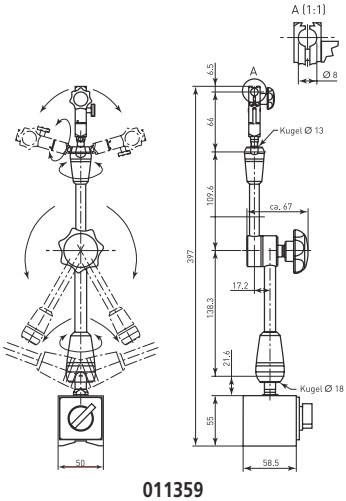
No.	Stem hole ø	Working radius [mm]	Thread Arm/Base	Mass [kg]
011533	8 mm, dovetail	130	M6 x 1	0,45
011358	8 mm, dovetail	200	M8 x 1,25	1,55
011359	8 mm, dovetail	280	M8 x 1,25	1,85
011360	8 mm, dovetail	400	M8 x 1,25	2,1



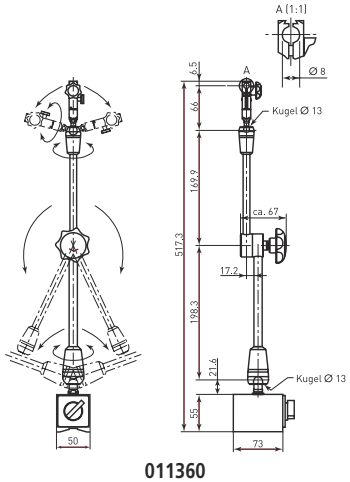
011533



011358



011359



011360

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Mitutoyo

Jointed Magnetic Stands

Series 7

This jointed magnetic stand offers you the following benefits:

- It comes with a mechanical locking system and allows fine adjustment.
- You can also fix a dial indicator in any position by mechanically clamping the articulated arm.

7031-10

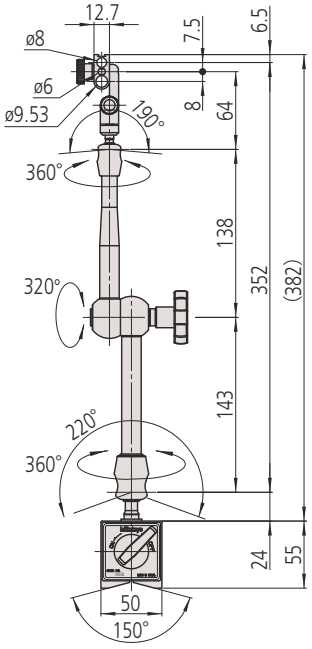
7032-10

7033-10

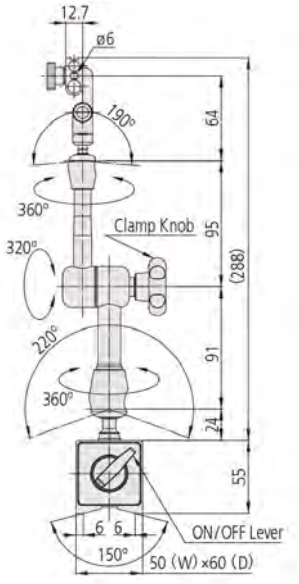
With fine feed wheel.

No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH)	Total height [mm]	Fine adjustment
7031-10	magnetic	300	36 x 30 x 36 mm	214	with fine feed wheel +-4°
7032-10	magnetic	600	59 x 50 x 55 mm	345	with fine feed wheel +-4°
7033-10	magnetic	600	59 x 50 x 55 mm	425	with fine feed wheel +-4°

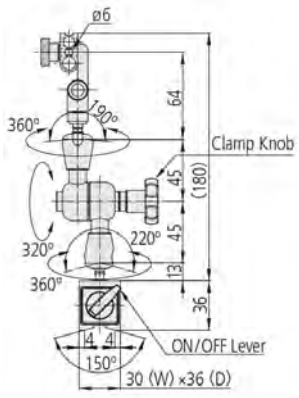
No.	Stem hole ø	Working radius [mm]	Thread Arm/Base	Mass [kg]
7031-10	6 mm, 8 mm, 9,53 mm, dovetail	154	M5 x 0,8	0,59
7032-10	6 mm, 8 mm, 9,53 mm, dovetail	250	M8 x 1,25	1,6
7033-10	6 mm, 8 mm, 9,53 mm, dovetail	346	M8 x 1,25	1,75



7033-10



7032-10



7031-10

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Flexible Jointed Arms

Arms without magnetic base

011361
Dimensions : see 011358

011362
Dimensions : see 011359

011363
Dimensions: see 011360

No.	Stem hole ø	Working radius [mm]	Mass [g]
63AAA130	8 mm, dovetail	Approx. 130	270
21JZA331	6, 8 mm, 3/8" (9,53 mm), dovetail	Approx. 154	
011361	8 mm, dovetail	Approx. 200	400
21JZA332	6, 8 mm, 3/8" (9,53 mm), dovetail	Approx. 250	
011362	8 mm, dovetail	Approx. 280	800
21JZA333	6, 8 mm, 3/8" (9,53 mm), dovetail	Approx. 346	
011363	8 mm, dovetail	Approx. 400	900

Bases

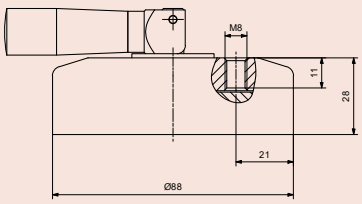
Magnetic and pneumatic bases witout arm

63AAA470

7013-10

011364

63AAA671



63AAA671

No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH)	Thread Arm/Base	Mass [g]
63AAA470	magnetic	300	36 x 30 x 35 mm	M6 x 1	200
63AAA131	magnetic	750	58,5 x 50 x 55 mm	M8 x 1,25	980
7013-10	magnetic	600	58,5 x 50 x 55 mm	M8 x 1,25	990
011364	magnetic	900	73 x 50 x 55 mm	M8 x 1,25	1260
63AAA671	pneumatic	300	D= 88 mm	M8 x 1,25	360

Application of the pneumatic base 63AAA671on a granite plate with indicator and flexible jointed arm (optional)

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Mitutoyo

Magnetic Stands

Series 7

- V-block base type.

63AAA670

7010S-10

7011S-10

7015-10

No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH)	Total height [mm]	Fine adjustment	Stem hole ø	Working radius [mm]	Thread Arm/Base	Mass [kg]
63AAA670	magnetic	300	36 x 30 x 35 mm	234	with fine feed wheel 1,3 mm/ rotation	8 mm, dove-tail	120	M6 x 1	0,47
7010S-10	magnetic	600	59 x 50 x 55 mm	232	None	3/8" / 9,53 mm, 4 mm, 8 mm (with stem bush)	165	M8 x 1,25	1,38
7011S-10	magnetic	600	59 x 50 x 55 mm	232	with fine adjustment knop	3/8" / 9,53 mm, 4 mm, 8 mm (with stem bush)	150	M8 x 1,25	1,49
7015-10	magnetic	600	59 x 50 x 55 mm	232	with fine feed wheel +-4°	3/8" / 9,53 mm, 6 mm, 8 mm (with stem bush)	170,5	M8 x 1,25	1,37

With fine feed wheel (63AAA670, 7010-S, 7015-10).

With fine adjustment knop (7011S-10).

Standard accessories

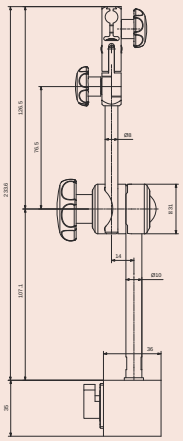
No.	Description
02AZC291	Stem Bush for Magnet Stand, 9,53mm to 8mm

for 7010S-10, 7011S-10, 7015-10

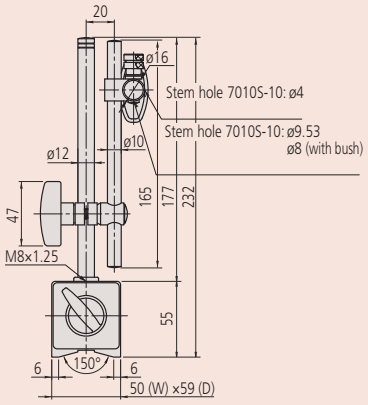
Optional accessories

No.	Description
02AZC282	Cross arm for Magnet Stand, 300mm

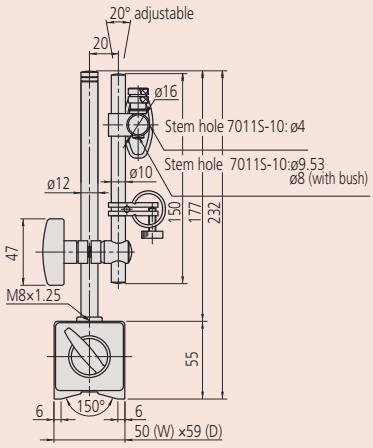
for 7010S-10, 7011S-10, 7015-10



63AAA670



7010S-10



7011S-10

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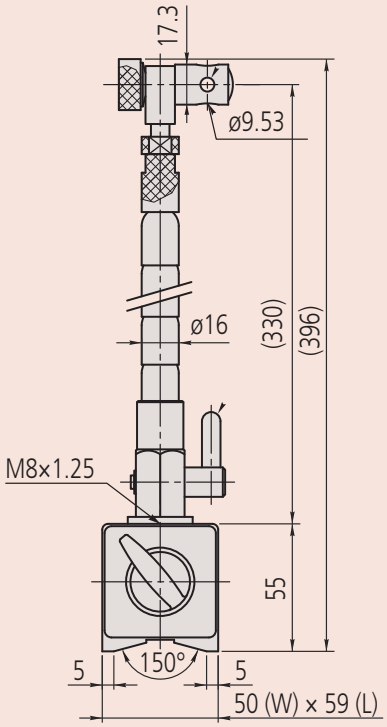
Magnetic Stands

Standard accessories

No.	Description
02AZC291	Stem Bush for Magnet Stand, 9,53mm to 8mm

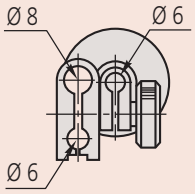


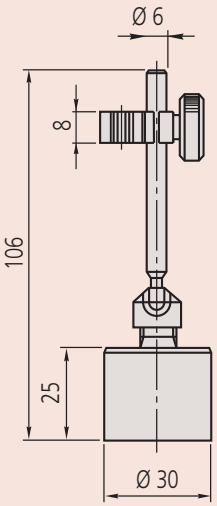
Series 7

With V-block base and flexible arm.

7012-10

No.	Clamping device	Clamping force (vertical) [N]	Base size (LxWxH)	Total height [mm]	Stem hole ø	Thread Arm/ Base	Mass [kg]
7012-10	magnetic	600	59 x 50 x 55 mm	396	6 mm, 3/8" / 9,53 mm, 8 mm (with stem bush)	M8 x 1,25	1,5





Series 7

This is a mini type of magnetic stand that offers you the following benefits:

- Mini measuring stand without magnet ON/OFF.
- It is designed to accept dial test indicators with 6 mm or 8 mm diameter stems, or dovetail.

7014-10

No.	Clamping device	Clamping force (vertical) [N]	Base size [mm]	Total height [mm]	Stem hole ø	Working radius [mm]	Mass [g]
7014-10	magnetic	150	ø 30	106	6 mm, 8 mm, dove-tail	68	170

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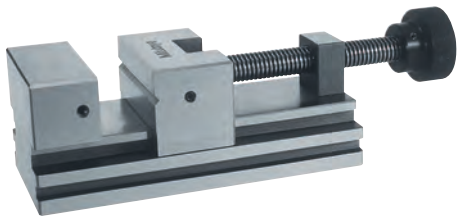
Precision Vices

Series 930

- It is made of tool steel, hardened and precision ground.
- It has a horizontally ground V-groove in the moveable jaw.

930-611

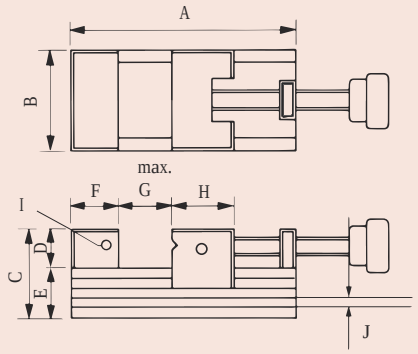


930-602

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J H x D [mm]	Mass [kg]
930-611	90	60	50	25	25	25	30	30	M5	6 x 6	1,6
930-601	160	70	62	30	32	33	80	45	M6	7 x 7	4
930-602	210	90	80	40	40	40	120	50	M6	8 x 7	7,6
930-612	285	120	90	40	50	55	150	70	M6	10 x 7	17,4

Specifications

Parallelism	0,002 mm / 100 mm
Squareness	0,005 mm / 100 mm



930-602

Series 930

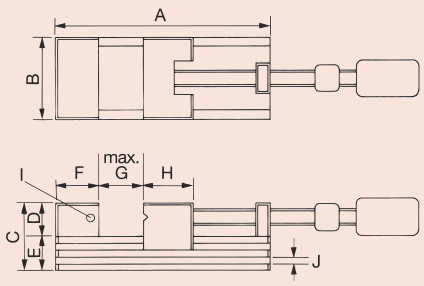
- It is made of tool steel, hardened and precision ground.
- With hydraulic system for max.clamping force of 14,7 kN.
- It has a horizontally ground V-groove in the movable jaw.

930-616

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J H x D [mm]	Mass [kg]
930-616	285	120	90	40	50	55	150	70	M6	10 x 7	17,7

Specifications

Parallelism	0,002 mm / 100 mm
Squareness	0,03 mm / 100 mm



Series 930

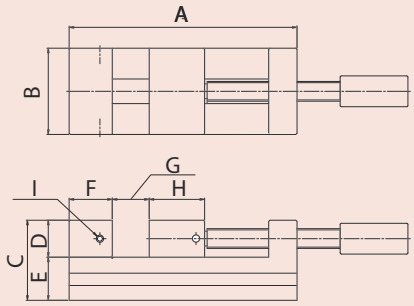
- It is made of PET plastics, light weight, and protecting workpieces from scratches.

930-641

No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	Mass [g]
930-641	90	60	50	25	25	25	30	30	M5	350
930-642	160	70	62	30	32	33	80	45	M6	700

Specifications

Parallelism	0,02 mm
Squareness	0,03 mm (930-641), 0,05 mm (930-642)



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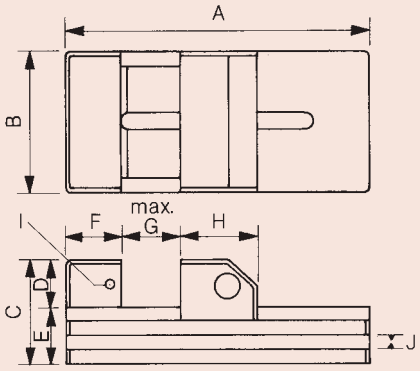
Precision Vices

Series 930

This precision vice has a pull-down clamping action and offers you the following benefits:
- It gives you high accuracy for precision grinding, milling, measuring and eroding.
- It is made of tool steel, hardened and precision ground.

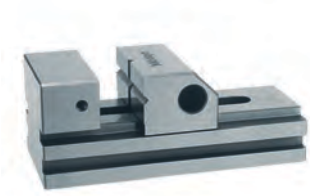
Specifications

Parallelism	0,002 mm / 100 mm
Squareness	0,005 mm / 100 mm



930-630

930-631



930-607

930-632

No.	Remarks	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I [mm]	J H x D [mm]	Mass [kg]
930-606	V-groove (moveable jaw) vertical and horizontal	160	70	62	30	32	33	80	45	M6	8 x 7	3
930-607	V-groove (moveable jaw) vertical and horizontal	210	90	80	40	40	40	120	50	M6	10 x 7	5,8
930-630	V-groove (moveable jaw) vertical	75	34	35	15	20	20	25	30	M4	Ø 8 x 4	0,38
930-631	V-groove (moveable jaw) horizontal	110	45	45	20	25	25	50	35	M5	6 x 6	1
930-632	V-groove (moveable jaw) horizontal	285	120	90	40	50	60	150	70	M6	12 x 7	13,5
930-633	V-groove (moveable jaw) none	370	175	95	45	50	60	200	110	M8	12 x 10	28,7

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Mitutoyo

Precision Sine Plates

Series 930

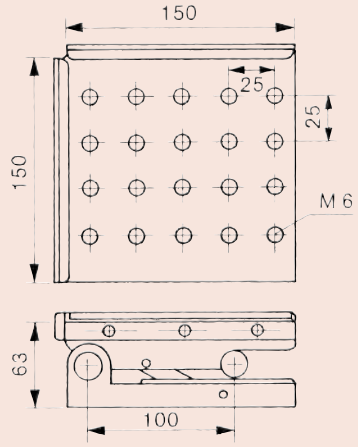
- Sine bar style of auxiliary plate.
- It is made of tool steel, hardened and precision ground.
- Accurate angle setting is made by gauge blocks, max. 45°.
- 930-626 Work piece can be fixed on plate surface by tap holes and stoppers on side.
- 930-628 and 930-629 can set the angle at two directions which go straight angularly.
- 930-629 Permanently magnet chuck is adapted.

930-626

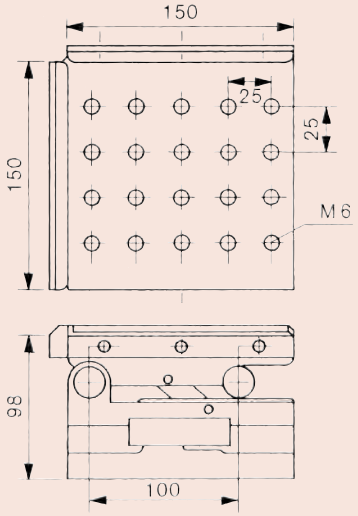
930-628

930-629

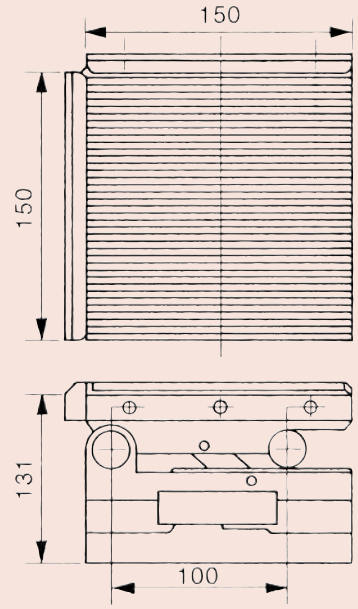
No.	Parallelism	Squareness	Remarks	Setting accuracy at 45°	Mass [kg]
930-626	0,002 mm / 100 mm	0,005 mm / 100 mm	With M6 clamping holes	±15"	7,6
930-628	0,002 mm / 100 mm	0,005 mm / 100 mm	Compound-axis type with angle in two directions With M6 clamping holes	±15"	11,3
930-629	0,002 mm / 100 mm	0,005 mm / 100 mm	Coumpound-axis type With lever-operated magnetic chuck	±15"	16,5



930-626



930-628



930-629

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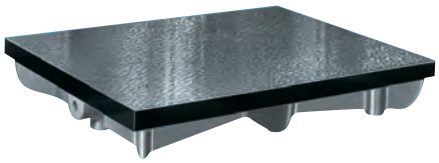
Cast Iron Surface Plates

Series 902

- A ribbed design gives you rigidity with minimum weight, and a special cast iron confers a high degree of wear resistance.



902-304

No.	Dimensions L x W x H [mm]	Accuracy	Mass [kg]
902-301	300 x 300 x 85	According to DIN 876; Grade 1 : fine scraped	15
902-302	400 x 400 x 90	According to DIN 876; Grade 1 : fine scraped	35
902-303	500 x 400 x 100	According to DIN 87; Grade 1 : fine scraped	40
902-304	600 x 500 x 120	According to DIN 876; Grade 1 : fine scraped	65
902-305	800 x 500 x 140	According to DIN 876; Grade 1 : fine scraped	95
902-306	1000 x 750 x 170	According to DIN 876; Grade 1 : fine scraped	210
902-101	300 x 300 x 85	According to DIN 876; Grade 3 : fine planed	15
902-102	400 x 400 x 90	According to DIN 876; Grade 3 : fine planed	35
902-103	500 x 400 x 100	According to DIN 876; Grade 3 : fine planed	40
902-104	600 x 500 x 120	According to DIN 876; Grade 3 : fine planed	65
902-105	800 x 500 x 140	According to DIN 876; Grade 3 : fine planed	95
902-106	1000 x 750 x 170	According to DIN 876; Grade 3 : fine planed	210

Granite Squares 90°

Series 972

- It is made of natural hard stone, with two sides precision ground.

972-106

No.	Length [mm]	Width [mm]	Accuracy	Delivered	Mass [kg]
972-106	300 x 200	50	Perpendicularity: DIN 875 Flatness: DIN 876 Grade 00	With certificate of inspection	6,5
972-107	400 x 250	50	Perpendicularity: DIN 875 Flatness: DIN 876 Grade 00	With certificate of inspection	10
972-108	500 x 300	60	Perpendicularity: DIN 875 Flatness: DIN 876 Grade 00	With certificate of inspection	17
972-109	600 x 400	70	Perpendicularity: DIN 875 Flatness: DIN 876 Grade 00	With certificate of inspection	30

Optional accessories

No.	Description
902-930	Stand (Angle Steel), for Cast Iron Plate 800x500x140mm
902-931	Stand (Angle Steel), for Cast Iron Plate 1000x750x170mm

Stand for Series 902

All products to be sold to commercial customers.
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Granite Surface Plates DIN 876

Series 901

- Surface diamond lapped, side face fine ground, backside fine sawn.
- The optional stand is a welded construction including 3 or 5-point bearings and two adjusting screws.
- Delivered with a certificate of inspection

1. Accuracy Grade 00

No.	Dimensions L x W x H [mm]	Accuracy	Max. workpiece load [kg]	Mass [kg]
901-131	400 x 250 x 50	DIN 876 grade 00	50	15
901-132	400 x 400 x 50	DIN 876 grade 00	60	25
901-133	630 x 400 x 70	DIN 876 grade 00	65	53
901-134	630 x 630 x 70	DIN 876 grade 00	75	83
901-135	1000 x 630 x 100	DIN 876 grade 00	150	189
901-136	1000 x 1000 x 100	DIN 876 grade 00	250	300
901-137	1200 x 800 x 160	DIN 876 grade 00	600	460
901-138	1600 x 1000 x 160	DIN 876 grade 00	650	768
901-139	2000 x 1000 x 220	DIN 876 grade 00	750	1.320

2. Accuracy Grade 0

No.	Dimensions L x W x H [mm]	Accuracy	Max. workpiece load [kg]	Mass [kg]
901-121	400 x 250 x 50	DIN 876 grade 0	100	15
901-122	400 x 400 x 50	DIN 876 grade 0	120	25
901-123	630 x 400 x 70	DIN 876 grade 0	130	53
901-124	630 x 630 x 70	DIN 876 grade 0	150	83
901-125	1000 x 630 x 100	DIN 876 grade 0	300	189
901-126	1000 x 1000 x 100	DIN 876 grade 0	500	300
901-127	1200 x 800 x 160	DIN 876 grade 0	1.200	460
901-128	1600 x 1000 x 160	DIN 876 grade 0	1.300	768
901-129	2000 x 1000 x 220	DIN 876 grade 0	1.500	1.320

3. Accuracy Grade 1

No.	Dimensions L x W x H [mm]	Accuracy	Max. workpiece load [kg]	Mass [kg]
901-111	400 x 250 x 50	DIN 876 grade 1	100	15
901-112	400 x 400 x 50	DIN 876 grade 1	120	25
901-113	630 x 400 x 70	DIN 876 grade 1	130	53
901-114	630 x 630 x 70	DIN 876 grade 1	150	83
901-115	1000 x 630 x 100	DIN 876 grade 1	300	189
901-116	1000 x 1000 x 100	DIN 876 grade 1	500	300
901-117	1200 x 800 x 160	DIN 876 grade 1	1.200	460
901-118	1600 x 1000 x 160	DIN 876 grade 1	1.300	768
901-119	2000 x 1000 x 220	DIN 876 grade 1	1.500	1.320

4. Accuracy Grade 2

No.	Dimensions L x W x H [mm]	Accuracy	Max. workpiece load [kg]	Mass [kg]
901-101	400 x 250 x 50	DIN 876 grade 2	100	15
901-102	400 x 400 x 50	DIN 876 grade 2	120	25
901-103	630 x 400 x 70	DIN 876 grade 2	130	53
901-104	630 x 630 x 70	DIN 876 grade 2	150	83
901-105	1000 x 630 x 100	DIN 876 grade 2	300	189
901-106	1000 x 1000 x 100	DIN 876 grade 2	500	300
901-107	1200 x 800 x 160	DIN 876 grade 2	1.200	460
901-108	1600 x 1000 x 160	DIN 876 grade 2	1.300	768
901-109	2000 x 1000 x 220	DIN 876 grade 2	1.500	1.320

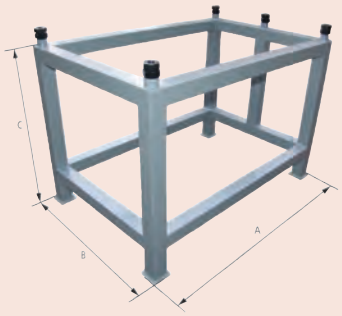
Stand

No.	Dimensions L x W x H [mm]	A [mm]	B [mm]	C [mm]	Mass [kg]
901-931	630 x 400 x 70	550	350	770	22
901-932	630 x 630 x 70	550	550	770	25
901-933	1000 x 630 x 100	750	550	740	28
901-934	1000 x 1000 x 100	750	750	740	30
901-935	1200 x 800 x 160	900	600	680	30
901-936	1600 x 1000 x 160	1050	750	680	35
901-937	2000 x 1000 x 220	1450	750	620	40

Specifications

Hardness	HV 850-900
Flexural strength	13-22 N/mm^2
Compressive strength	Approx. 280 N/mm^2
Coefficient of thermal expansion	(5 to 7,5) x 10^{-6} x K^{-1}

Granite plate and stand (optional)



Dimensions for stand

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Universal Bevel Protractors

Series 187

This universal bevel protector offers you the following benefits:

- Its high-precision angle gauge enables you to take accurate angle measurements of machines, moulds and jigs.
- You can attach it to height gauges.

187-201

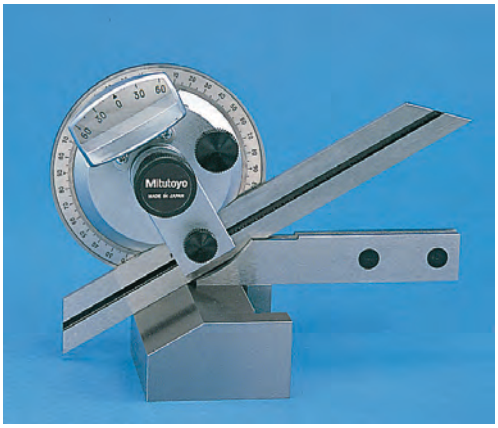
187-901-10

187-907-10

187-908-10
with height gage holder

Metric

No.	Graduation	Blade edge angle	Blade length	Delivered	Mass [g]
187-201	5 ' (0° - 90° - 0°)	30°, 60° edges	137 mm	In a box with acute angle attachment	212
187-901-10	5 ' (0° - 90° - 0°)	60°, 45°, 30° edges	150, 300 mm	In a box with acute angle attachment, holder for height gauge, magnifier	390
187-907-10	5 ' (0° - 90° - 0°)	60°, 45° edges	150 mm	In a box with holder for height gauge, magnifier	284
187-908-10	5 ' (0° - 90° - 0°)	60°, 45° edges	300 mm	In a box with holder for height gauge, magnifier	318



Standard accessories

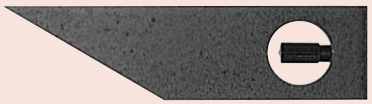
No.	Description
187-106	Steel Rule, **150mm**/6", Metric/Inch
187-107	Steel Rule, **300mm**/12", Metric/Inch
950750	Holder for Mounting on Height Gauges, Metric, Series 187
187-105	Acute angle attachment, for Series 187

187-106 for 187-901-10, 187-907-10
187-107 for 187-901-10, 187-908-10
950750 for Height Gauge with 9x 9 mm scriber shaft
for 187-901-10, 187-907-10, 187-908-10
950750 for 187-201 and 187-901-10

187-106

187-107

950750



187-105

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Digimatic Universal Protractors

Series 187

This is a Digimatic Universal Protractor with data output that offers you the following features:

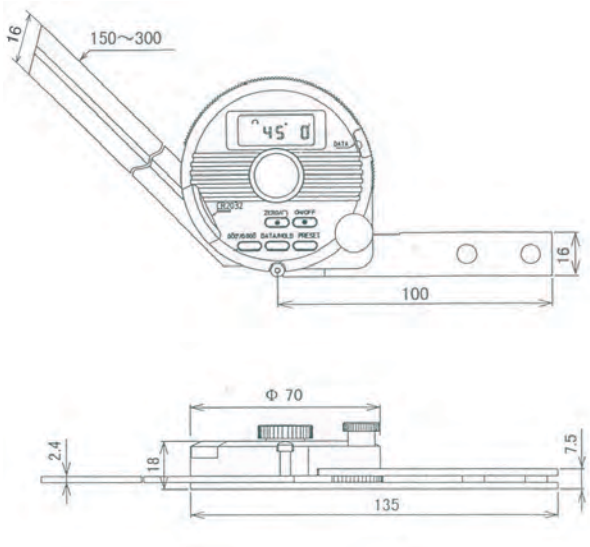
- It has an easy-to-read digital display.
- It automatically turns off after 10 minutes, and gives you fixed reference points for easy adjustment.
- You can slide and clamp the measuring blade over the entire length.
- You can make fine adjustments to precisely adjust arbitrary angle dimensions.
- It comes with a mounting facility on height gauges and tracers of series 192 via holder.

187-501

187-502

Metric

No.	Digital step	Blade length	Delivered	Mass [g]
187-501	1' (0,01°)	150 mm	In a box including CR-2032 battery, 150 mm steel rule, holder for height gauge	624
187-502	1' (0,01°)	300 mm	In a box including CR-2032 battery, 300 mm steel rule, holder for height gauge	662



Functions	Series 187
ON/OFF	●
DATA (output with cable) / HOLD (display value)	●
Data output	●
ZERO SET	●
PRESET	●
Angle sexagesimal/decimal	●

Specifications

Max. permissible error	2' (0,03°)
Repeatability	1' (0,01°)
Battery life	Approx. 2000 hours
Power supply	1 battery CR-2032
Display	LCD with character height 6,5 mm

Standard accessories

No.	Description
187-106	Steel Rule, **150mm**/6", Metric/Inch
187-107	Steel Rule, **300mm**/12", Metric/Inch
950750	Holder for Mounting on Height Gauges, Metric, Series 187

187-106 for 187-501
187-107 for 187-502
950750 for 187-501, 187-502

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
06AFM380F	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat Straight Type
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790F	U-WAVE-T Connection Cable F, Flat Straight Type
187-105	Acute angle attachment, for Series 187

Consumable spares

No.	Description
05SAA217D	Lithium battery CR-2032, 1 pcs.

950750

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Digital Precision Levels

Series 950

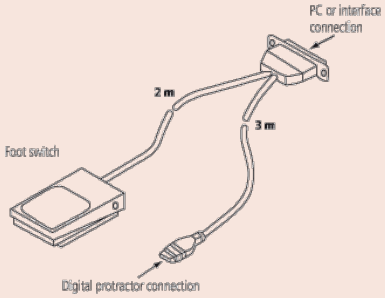
This Digital Precision Level offers you the following benefits:
- You can measure flatness, squareness and angularity.
- Precision support surfaces in aluminium frame provide you with high rigidity and low weight.

Specifications

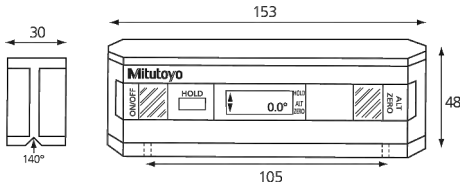
Range	360° (4 x 90°)
Power supply	Standard battery (9 V) 6LR61
Battery life	Approx. 500 hours

Optional accessories

No.	Description
50AAA983A	RS-232C Output Cable, for series 950



950-318



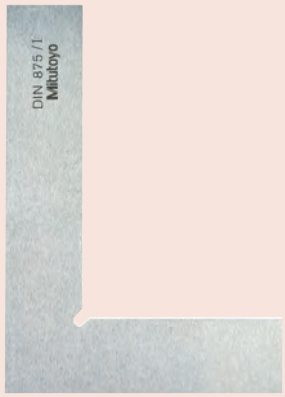
Distance between two M 3 x 0,5 mm Mounting holes

No.	Max. permissible error (degrees)	Repeatability (degrees)	Data output	Sensitivity (degrees)	Delivered	Mass [kg]
950-318	0,05 (0 to 10) 0,1 (80 to 90) 0,2 (10 to 80)	0,05	●	0,01 (0 to 9,99) 0,1 (10 to 90)	Including box	0,3

90° Steel Squares

Series 916

This 90° Steel Square offers you the following benefits:
- Three types of square are available.
- It is hardened, and has precision ground edges.



Try square

Try square

No.	Length [mm]	Cross section	Accuracy	Grade	Remarks	Mass [g]
916-222	75x50	15x5	According to DIN 875	1	steel	85
916-223	100x70	20x5	According to DIN 875	1	steel	130
916-224	150x100	25x5	According to DIN 875	1	steel	270
916-225	200x130	30x6	According to DIN 875	1	steel	585
916-226	250x165	35x7	According to DIN 875	1	steel	840
916-227	300x200	40x8	According to DIN 875	1	steel	1300
916-232	75x50	15x5	According to DIN 875	2	steel	85
916-233	100x70	20x5	According to DIN 875	2	steel	130
916-234	150x100	25x5	According to DIN 875	2	steel	270
916-235	200x130	30x6	According to DIN 875	2	steel	530

Try square with shoulders

Try square with shoulders

No.	Length [mm]	Cross section	Accuracy	Grade	Remarks	Mass [g]
916-321	75x50	15x5	According to DIN 875	1	steel	60
916-322	100x70	20x5	According to DIN 875	1	steel	180
916-323	150x100	25x5	According to DIN 875	1	steel	400
916-324	200x130	30x6	According to DIN 875	1	steel	675
916-325	250x165	35x7	According to DIN 875	1	steel	1185
916-326	300x200	40x8	According to DIN 875	1	steel	1730
916-332	100x70	20x5	According to DIN 875	2	steel	180
916-333	150x100	25x5	According to DIN 875	2	steel	365
916-334	200x130	30x6	According to DIN 875	2	steel	790
916-335	250x165	35x7	According to DIN 875	2	steel	1320

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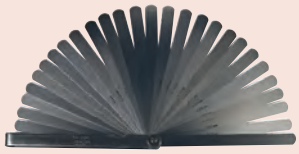
Feeler Gauges

Series 184 - Feeler Gauge

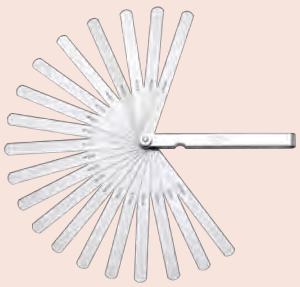
This feeler gauge is ideal for a variety of measuring tasks and offers you the following benefits:
- Size clearly stamped on each leaf
- Leaves are easy to remove and can be individually locked open.

Metric

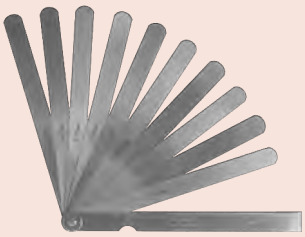
No.	Range	Accuracy	Number of leaves	Leaf length [mm]	Mass [g]
184-301S	0,05-0,3 mm by 0,05 mm, 0,4-1 mm by 0,1 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	13	150	121
184-302S	0,03-0,1 mm by 0,01 mm, 0,2-0,5 mm by 0,1 mm, 0,15 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	13	150	67
184-303S	0,05-0,15 mm by 0,01 mm, 0,2-1 mm by 0,05 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	28	150	195
184-304S	0,05-1 mm by 0,05 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	20	150	184
184-305S	0,05-0,3 mm by 0,05 mm, 0,4-1 mm by 0,1 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	13	100	82
184-306S	0,05-0,2 mm by 0,05 mm, 0,3-0,8 mm by 0,1 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	10	100	62
184-307S	0,03-0,1 mm by 0,01 mm, 0,2-0,5 mm by 0,1 mm, 0,15 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	13	100	47
184-308S	0,05-0,2 mm by 0,05 mm, 0,3-0,8 mm by 0,1 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	10	150	91
184-313S	0,05-0,15 mm by 0,01 mm, 0,2-1 mm by 0,05 mm	0,03-0,15 mm: ±0,005 mm, 0,2- 0,5 mm: ±0,012 mm, 0,55-1 mm: ±0,02 mm	28	100	129



184-303S



184-304S



184-308S

Knife Edge Straight Edge

Series 528

This Knife Edge Straight Edge offers you the following benefits:
- Its straight edges are especially suited to testing the flatness of surfaces.
- It has a hardened, ground and micro lapped measuring edge.

Series 528

No.	Cross section	Section	Accuracy	Length [mm]	Mass [g]
528-100	25 x 6 mm	60°	DIN 874-2	50	40
528-101	25 x 6 mm	60°	DIN 874-2	75	50
528-102	25 x 6 mm	60°	DIN 874-2	100	60
528-110	25 x 6 mm	60°	DIN 874-2	125	80
528-103	25 x 6 mm	60°	DIN 874-2	150	100
528-104	25 x 6 mm	60°	DIN 874-2	200	190
528-105	32 x 7 mm	60°	DIN 874-2	300	370
528-106	40 x 8 mm	60°	DIN 874-2	400	1080
528-107	50 x 10 mm	60°	DIN 874-2	500	1400

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Steel Rules

Series 182

These are rigid and fully-flexible rules that offer you the following benefits:
- They have clear graduations on satin-chrome finish.
- The rules are stainless tempered.

182-211

182-131

Metric

Fully-flexible rule

No.	Range [mm]	Graduation	Accuracy	Width	Thickness	Mass [g]
182-211	0 - 150	1 mm / 0,5 mm (on both faces)	±0,15 mm	12 mm	0,4 mm	5
182-231	0 - 300	1 mm / 0,5 mm (on both faces)	±0,15 mm	12 mm	0,4 mm	10
182-251	0 - 450	1 mm / 0,5 mm (on both faces)	±0,15 mm	19 mm	0,4 mm	130
182-271	0 - 600	1 mm / 0,5 mm (on both faces)	±0,2 mm	19 mm	0,4 mm	90

Metric

Wide rigid rule

No.	Range [mm]	Graduation	Accuracy	Width	Thickness	Mass [g]
182-111	0 - 150	1 mm / 0,5 mm (on both faces)	±0,15 mm	19 mm	1,2 mm	27
182-131	0 - 300	1 mm / 0,5 mm (on both faces)	±0,15 mm	25 mm	1,2 mm	72
182-151	0 - 450	1 mm / 0,5 mm (on both faces)	±0,15 mm	30 mm	1,2 mm	130
182-171	0 - 600	1 mm / 0,5 mm (on both faces)	±0,2 mm	30 mm	1,2 mm	175

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Digital Height Masters

Series 515

This is a standard model with a digital display, that offers you the following benefits:

- It gives you all the essential specifications required for a versatile height standard.
- You can use it to calibrate and set height gauges and other measuring instruments.
- Models have two measuring faces on the same level, one facing up and the other down.

Functions	Series 515
DATA (output with cable) / HOLD (display value)	●
Auto Power OFF after 20 min. non use	●
Low voltage alarm	●
Data output	●
PRESET	●
ABS / INC (INC ZERO)	●

Specifications

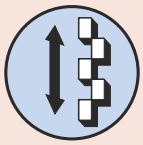
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	Range ≤ 310 mm: ±1,5 µm 310 < range ≤ 450 mm: ±2,5 µm 450 < range ≤ 610 mm: ±3,5 µm
Parallelism of blocks	Range ≤ 310 mm: 2 µm 310 < range ≤ 610 mm: 2,5 µm
Battery life	Approx. 1,8 years

Optional accessories

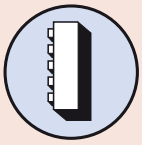
No.	Description
515-111	Auxiliary Block Kit for Bore Gauge, for 515-374/515-376/515-378
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button

Consumable spares

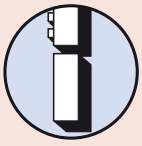
No.	Description
938882	Battery SR44 1,5 V



Staggered 20 mm blocks (movable)



Vertical orientation



Riser block (optional)

515-374

Metric

No.	Range [mm]	Graduation [mm]	Digital step	Block step	Feed error	Retrace error	Delivered	Mass [kg]
515-374	10 - 310	0,002	0,001 mm	20 mm staggered	±2 µm	2 µm	In a wooden case with certificate of inspection, 11 mm gauge block, SR-44 battery	9,5
515-376	10 - 460	0,002	0,001 mm	20 mm staggered	±2 µm	2 µm	In a wooden case with certificate of inspection, 11 mm gauge block, SR-44 battery	13,6
515-378	10 - 610	0,002	0,001 mm	20 mm staggered	±2,5 µm	2,5 µm	In a wooden case with certificate of inspection, 11 mm gauge block, SR-44 battery	16

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Height Masters

Series 515

This height master offers you the following benefits:

- You can use it to calibrate and set height gauges and other measuring instruments.
- Models with the staggered arrangement of blocks have two measuring faces on the same level, one facing up and the other down.
- It is supplied in a fitted wooden case.

515-520

Using in horizontal orientation

Specifications

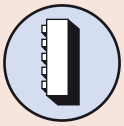
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	Range ≤ 310 mm: ±1,5 µm 310 < range ≤ 610 mm: ±2,5 µm 610 < range ≤ 1010 mm: ±3,5 µm
Parallelism of blocks	Range ≤ 610 mm: 1,5 µm 610 < range ≤ 1010 mm: 2 µm

Optional accessories

No.	Description
515-110	Auxiliary Block Kit for Bore Gauge, for 515-520/515-523
900574	Supporting Base for Vertical Operation, for Height Master

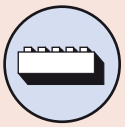
900574 : supplied as a standard for 515-523

Single-row 10 mm blocks (movable)



Vertical orientation

Riser block (optional)



Horizontal orientation

Metric

No.	Range [mm]	Graduation [mm]	Block step	Feed error	Retrace error	Delivered	Mass [kg]
515-520	5 - 610	0,001	10 mm straight	±1,2 µm	1,2 µm	In a wooden case with certificate of inspection	45
515-523	5 - 1010	0,001	10 mm straight	±1,5 µm	1,5 µm	In a wooden case with certificate of inspection, supporting base 900574	63,5

900574 (optional)
Supporting base for vertical operation

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Universal Height Masters

Series 515

This Universal Height Master offers you the following benefits:

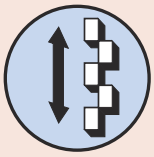
- It is designed for both vertical and horizontal orientations, enabling you to carry out a wide range of applications such as accuracy checking of machine tool table movements.
- It is supplied in a fitted wooden case.

Specifications

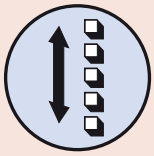
Micrometer adjustment	20 mm
Micrometer feed	0,5 mm
Block pitch accuracy	±1,5 µm
Parallelism of blocks	1 µm

Optional accessories

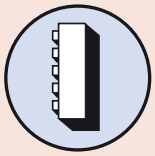
No.	Description
515-112	Auxiliary Block Kit for Bore Gauge, for 515-322



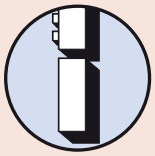
Staggered 20 mm blocks (movable)



Single-row 10 mm blocks (movable)



Vertical orientation

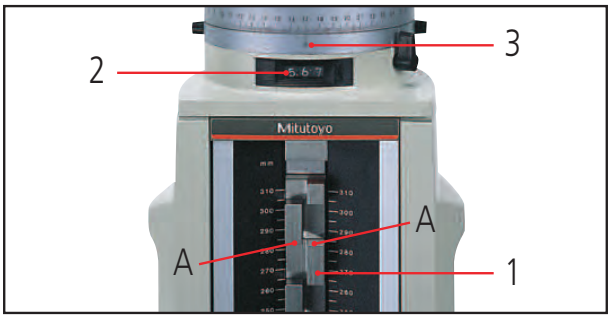


Riser block (optional)

515-322

Metric

No.	Range [mm]	Graduation [mm]	Block step	Feed error	Retrace error	Delivered	Mass [kg]
515-322	5 - 310	0,001	20 mm staggered	±1 µm	1 µm	In a wooden case with certificate of inspection	23



Height A
1. Scale 280.000 mm
2. Counter 5.670 mm
3. Thimble 0.000 mm

285.670 mm

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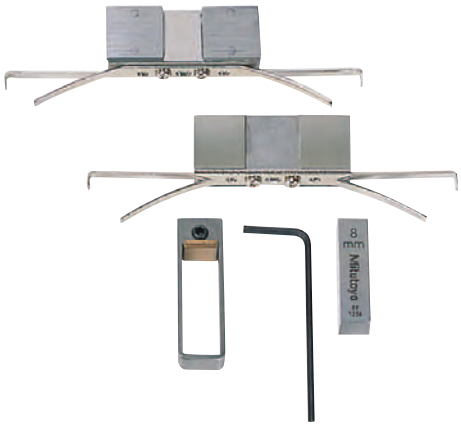
Optional Accessories for Height Master

Series 515

This is an auxiliary block kit that allows you to efficiently carry out reference-setting of dial bore gauges and tubular inside micrometers (18-150mm).



Bore Gauge Series 511
reference setting

Metric

No.	Suitable for Height Master	Mass [kg]
515-112	515-322	0,142
515-110	515-520 / 515-523	0,14
515-111	515-374 / 515-376 / 515-378	0,142

Series 515

These riser blocks offer you the following benefits:

- You can extend the measuring range up to 900mm by using 150, 300 or 600mm riser blocks.
- They can be used with both standard and digital Height Masters.

515-113

515-114

515-115

Sample application

Metric

No.	Parallelism	Accuracy	Height [mm]	Mass [kg]
515-113	0,6 µm	±0,6 µm	150	5,7
515-114	0,8 µm	±1 µm	300	11,3
515-115	1 µm	±2 µm	600	31

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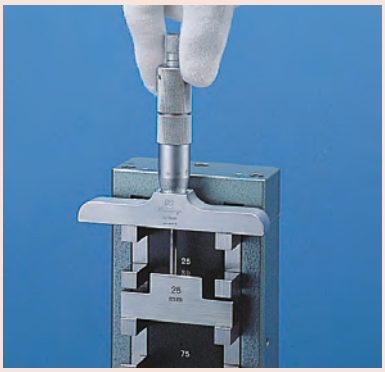
Depth Micro Checkers

Specifications

Anvil block accuracy	±0,5 µm
Block pitch accuracy	±(1+L/150)µm L= lenght to check (mm)



Series 515

This Depth Micro Checker offers you the following benefits:

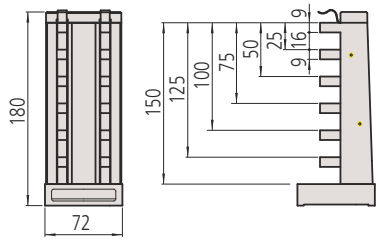
- The Depth Micro Checker is designed to let you check and help set the range-end points of a depth micrometer.
- A 25mm carbide gauge block is provided as the reference surface.

515-571

Metric

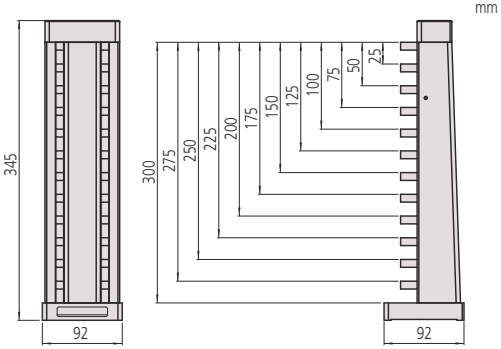
No.	Range [mm]	Reference length	Delivered	Mass [kg]
515-570	0 - 150	25, 50, 75, 100, 125, 150 mm	In a wooden case with certificate of inspection, 25 mm carbide reference block	3
515-571	0 - 300	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	In a wooden case with certificate of inspection, 25 mm carbide reference block	17

mm



515-570

mm



515-571

All products to be sold to commercial customers.
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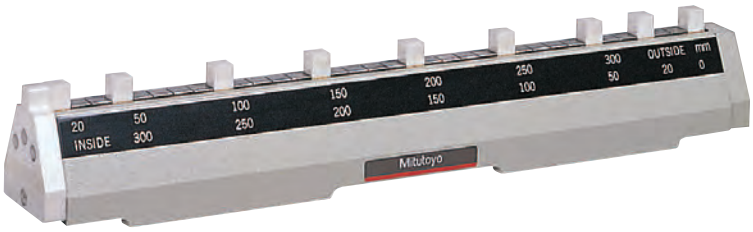
CERA Caliper Checkers

Series 515

This CERA Caliper Checker offers you the following benefits:
- You can set and inspect caliper and height gauges.
- It comes with ceramic gauge blocks.

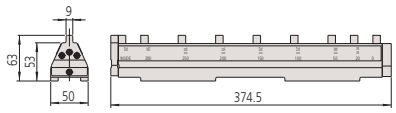


515-555

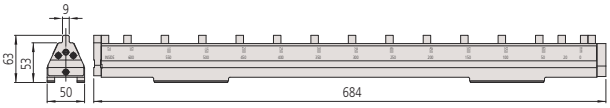
Metric

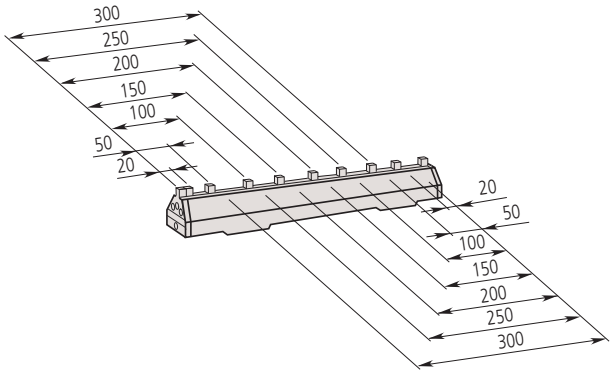
No.	Range [mm]	Reference checking lengths available for outside/ inside measurement	Delivered	Mass [kg]
515-555	0 - 300	20, 50, 100, 150, 200, 250 and 300 mm	In a paper case with certificate of inspection	4
515-556-2	0 - 600	20, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550 and 600 mm	In a paper case with certificate of inspection	8,5

515-555

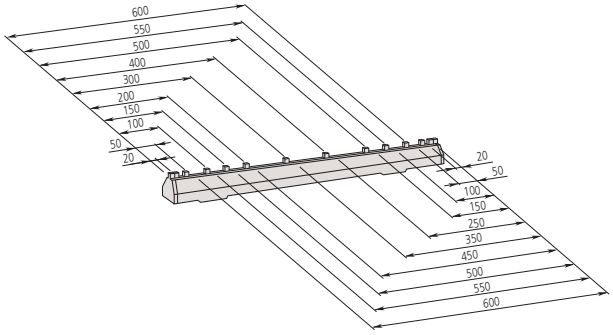


515-556-2





515-555



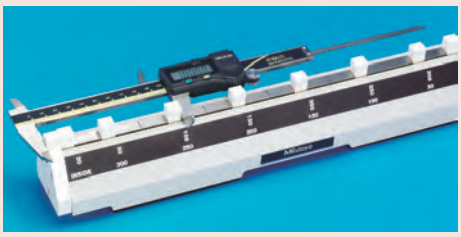
515-556-2

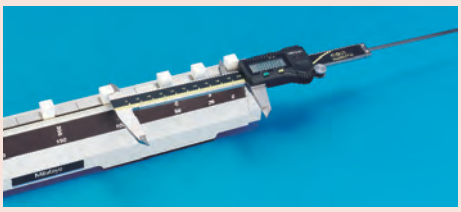
Specifications

Block pitch accuracy	20 - 300 mm: ±0,005 mm 350 - 600 mm: ±0,007 mm
Parallelism of blocks	20 - 300 mm: 0,002 mm 350 - 600 mm: 0,004 mm

Optional accessories

No.	Description
602162	Wooden Case (300 mm), for Caliper Checker
602164	Wooden Case (600 mm), for Caliper Checker





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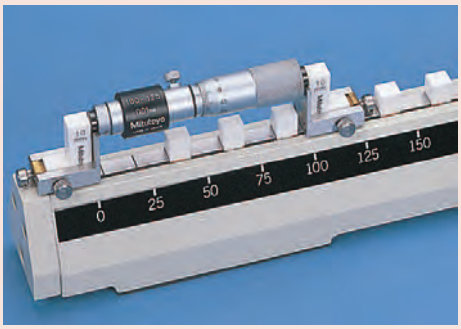
Inside Micro Checkers

Specifications

Block pitch accuracy	±(1+L/150) µm L = Length to check (mm)

Support clamps with 10 mm gauge blocks

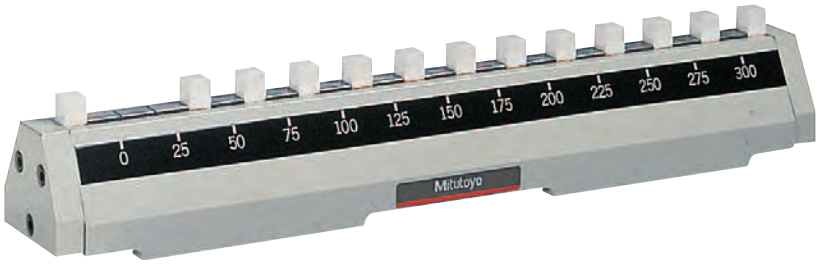


Application with Series 133

Series 515

This Inside Micro Checker offers you the following benefits:

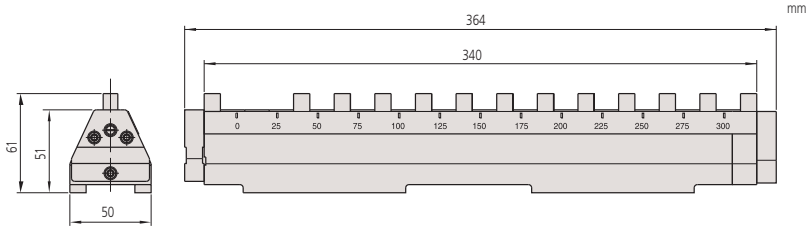
- Applicable for Series 133, 139 and 145 (over 50 mm).
- Not applicable for Series 137, 141, 337 and 339
- It designed to act as a setting standard for inside micrometers.
- It comes with ceramic gauge blocks.



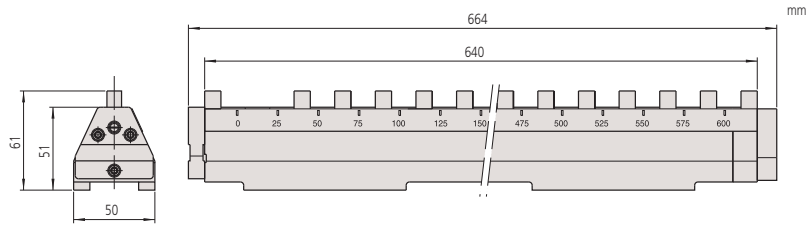
515-585

Metric

No.	Range [mm]	Graduation [mm]	Reference length	Delivered	Mass [kg]
515-585	25 - 300	25	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300 mm	In a wooden case with certificate of inspection, support clamps, 2x10 mm gauge block grade 0	3,9
515-586	25 - 600	25	25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600 mm	In a wooden case with certificate of inspection, support clamps, 2x 10 mm gauge block	7



515-585



515-586

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Check Masters

Series 515

This Check Master allows you to test precision tool and coordinate measuring machines, and offers you the following benefits:

- You can test the X, Y and Z-coordinate axes of precision tool machines and coordinate measuring machines.
- It consists of rigidly clamped gauge blocks with a step of 10mm.
- It is supplied in a fitted wooden case.

515-722

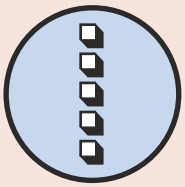
Metric

No.	Range [mm]	Delivered	Mass [kg]
515-720	0 - 310	In a wooden case with certificate of inspection	7
515-721	0 - 450	In a wooden case with certificate of inspection	10
515-722	0 - 610	In a wooden case with certificate of inspection	13
515-723	0 - 1010	In a wooden case with certificate of inspection	22
515-724	0 - 1510	In a wooden case with certificate of inspection	30

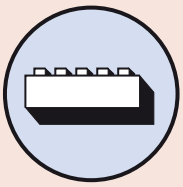
515-724 515-723 515-722

Specifications

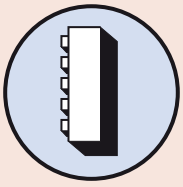
Block step	10 mm
Block pitch accuracy	Range ≤ 310 mm: ±2,5 µm 310 < range ≤ 610 mm: ±3,5 µm 610 < range ≤ 1010 mm: ±5,0 µm 1010 < range ≤ 1510 mm: ±8,0 µm
Parallelism of blocks	Range ≤ 310 mm: 1,2 µm 310 < range ≤ 610 mm: 1,5 µm 610 < range ≤ 1010 mm: 2,0 µm 1010 < range ≤ 1510 mm: 2,5 µm
Hardness	> 64 HRC



Single-row 10 mm blocks



Horizontal orientation



Vertical orientation

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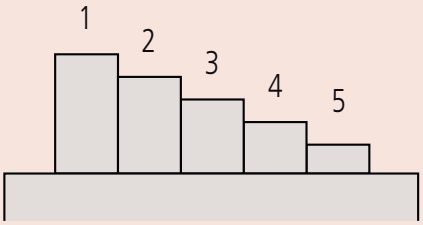
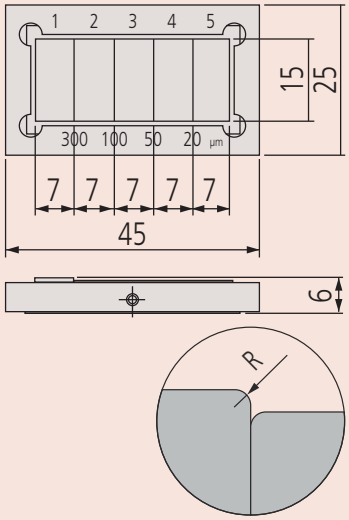
Step Masters



	Step value			
	1/2	2/3	3/4	4/5
516-198, 516-498	10 µm	5 µm	2 µm	1 µm
516-199, 516-499	300 µm	100 µm	50 µm	20 µm



Series 516

The Step Master is a gauge that provides you with four small increments in height and offers you the following benefits:

- It is constructed from an assembly of five highly accurate, steel or ceramic gauge blocks.
- Each adjacent step is calibrated to a resolution of 0,01 µm by using an interferometer with an accuracy tolerance of ±0,2 µm.

516-499 Ceramic type

516-199 Steel type

Metric

No.	Block step	Material	Delivered	Mass [kg]
516-198	10, 5, 2, 1 µm	Steel	In a wooden case with certificate of inspection	0,15
516-198-24	10, 5, 2, 1 µm	Steel	In a wooden case with JCSS calibration certificate	0,15
516-199	300, 100, 50, 20 µm	Steel	In a wooden case with certificate of inspection	0,15
516-199-24	300, 100, 50, 20 µm	Steel	In a wooden case with JCSS calibration certificate	0,15
516-498	10, 5, 2, 1 µm	Ceramic	In a wooden case with certificate of inspection	0,14
516-498-24	10, 5, 2, 1 µm	Ceramic	In a wooden case with JCSS calibration certificate	0,14
516-499	300, 100, 50, 20 µm	Ceramic	In a wooden case with certificate of inspection	0,14
516-499-24	300, 100, 50, 20 µm	Ceramic	In a wooden case with JCSS calibration certificate	0,14

Specifications

Accuracy	DIN 2269 error limit of diameter grade 1: ±1 µm grade 2: ±2 µm
Finish	Very fine ground, from Ø 3 mm inscribed
Hardness	HRC 60-62
Roughness	RA ≤ 0,1 µm
Length	up to Ø 6 mm = 50 mm over Ø 6 mm = 70 mm

Cylindrical Measuring Pins

Series 926

This is a complete incremental set of plug (or pin) gauges, that offers you the following benefits:

- It includes 91 or 273 pieces that you can use in the inspection room, or on the shop floor in tool and fixture making.

926-210

926-222

Set of 273 pieces

No.	Grade	Remarks	Delivered	Mass [kg]
926-210	1	1-10 mm, rising by 0,1 mm (91 pins). Each of these 91 pins are flanked by a +0,01 mm (oversize) and a -0,01 mm (undersize) pin.	In a wooden box	7,335
926-212	2	1-10 mm, rising by 0,1 mm (91 pins). Each of these 91 pins are flanked by a +0,01 mm (oversize) and a -0,01 mm (undersize) pin.	In a wooden box	7,295

Set of 91 pieces

No.	Grade	Remarks	Delivered	Mass [kg]
926-220	1	1-10 mm, rising by 0,1 mm	In a wooden box	3
926-222	2	1-10 mm, rising by 0,1 mm	In a wooden box	3

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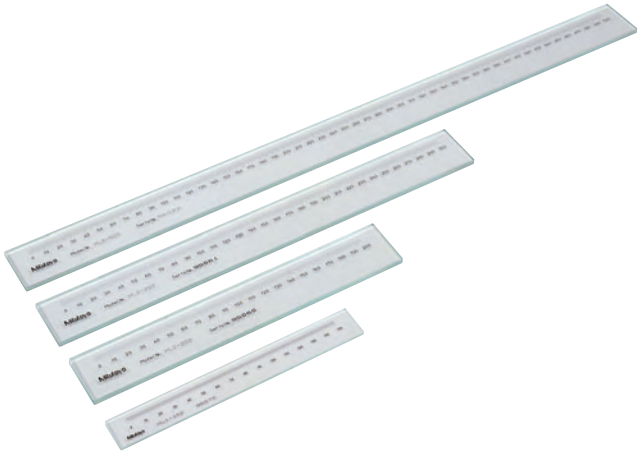
Glass Scales

Series 182

These high precision glass scales offer you the following benefits:

- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- They are ideal for checking the magnification accuracy of profile projectors and microscopes, as well as the table feed accuracy of measuring equipment.



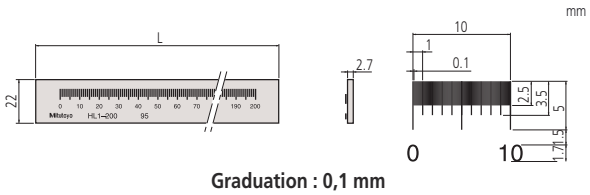
182-525-10 / 182-523-10 / 182-522-10 / 182-513-10

Specifications

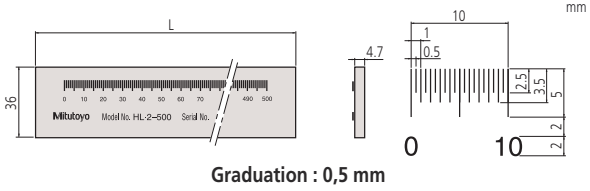
Accuracy	(1,5+2L/1000) µm L = measured length (mm)
Material	Sodium glass
Thermal expansion coefficient	(8±1) x 10^{-6}/K

Metric

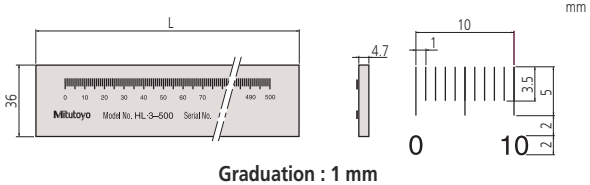
No.	Range [mm]	Graduation [mm]	Thickness of graduation line [µm]	L [mm]	Delivered	Mass [kg]
182-511-10	0 - 50	0,1	20	75	In a wooden case with certificate of inspection	0,23
182-512-10	0 - 100	0,1	20	125	In a wooden case with certificate of inspection	0,24
182-521-10	0 - 100	0,5	50	130	In a wooden case with certificate of inspection	0,27
182-513-10	0 - 150	0,1	20	175	In a wooden case with certificate of inspection	0,35
182-514-10	0 - 200	0,1	20	225	In a wooden case with certificate of inspection	0,36
182-522-10	0 - 200	0,5	50	230	In a wooden case with certificate of inspection	0,32
182-531-10	0 - 250	1	100	280	In a wooden case with certificate of inspection	0,55
182-523-10	0 - 300	0,5	50	330	In a wooden case with certificate of inspection	0,57
182-524-10	0 - 400	0,5	50	430	In a wooden case with certificate of inspection	0,71
182-525-10	0 - 500	0,5	50	530	In a wooden case with certificate of inspection	0,86
182-532-10	0 - 500	1	100	530	In a wooden case with certificate of inspection	0,86
182-533-10	0 - 750	1	100	780	In a wooden case with certificate of inspection	1,22
182-534-10	0 - 1000	1	100	1030	In a wooden case with certificate of inspection	1,54



Graduation : 0,1 mm



Graduation : 0,5 mm



Graduation : 1 mm

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Low Expansion Glass Scales

Specifications

Accuracy	(0,5+L/1000) µm L = measured length (mm)
Graduation	1 mm
Thickness of graduation line	4 µm
Material	Low expansion glass
Thermal expansion coefficient	(0±0,02) x 10^{-6}/K

Series 182

These high precision glass scales offer you the following benefits:

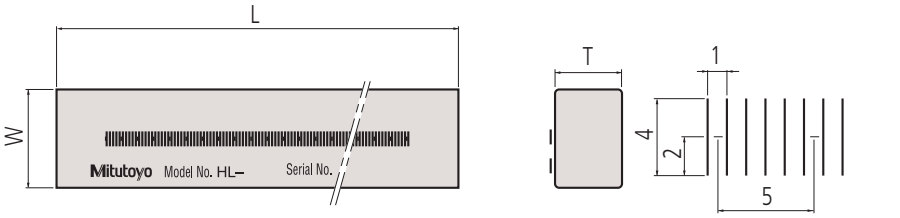
- They are manufactured using Mitutoyo's leading-edge Linear Scale production technology.
- You can use them as a standard for calibrating graduating scales, with high accuracy.

182-502-60
182-501-60

Metric

No.	Range [mm]	L [mm]	T [mm]	W [mm]	Delivered	Mass [kg]
182-501-50	0 - 250	280	10	20	In a wooden case with certificate of inspection	0,75
182-501-60	0 - 250	280	10	20	In a wooden case with JCSS calibration certificate	0,75
182-502-50	0 - 500	530	20	30	In a wooden case with certificate of inspection	1,8
182-502-60	0 - 500	530	20	30	In a wooden case with JCSS calibration certificate	1,8

mm



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Calibration Testers

Series 170

This Calibration Tester offers you the following benefits:

- It enables you to test dial indicators, lever gauges and bore gauges with 0,01mm scale graduation.
- Bore gauges can be supported both horizontally and vertically.

170-102-12

Metric

No.	Range [mm]	Spindle feed error [µm]	Hysteresis	Delivered	Mass [kg]
170-102-12	0 - 25	±2	0,5 µm	With bore gauge (Series 511) holder **12AAK821**	7,5

Specifications

Graduation	0,001 mm
Measuring face	Carbide tipped, rotating
Clamping range	Ø 6/8 mm

Optional accessories

No.	Description
12AAK824	Horizontal Holder for Bore Gauge, For Series 170

Series 521

This allows the calibration of digital and analogue indicators, lever gauges and measuring probes with a maximum measuring span of 5mm.

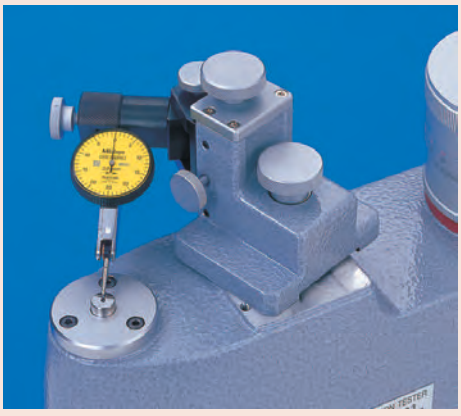
521-105

Metric

No.	Range [mm]	Spindle feed error [µm]	Hysteresis	Mass [kg]
521-103	0 - 1	±0,2	0,2 µm	7
521-105	0 - 5	±0,8	0,8 µm	7,5

Specifications

Graduation	0,0002 mm
Measuring face	Carbide tipped, non rotating
Clamping range	Ø 4-10 mm



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Calibration Testers i-Checker 2000

Series 170

- i-Checker is specially designed to calibrate dial indicators, dial test indicators, bore gauges, electronic digital indicator gauges and other electronic gauges.
- Inspection can be performed 2,5 times faster compared to the previous model.
- This instrument achieves the high accuracy and therefore guarantees ultra-reliable inspection results.
- Digital indicators equipped with a data output function are checked very efficiently due to spindle positioning at the inspection points and recording of measurement results being under fully automatic control.
- Analog type indicators are inspected in semi-automatic mode with the pointer of the indicator being manually adjusted at each measuring point with automatic transfer of inspection results and movement to the next measuring point.

170-402D
with optional accessories

Specifications

Max. drive speed	10 mm/s
Drive method	Motor drive, semi automatic, fully automatic only for indicator with data output
Scale	Linear encoder
Power supply	100VAC to 240VAC ±10%, 50/60Hz
PC connection	USB

Optional accessories

No.	Description
02ASK000	Test Indicator Accessory Set, I-Checker, For Ø6mm Stem
02ASK180	Test Indicator Accessory Set, I-Checker, For Ø8mm Stem
02ASK040	Stem Bush for I-Checker, For Ø6mm Stem
02ASL150	Stem Bush for I-Checker, For ø10mm Stem
02ASK060	Stem Bush for I-Checker, For Ø12mm Stem
02ASK070	Stem Bush for I-Checker, For Ø15mm Stem
02ASK080	Stem Bush for I-Checker, For Ø20mm Stem
02ASK710	Stem Bush for I-Checker, For Ø28mm Stem
02ASK090	Stem Bush for I-Checker, For Ø**9,525mm** (3/8") Stem
02ASU162	Cylinder Gauge Set, IC-2000

Calibration of Dial Test Indicator (Lever Type) with optional accessories

Metric

No.	Range [mm]	Digital step	Accuracy	Delivered	Mass
170-402D	0 - 100	0,01 µm	±(0,1+4L/1000) µm L = measured length (mm)	With ø8 mm stem bush, software i-Pak, certificate of inspection	20 kg

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Gauge Block Comparators GBCD-250

Series 565

This Manual Comparator with Dual Gauge Heads offers you the following benefits:
- It performs gauge block calibration according to EN ISO 3650.
- You can easily compare gauge blocks between 0,1 mm and 250 mm with reference gauge blocks.
- The upper and lower gauging heads give you of easy, high-accuracy measurement.

No.	Range [mm]	Measuring force [N]	Stroke [mm]	Measuring range [mm]	Resolution	Measuring unit	Mass [kg]
565-151D-01	0,1 - 250	0,4 N (upper) 0,2 N (lower)	10,5	0,2 - 8,2	0,001 µm	Linear Gauge (upper, lower)	55

Optional accessories

No.	Description
02ASW561	Software GB-PAK-A, Vers. 4,0X, for New GBCD-250 Installation, English Version
02ASF040	Heat Protection Shield, For GBCD-250
02ASP422	RS-232C Cable
02ASD130	Square Gauge Block Holder, For GBCD-210
601644	Cerastone for Gauge Blocks, 150x50x20mm
158-120	Optical Flat, 15mm, D=60mm, 0,1µm
516-650E	Maintenance Kit for Gauge Blocks
516-145-E2	Calibration Master for GB-Comparator, 11pcs., Refer to EA-10/02

Gauge Block Comparators GBCD-100A

Series 565

- It performs gauge block calibration according to EN ISO 3650
- Measures the length of rectangular gauge blocks in the size range 0,5 mm to 100 mm. It automatically compares a test block with an appropriate reference gauge block.
- The compensation result is not affected by any warping of thinner gauge blocks due to the use of upper and lower gage heads (dual-head system).
- Measurement configuration: 1 cycle of automatic comparison measurement with a standard gauge block.

No.	Range [mm]	Measuring force [N]	Resolution	Measuring unit
565-172	0,5 - 100	0,8 N (upper) 0,4 N (lower)	0,01 µm	Inductive probe (upper, lower)

Optional accessories

No.	Description
02ASW551	Software GB-PAK-A, Vers. 4.0X, for New GBCD-100A Installation, English Version
601644	Cerastone for Gauge Blocks, 150x50x20mm
158-120	Optical Flat, 15mm, D=60mm, 0,1µm
516-650E	Maintenance Kit for Gauge Blocks
516-146-E2	Calibration Master for GB-Comparator, 12pcs., Eng., GBCD, Cal. Cert., Trace.

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Mitutoyo

Steel Metric Gauge Block Sets Overview

Mitutoyo provides a wide selection of boxed sets of gauge blocks to meet the various needs of industry. Selecting the best set, or sets, to acquire usually depends on the accuracy required by the target applications, the level of convenience desired and the environmental conditions in which they will be used.

Steel 32-block set

Steel 34-block set

Steel 46-block set

Steel 47-block set

Steel 56-block set

Steel 76-block set

Steel 87-block set

Steel 88-block set

Steel 103-block set

Steel 112-block set

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Steel Metric Gauge Block Sets Grade K with ISO JCSS Certificate

Grade K with ISO JCSS Certificate

Specifications

Accuracy	EN ISO 3650

JCSS Calibration Certificate

These Gauge Block Sets are delivered with a JCSS Certificate of Calibration (Japan Calibration Service System).
A JCSS Certificate of Calibration is comparable with e.g. DAkkS COFRAC, RVA or UKAS Certificate of Calibration.
This calibration result is accepted internationally.

Calibration Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-596-60	122	K	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 1,6-1,9 mm (0,1 mm step / 4 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 30-100 mm (10 mm step / 8 blocks) 25, 75 mm (50 mm step / 2 blocks)	3700
516-937-60	112	K	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3700
516-941-60	103	K	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3800
516-945-60	87	K	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-949-60	76	K	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-953-60	56	K	Steel	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2600
516-957-60	47	K	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2400
516-961-60	47	K	Steel	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-994-60	46	K	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-128-60	34	K	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-965-60	32	K	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1100

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Steel Metric Gauge Block Sets
Grade 0 with ISO Inspection Certificate

Grade 0 with ISO Inspection Certificate

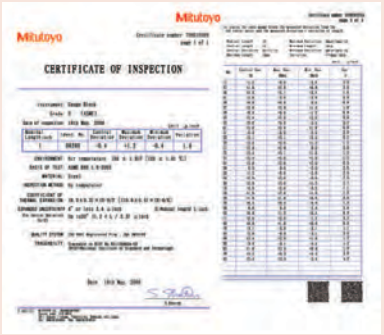
Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-597-10	122	0	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 1,6-1,9 mm (0,1 mm step / 4 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 30-100 mm (10 mm step / 8 blocks) 25, 75 mm (50 mm step / 2 blocks)	3700
516-938-10	112	0	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3700
516-942-10	103	0	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3800
516-970-10	88	0	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-946-10	87	0	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-950-10	76	0	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-954-10	56	0	Steel	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2080
516-958-10	47	0	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2400
516-962-10	47	0	Steel	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-995-10	46	0	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-129-10	34	0	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-966-10	32	0	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1100

Specifications

Accuracy	EN ISO 3650



Inspection Certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

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Steel Metric Gauge Block Sets
Grade 1 with ISO Inspection Certificate

Grade 1 with ISO Inspection Certificate

Specifications

Accuracy	EN ISO 3650

Inspection Certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-598-10	122	1	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 1,6-1,9 mm (0,1 mm step / 4 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 30-100 mm (10 mm step / 8 blocks) 25, 75 mm (50 mm step / 2 blocks)	3700
516-939-10	112	1	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3700
516-943-10	103	1	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3800
516-971-10	88	1	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-947-10	87	1	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-951-10	76	1	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-955-10	56	1	Steel	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2600
516-959-10	47	1	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2400
516-963-10	47	1	Steel	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-996-10	46	1	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-130-10	34	1	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-967-10	32	1	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1100

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Steel Metric Gauge Block Sets
Grade 2 with ISO Inspection Certificate

Grade 2 with ISO Inspection Certificate

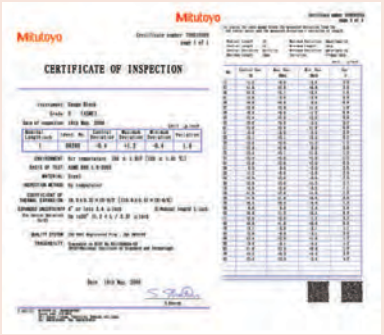
Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-599-10	122	2	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 1,6-1,9 mm (0,1 mm step / 4 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 30-100 mm (10 mm step / 8 blocks) 25, 75 mm (50 mm step / 2 blocks)	3700
516-940-10	112	2	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3700
516-944-10	103	2	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3800
516-972-10	88	2	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-948-10	87	2	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3300
516-952-10	76	2	Steel	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-956-10	56	2	Steel	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2600
516-960-10	47	2	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2400
516-964-10	47	2	Steel	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-997-10	46	2	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-131-10	34	2	Steel	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-968-10	32	2	Steel	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1100

Specifications

Accuracy	EN ISO 3650



Inspection Certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Steel Gauge Blocks - Thin Block Sets with 0,001/0,05 mm step and ISO Inspection Certificate

Specifications

Accuracy	EN ISO 3650

Inspection Certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

With ISO Inspection Certificate

Inspection Certificate

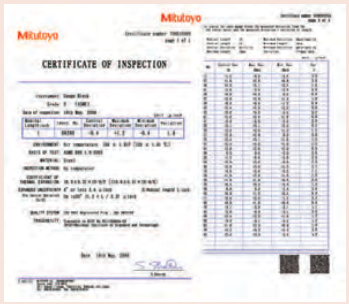
Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-974-10	18	0	Steel	0,991-0,999 mm (0,001 mm step / 9 blocks) 1,001-1,009 mm (0,001 mm step / 9 blocks)	500
516-975-10	18	1	Steel	0,991-0,999 mm (0,001 mm step / 9 blocks) 1,001-1,009 mm (0,001 mm step / 9 blocks)	500
516-976-10	18	2	Steel	0,991-0,999 mm (0,001 mm step / 9 blocks) 1,001-1,009 mm (0,001 mm step / 9 blocks)	500
516-982-10	9	0	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks)	200
516-983-10	9	1	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks)	200
516-984-10	9	2	Steel	1,001-1,009 mm (0,001 mm step / 9 blocks)	200
516-986-10	9	0	Steel	0,991-0,999 mm (0,001 mm step / 9 blocks)	200
516-987-10	9	1	Steel	0,991-0,999 mm (0,001 mm step / 9 blocks)	200
516-988-10	9	2	Steel	0,991-0,999 mm (0,001 mm step / 9 blocks)	200
516-990-10	9	0	Steel	0,10-0,50 mm (0,05 mm step / 9 blocks)	200
516-991-10	9	1	Steel	0,10-0,50 mm (0,05 mm step / 9 blocks)	200
516-992-10	9	2	Steel	0,10-0,50 mm (0,05 mm step / 9 blocks)	200

Steel Gauge Blocks - Long Block Sets with ISO Inspection Certificate

Specifications

Accuracy	EN ISO 3650



Inspection Certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

With ISO Inspection Certificate

Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-702-10	8	0	Steel	125-175 mm (25 mm step / 3 blocks) 200-250 mm (50 mm step / 2 blocks) 300-500 mm (100 mm step / 3 blocks)	7200
516-703-10	8	1	Steel	125-175 mm (25 mm step / 3 blocks) 200-250 mm (50 mm step / 2 blocks) 300-500 mm (100 mm step / 3 blocks)	7200
516-704-10	8	2	Steel	125-175 mm (25 mm step / 3 blocks) 200-250 mm (50 mm step / 2 blocks) 300-500 mm (100 mm step / 3 blocks)	7200

All products to be sold to commercial customers.
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Carbide Wear Gauge Block Sets Metric ISO Standard

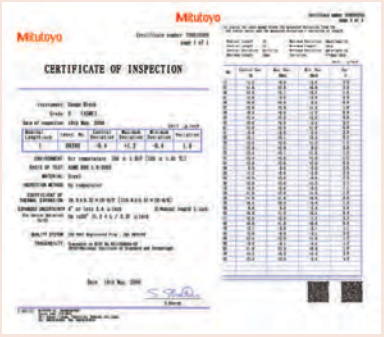
Wear Block Sets Metric with ISO Inspection Certificate

This set is made up of two gauge blocks and offers you the following benefits:
- Wear-resistant even with frequent use of individual gauge blocks

Inspection Certificate

Specifications

Accuracy	EN ISO 3650



Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-807-10	2	0	Carbide	1 mm (2 blocks)	200
516-806-10	2	1	Carbide	1 mm (2 blocks)	135
516-803-10	2	0	Carbide	2 mm (2 blocks)	145
516-802-10	2	1	Carbide	2 mm (2 blocks)	200

Steel Caliper Inspection Gauge Block Sets Metric

Caliper Inspection Sets Metric

Inspection Certificate

Specifications

Accuracy	Accuracy EN ISO 3650
Delivered	In a wooden case with certificate of inspection (Gauge Blocks only)

516-124-10

516-527-10

Metric

No.	Blocks per set	Grade	Material	Calibration/Standard applications	Set configuration	Mass [g]
516-124-10	3	1	Steel	DIN 862:1988 VDI/VDE/DGQ 2618	3pcs.: 30, 41,3, 131,4 mm, Setting ring (ø4 mm, ø25 mm), Glove	1720
516-125-10	3	2	Steel	DIN 862:1988 VDI/VDE/DGQ 2618	3pcs.: 30, 41,3, 131,4 mm, Setting ring (ø4 mm, ø25 mm), Glove	1720
516-526-10	4	1	Steel	EN ISO 13385-1:2011	4pcs.: 10, 30, 50, 125 mm, Setting ring (ø4 mm, ø10 mm), Pin gage (ø10 mm), Glove	1720
516-527-10	4	2	Steel	EN ISO 13385-1:2011	4pcs.: 10, 30, 50, 125 mm, Setting ring (ø4 mm, ø10 mm), Pin gage (ø10 mm), Glove	1800

All products to be sold to commercial customers.
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Steel Micrometer Inspection Gauge Block Sets Metric

516-607 with optional gauge blocks

Series 516 - Micro Checker

- For securely holding a stack of gauge blocks to be used for micrometer inspection.
- Can be used vertically and horizontally.
- Parallelism of micrometer measuring faces is checked by optical parallel which can be attached.

516-607

Metric

Micro Checker (stand only)

No.	Applicable gauge block sets	Applicable gauge block size [mm]	Mass [g]
516-607	516-106-xx, 516-107-xx, 516-108-xx, 516-156-xx, 516-157-xx, 516-158-xx	2,5 / 5,1 / 7,7 / 10,3 / 12,9 / 15 / 17,6 / 20,2 / 22,8 / 25	1300

Specifications

Accuracy	EN ISO 3650
Delivered	In a wooden case with certificate of inspection (Gauge Blocks only)

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

Micrometer Inspection Sets Metric

Inspection Certificate

516-135-10

Metric

With inspection certificate

No.	Blocks per set	Grade	Material	Calibration/Standard applications	Set configuration	Mass [g]
516-580-10	10	0	Steel	For Micrometer with 2 mm spindle pitch. (QuantuMike)	2,2, 4,8, 7,8, 10,4, 12, 15,2, 17,4, 19,6, 22,6, 25 mm	900
516-581-10	10	1	Steel	For Micrometer with 2 mm spindle pitch. (QuantuMike)	2,2, 4,8, 7,8, 10,4, 12, 15,2, 17,4, 19,6, 22,6, 25 mm	900
516-582-10	10	2	Steel	For Micrometer with 2 mm spindle pitch. (QuantuMike)	2,2, 4,8, 7,8, 10,4, 12, 15,2, 17,4, 19,6, 22,6, 25 mm	900
516-106-10	10	0	Steel	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Optical parallel (t = 12 mm)	1000
516-107-10	10	1	Steel	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Optical parallel (t = 12 mm)	970
516-108-10	10	2	Steel	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Optical parallel (t = 12 mm)	1000
516-135-10	10	0	Steel	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Micro Checker, Optical parallel (t = 12 mm)	2900
516-136-10	10	1	Steel	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Micro Checker, Optical parallel (t = 12 mm)	2900
516-137-10	10	2	Steel	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Micro Checker, Optical parallel (t = 12 mm)	2900

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

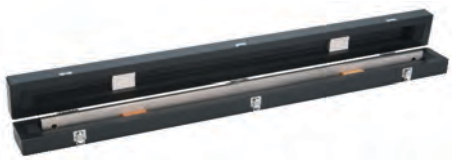
Steel Metric Individual Gauge Blocks

Metric Blocks ≤ 1,19 mm

Ordering example: To order a 0,1mm ISO Standard grade 1 block with JCSS calibration certificate, choose No. 611821-036.

Calibration Certificate

Inspection Certificate



Length [mm]	No.
0,1	611821
0,11	611860
0,12	611861
0,13	611862
0,14	611863
0,15	611822
0,16	611864
0,17	611865
0,18	611866
0,19	611867
0,2	611823
0,21	611868
0,22	611869
0,23	611870
0,24	611871
0,25	611824
0,26	611872
0,27	611873
0,28	611874
0,29	611875
0,3	611825
0,31	611876
0,32	611877
0,33	611878
0,34	611879
0,35	611826
0,36	611880
0,37	611881
0,38	611882
0,39	611883
0,4	611827
0,41	611884
0,42	611885
0,43	611886
0,44	611887
0,45	611828
0,46	611888
0,47	611889
0,48	611890
0,49	611891
0,5	611506
0,51	611892
0,52	611893

Length [mm]	No.
0,53	611894
0,54	611895
0,55	611896
0,56	611897
0,57	611898
0,58	611899
0,59	611900
0,6	611901
0,61	611902
0,62	611903
0,63	611904
0,64	611905
0,65	611906
0,66	611907
0,67	611908
0,68	611909
0,69	611910
0,7	611911
0,71	611912
0,72	611913
0,73	611914
0,74	611915
0,75	611916
0,76	611917
0,77	611918
0,78	611919
0,79	611920
0,8	611921
0,81	611922
0,82	611923
0,83	611924
0,84	611925
0,85	611926
0,86	611927
0,87	611928
0,88	611929
0,89	611930
0,9	611931
0,91	611932
0,92	611933
0,93	611934
0,94	611935
0,95	611936

Length [mm]	No.
0,96	611937
0,97	611938
0,98	611939
0,99	611940
0,991	611551
0,992	611552
0,993	611553
0,994	611554
0,995	611555
0,996	611556
0,997	611557
0,998	611558
0,999	611559
1	611611
1,0005	611520
1,001	611521
1,002	611522
1,003	611523
1,004	611524
1,005	611525
1,006	611526
1,007	611527
1,008	611528
1,009	611529
1,01	611561
1,02	611562
1,03	611563
1,04	611564
1,05	611565
1,06	611566
1,07	611567
1,08	611568
1,09	611569
1,1	611570
1,11	611571
1,12	611572
1,13	611573
1,14	611574
1,15	611575
1,16	611576
1,17	611577
1,18	611578
1,19	611579

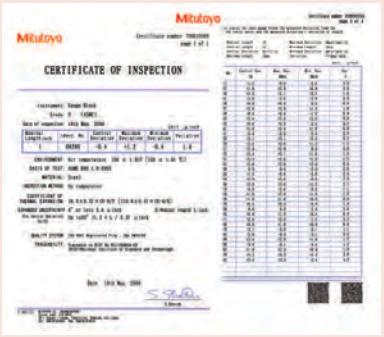
Specifications

Accuracy	EN ISO 3650
Delivered	Foamed material 0.1-500 mm in a wooden case 600-1000 mm

Suffix No. (-XXX) for Selecting Certificate Provided

ISO/DIN/JIS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-016	K	O	O
-021	0	O	—
-026	0	O	O
-031	1	O	—
-036	1	O	O
-041	2	O	—
-046	2	O	O



Inspection Certificate

JCSS Calibration Certificate

These Gauge Block Sets are delivered with a JCSS Certificate of Calibration (Japan Calibration Service System).
A JCSS Certificate of Calibration is comparable with e.g. DAkkS COFRAC, RVA or UKAS Certificate of Calibration.
This calibration result is accepted internationally.

All products to be sold to commercial customers.
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Steel Metric Individual Gauge Blocks

Metric Blocks ≤ 1000 mm

Ordering example: To order a 1,2 mm ISO Standard grade K block with JCSS calibration certificate, choose 611580-016.

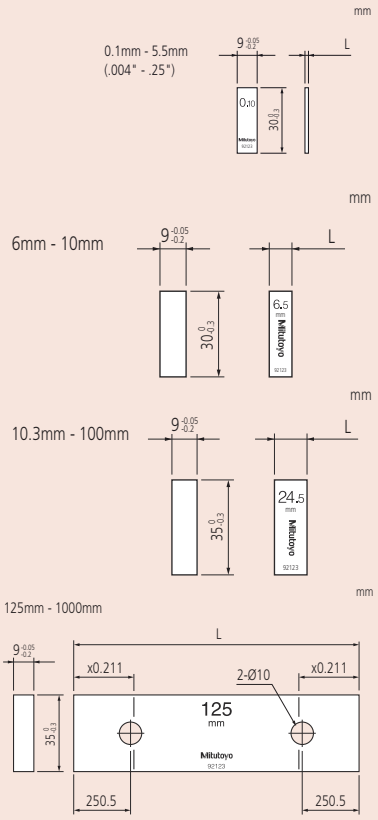
Inspection Certificate

Calibration Certificate

Suffix No. (-XXX) for Selecting Certificate Provided

ISO/DIN/JIS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-016	K	O	O
-021	0	O	—
-026	0	O	O
-031	1	O	—
-036	1	O	O
-041	2	O	—
-046	2	O	O



Length [mm]	No.
1,2	611580
1,21	611581
1,22	611582
1,23	611583
1,24	611584
1,25	611585
1,26	611586
1,27	611587
1,28	611588
1,29	611589
1,3	611590
1,31	611591
1,32	611592
1,33	611593
1,34	611594
1,35	611595
1,36	611596
1,37	611597
1,38	611598
1,39	611599
1,4	611600
1,41	611601
1,42	611602
1,43	611603
1,44	611604
1,45	611605
1,46	611606
1,47	611607
1,48	611608
1,49	611609
1,5	611641
1,6	611516
1,7	611517
1,8	611518
1,9	611519
2	611612
2,0005	611690
2,001	611691
2,002	611692
2,003	611693
2,004	611694
2,005	611695
2,006	611696
2,007	611697
2,008	611698
2,009	611699
2,01	611701
2,02	611702
2,03	611703
2,04	611704
2,05	611705
2,06	611706
2,07	611707
2,08	611708
2,09	611709
2,1	611710
2,11	611711
2,12	611712
2,13	611713
2,14	611714

Length [mm]	No.
2,15	611715
2,16	611716
2,17	611717
2,18	611718
2,19	611719
2,2	611720
2,21	611721
2,22	611722
2,23	611723
2,24	611724
2,25	611725
2,26	611726
2,27	611727
2,28	611728
2,29	611729
2,3	611730
2,31	611731
2,32	611732
2,33	611733
2,34	611734
2,35	611735
2,36	611736
2,37	611737
2,38	611738
2,39	611739
2,4	611740
2,41	611741
2,42	611742
2,43	611743
2,44	611744
2,45	611745
2,46	611746
2,47	611747
2,48	611748
2,49	611749
2,5	611642
2,6	611750
2,7	611751
2,8	611752
2,9	611753
3	611613
3,5	611643
4	611614
4,5	611644
5	611615
5,1	611850
5,5	611645
6	611616
6,5	611646
7	611617
7,5	611647
7,7	611851
8	611618
8,5	611648
9	611619
9,5	611649
10	611671
10,3	611852
10,5	611650
11	611621

Length [mm]	No.
11,5	611651
12	611622
12,5	611652
12,9	611853
13	611623
13,5	611653
14	611624
14,5	611654
15	611625
15,5	611655
16	611626
16,5	611656
17	611627
17,5	611657
17,6	611854
18	611628
18,5	611658
19	611629
19,5	611659
20	611672
20,2	611855
20,5	611660
21	611631
21,5	611661
22	611632
22,5	611662
22,8	611856
23	611633
23,5	611663
24	611634
24,5	611664
25	611635
25,25	611754
30	611673
35	611755
40	611674
41,3	611857
45	611756
50	611675
60	611676
70	611677
75	611801
80	611678
90	611679
100	611681
125	611802
131,4	611858
150	611803
175	611804
200	611682
250	611805
300	611683
400	611684
500	611685
600	611840
700	611841
750	611842
800	611843
900	611844
1000	611845

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Ceramic Metric Gauge Block Sets Overview

Mitutoyo provides a wide selection of boxed sets of gauge blocks to meet the various needs of industry. Selecting the best set, or sets, to acquire usually depends on the accuracy required by the target applications, the level of convenience desired and the environmental conditions in which they will be used.

CERA 32-block set

CERA 34-block set

CERA 46-block set

CERA 47-block set

CERA 56-block set

CERA 76-block set

CERA 103-block set

CERA 112-block set

All products to be sold to commercial customers.
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Ceramic Gauge Block Sets Grade 0 with Inspection Certificate

Grade 0 with Inspection Certificate

Specifications

Accuracy	EN ISO 3650

Mitutoyo

CERTIFICATE OF INSPECTION

Inspection certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

PROPRIETARY INSPECTION CERTIFICATE

Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-338-10	112	0	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3200
516-342-10	103	0	Ceramic	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3000
516-370-10	88	0	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3200
516-346-10	87	0	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-350-10	76	0	Ceramic	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-354-10	56	0	Ceramic	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2200
516-358-10	47	0	Ceramic	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2000
516-362-10	47	0	Ceramic	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2600
516-395-10	46	0	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2700
516-179-10	34	0	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-366-10	32	0	Ceramic	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1300

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Mitutoyo

Ceramic Gauge Block Sets Grade 1 with Inspection Certificate

Grade 1 with Inspection Certificate

Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-339-10	112	1	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3200
516-343-10	103	1	Ceramic	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3000
516-371-10	88	1	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3200
516-347-10	87	1	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-351-10	76	1	Ceramic	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-355-10	56	1	Ceramic	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2200
516-359-10	47	1	Ceramic	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2000
516-363-10	47	1	Ceramic	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2600
516-396-10	46	1	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2700
516-180-10	34	1	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-367-10	32	1	Ceramic	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1300

Specifications

Accuracy	EN ISO 3650

Mitutoyo

CERTIFICATE OF INSPECTION

Inspection certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

All products to be sold to commercial customers.
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Ceramic Gauge Block Sets Grade 2 with Inspection Certificate

Grade 2 with Inspection Certificate

Specifications

Accuracy	EN ISO 3650

Mitutoyo

CERTIFICATE OF INSPECTION

Inspection certificate

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

PROPRIETARY INSPECTION CERTIFICATE

Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-340-10	112	2	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3200
516-344-10	103	2	Ceramic	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-24,5 mm (0,5 mm step / 49 blocks) 25-100 mm (25 mm step / 4 blocks)	3000
516-372-10	88	2	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	3200
516-348-10	87	2	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-100 mm (10 mm step / 10 blocks)	2800
516-352-10	76	2	Ceramic	1,005 mm (1 block) 1,01-1,49 mm (0,01 mm step / 49 blocks) 0,5-9,5 mm (0,5 mm step / 19 blocks) 10-40 mm (10 mm step / 4 blocks) 50-100 mm (25 mm step / 3 blocks)	2400
516-356-10	56	2	Ceramic	0,5 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2200
516-360-10	47	2	Ceramic	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-24 mm (1 mm step / 24 blocks) 25-100 mm (25 mm step / 4 blocks)	2000
516-364-10	47	2	Ceramic	1,005 mm (1 block) 1,01-1,19 mm (0,01 mm step / 19 blocks) 1,2-1,9 mm (0,1 mm step / 8 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2600
516-397-10	46	2	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-100 mm (10 mm step / 10 blocks)	2700
516-181-10	34	2	Ceramic	1,0005 mm (1 block) 1,001-1,009 mm (0,001 mm step / 9 blocks) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-5 mm (1 mm step / 5 blocks) 10 mm (1 block)	1200
516-368-10	32	2	Ceramic	1,005 mm (1 block) 1,01-1,09 mm (0,01 mm step / 9 blocks) 1,1-1,9 mm (0,1 mm step / 9 blocks) 1-9 mm (1 mm step / 9 blocks) 10-30 mm (10 mm step / 3 blocks) 60 mm (1 block)	1300

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Mitutoyo

Ceramic Gauge Blocks - Thin Block Sets with 0,001 mm step and ISO Inspection Certificate

With ISO Inspection Certificate

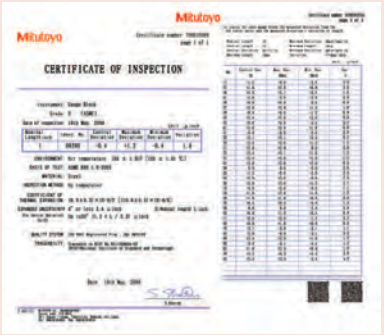
Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-374-10	18	0	Ceramic	0,991-0,999 mm (0,001 mm step / 9 blocks) 1,001-1,009 mm (0,001 mm step / 9 blocks)	600
516-375-10	18	1	Ceramic	0,991-0,999 mm (0,001 mm step / 9 blocks) 1,001-1,009 mm (0,001 mm step / 9 blocks)	600
516-376-10	18	2	Ceramic	0,991-0,999 mm (0,001 mm step / 9 blocks) 1,001-1,009 mm (0,001 mm step / 9 blocks)	600
516-382-10	9	0	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks)	300
516-383-10	9	1	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks)	300
516-384-10	9	2	Ceramic	1,001-1,009 mm (0,001 mm step / 9 blocks)	300
516-386-10	9	0	Ceramic	0,991-0,999 mm (0,001 mm step / 9 blocks)	200
516-387-10	9	1	Ceramic	0,991-0,999 mm (0,001 mm step / 9 blocks)	200
516-388-10	9	2	Ceramic	0,991-0,999 mm (0,001 mm step / 9 blocks)	200

Specifications

Accuracy	EN ISO 3650



Mitutoyo Gauge Blocks and Inspection Certificates

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

Ceramic Gauge Blocks - Long Block Sets with ISO Inspection Certificate

With ISO Inspection Certificate

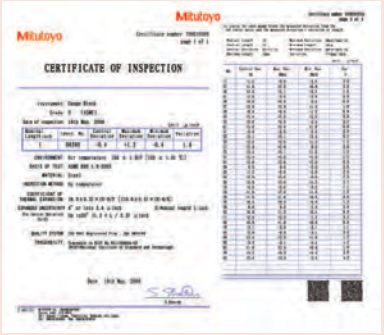
Inspection Certificate

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-732-10	8	0	Ceramic	125-175 mm (25 mm step / 3 blocks) 200-250 mm (50 mm step / 2 blocks) 300-500 mm (100 mm step / 3 blocks)	6200
516-733-10	8	1	Ceramic	125-175 mm (25 mm step / 3 blocks) 200-250 mm (50 mm step / 2 blocks) 300-500 mm (100 mm step / 3 blocks)	6200
516-734-10	8	2	Ceramic	125-175 mm (25 mm step / 3 blocks) 200-250 mm (50 mm step / 2 blocks) 300-500 mm (100 mm step / 3 blocks)	6200

Specifications

Accuracy	EN ISO 3650



Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

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Ceramic Wear Gauge Block Sets Metric ISO Standard

Specifications

Accuracy	EN ISO 3650

Mitutoyo Gauge Blocks and Inspection Certificates

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

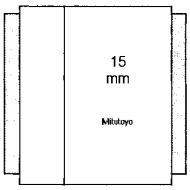
Wear Block Sets Metric ISO Standard

This set is made up of two gauge blocks and offers you the following benefits:

- Wear-resistant even with frequent use of individual gauge blocks

Inspection Certificate

Ceramic 2-block set



Protection gauge blocks (highlighted in grey above) are placed at each end of the gauge block stack to absorb the wear caused by contact with workpieces.

Metric

No.	Blocks per set	Grade	Material	Set configuration	Mass [g]
516-832-10	2	0	Ceramic	1 mm (2 blocks)	115
516-833-10	2	1	Ceramic	1 mm (2 blocks)	130
516-830-10	2	0	Ceramic	2 mm (2 blocks)	130
516-831-10	2	1	Ceramic	2 mm (2 blocks)	130

Ceramic Caliper Inspection Gauge Block Sets Metric

Specifications

Accuracy	Accuracy EN ISO 3650
Delivered	In a wooden case with certificate of inspection (Gauge Blocks only)

Caliper Inspection Sets Metric

Inspection Certificate

516-566-10

Metric

No.	Blocks per set	Grade	Material	Calibration/Standard applications	Set configuration	Mass [g]
516-566-10	4	1	Ceramic	EN ISO 13385-1:2011	4 pcs.: 10, 30, 50, 125 mm, Setting ring (ø4 mm, ø10 mm), Pin gage (ø10 mm), Glove	1750
516-567-10	4	2	Ceramic	EN ISO 13385-1:2011	4 pcs.: 10, 30, 50, 125 mm, Setting ring (ø4 mm, ø10 mm), Pin gage (ø10 mm), Glove	1750
516-150-10	3	1	Ceramic	DIN 862:1988 VDI/VDE/DGQ 2618	3 pcs.: 30, 41,3, 131,4 mm, Setting ring (ø4 mm, ø25 mm), Glove	1700
516-151-10	3	2	Ceramic	DIN 862:1988 VDI/VDE/DGQ 2618	3 pcs.: 30, 41,3, 131,4 mm, Setting ring (ø4 mm, ø25 mm), Glove	1720

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Ceramic Micrometer Inspection Sets Metric

Micrometer Inspection Sets Metric

Inspection Certificate

516-156-10

Metric

With inspection certificate

No.	Blocks per set	Grade	Material	Calibration/Standard applications	Set configuration	Mass [g]
516-390-10	10	0	Ceramic	Especially for Micrometer with 2 mm spindle pitch. (QuantuMike)	2,2, 4,8, 7,8, 10,4, 12, 15,2, 17,4, 19,6, 22,6, 25 mm	900
516-391-10	10	1	Ceramic	Especially for Micrometer with 2 mm spindle pitch. (QuantuMike)	2,2, 4,8, 7,8, 10,4, 12, 15,2, 17,4, 19,6, 22,6, 25 mm	900
516-392-10	10	2	Ceramic	Especially for Micrometer with 2 mm spindle pitch. (QuantuMike)	2,2, 4,8, 7,8, 10,4, 12, 15,2, 17,4, 19,6, 22,6, 25 mm	900
516-156-10	10	0	Ceramic	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Optical parallel (t = 12 mm)	900
516-157-10	10	1	Ceramic	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Optical parallel (t = 12 mm)	900
516-158-10	10	2	Ceramic	EN ISO 3611 DIN 863 (1999) VDI/VDE/DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Optical parallel (t = 12 mm)	900
516-185-10	10	0	Ceramic	EN ISO 3611 DIN 863 (1999) VDI/VDE/ DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Micro Checker, Optical parallel (t = 12 mm)	2900
516-186-10	10	1	Ceramic	EN ISO 3611 DIN 863 (1999) VDI/VDE/ DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Micro Checker, Optical parallel (t = 12 mm)	2900
516-187-10	10	2	Ceramic	EN ISO 3611 DIN 863 (1999) VDI/VDE/ DGQ 2618	2,5, 5,1, 7,7, 10,3, 12,9, 15, 17,6, 20,2, 22,8, 25 mm, Micro Checker, Optical parallel (t = 12 mm)	2900

Specifications

Accuracy	EN ISO 3650
Delivered	In a wooden case with certificate of inspection (Gauge Blocks only)

Micro checker 516-607
applicable gauge block sets
516-156-xx, 516-157-xx, 516-158-xx

Grad K/0/1/2 Gauge Block Sets with JCSS Calibration Certificate (issued by the Mitutoyo JCSS accredited laboratory) see online.

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Ceramic Metric Individual Gauge Blocks

Metric Blocks

Ordering example: To order a 0,5mm ISO Standard grade 1 block with JCSS calibration certificate, choose 613506-036.

Calibration Certificate

Inspection Certificate

Specifications

Accuracy	EN ISO 3650
Delivered	Foamed material 0.5-100 mm in a wooden case 125-500 mm

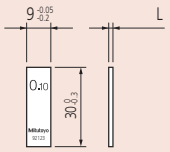
Suffix No. (-XXX)
for Selecting Certificate Provided

ISO/DIN/JIS

Suffix No.	Grade	Inspection Certificate	Calibration Certificate JCSS
-016	K	O	O
-021	0	O	—
-026	0	O	O
-031	1	O	—
-036	1	O	O
-041	2	O	—
-046	2	O	O

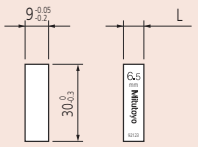
mm

0.1mm - 5.5mm



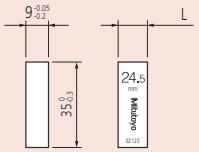
mm

6mm - 10mm



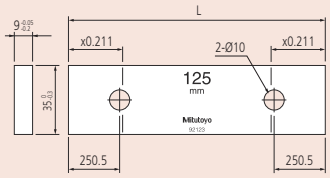
mm

10.3mm - 100mm



mm

125mm - 500mm



Length [mm]	No.
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0,992	613552
0,993	613553
0,994	613554
0,995	613555
0,996	613556
0,997	613557
0,998	613558
0,999	613559
1	613611
1,0005	613520
1,001	613521
1,002	613522
1,003	613523
1,004	613524
1,005	613525
1,006	613526
1,007	613527
1,008	613528
1,009	613529
1,01	613561
1,02	613562
1,03	613563
1,04	613564
1,05	613565
1,06	613566
1,07	613567
1,08	613568
1,09	613569
1,1	613570
1,11	613571
1,12	613572
1,13	613573
1,14	613574
1,15	613575
1,16	613576
1,17	613577
1,18	613578
1,19	613579
1,2	613580
1,21	613581
1,22	613582
1,23	613583
1,24	613584
1,25	613585
1,26	613586
1,27	613587
1,28	613588
1,29	613589

Length [mm]	No.
1,3	613590
1,31	613591
1,32	613592
1,33	613593
1,34	613594
1,35	613595
1,36	613596
1,37	613597
1,38	613598
1,39	613599
1,4	613600
1,41	613601
1,42	613602
1,43	613603
1,44	613604
1,45	613605
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1,47	613607
1,48	613608
1,49	613609
1,5	613641
1,6	613516
1,7	613517
1,8	613518
1,9	613519
2	613612
2,5	613642
3	613613
3,5	613643
4	613614
4,5	613644
5	613615
5,1	613850
5,5	613645
6	613616
6,5	613646
7	613617
7,5	613647
7,7	613851
8	613618
8,5	613648
9	613619
9,5	613649
10	613671
10,3	613852
10,5	613650
11	613621
11,5	613651
12	613622
12,5	613652

Length [mm]	No.
12,9	613853
13	613623
13,5	613653
14	613624
14,5	613654
15	613625
15,5	613655
16	613626
16,5	613656
17	613627
17,5	613657
17,6	613854
18	613628
18,5	613658
19	613629
19,5	613659
20	613672
20,2	613855
20,5	613660
21	613631
21,5	613661
22	613632
22,5	613662
22,8	613856
23	613633
23,5	613663
24	613634
25	613635
25,25	613754
30	613673
35	613755
40	613674
41,3	613857
45	613756
50	613675
60	613676
70	613677
75	613801
80	613678
90	613679
100	613681
125	613802
131,4	613858
150	613803
175	613804
200	613682
250	613805
300	613683
400	613684
500	613685

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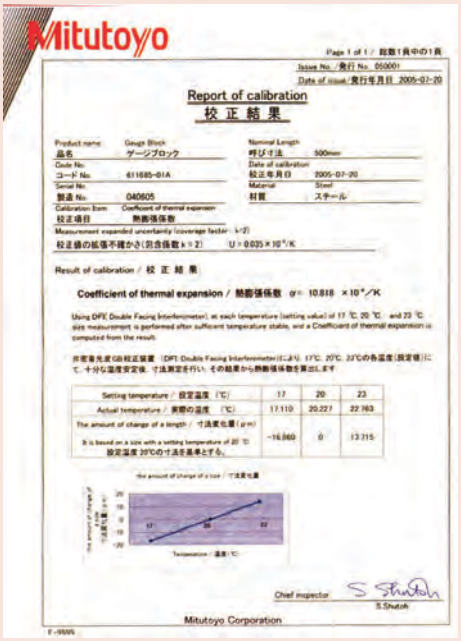
Gauge Blocks with a Calibrated CTE

Gauge Blocks with a Calibrated Coefficient of Thermal Expansion

These are metric gauge blocks with a calibrated coefficient of thermal expansion. They offer you the following benefits:

- Mitutoyo offers top-level gauge blocks (steel and ceramic) which are superior to K class blocks, with their quality supported by Mitutoyo's best technologies.
- They feature an accurately calibrated thermal expansion coefficient measured with a proprietary double-faced interferometer (DFI).
- Each gauge block is calibrated for length on a highly accurate gauge block interferometer (GBI) system.
- Uncertainty of thermal expansion coefficient: 0,035 x 10-6 /K (k=2).
- Uncertainty of length measurement: 30 nm (k=2), for 100mm blocks.

Calibration Certificate



To each final dimension a factory certificate is supplied.

- Uncertainty of thermal expansion coefficient : 0,035 x 10^{-6}/K (k=2)
- Uncertainty of length measurement : 30 nm (k=2), for 100 mm blocks.

Metric

Steel

No.	Length [mm]	Accuracy	Grade	Material	Mass [g]
611681-01B	100	EN ISO 3650, Grade K	K	Steel	245
611802-01B	125	EN ISO 3650, Grade K	K	Steel	306
611803-01B	150	EN ISO 3650, Grade K	K	Steel	368
611804-01B	175	EN ISO 3650, Grade K	K	Steel	430
611682-01B	200	EN ISO 3650, Grade K	K	Steel	490
611805-01B	250	EN ISO 3650, Grade K	K	Steel	613
611683-01B	300	EN ISO 3650, Grade K	K	Steel	735
611684-01B	400	EN ISO 3650, Grade K	K	Steel	980
611685-01B	500	EN ISO 3650, Grade K	K	Steel	1225

Ceramic

No.	Length [mm]	Accuracy	Grade	Material	Mass [g]
613681-01B	100	EN ISO 3650, Grade K	K	Ceramic	189
613802-01B	125	EN ISO 3650, Grade K	K	Ceramic	228
613803-01B	150	EN ISO 3650, Grade K	K	Ceramic	275
613804-01B	175	EN ISO 3650, Grade K	K	Ceramic	322
613682-01B	200	EN ISO 3650, Grade K	K	Ceramic	370
613805-01B	250	EN ISO 3650, Grade K	K	Ceramic	464
613683-01B	300	EN ISO 3650, Grade K	K	Ceramic	275
613684-01B	400	EN ISO 3650, Grade K	K	Ceramic	748
613685-01B	500	EN ISO 3650, Grade K	K	Ceramic	937

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ZERO CERA Blocks

Ultra-low Expansion Ceramic Gauge Blocks

Calibration Certificate

These are ultra-low expansion ceramic gauge blocks.
The ZERO CERA Blocks offer you the following benefits:

- Thermal expansion at 20 ±1°C is less than 1/500 that of steel.
- There is almost no secular change either in the dimension or coefficient of thermal expansion.
- You will find them light and easy to handle.
- They are rust free.
- They are magnetisation free.

Specifications

Accuracy	EN ISO 3650
Coefficient of thermal expansion	0 ± 0.02 x 10^{-6}/K (at 20°C)*2
Density	2.5 g/cm^3*2
Standard accessories	Inspection certificate, Calibration certificate and custom-made aluminium case

*1
If you require a grade other than K, please contact Mitutoyo.
*2
Value claimed by the material supplier.

Metric

No.	Accuracy	Remarks	Length	Type	Mass [g]
617673-016	EN ISO 3650, Grade K		30 mm	Individual	24
617675-016	EN ISO 3650, Grade K		50 mm	Individual	40
617681-016	EN ISO 3650, Grade K		100 mm	Individual	80
617682-016	EN ISO 3650, Grade K		200 mm	Individual	160
617683-016	EN ISO 3650, Grade K		300 mm	Individual	240
617684-016	EN ISO 3650, Grade K		400 mm	Individual	320
617685-016	EN ISO 3650, Grade K		500 mm	Individual	400
617840-016	EN ISO 3650, Grade K		600 mm	Individual	480
617841-016	EN ISO 3650, Grade K		700 mm	Individual	560
617843-016	EN ISO 3650, Grade K		800 mm	Individual	640
617844-016	EN ISO 3650, Grade K		900 mm	Individual	720
617845-016	EN ISO 3650, Grade K		1000 mm	Individual	800
516-771-60	EN ISO 3650, Grade K	Zero Cera Block set. 12 blocks per set, 30 mm (1 block) 50 mm (1 block) 100 - 1000 mm (100 mm step / 10 blocks)		Set	4464

Characteristics comparison of gauge block materials

	ZERO CERA BLOCK	Low expansion glass	CERA BLOCK	Steel	Tungsten carbide
Coefficient of thermal expansion (10^{-6}/K)	0 ± 0,02 *2) *3)	0 ± 0,02 *2) *3)	9,3 ± 0,5	10,8 ± 0,5	5,5 ± 1
Thermal conductivity (W/m*K)	3,7	1,7	2,9	54,4	79,5
Specify gravity	2,5	2,55	6	7,8	14,8
Young modulus (GPa)	130	90	206	206	618
Poisson ratio	0,3	0,25	0,3	0,3	0,2
Flexural strength (3 points) (MPa)	210	143	1270	1960	1960
Fracture toughness (MPa*$m^{1/2}$)	1,2	0,69 *4)	7	120	12
Vickers hardness (HV)	826 *3)	680	1350	800	1650

1) Material for Mitutoyo Products
2) Value at 20°C
3) Claimed value by the material supplier
4) Value measured by the material supplier (reference)

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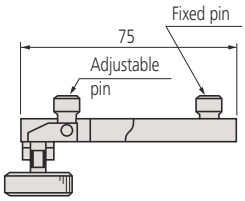
Gauge Block Accessories

Series 516

Specially designed for long gauge blocks over 100 mm which have two coupling holes on the body.

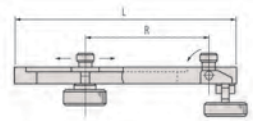
516-605

No.	Included in set	Mass [g]
516-605	Holder A (**619031**)-1 pc Holder B (**619032**)-1 pc Holder C (**619033**)-1 pc Holder D (**619034**)-1 pc Holder E (**619035**)-1 pc Adapter (**619036**)-3 pcs Holder base 35mm (**619009**)-1 pc Half-round jaw 12mm (**619013**)-2 pcs Plain jaw (**619018**)-2 pcs Scriber point (**619019**)-1 pc	4120



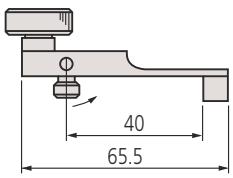
Holder A: 619031
Used for coupling two long gauge blocks.

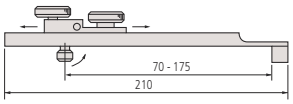
619031



619032 / 619033

Holder B and C :
Used for coupling two long gauge blocks together with other gauge blocks up to 35 mm (Holder B) or 140 mm Holder C). Also used for attaching jaws with two adapters.
Holder B : 619032 (R max.= 90 mm- L= 126 mm)
Holder C : 619033 (R max.= 200 mm- L= 236 mm)

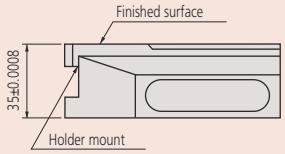




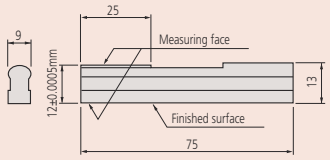
Holder D : 619034
Used for attaching to the holder base.

619034

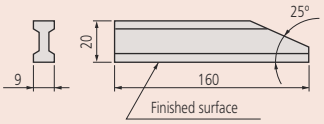
Holder E: 619035
Used for attaching to the holder base together with other gauge blocks up to 125mm. Used for attaching jaws with one adapter.



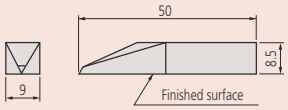
Holder base : 619009



Half-round jaw : 619013



Plain jaw : 619018



Scriber point : 619019

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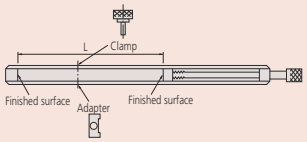
Gauge Block Accessories

Series 619

These accessories are specially designed for long gauge blocks over 100mm which have two coupling holes on the body.

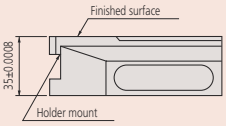
516-601J

516-602J

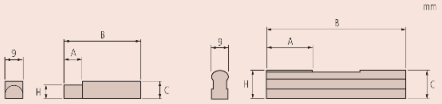


Holder : 619002 to 619005

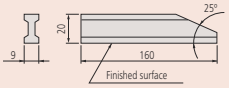
Used to clamp plain jaws, a scriber point, etc., to a gauge block stack.



Holder base 35 mm : 619009
Acts as base for a stack of gauge blocks that carry one of the many types of point.

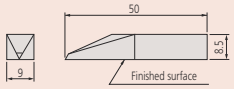


Half round jaw : 619010 to 619014
Used for gauging an outside or inside diameter if used when a pair of jaws in a holder.



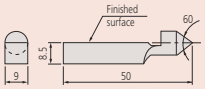
Plain jaw : 619018

Gauges outside and inside dimensions (not inside diameters) when used as a pair of jaws in a holder.

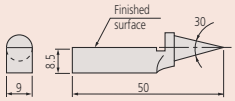


Scriber point : 619019

Scribes a straight line on a workpiece a known distance from a datum plane if used in a holder and holder base.



Centre point : 619020
Pushed into a small hole, or conical punch mark, this point provides the pivot for scribing a circular line with a gauge block trammel assembly.



Tram point : 619021

For checking distances between lines and points.

Triangular straight edge : 619022/619023
Can be used to indicate parallelism.

1. Set

No.	Included in set	Mass [g]
516-602J	(1 x 619002; 1 x 619003; 1 x 619004; 1 x 619005; 1 x 619009; 2 x 619010; 2 x 619011; 2 x 619012; 1 x 619019; 1 x 619020; 1 x 619022)	2590
516-601J	(1 x 619003; 1 x 619004; 1 x 619005; 1 x 619009; 2 x 619010; 2 x 619011; 2 x 619012; 2 x 619013; 2 x 619014; 2 x 619018; 1 x 619019; 1 x 619020; 2 x 619021; 1 x 619022; 1 x 619023)	3260

2. Holder

No.	L [mm]	Mass [g]
619002	15-60	150
619003	5-100	170
619004	15-160	320
619005	20-250	360

3. Holder base

No.	Description	Mass [g]
619009	35 mm	1200

4. Half-round jaw

No.	A [mm]	B [mm]	C [mm]	H [mm]	Mass [g]
619010	5,5	40	7,5	2 ±0,0005	20
619011	14	45	7,5	5 ±0,0005	25
619012	18,5	50	8,5	8 ±0,0005	35
619013	25	75	13	12 ±0,0005	50
619014	25	125	20,5	20 ±0,0005	115

5. Miscellaneous jaws

No.	Description	Mass [g]
619018	Plain jaw	165
619019	Scriber point	20
619020	Centre point	20
619021	Tram point	20

6. Triangular straight edge

No.	A [mm]	L [mm]	Mass [g]
619022	16	100	40
619023	19,5	160	120

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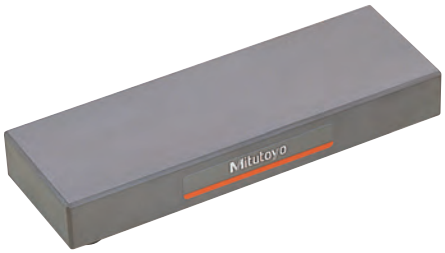
Mitutoyo

Ceraston

Accessory for Gauge Block Maintenance

This accessory for gauge block maintenance offers you the following benefits:
- Alumina-ceramic abrasive stone lets you remove burrs from hard materials such as ceramics, that ordinary stones cannot handle.
- You can use them for both steel gauge blocks and CERA Blocks.



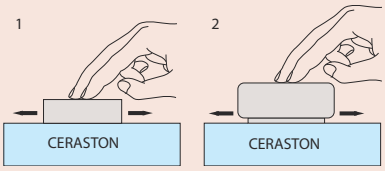
601644

601645

No.	Dimensions (WxDxH)	Mass [g]
601644	150 x 50 x 20 mm	530
601645	100 x 25 x 12 mm	110

Removing burrs

1 Wipe any dust and oil films from the gauge block and the Ceraston (or Arkansas stone) using a solvent.
2 Place the gauge block on the Ceraston so that the measuring face that has burrs is on the abrasive surface of the stone. While applying light pressure, move the gauge block to and fro about ten times (Fig. 1). Use a block rubber for thin gauge blocks to apply even pressure (Fig. 2).
3 Check the measuring face for burrs with an optical flat. If the burrs have not been removed, repeat step 2. If burrs are too large, they may not be removed with an abrasive stone. If so, discard the gauge block.



Maintenance Kit for Gauge Blocks

Series 516

This is a maintenance kit for gauge blocks that offers you the following benefits:
- It includes all maintenance tools needed for the daily care and storage of gauge blocks.
- It is supplied in a fitted wooden case for portable use.

No.	Tools and accessories included	Mass [g]
516-650E	Ceraston (**601645**): Used for removing burrs on the measuring surface. Tweezers (**600004**): Used for handling thin gauge blocks. Blower brush (**600005**): Used for blowing dust off the measuring surface. Cleaning paper (**600006**): Used for wiping off rust preventive oil and contamination. Artificial leather mat (**600007**): Used as a gauge block mat. Reagent bottle (**600008**): Bottle for wiping solution (100 ml). Solution not included. Gloves (**600009D**) Optical flat **(158-117)**	2270

Consumable spares

No.	Description
601645	Cerastone for Gauge Blocks, 100x25x12mm
600004	Tweezer for Gauge Blocks
600005	Blower Brush for Gauge Blocks
600006	Cleaning Paper for Gauge Blocks
600007	Artificial Leather Mat for Gauge Blocks
600008	Reagent Bottle, 100 ml
600009D	Cotton Gloves, White
158-117	Optical Flat, 12mm, D=45mm, 0,2µm

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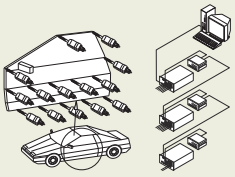

Linear Gauge Application Examples
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Digimatic and Incremental Linear Gauge
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Counters and Display Units
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SENSORPAK
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Motorized Low Force High Precision Gauges LITEMATIC
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Surface Measure
Page 371

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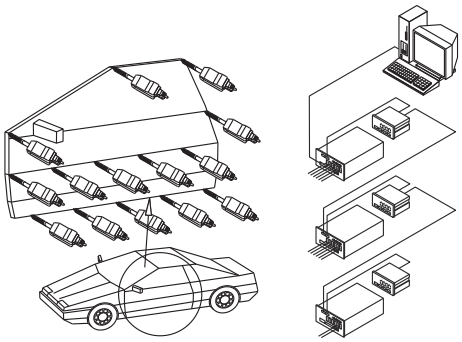
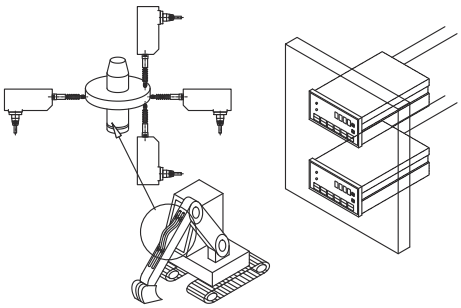
Linear Gauge Application Examples

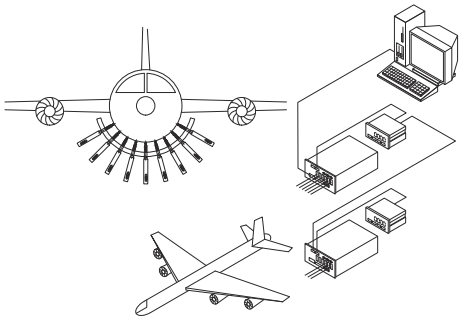
Linear Gauge Applications



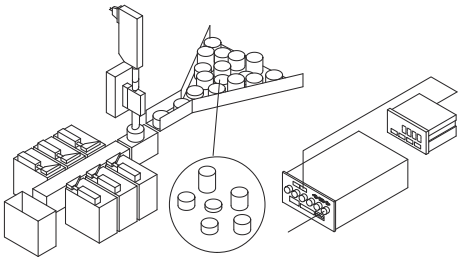
Multi-point measurement on car doors



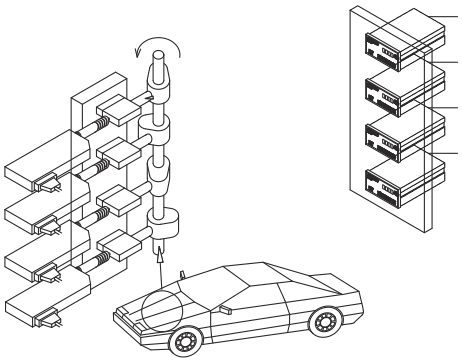
Dimensional measurement of fluid flywheels



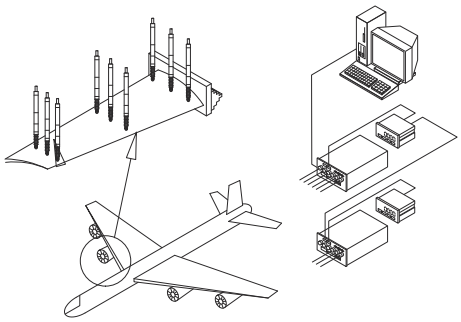
Measurement of aeroplane body deformation



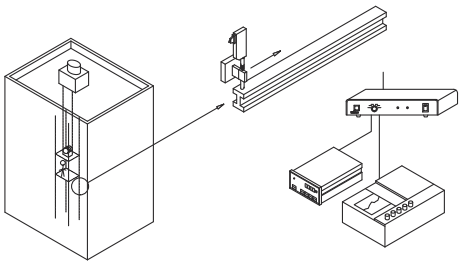
Sorting of parts according to size



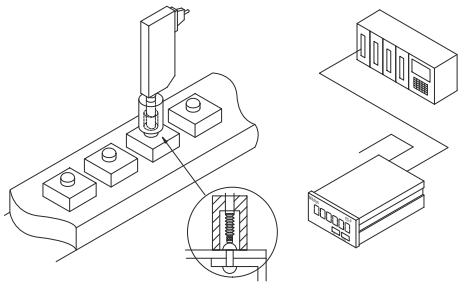
Cam measurement



Multi-point measurement on turbine blades



Measurement of deflection of lift guiding rails



Rivet head testing

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Linear Gauge LG100 Series

Linear Gauge LG100 Series

IP67 G

The LG100 is a very robust and economical linear gauge for in-line use and automatic machines, in combination with the EJ Counter. EH-counters can be used as well.

- The advanced construction of the plunger guidance assembly makes it very resistant to external shocks and vibrations.
- Its differential square-wave signal output allows for a wide range of applications.
- Long-lasting due to linear ball-bearings in the spindle unit.
- Repeatability of 0,3 µm.
- Narrow range accuracy: 0,5 µm (20 µm range).
- Operation temperature range: 0 - 50°C.

LG100

Specifications

Cable length	2 m
Scale	Photoelectric linear encoder
Contact point	Ø3 mm carbide ball, thread: M 2,5 x 0,45
Output signal	90° phase difference, differential square wave (RS-422 equivalent)
Environmental conditions	0°C to 50°C (20% to 80% rel. humidity, no condensation)
Bearing type	Linear ball bearing
Power supply	DC 5 V ±0,2 V ripple voltage 200 mVpp max
Minimum edge distance	500 ns (1 µm type), 250 ns (0,5/0,1 µm type)
Scale reference point	3 mm from the lowest rest point (10 mm type), 5mm from the lowest rest point (25/50 mm type)

Optional accessories

No.	Description
21HAA331	HNBR Rubber Boot (for 10 mm range model), 10 mm model
21HZA176	HNBR Rubber Boot (for 25 mm range model), 25 mm model
21HZA184	HNBR Rubber Boot (for 50 mm range model), 50 mm model
21HZA197	Extension Cable 5 m (10P-10P)
21HZA198	Extension Cable 10 m (10P-10P)
21HZA199	Extension Cable 20 m (10P-10P)
21HZA196	Exchange Plug (for Z-Counter)
21HZA261	Exchange cable (for Z-Counter)
21HZA195	Exchange Plug (for P-Counter)
21HZA260	Exchange cable (for P counter)
02ADE230	Air Drive Unit for Linear Gauges 10 mm, 10 mm
02ADE250	Air Drive Unit for Linear Gauges 25 mm, 25 mm
02ADE270	Air Drive Unit for Linear Gauges 50 mm, 50 mm
02ADB680	Thrust Stem Set (for 10 mm model)
02ADB681	Thrust Stem (part)
02ADB682	Nut (part)
02ADB683	Spanner Wrench (for 02ADB682)
02ADN370	Thrust Stem Set (for 25 mm and 50 mm range model)
02ADN371	Thrust Stem (part), for 25 mm and 50 mm model
02ADB692	Nut (part)
02ADB693	Spanner Wrench (for 02ADB692)
238772	Silicone Rubber Boot (for 10 mm model)
962504	Silicone Rubber Boot (for 25 mm model)
962505	Silicone Rubber Boot (for 50 mm model)
542-071D	Linear Gauge Counter EH, (need 21HZA195)
542-075D	Linear Gauge Counter EH, (need 21HZA195)
542-073D	Linear Gauge Counter EH, (need 21HZA196)
542-080	EJ-Counter -102N
542-081	EJ Counter-102NE

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

No.	Range [mm]	Accuracy	Measuring force	Resolution	Stem ∅	Mass [g]	Max. response speed [mm/s]	Signal pitch [µm]
542-190	0 - 10	(1,5+L/50) µm L=measured length in mm	1,4 N with spindle down, 1,3 N with spindle horizontal, 1,2 N with spindle upwards	0,001 µm	8 mm	260	1500 mm/s	4
542-191	0 - 10	(1,5+L/50) µm L=measured length in mm	1,4 N with spindle down, 1,3 N with spindle horizontal, 1,2 N with spindle upwards	0,0005 µm	8 mm	260	1500 mm/s	2
542-192	0 - 10	(0,8+L/50) µm L=measured length in mm	1,4 N with spindle down, 1,3 N with spindle horizontal, 1,2 N with spindle upwards	0,0001 µm	8 mm	260	400 mm/s	0,4
542-193	0 - 25	(1,5+L/50) µm L=measured length in mm	4,6 N with spindle down, 4,3 N with spindle horizontal, 4 N with spindle upwards	0,001 µm	15 mm	300	1500 mm/s	4
542-194	0 - 25	(1,5+L/50) µm L=measured length in mm	4,6 N with spindle down, 4,3 N with spindle horizontal, 4 N with spindle upwards	0,0005 µm	15 mm	300	1500 mm/s	2
542-195	0 - 25	(0,8+L/50) µm L=measured length in mm	4,6 N with spindle down, 4,3 N with spindle horizontal, 4 N with spindle upwards	0,0001 µm	15 mm	300	400 mm/s	0,4
542-196	0 - 50	(1,5+L/50) µm L=measured length in mm	5,7 N with spindle down, 5,3 N with spindle horizontal, 4,9 N with spindle upwards	0,001 µm	15 mm	400	1500 mm/s	4
542-197	0 - 50	(1,5+L/50) µm L=measured length in mm	5,7 N with spindle down, 5,3 N with spindle horizontal, 4,9 N with spindle upwards	0,0005 µm	15 mm	400	1500 mm/s	2

if no EJ-Counter is used, an adapter is necessary (for all LG100 models)

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Mitutoyo

Linear Gauge LG200 Series

Linear Gauge LG200 Series

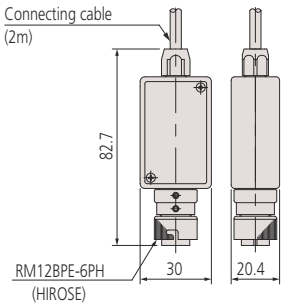
This slim type linear gauge allows you to meet a variety of measurement needs.

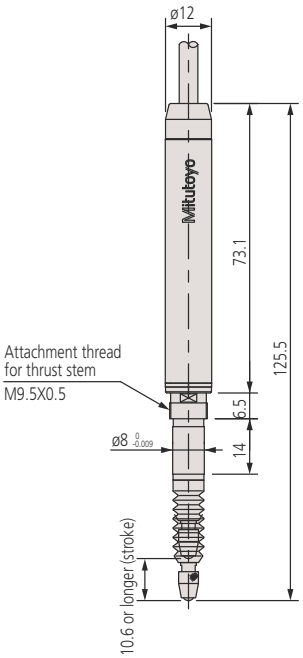
- Differential square wave signal output enables use for a wide range of applications.
- Due to its compact design, you can install it even where space is restricted.
- Its photoelectric scale delivers high precision across the entire measuring range.
- Extremely long-lasting due to linear ball-bearings in the spindle unit.
- Perfect for use in tough environments, they come with a high IP class of IP67G.
- Ideal for in-line measurement and embedded in automatic machines.

LG200

No.	Range [mm]	Accuracy	Measuring force	Resolution	Signal pitch [µm]	Max. response speed	Mass [g]
542-186	0 - 10	(1,5 + L/50) µm L=measured length in mm	0,8 N with spindle down, 0,75 N spindle horizontal, 0,7 N spindle upwards	0,001 µm	4	1500 mm/s	175
542-187	0 - 10	(1,5 + L/50) µm L=measured length in mm	0,8 N with spindle down, 0,75 N spindle horizontal, 0,7 N spindle upwards	0,0005 µm	2	1500 mm/s	175
542-188	0 - 10	(0,8 + L/50) µm L=measured length in mm	0,8 N with spindle down, 0,75 N spindle horizontal, 0,7 N spindle upwards	0,0001 µm	0,4	400 mm/s	175

*1 Spindle DOWN/Horizontal/UP





Specifications

Scale	Photoelectric linear encoder
Stem ∅	8 mm
Contact point	Ø 3 mm carbide ball, thread: M 2,5 x 0,45
Repeatability (±2σ)	0,3 µm (20°)
Cable length	2 m
Power supply	5 V (4,5 V to 5,2 V), 80 mA max.
Output signal	90° phase difference, differential square wave (RS-422A equivalent) minimum edge distance 500 ns (0,1 µm type), 250 ns (0,1 and 0,5 µm type)
Environmental conditions	0° C to 50° C (20% to 80% rel. humidity, no condensation)
Bearing type	Linear ball bearing

Optional accessories

No.	Description
21HZA197	Extension Cable 5 m (10P-10P)
21HZA198	Extension Cable 10 m (10P-10P)
21HZA199	Extension Cable 20 m (10P-10P)
21HZA195	Exchange Plug (for P-Counter)
21HZA260	Exchange cable (for P counter)
21HZA196	Exchange Plug (for Z-Counter)
21HZA261	Exchange cable (for Z-Counter)
02ADE230	Air Drive Unit for Linear Gauges 10 mm, 10 mm
02ADB680	Thrust Stem Set (for 10 mm model)
238772	Silicone Rubber Boot (for 10 mm model)
Connectable Counter	
542-080	EJ-Counter -102N
542-081	EJ Counter-102NE
Connectable Counter	
542-075D	Linear Gauge Counter EH, (need 21HZA195)
542-071D	Linear Gauge Counter EH, (need 21HZA195)

*the EH-counter need 21HZA195

Consumable spares

No.	Description
21HAA331	HNBR Rubber Boot (for 10 mm range model), 10 mm model
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

Refer to the Linear Gauge documentation for more details

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ABSOLUTE Digimatic Linear Gauge LGS Series

The LGS is a compact ABS linear gauge that offers you the following benefits:
- Its ABSOLUTE Digimatic data output and IP-66 protection class give you best-of-breed technology.

Specifications

Scale	Electrostatic capacitance-type ABSOLUTE linear encoder
Contact point	Ø3 mm carbide ball thread : M 2,5 x 0,45 mm
Cable length	2 m
Max. response speed	Unlimited (measuring by scanning cannot be performed)
Output signal	Digimatic
Environmental conditions	0 °C to 40 °C (20 % to 80 % rel. humidity, no condensation)
Bearing type	Slide bearing
Digital step	0,01 mm

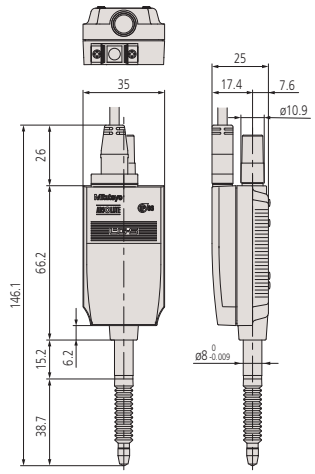
Optional accessories

No.	Description
02ADF640	Extension Adaptor, for SPC Cables.
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
903594	Air Drive Unit, Indicator/Linear Gauge, for ID-S, ID-C, LGS, 12,7 mm and 0,5" Range
542-007D	Display Unit EC-Counter, CEE, for Digimatic Gauges
542-072D	Linear Gauge Counter EH, for LGS, LGD, Scale Units
63AAA033	Digimatic Interface DMX-8/2, 8x Digimatic Input, Serial D-SUB 9 Connector
63AAA026	Digimatic Interface DMX-16, 16x Digimatic Input, Serial D-SUB 9 Connector
63AAA106	Digimatic Interface DMX-16C, 16x Digimatic Input, Serial D-SUB 9 Connector

Consumable spares

No.	Description
238774	Silicon rubber boot for ID-C, ID-N, ID-S

575-303



Metric

No.	Range [mm]	Accuracy	Measuring force	Stem ∅	Direction of counting	Mass [g]
575-303	0 - 12,7	15 µm	2 N with spindle down, 1,8 N spindle horizontal, 1,6 N spindle upwards	8 mm	positive	190

*1 Spindle DOWN/Horizontal/UP

Air Drive Unit

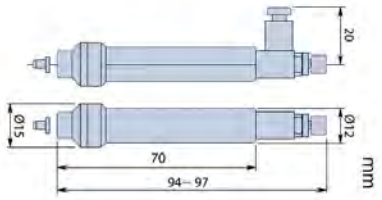
- Provides smooth lifting and lowering of the contact point of a gauge by pneumatic cylinder.
- The speed of lift can be regulated by the throttle on the remote cylinder.

No.	Remarks	Suitable for gage model	Air supply [MPa]	Mass [g]
903594	Need air filter, regulator and lubricator	Linear Gage LGS, Comparateur Digimatic ID-S/ ID-C 12,7 mm	0,5	60

Specifications

Throttle	Interior Ø 2,5 mm Exterior Ø 3,2 mm

Refer to the Linear Gauge documentation for more details



903594

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Laser Hologauge LGH

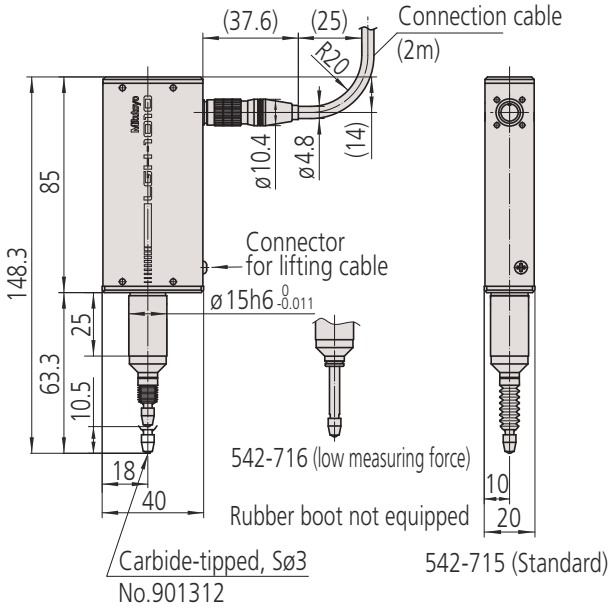
This is a highly precise dial gauge that uses optical interference so you can measure with unparalleled accuracy.
The Mitutoyo Laser Hologage offers you the following benefits:

- Through optical interference of laser light through a diffraction grating it gives you an extremely precise holographic scale with 0,00001mm resolution.
- You can use the Laser Hologage for extremely precise measurements, as well as a transducer in ultra-precise positioning and control systems.

542-715D

No.	Range [mm]	Accuracy	Measuring force	Resolution [µm]	Stem ∅	Repeatability	Mass [g]
542-715D	0 - 10	0,2 µm	0,65 N with spindle down, 0,55 N spindle horizontal, 0,45 N spindle upwards	0,01	15 mm	0,1 µm	220
542-716D	0 - 10	0,2 µm	0,12 N with spindle down/ - / -	0,01	15 mm	0,1 µm	220

*1 Spindle DOWN/Horizontal/UP



542-715D

Specifications

Scale	Laser-hologram measurement sensor
Max. response speed	700 mm/s
Contact point	Ø 3 mm carbide ball, thread: M 2,5 x 0,45
Output signal	90° phase difference, differential square wave (RS-422A equivalent)
Signal pitch	4 µm
Bearing type	High precision linear ball bearing
Environmental conditions	0C to 40°C (20% to 80% rel. humidity, no condensation)
Delivered	With Display Unit

Standard accessories

No.	Description
538610	Wrench Key/542

Optional accessories

No.	Description
971750	Laser Hologauge stand
971753	Spindle lifting cable
971751	Gage Fixture (A) LHG
971752	Fastening system, Laser Hologage

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

Refer to the Linear Gauge documentation for more details

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Laser Hologauge LGH

Functions	
Digimatic data output	●
ON/OFF	●
Error display/output	●
MAX / MIN / difference measurement	●
Mm / inch switching	●
RS-232C Output	●
USB Output for SENSORPAK	●
Extern tolerance set (when a PC is used)	●

Specifications

Scale	Laser-hologram measurement sensor
Max. response speed	250 mm/s
Contact point radius	R=5 mm carbide
Bearing type	High precision linear ball bearing
Environmental conditions	10°C to 30°C (30% to 70% rel. humidity, no condesation)
Delivered	With Display Unit

Standard accessories

No.	Description
538610	Wrench Key/542

Optional accessories

No.	Description
971750	Laser Hologauge stand
971753	Spindle lifting cable
971751	Gage Fixture (A) LHG
971752	Fastening system, Laser Hologage

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

Refer to the Linear Gauge documentation for more details

This is a highly precise dial gauge that uses optical interference so you can measure with unparallelled accuracy.
The Mitutoyo Laser Hologage offers you the following benefits:

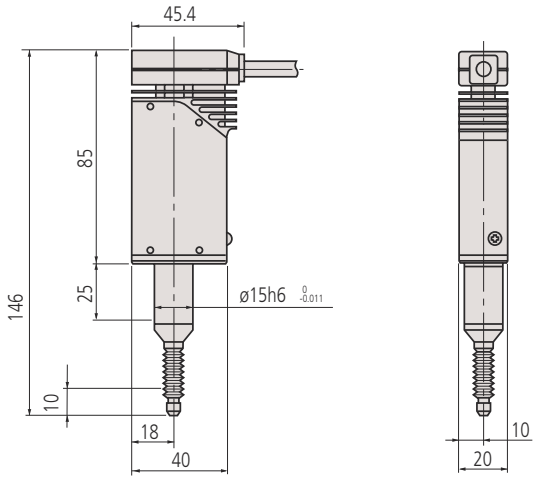
- Through optical interference of laser light through a diffraction grating it gives you an extremely precise holographic scale with 0,005 µm resolution.
- The measuring head is very compact, enabling you to build it into various systems far less expensively than conventional laser technology.
- You can use the Laser Hologage for measuring extremely precise parts, as well as a transducer in ultra-precise positioning and control systems.

542-720D

Laser Hologage supplied with Display Unit (2 axis counter)

No.	Range [mm]	Accuracy	Measuring force	Resolution [µm]	Stem ∅	Repeatability	Mass [g]
542-720D	0 - 10	0,1µm	0,65 N with spindle down, 0,55 N spindle horizontal, 0,45 N spindle upwards	0,005	15 mm	0,02 µm	220
542-721D	0 - 10	0,1µm	0,1 N with spindle down/ - / -	0,005	15 mm	0,02 µm	220

*1 Spindle DOWN/Horizontal/UP



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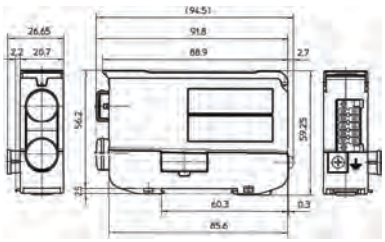
EJ Counter and Interfaces for Linear Gauges

The EJ-Counter is targeted at secondary and automatic embedded markets as well as conventional measurement rooms.

- Multipoint measuring systems with a maximum of 16 gauges can be configured.
- The EJ-Counter is attached to a DIN rail for use. Due to the small size of the unit, it can be installed inside of switchboards /equipment. When using multiple EJ Counters linked together, connection of power to one EJ Counter also supplies power to the other linked counters.
- In addition, through the industrial I/F unit (sold separately), data can be managed on the upper side, and it is possible to support smart factories such as IoT and M2M.
- Easy setup with the LG QuickSetup Tool software (free of charge) (USB interface is required).

EJ-Counter-102N

Counter unit (EJ-102N) + Interface unit (21HZA186)



542-080

Functions	
ZERO SET	●
Origin detection	●
PRESET	●
External HOLD	●
External CLEAR	●
External 1 / 2 SELECT	●
MAX / MIN / difference measurement	●
Internal calculation	●
Tolerance indicator	●
Extern tolerance set (when a PC is used)	●
Tolerance judgement (3 or 5 step)	●
Counting direction switchable	●
External PRESET / ZERO	●

Specifications

Operating temperature / humidity	0°C to 50°C / 20% to 80% rel. humidity, no condensation
Storage temperature / humidity	-10°C to 60°C / 20% to 80% rel. humidity, no condensation
Power supply	Input voltage: 10 - 27V DC supplied from EJ-Counter Maximum power consumption: Single EJ Counter: 3W or less Maximum consolidation: 30W or less

Optional accessories

No.	Description
21HZA157	DIN Stoppers
21HZA149	USB I/F unit for EJ Counter
21HZA186	CC-Link / I/F unit for EJ Counter
21HZA187	PROFINET I/F unit for EJ Counter
21HZA188	Ethernet/IP I/F unit for EJ Counter
21HZA264	EtherCAT I/F unit for EJ Counter
21HZA193	Connector Adapter Cable (for P-Gage)
21HZA194	Connector Adapter Cable (for Z-Gage)
21HZA209	DC Jack with Pin Terminal
357651	AC-Adapter 12V, CEE Type, for SJ-210/ SJ-310/LH-600/QM-Data 200
02ZAA020	AC-Cordset CEE, 1,8m for EU (excl. UK)
02ZAA030	AC-Cordset BS, 1,8m for UK

Metric — EJ-Counter-102N

No.	Mass [g]	Max. input frequency	Input signal type	Applicable gauge	Gauge inputs	External input / output
542-080	120	5 MHz	differential square wave (RS422A equivalent)	LG100, LG200	2	In: 4 ports / Out: 4 ports Applicable communications standards: Supported by optional interface unit

Metric/Inch — EJ-Counter-102NE

No.	Mass [g]	Max. input frequency	Input signal type	Applicable gauge	Gauge inputs	External input / output
542-081	120	5 MHz	differential square wave (RS422A equivalent)	LG100, LG200	2	In: 4 ports / Out: 4 ports Applicable communications standards: Supported by optional interface unit

Interface unit CC-Link

No.	Mass [g]	Baud rate	Connector type	Industrial I/F	Data transfered
21HZA186	154	USB 2 Full speed (12Mbps)	Type C	CC-Link Ver. 1.10 CC-Link Ver. 2.00	Current value data* (No unit, signed 32bit data); Tolerance judgment result *only Ver. 2.00 supported

Interface unit EtherCAT

No.	Mass [g]	Baud rate	Connector type	Industrial I/F	Data transfered
21HZA264	165	USB 2 Full Speed (12Mbps)	Type C	EtherCAT	Current value data (No unit, signed 32 bit data), Tolerance judgment result

Interface unit Ethernet/IP

No.	Mass [g]	Baud rate	Connector type	Industrial I/F	Data transfered
21HZA188	165	USB 2 Full Speed (12 Mbps)	Type C	EtherNet/IP	Current value data (No unit, signed 32 bit data), Tolerance judgment result

Interface unit PROFINET

No.	Mass [g]	Baud rate	Connector type	Industrial I/F	Data transfered
21HZA187	165	USB 2 Full Speed (12 Mbps)	Type C	PROFINET RT (RT Class1)	Current value data (No unit, signed 32 bit data), Tolerance judgment result

Interface unit USB

No.	Mass [g]	Baud rate	Connector type	Industrial I/F	Data transfered
21HZA149	115	USB 2 Full speed (12Mbps)	Type C	None	Current value data (No unit, signed 32 bit data), Tolerance judgment result

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EJ Counter and Interfaces for Linear Gauges

USB (21HZA149)

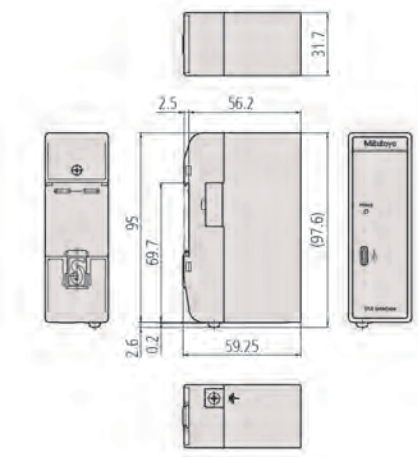
CC-Link (21HZA186)

PROFINET (21HZA187)

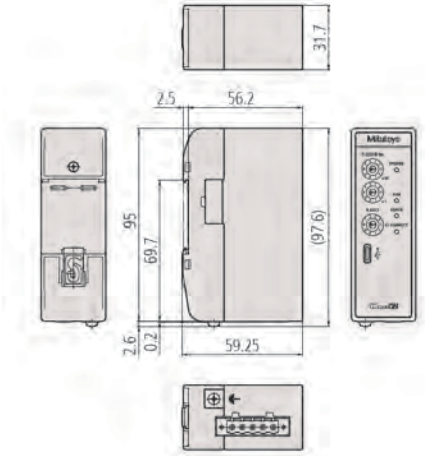
EtherNet/IP (21HZA188)

EtherCAT (21HZA264)

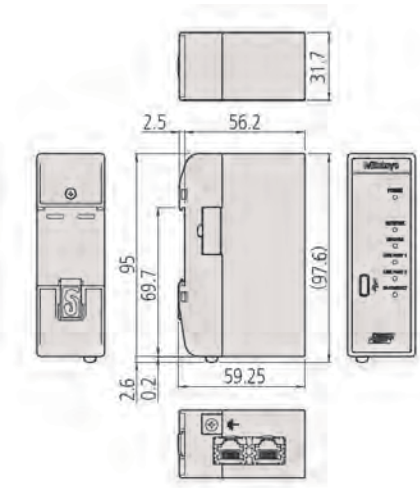
General settings



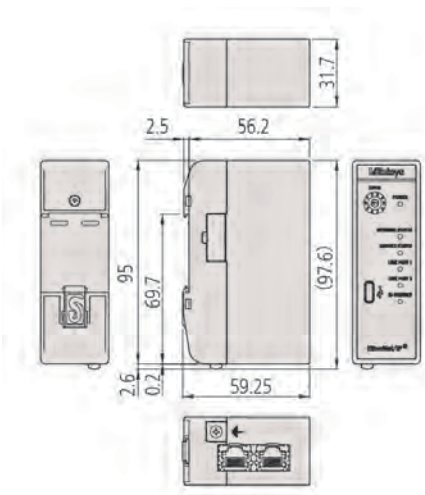
Interface unit USB (21HZA149)



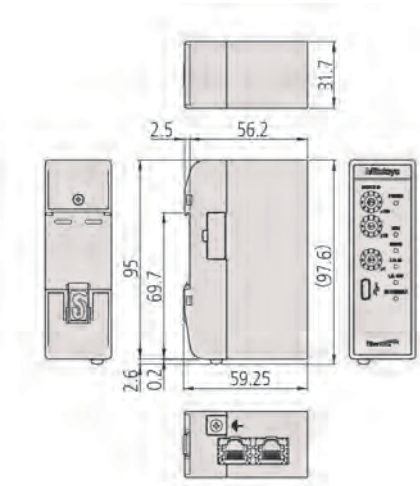
Interface unit CC-Link (21HZA186)



Interface unit PROFINET (21HZA187)



Interface unit EtherNet/IP (21HZA188)



Interface unit EtherCAT (21HZA264)

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EH Counter for Linear Gauges

Multi-functional Counter

- The standard RS-232C and USB interfaces allows easy communication with an external PC (the USB can only be used with SENSORPAK).
- The built-in networking function allows you to easily create a multi-point measuring system (RS link, max. 10 Counter).
- The 2-gauge input type can calculate additions and subtractions between two gauges.

542-075D

542-071D, 542-073D, 542-072D

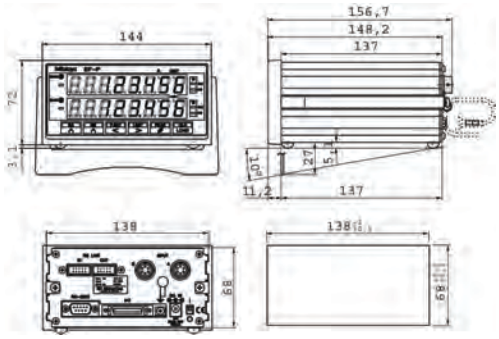
542-075D

542-071D

542-073D

542-072D

No.	Resolution [mm]	Mass [g]	Max. input frequency	Input signal type	Applicable gauge	Gauge inputs
542-075D	0,0001/0,001/0,01	760	2,5 MHz (2-phase square wave), response speed depends on gauge specification	Differential square-wave	LGF, LGK, LGB, LG, LGM, LGH (excluding LGF-Z with reference point, LGH with 0,01 µm resolution), LG100 with connector adapter plug 21HZA195	1
542-071D	0,0001/0,001/0,01	800	2,5 MHz (2-phase square wave), response speed depends on gauge specification	Differential square-wave	LGF, LGK, LGB, LG, LGM, LGH (excluding LGF-Z with reference point, LGH with 0,01 µm resolution), LG100 with connector adapter plug 21HZA195	2
542-073D	0,0001/0,001/0,01	800	2,5 MHz (2-phase square wave), response speed depends on gauge specification	Differential square-wave with reference point	LGF-Z with reference point, LG100 with connector adapter plug 21HZA196	2
542-072D	0,001/0,01 (automatic setting by gauge)	800	-	Digimatic code	Digimatic Indicator Digimatic Scale Units Linear Gauge LGS/LGD	2



Functions	542-071D 542-073D	542-072D	542-075D
Digimatic data output	●	●	●
ON/OFF	●	●	●
Sum/difference calculation	●	●	
ABS/INC		●	
BCD output	●	●	●
Error display/output	●	●	●
External HOLD	●	●	●
MAX / MIN / Difference measurement	●	●	●
Mm / inch switching	●	●	●
Lower digit blank-out			●
RS link	●	●	●
RS-232C Output	●	●	●
ZERO SET	●	●	●
PRESET	●	●	●
I/O Output	●	●	●
USB Output for SENSORPAK	●	●	●
Extern tolerance set (when a PC is used)	●	●	●
Counting direction switchable	●	●	●
External PRESET / ZERO	●	●	●

Specifications

Power supply	Via AC Adapter (12-24 V DC, 700 mA)
Tolerance judgement display	LED display (3 steps : Amber, Green, Red/5 steps : Amber, Amber flashing, Green, Red flashing, Red)

Standard accessories

No.	Description
02ZAA020	AC-Cordset CEE, 1,8m for EU (excl. UK)

Optional accessories

No.	Description
02ADB440	Data Plug I/O Interface, for Litematic
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type

02ADB440

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EC Counter for Linear Gauges

Functions	
Digimatic data output	●
ON/OFF	●
ABS/INC	●
Error display/output	●
External HOLD	●
Mm / inch switching	●
ZERO SET	●
PRESET	●
Counting direction switchable	●
External PRESET / ZERO	●

Specifications

Power supply	+ 9 - 12 V DC 400 mA or AC adapter
Tolerance judgement display	LED display (3 steps: Amber, Green, Red)

Optional accessories

No.	Description
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type

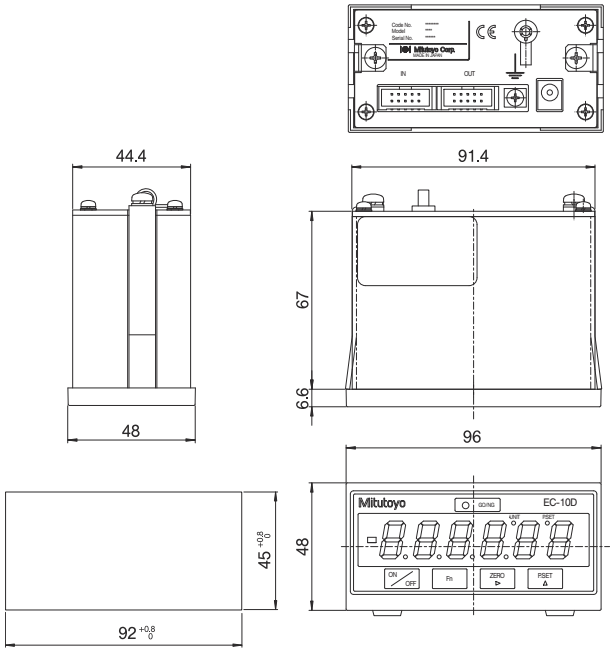
Refer to the Linear Gauge documentation for more details

This Digimatic display can be connected to any device with Digimatic output, including micrometers, indicators, calipers and LGS/LGD Linear Gauge.
It offers you the following benefits:

- It has a data output and tolerance evaluation function.

542-007D

No.	Mass [g]	Resolution [mm]	Input signal type	Applicable gauge	Gauge inputs
542-007D	500	0,001/0,01 (automatic setting by gauge)	Digimatic code	Digimatic Indicator Digimatic Scale Units Linear Gauge LGS/LGD	1
542-007E	500	0,001/0,01 (automatic setting by gauge)	Digimatic code	Digimatic Indicator Digimatic Scale Units Linear Gauge LGS/LGD	1



542-007D

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SENSORPAK

The SENSORPAK supports the development of measuring facilities and measuring stations.
It offers you the following benefits:

- It can simultaneously display measurement values from up to 60 sensors in real time.
- You can make calculations using measurement values from up to 30 sensors in real time.
- It enables a huge range of different graphical presentations of using measurement, such as number representation, pointer representation, scale representation.
- Data registration can be made in control cards or data tables.
- You can also carry out further data processing with external software, such as Microsoft® Excel® or MeasurLink.

Measurement screen

Meter screen

Model	SENSORPAK
No.	**02NGB072**
Output function	Direct output to Microsoft® Excel® spreadsheet, CSV file output (compatible with MeasurLink)
Total tolerance judgement	GO/NG judgement (by specifying gauges to be used for total tolerance judgement) GO/NG signal output with optional I/O cable
Input function	Trigger function : by means of keys timer or external TRG (with optional I/O cable) Data input frequency : Max. 9999 times (with 60 gages connected) to 60000 times (with 6 gages connected)
Applicable counter	Counters with RS-232C interface (EH and EV), with USB interface (EH)
Display	Display type : Counter, bar graph, meter, chart (capable of simultaneous display) Tolerance judgement result : Color display (green/red) Connectable gauges : Max. 60 gages

Specifications

OS compatibility	Windows® 7 (32/64 bit) Windows® 8. 1 (32/64 bit) Windows® 10 (64bit) Excel® 2007, 2010, 2013

Optional accessories

No.	Description
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E

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LITEMATIC VL-50
Motorized low force, high precision gauges

Functions	LITEMATIC VL50 separate display type
ABS / INC (INC ZERO)	●
Data output	●
Key lock	●
Mm / inch switching	●
Tolerance input (3 or 5 levels)	●
Motorized plunger movement	●
Mode : max-min (TIR) reading	●

Specifications

Measuring range (inside)	0-50 mm
Data output	DIGIMATIC RS 232C INTERFACE I/O

Optional accessories

No.	Description
K543722	Vacuum holder for high accuracy thickness measurement of battery foil samples, Precision Vacuum Specimen Holder for VL-50 LITEMATIC
K543753	Adaptor plate for K543722 , for the attachment to stand 957460 for LITEMATIC head type
02ADB440	Data Plug I/O Interface, for Litematic
957460	Litematic Head Stand
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

318-226D/318-227D/318-228D

Caption K543722 vacuum holder and adapter K543753

Refer to the LITEMATIC documentation for more details

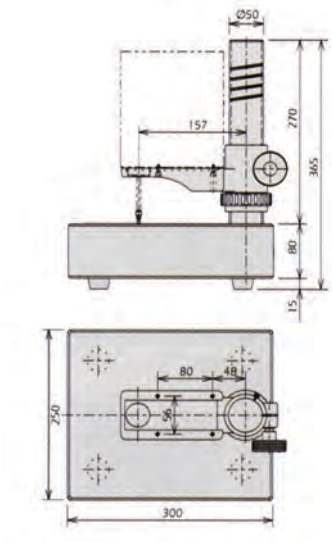
LITEMATIC VL50 separate display type

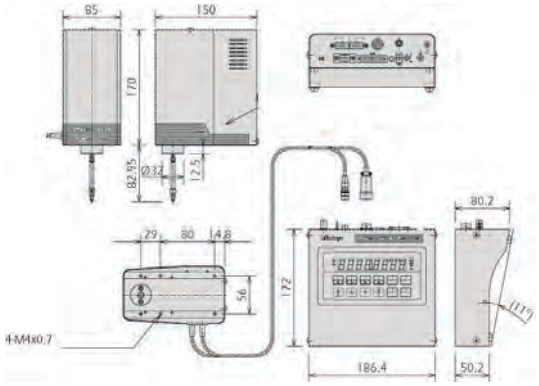
This is a high-accuracy gauge head with a separate controller.
The LITEMATIC VL-50 offers you the following benefits:

- It has a measuring force of **0,01 N** (1 gf) and a resolution of 0,01 µm.
- Its constant and low measuring force makes it especially suitable for measuring soft materials such as rubber, plastic, film thicknesses or sensitive form parts.
- The motor driven plunger gives you a range of approach and retraction speeds for safe and easy operation.
- The head is supplied with a separate controller so you can mount it in a measurement fixture, or on the optional comparator stand.

LITEMATIC VL-50 with optional Head Stand (957460).

No.	Accuracy	Measuring force	Type	Mass [kg]
318-226D	**(5 + L/1000)**µm L = Measurement height	**0,01 N** (1 gf)	VL-50S-B	6
318-227D	**(5 + L/1000)**µm L = Measurement height	**0,15 N** (15 gf)	VL-50S-15-B	6
318-228D	**(5 + L/1000)**µm L = Measurement height	**1 N** (102 gf)	VL-50S-100-B	6





957460 Comparator stand

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LITEMATIC VL-50
Motorized low force, high precision gauges

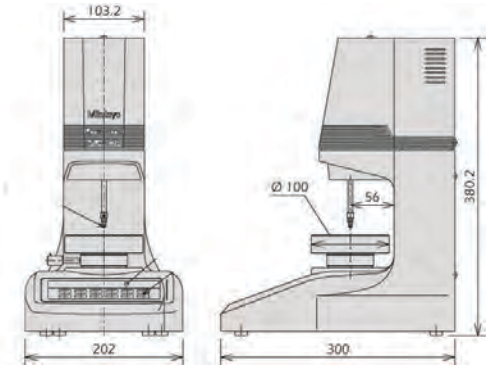
LITEMATIC VL50 standard type

This is a high-accuracy motorised measuring machine with safe and easy operation.
The LITEMATIC VL-50 offers you the following benefits:

- It has a measuring force of **0,01 N** (1 gf) and a resolution of 0,01 µm.
- Its constant and low measuring force makes it especially suitable for measuring soft materials such as rubber, plastic, film thicknesses or sensitive form parts.
- The motor driven plunger gives you a range of approach and retraction speeds for safe and easy operation.

318-221D/318-222D/318-223D

No.	Accuracy	Measuring force	Type	Mass [kg]
318-221D	**(5 + L/1000)** µm L = Measurement height	**0,01 N** (1 gf)	VL-50 B	19
318-222D	**(5 + L/1000)** µm L = Measurement height	0,15 N (15 gf)	VL-50-15-B	19
318-223D	**(5 + L/1000)** µm L = Measurement height	1 N (102 gf)	VL-50-100-B	19



318-221D/318-222D/318-223D

Functions	LITEMATIC VL50 standard type
ABS / INC (INC ZERO)	●
Data output	●
Key lock	●
Mm / inch switching	●
Tolerance input (3 or 5 levels)	●
Motorized plunger movement	●
Mode : max-min (TIR) reading	●

Specifications

Measuring range (inside)	0-50 mm
Data output	Digimatic RS-232C INTERFACE I/O

Optional accessories

No.	Description
K543722	Vacuum holder for high accuracy thickness measurement of battery foil samples, Precision Vacuum Specimen Holder for VL-50 LITEMATIC
02ADB440	Data Plug I/O Interface, for Litematic
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m

Consumable spares

No.	Description
901312	Contact Element Ball Point, M2,5x0,45, 7,3 mm Length, Carbide, Metric

K543722

Refer to the LITEMATIC documentation for more details

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Surface Measure

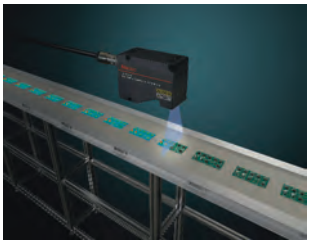
Surface Measure 1008S

Stand-alone non-contact line-laser sensor

Main benefits:

- High accuracy and environment-resistant sensor.
- Supporting automated measurement.
- Excellent operability simply by using a mouse.
- Simple and intuitive interface.
- Web-browser based, no need to install software.
- Various built-in measurement.
- 2D and 3D data can be obtained.

553-100



Application of SM1008S.

Specifications

Laser Class EN/IEC	CLASS 2 (EN/IEC 60825-1:2014)
Laser Class JIS	CLASS 2 (JIS C 6802:2014)
Line Laser Medium	Semiconductor laser
Operating Environment Temperature	0°C to 40°C
Operating Environment Humidity	RH 20% to 80%, non-condensing
Storage Environment Temperature	-30°C to 70°C
Storage Environment Humidity	RH 20% to 95%, non-condensing
IP Protection Class	IP67*2
Power supply	24V to 48VDC (15W)

Optional accessories

No.	Description
Multi Sensor System:	
02AQL401	Master810 Network Hub 8 Sensors, Multi Sensor Network Hub Master for max. 8 Sensors
02AQL402	Master2410 Network Hub 24 Sensors, Multi Sensor Network Hub Master for max. 24 Sensors
02AQL421	GoMax NX smart vision plug type: F, GoMax NX high-performance smart vision embedded device, plug type: F

02AQL402

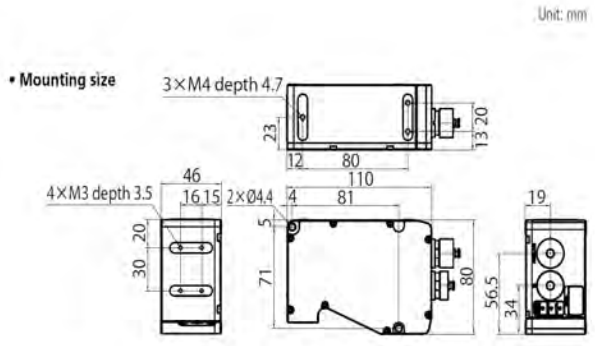
02AQL421

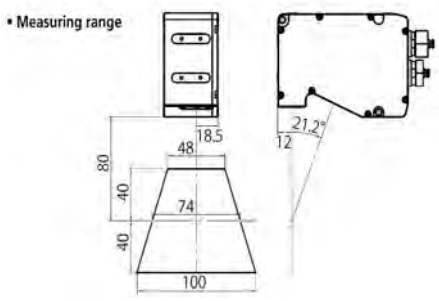
Refer to the Surface Measure documentation for more details

Find more optional accessories at:
https://www.mitutoyo.eu.

No.	Maximum measuring width [mm]	Measuring range [mm]	Working distance [mm]	Scanning error (1σ)*1 [µm]	Frame rate	Line Laser Wavelength	Line Laser Max. Power [mW]	Mass
553-100	100	80	80	20	Max. 10kHz	405nm (visible)	2,2	650g

*1 Accuracy inspection environment: Temperature 20°C ± 1°C, Humidity 50%RH ± 10%RH
Measurement workpieces: Specified reference ball for inspection (Φ30 mm)
Inspection method: Determined by Mitutoyo-specified inspection method.
The operating environment and the storage environment are different from the guaranteed accuracy environment.
*2 Measuring accuracy may deteriorate if any water droplet or dust particle adheres to the optical path





All products to be sold to commercial customers.
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Laser Scan Micrometer Measuring Unit
Page 373

Laser Scan Micrometer Controller Unit
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Laser Scan Micrometer Interface Unit
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Laser Scan Micrometer Optional Accessories
Page 377

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Laser Scan Micrometer Measuring Unit

LSM-02-A

High performance Laser Scan Micrometer

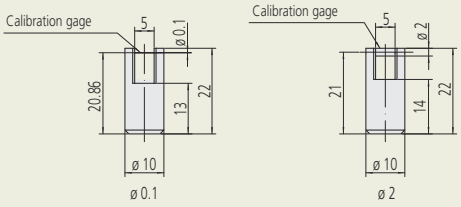
- IP67 rated
- Scan rate 3200 scans/s
- Repeatability (2 σ) : ±0,015 µm (ø1 mm)
- Linearity: ±0,3 µm
- Resolution: 0,01 µm

Specifications

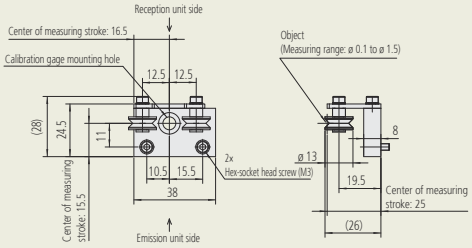
Linearity at 20°C *1	±0,3 µm
Positional error *2	±0,4 µm
Measuring region	1 x 2 [optical axis depth] x [scanning width] mm
Laser wavelength	650 nm, visible
Scanning rate	3200 scans/s
Scanning speed	76 m/s
Applicable laser standards	JIS, IEC, FDA, Class 1
Repeatability (±2σ)	∅ 2 mm: ±0,03 µm ∅ 1 mm: ±0,015 µm

Optional accessories

No.	Description
02AGD200	Wire guiding pulley
02AGD110	Calibration Gauge Set, Ø 0,1 - 2 mm
Set consists of:	
02AGD111	Gage Stand for LSM-02-A
958200	Calibration Gauge, 0,1mm
958202	Calibration Gauge 2mm
958203	Box for Specimens



Calibration gage set for LSM-02-A

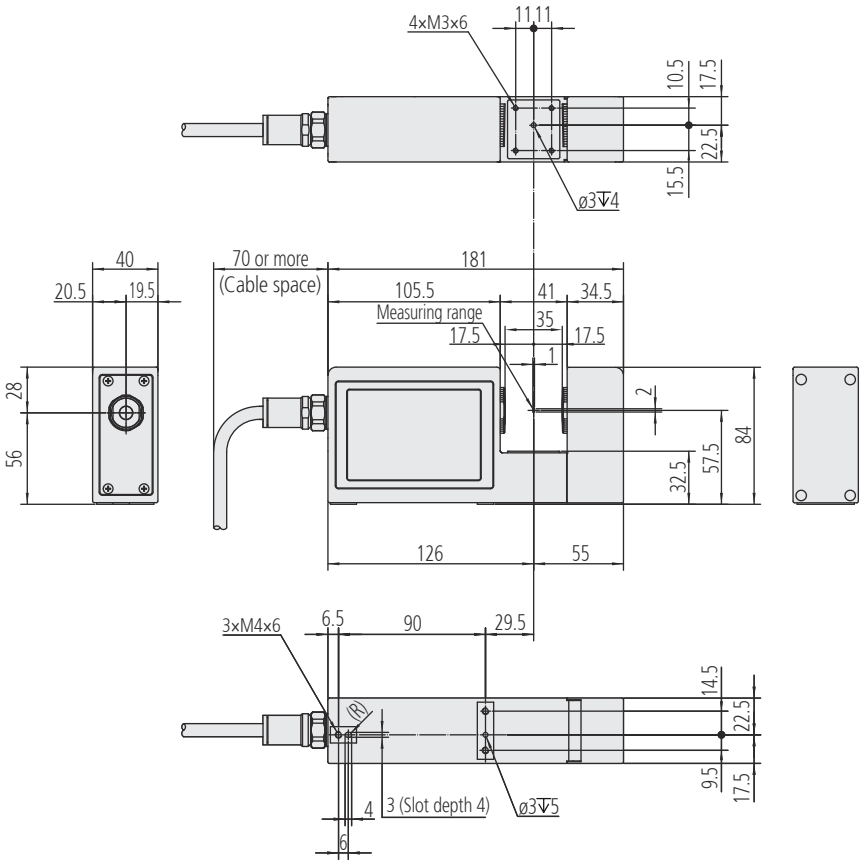


Wire guiding pulley for LSM-02-A

LSM-02-A: ø 0.1 mm to ø 1.5 mm.
Larger than ø1.5 mm, contact one of our sales or customer service representatives.
Use a calibration gage set (02AGD110) for LSM-02-A for any workpiece if calibration is necessary.

LSM-02-A

No.	Description	Measuring range [mm]
544-123	LSM-02-A	0,005 to 2mm



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Laser Scan Micrometer Measuring Unit

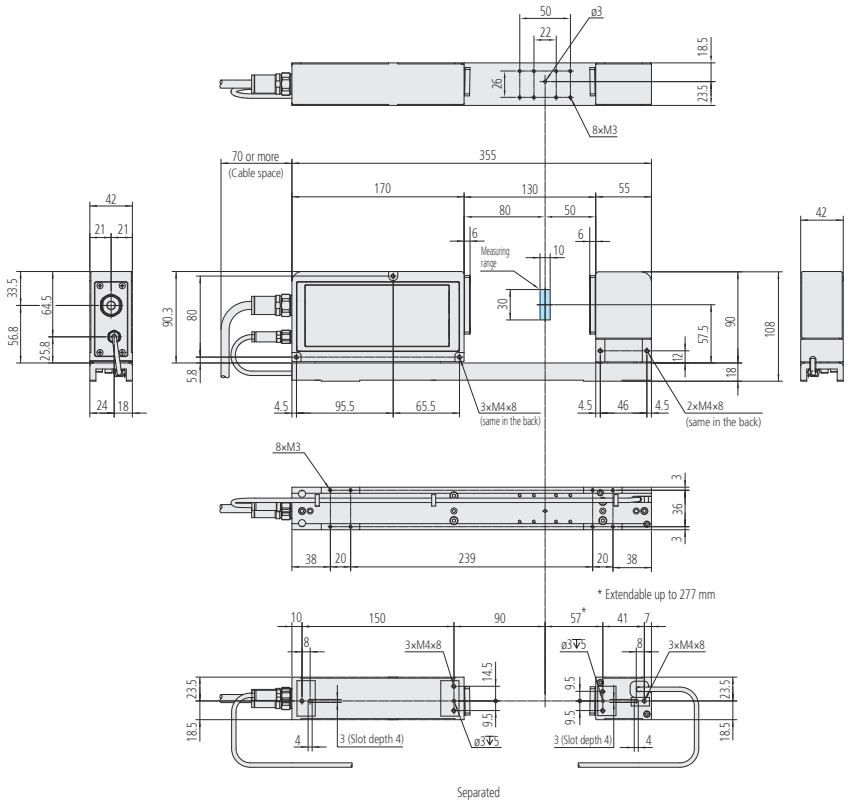
LSM-30-A

High performance Laser Scan Micrometer

- IP67 rated
- Scan rate 3200 scans/s
- Repeatability (2 σ) : ±0,06 µm (ø10 mm)
- Linearity: ±1 µm

LSM-30-A

No.	Description	Measuring range [mm]
544-124	LSM-30-A	0,3 to 30mm

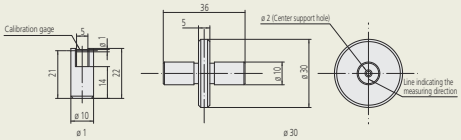


Specifications

Linearity at 20°C *1	Entire range: ± 1 µm Narrow range: ± (0,6 + 0,1 ΔD) µm
Positional error *2	Full range (10 x 30): ± 1,8 µm Middle range (5 x 20): ± 1 µm
Measuring region	10 x 30 [optical axis depth] x [scanning width] mm
Laser wavelength	650 nm, visible
Scanning rate	3200 scans/s
Scanning speed	226 m/s
Applicable laser standards	JIS, IEC, FDA, Class 1
Repeatability (±2σ)	∅ 30 mm: ±0,09 µm ∅ 10 mm: ±0,06 µm

Optional accessories

No.	Description
02AGD130	Calibration Gauge Set, Ø 1 - 30 mm
Set consists of:	
02AGD131	Gage Stand for LSM-30-A
02AGD920	Calibration Gauge, LSM Ø 1mm
02AGD961	Calibration Gauge, LSM Ø 30mm
02AGD980	GAGE SET CASE FOR LSM-30-A



Calibration gage set for LSM-30-A

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Laser Scan Micrometer Controller Unit

LSM-CU-A

Modular industrial design controller unit for LSM-02/30-A

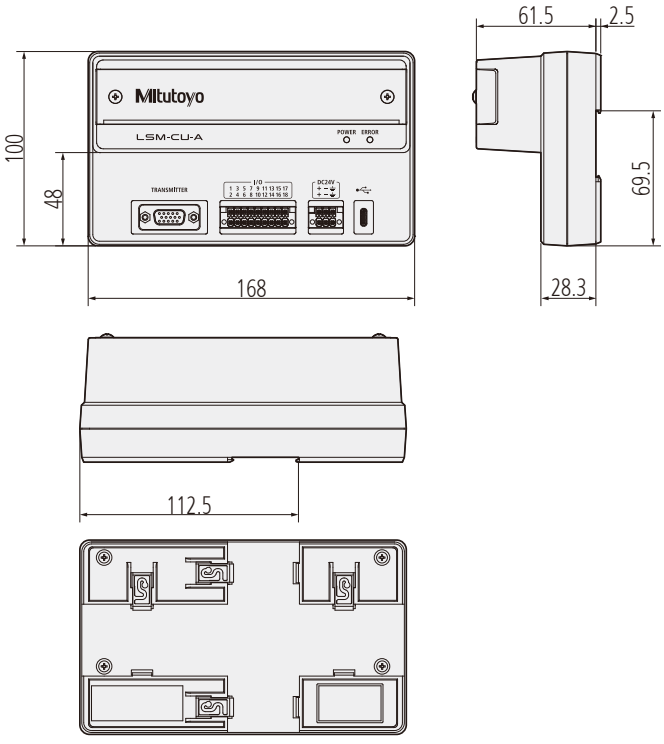
- Compact, slim design
- DIN rail compatible
- USB Type-C, I/O ports, and industrial interfaces (optional)
- Configuration software included

Specifications

Power supply	DC+24 V ± 10%, 3 A or more
Remarks	Transparent object measurement, Ultra-fine wire mode (LSM-2-A only), Simultaneous measurement of two items, Automatic workpiece detection, Outlier elimination, Judgment (lower limit/upper limit, multi-limit tolerance zone, target value and tolerance value), Dirt detection for protective glass, Sample measurement, Analog output, Parameter setting (Measurement condition): 20, Workpiece position, Calibration, Presetting, Offset, Statistical analysis, Calculation of two or more sets, Sensor model identification

LSM-CU-A

No.	Description	Type	Mass
544-120	LSM-CU-A	metric	Approx. 550 g
544-121	LSM-CU-A	metric/inch	Approx. 550 g



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Laser Scan Micrometer Interface Unit

LSM Interface Unit

Optional module dedicated to LSM-CU-A.

Choose from four interface types to match your production line requirements:
EtherNet/IP, PROFINET, EtherCAT and CC-Link IE TSN.
Controller design allows for module insertion without altering the layout.

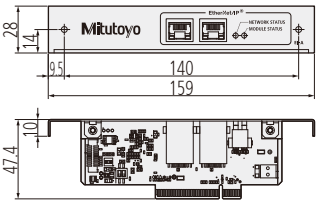
LSM EI-A

LSM CC-A

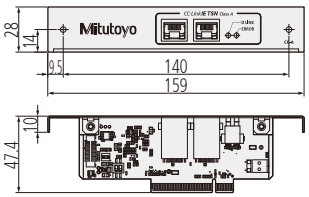
LSM PN-A

LSM EC-A

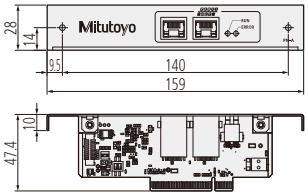
No.	Description	Industrial I/F
02AGQ300	LSM-EI-A	EtherNet/IP
02AGQ350	LSM-PN-A	PROFINET
02AGQ370	LSM-EC-A	EtherCAT
02AGQ390	LSM-CC-A	CC-Link IE TSN



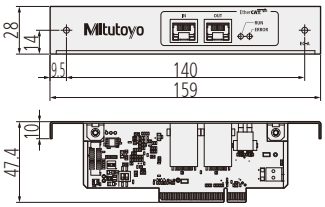
LSM-EI-A



LSM-CC-A



LSM-PN-A



LSM-EC-A

Specifications

Communication ports	RJ45 x 2
Communication speed kbps	100.000
Communication cable	Cat. 5e or more STP cable
Operating temperature / humidity	0 °C to 50 °C, 20% RH to 85% RH (non-condensing)
Storage temperature / humidity	-10 °C to 60 °C, 20% RH to 85% RH (non-condensing)

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Laser Scan Micrometer Optional Accessories

Refer to the LSM brochure

Accessories

	No.	Application	Description
	02AGD110	LSM-02-A	Calibration gauge set ø0.1-2 mm
	02AGD130	LSM-30-A	Calibration gauge set ø1-30 mm
	02AGD200	LSM-02-A	Wire guiding pulley
	02AGD490	LSM-30-A	Adjustable Workstage
	02AGD270	LSM-30-A	Workstage
	02AGD440	LSM-30-A	Center support f. 02AGD490
	02AGD450	LSM-30-A	Adjustable V-Block f. 02ADG490
	02AGN780A	LSM-02/30-A	Extension signal cable 5 m
	02AGN780B	LSM-02/30-A	Extension signal cable 10 m
	02AGN780C	LSM-02/30-A	Extension signal cable 15 m
	02AGN780D	LSM-02/30-A	Extension signal cable 20 m

For LSM-02-A, the signal cable length is 20m max. and the relay cable is 2m max.
For LSM-30-A, the signal cable length is 29m max. and the relay cable is 5m max.
The total length of signal and relay cable is 29m max.

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NC Linear Scales
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Scale Units
Page 393

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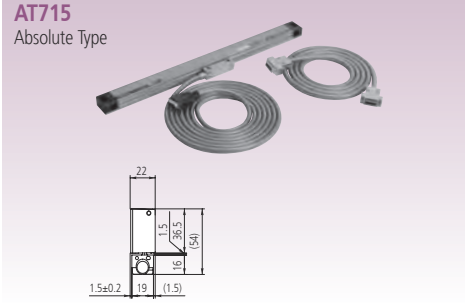
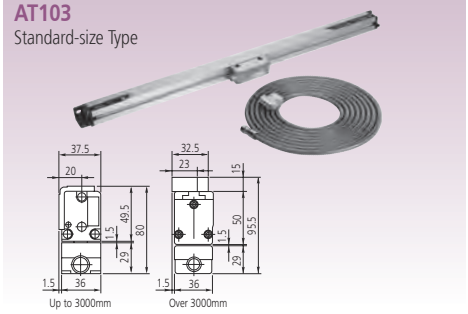
DRO Linear Scales Selection Guide

AT715
Absolute Type



AT103
Standard-size Type



AT113
Slim Type

Specifications

Model	AT715	AT103	AT113
Measurement method	Electromagnetic induction system	Photoelectric (transparent linear encoder)	
Light source	—	LED	
Receptor	—	Phototransistor	
Output wave form	—	2-phase sine curves with a phase difference of 90°	
Effective length (for high accuracy type)	100 - 3000mm	1600 - 6000mm (1600 - 2000mm)	100 - 1500mm (100 - 1500mm)
Accuracy* [high accuracy type] * Excluding quantizing error of ±1 count	±5µm (Effective length: 100 - 500mm) ±7µm (Effective length: 600 - 1800mm) ±10µm (Effective length: 2000 - 3000mm)	($5+5L_0/1000$)µm*1 [($3+3L_0/1000$)µm]	($5+5L_0/1000$)µm [($3+3L_0/1000$)µm
Maximum response speed	50m/min.	120m/min.*3	120m/min.
Scale reference point	—	At every 50mm interval	
Linear expansion coefficient	—	$(8±1)x10^{-6}$/°C	
Power supply	5V±5% DC	5V±5% DC	
Max, current consumption	70mA	70mA*4 (60mA: AT113)	
Operating temperature	0°C to 45°C		
Storage temperature	-20°C to 70°C		
Relative humidity	20 - 80%RH		
Head Cable length	—	—	*6
Sliding force	5N or less	5N or less	
Single cable*5	Standard accessory (refer to individual specifications for the length)		
Dust/water protection level	IP67	IP53	

*1: ($5+8L_0/1000$)µm for models over 3250mm effective length
*3: 50m/min. for models over 3250mm effective length
*4: 140mA for models over 3250mm effective length
*5: Vinyl-coated type single cable and extension cable are available on request.
*6: AT103:0.3m

All products to be sold to commercial customers.
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Mitutoyo

DRO Linear Scales AT103

Sealed incremental - full size housing

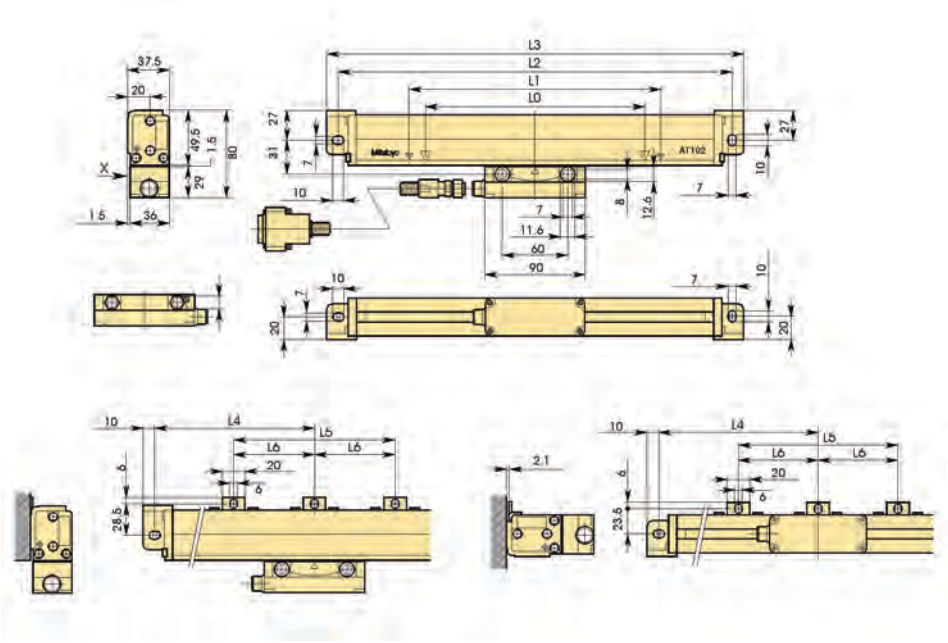
IP53

These linear scales offer : Sturdy construction-high resistance to vibration-protection rating are similar in upright and reclining position

- The innovative rubber lips keep out contaminants when you are using the scale in a machine shop.
- An armoured signal cable is used to connect the scale unit to the DRO counter, so you can operate it safely even in hostile environments.
- The signal cable outlet can be positioned on either side of the slider so you can connect the signal cable from either direction.

539-133-30

No.	Cable length [m]	Effective Length	L^0 [mm]	L^1 [mm]	L^2 [mm]	L^3 [mm]	L^4 [mm]	L^5 [mm]	L^6 [mm]	Mass [kg]
539-133-30	5	1600 mm	1600	1690	1818	1838		610		5,1
539-134-30	5	1700 mm	1700	1790	1918	1938		650		5,3
539-135-30	5	1800 mm	1800	1890	2018	2038		670		5,5
539-136-30	5	2000 mm	2000	2100	2228	2248		740		6
539-137-30	5	2200 mm	2200	2300	2428	2448		800		6,4
539-138-30	7	2400 mm	2400	2500	2628	2648	1314	1300	650	7,1
539-139-30	7	2500 mm	2500	2600	2728	2748	1364	1340	670	7,3
539-140-30	7	2600 mm	2600	2700	2828	2848	1414	1400	700	7,5
539-141-30	7	2800 mm	2800	2900	3028	3048	1514	1500	750	7,9
539-142-30	7	3000 mm	3000	3100	3228	3248	1614	1600	800	8,3



Specifications

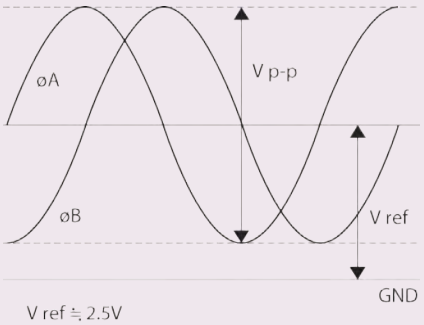
Accuracy	(5+5L/1000) µm L = Effective length (mm)
Output waveform	Two 90° phase-shifted sinusoidal signals (2Vpp)
Operation temperature	0°C to 45°C
Power supply	5V DC ± 10%
Cross section	80 x 37,5mm / 95,5 x 37,5mm
Max. drive speed	120 m/min.
Signal period	20 µm
Scale reference points	every 50 mm
Dust/water protection level	IP53

Optional accessories

No.	Description
09AAA033A	Extension Cable 2M
09AAA033B	Extension Cable 5M
09AAA033C	Extension Cable 7M
174-183D	Linear Scale Counter KA-212
174-185D	Linear Scale Counter KA-213

Extension cable

Legend
L0 Effective length
L1 Travel range
L2 Bore centre distance
L3 Total length
L4-L6 Support bracket position



V ref ≒ 2.5V
V p-p = 2V

Output waveform

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DRO Linear Scales AT103

Specifications

Accuracy	(5+8L/1000) µm L = Effective legnth (mm)
Output waveform	Two 90° phased-shifted sinusoidal signals (2Vpp)
Operation temperature	0°C to 45°C
Power supply	5V DC ± 10%
Cross section	80 x 37,5mm / 95,5 x 37,5mm
Max. drive speed	50 m/min.
Signal period	20 µm
Scale reference points	every 50 mm
Dust/water protection level	IP53

Optional accessories

No.	Description
09AAA033A	Extension Cable 2M
09AAA033B	Extension Cable 5M
09AAA033C	Extension Cable 7M
174-183D	Linear Scale Counter KA-212
174-185D	Linear Scale Counter KA-213

Extension cable

Legend
L0 Effective length
L1 Travel range
L2 Bore centre distance
L3 Total length
L4-L6 Support bracket position

Please refer to the DRO leaflet for more details.

Sealed incremental - full size housing -larger measuring lenght

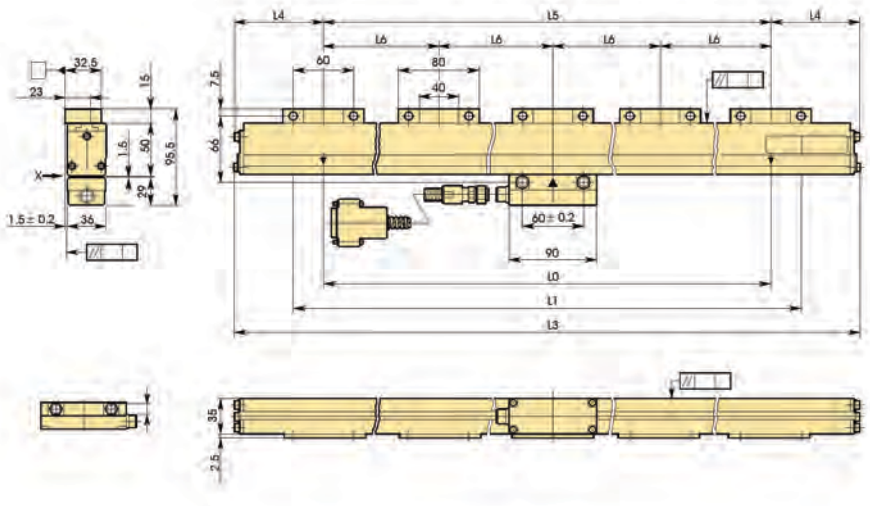
IP53

These linear scales offer : Sturdy construction-high resistance to vibration-protection rating are similar in upright and reclining position

- The innovative rubber lips keep out contaminants when you are using the scale in a machine shop.
- An armoured signal cable is used to connect the scale unit to the DRO counter, so you can operate it safely even in harsh environments.
- The signal cable outlet can be positioned on either side of the slider, so you can connect the signal cable from either direction.

539-143-30

No.	Cable length [m]	Effective Length	L^0 [mm]	L^1 [mm]	L^3 [mm]	L^4 [mm]	L^5 [mm]	L^6 [mm]	Mass [kg]
539-143-30	10	3250 mm	3250	3350	3470	135	3200	800	10,8
539-144-30	10	3500 mm	3500	3600	3720	160	3400	850	11,4
539-145-30	10	3750 mm	3750	3850	3970	125	3720	930	12
539-146-30	10	4000 mm	4000	4100	4220	110	4000	1000	12,6
539-147-30	10	4250 mm	4250	4350	4470	135	4200	1050	13,2
539-148-30	10	4500 mm	4500	4600	4720	160	4400	1100	13,8
539-149-30	15	4750 mm	4750	4850	4970	85	4800	800	15,2
539-150-30	15	5000 mm	5000	5100	5220	120	4980	830	15,8
539-151-30	15	5250 mm	5250	5350	5470	125	5220	870	16,4
539-152-30	15	5500 mm	5500	5600	5720	130	5460	910	17
539-153-30	15	5750 mm	5750	5850	5970	135	5700	950	17,6
539-154-30	15	6000 mm	6000	6100	6220	110	6000	1000	18,2



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Mitutoyo

DRO Linear Scales AT103 - High Accuracy

Sealed incremental - full size housing- with very high repeatability

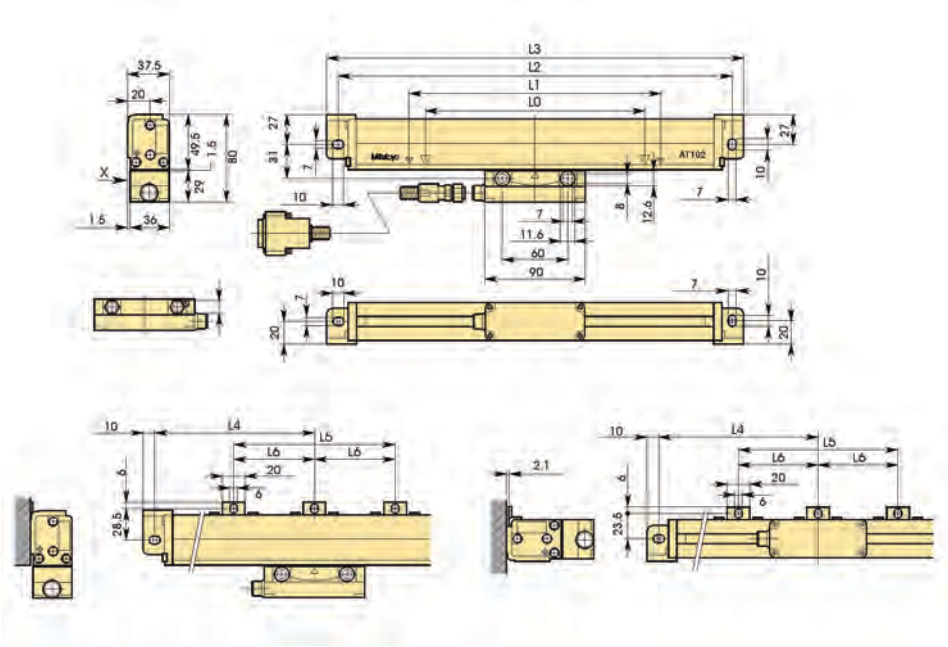
IP53

These linear scales offer : Sturdy construction-high resistance to vibration-protection rating are similar in upright and reclining position

- The innovative rubber lips keep out contaminants when you are using the scale in a machine shop.
- An armoured signal cable is used to connect the scale unit to the DRO counter, so you can operate it safely even in harsh environments.
- The signal cable outlet can be positioned on either side of the slider so you can connect the signal cable from either direction.

539-133-40

No.	Cable length [m]	Effective Length	L^0 [mm]	L^1 [mm]	L^2 [mm]	L^3 [mm]	L^5 [mm]	Mass [kg]
539-133-40	5	1600 mm	1600	1690	1818	1838	610	5,1
539-134-40	5	1700 mm	1700	1790	1918	1938	650	5,3
539-135-40	5	1800 mm	1800	1890	2018	2038	670	5,5
539-136-40	5	2000 mm	2000	2100	2228	2248	740	6



Specifications

Accuracy	(3+3L/1000) µm L = Effective length (mm)
Output waveform	Two 90° phase-shifted sinusoidal signals (2Vpp)
Operation temperature	0°C to 45°C
Power supply	5V DC ± 10%
Cross section	80 x 37,5mm / 95,5 x 37,5mm
Max. drive speed	up to 120 m/min.
Signal period	20 µm
Scale reference points	every 50 mm
Dust/water protection level	IP53

Optional accessories

No.	Description
09AAA033A	Extension Cable 2M
09AAA033B	Extension Cable 5M
09AAA033C	Extension Cable 7M
174-183D	Linear Scale Counter KA-212
174-185D	Linear Scale Counter KA-213

Extension cable

Legend
L0 Effective length
L1 Travel range
L2-L3 Mount interval
L4 Overall length
L5-L6 Support bracket position

Refer to the DRO System leaflet for more details.

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DRO Linear Scales AT113

Sealed incremental - slimline scale housing

These linear scales are built for limited installation space

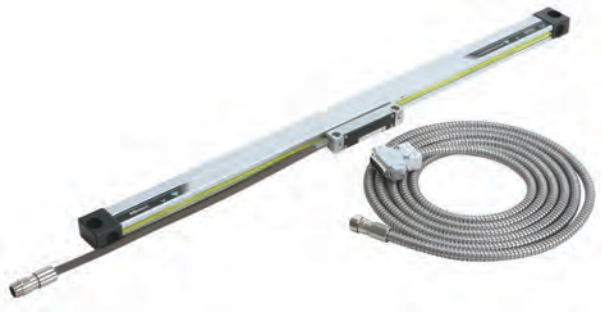
- Glass scale - Zero not coded
- Expansion factor (8 ± 1)x $10^{-6}/K^{-1}$
- An armoured inox signal cable is used to connect the DRO counter

Specifications

Accuracy	(5+5L/1000) µm L = Effective length (mm)
Output waveform	Two 90° phase-shifted sinusoidal signals (2Vpp)
Operation temperature	0°C to 45°C
Power supply	5V DC ± 10%
Cross section	52 x 22mm
Max. drive speed	120 m/min
Signal period	20 µm
Scale reference points	every 50 mm
Dust/water protection level	IP53

Optional accessories

No.	Description
09AAA033A	Extension Cable 2M
09AAA033B	Extension Cable 5M
09AAA033C	Extension Cable 7M
174-183D	Linear Scale Counter KA-212
174-185D	Linear Scale Counter KA-213

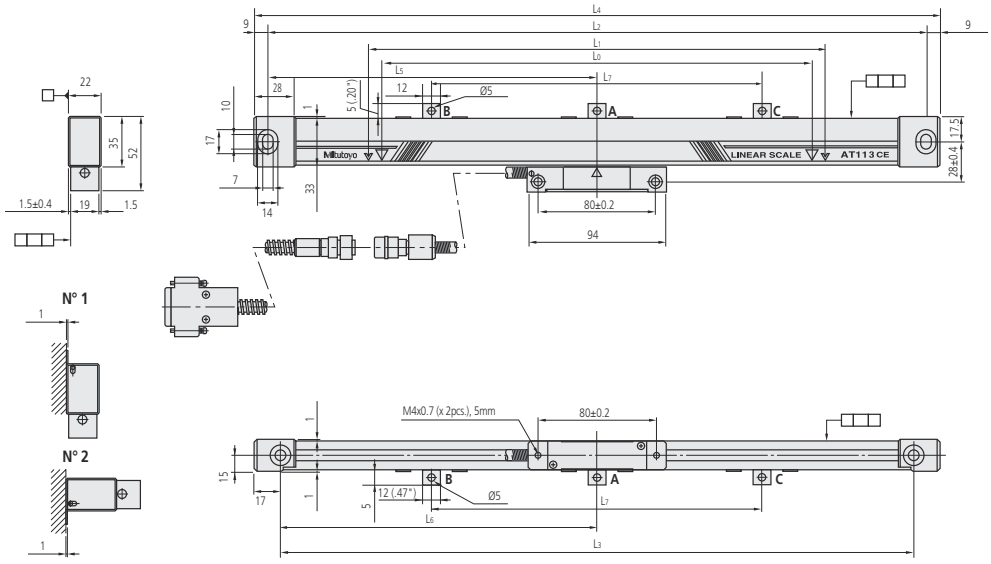


539-201-30

No.	Cable length [m]	Effective Length	L^0 [mm]	L^1 [mm]	L^2 [mm]	L^3 [mm]	L^4 [mm]	L^5 [mm]	L^6 [mm]	L^7 [mm]	Mass [kg]
539-201-30	3,5	100 mm	100	120	258	242	276				0,9
539-202-30	3,5	150 mm	150	170	308	292	326				0,905
539-203-30	3,5	200 mm	200	220	358	342	376				0,943
539-204-30	3,5	250 mm	250	270	408	392	426				0,981
539-205-30	3,5	300 mm	300	330	468	452	486				1,027
539-206-30	3,5	350 mm	350	380	518	502	536				1,064
539-207-30	3,5	400 mm	400	430	568	552	586				1,102
539-208-30	3,5	450 mm	450	480	618	602	636				1,14
539-209-30	3,5	500 mm	500	540	678	662	696	339	331		1,86
539-211-30	3,5	600 mm	600	640	778	762	796	389	381		1,3
539-213-30	3,5	700 mm	700	740	878	862	896	439	431		1,3
539-215-30	3,5	800 mm	800	840	978	962	996	489	481		1,4
539-216-30	3,5	900 mm	900	940	1078	1062	1096	539	531		1,4
539-217-30	5	1000 mm	1000	1040	1178	1162	1196	589	581		1,9
539-218-30	5	1100 mm	1100	1140	1278	1262	1296			430	1,9
539-219-30	5	1200 mm	1200	1240	1378	1362	1396			460	2
539-220-30	5	1300 mm	1300	1340	1478	1462	1496			490	2,2
539-221-30	5	1400 mm	1400	1440	1578	1562	1596			530	2,2
539-222-30	5	1500 mm	1500	1540	1678	1662	1696			560	2,2

Legend
L0 Effective length
L1 Travel range
L2-L3 Mount interval
L4 Overall length
L5-L7 Support bracket position

Refer to the DRO System leaflet for more details.



N°1-N°2 Mounting method

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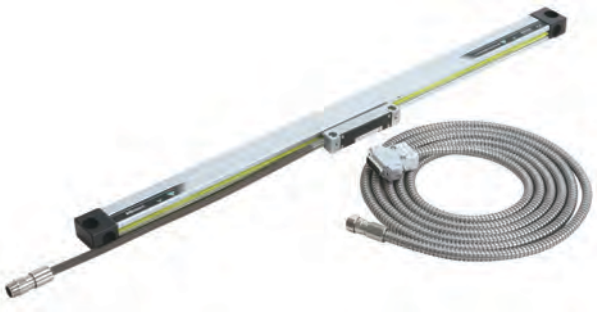
DRO Linear Scales AT113 - High Accuracy

Sealed incremental - slimline housing - with very high repeatability

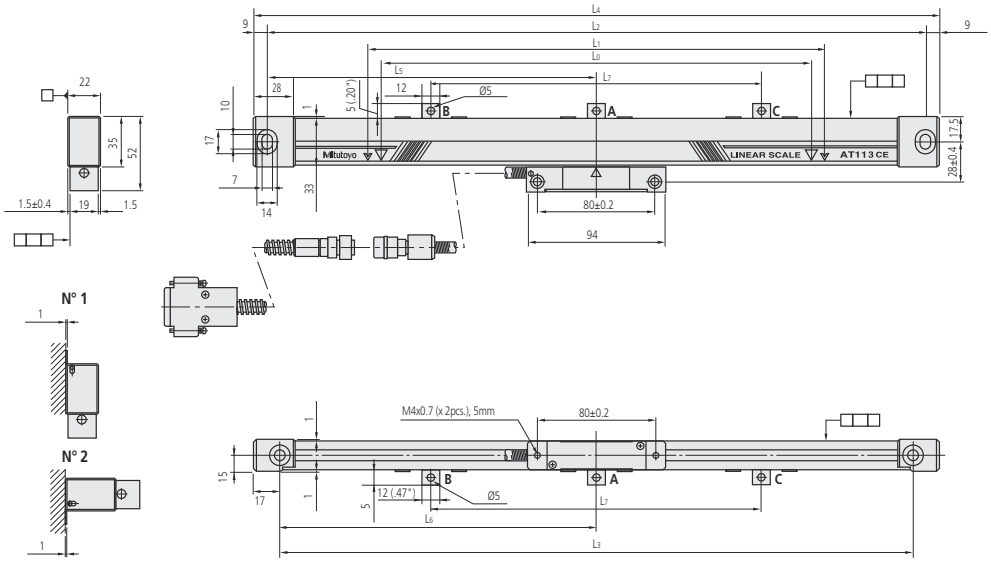
These linear scales are built for limited installation space

- Glass scale - Zero not coded
- Expansion factor (8 ± 1)x $10^{-6}/K^{-1}$
- An armoured inox signal cable is used to connect the DRO counter



539-201-40

No.	Cable length [m]	Effective Length	L^0 [mm]	L^1 [mm]	L^2 [mm]	L^3 [mm]	L^4 [mm]	L^5 [mm]	L^6 [mm]	L^7 [mm]	Mass [kg]
539-201-40	3,5	100 mm	100	120	258	242	276				0,9
539-202-40	3,5	150 mm	150	170	308	292	326				0,905
539-203-40	3,5	200 mm	200	220	358	342	376				0,943
539-204-40	3,5	250 mm	250	270	408	392	426				0,981
539-205-40	3,5	300 mm	300	330	468	452	486				1,027
539-206-40	3,5	350mm	350	380	518	502	536				1,064
539-207-40	3,5	400 mm	400	430	568	552	586				1,102
539-208-40	3,5	450 mm	450	480	618	602	636				1,14
539-209-40	3,5	500 mm	500	540	678	662	696	339	331		1,86
539-211-40	3,5	600 mm	600	640	778	762	796	389	381		1,3
539-213-40	3,5	700 mm	700	740	878	862	896	439	431		1,3
539-214-40	3,5	750 mm	750	780	918	902	936	459	451		1,4
539-216-40	3,5	900 mm	900	940	1078	1062	1096	539	531		1,4
539-217-40	5	1000 mm	1000	1040	1178	1162	1196	589	581		1,9
539-218-40	5	1100 mm	1100	1140	1278	1262	1296			430	1,9
539-219-40	5	1200 mm	1200	1240	1378	1362	1396			460	2
539-220-40	5	1300 mm	1300	1340	1478	1462	1496			530	2,2
539-221-40	5	1400 mm	1400	1440	1578	1562	1596			530	2,2
539-222-40	5	1500 mm	1500	1540	1678	1662	1696			560	2,2



N°1-N°2 Mounting method

Specifications

Accuracy	(3+3L/1000) µm L = Effective length (mm)
Operation temperature	0°C to 45°C
Power supply	5V DC ± 10%
Cross section	52 x 22mm
Max. drive speed	120 m/min
Signal period	20 µm
Scale reference points	every 50 mm
Dust/water protection level	IP53

Optional accessories

No.	Description
09AAA033A	Extension Cable 2M
09AAA033B	Extension Cable 5M
09AAA033C	Extension Cable 7M
174-183D	Linear Scale Counter KA-212
174-185D	Linear Scale Counter KA-213

Legend
L0 Effective length
L1 Travel range
L2-L3 Mount interval
L4 Overall length
L5-L7 Support bracket position

Refer to the DRO System leaflet for more details.

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DRO ABS Linear Scales AT715

Specifications

Measuring method	Electromagnetic induction system
Accuracy	100 to 500 mm ±5 µm; 600 to 1800 mm ±7 µm; 2000 to 3000 mm ±10 µm
Operation temperature	0-45 °C
Power supply	5V DC ± 10%
Cross section	54 x 22mm
Max. drive speed	50 m/min
Signal period	20 µm

Optional accessories

No.	Description
09AAB674A	Extension Cable 2m, for AT715
09AAB674B	Extension Cable 5m, for AT715
09AAB674C	Extension Cable 7m, for AT715
174-185D	Linear Scale Counter KA-213
174-183D	Linear Scale Counter KA-212

Legend
L0 Effective length
L1 Travel range
L2-L4 Mounting hole pitch
L5-L8 Middle support positions

Refer to the DRO System leaflet for more details.

Sealed Absolute - IP 67 protection - medium scale housing - specific for new and old manual machine

Dust and Water Protected
TÜVRheinland CERTIFIED
www.tuv.com ID 1111272565

ABSOLUTE IP67

This linear scale is based on electro magnetic induction principle thus offering you high enviroment protection IP level, in the mean time reference point is not necessary after each power on.

Only compatible with KA series display units.

539-807N

No.	Cable length [m]	Effective Length	L^1 [mm]	L^2 [mm]	L^3 [mm]	L^4 [mm]	L^5 [mm]	L^6 [mm]	L^7 [mm]	L^8 [mm]	Mass [kg]
539-801N	3,5	100 mm	120	258	242	278					0,7
539-802N	3,5	150 mm	170	308	292	328					0,75
539-803N	3,5	200 mm	220	358	342	378					0,8
539-804N	3,5	250 mm	270	408	392	428					0,85
539-805N	3,5	300 mm	330	468	452	488					0,9
539-806N	3,5	350 mm	380	518	502	538					0,95
539-807N	3,5	400 mm	430	568	552	588					1
539-808N	3,5	450 mm	480	618	602	638					1,05
539-809N	3,5	500 mm	540	678	662	698	339	331			1,1
539-811N	3,5	600 mm	640	778	762	798	389	381			1,2
539-813N	3,5	700 mm	740	878	862	898	439	431			1,3
539-814N	3,5	750 mm	780	918	902	938	459	451			1,35
539-815N	3,5	800 mm	840	978	962	998	489	481			1,4
539-816N	3,5	900 mm	940	1078	1062	1098	539	531			1,5
539-817N	5	1000 mm	1040	1178	1162	1198	589	581			1,65
539-818N	5	1100 mm	1140	1278	1262	1298	424	416	430		1,75
539-819N	5	1200 mm	1240	1378	1362	1398	459	451	460		1,85
539-820N	5	1300 mm	1340	1478	1462	1498	494	486	490		1,95
539-821N	5	1400 mm	1440	1578	1562	1598	524	516	530		2,05
539-822N	5	1500 mm	1540	1678	1662	1698	559	551	560		2,15
539-823N	5	1600 mm	1640	1778	1762	1798	459	451	430	215	2,25
539-824N	5	1700 mm	1740	1878	1862	1898	479	471	460	230	2,35
539-825N	5	1800 mm	1840	1978	1962	1998	459	451	530	280	2,45
539-860N	5	2000 mm	2040	2178	2162	2198	539	531	550		
539-861N	5	2200 mm	2240	2378	2362	2398	469	461	480		2,85
539-862N	7	2400 mm	2440	2578	2562	2598	509	501	520		3,05
539-863N	7	2500 mm	2540	2678	2662	2698	529	521	540		3,15
539-864N	7	2600 mm	2640	2778	2762	2798	549	541	560		3,25
539-865N	7	2800 mm	2840	2978	2962	2998	489	481	500		3,45
539-866N	7	3000 mm	3040	3178	3162	3198	529	521	530		3,65

2 m extension cable is attached to eff. length >= 2400 mm

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Mitutoyo

Universal DRO KA-200 Counter

DRO counter for Linear Scales

This counter displays length indication transmitted from a linear scale.
The KA-Counter offers you the following benefits:

- Can be used as a “standard counter” or a “lathe counter” by modifying parameters.
- Downsizing, weight saving and multiple function have been realized.
- Sub display for easy operation.
- Text data can be output using the optional USB interface.
- The optional external interface RS-232C enables connection to a PC and a printer.

174-183D

174-185D

No.	Axes	Mass
174-183D	2	1.25 kg
174-185D	3	1.33 kg

Functions	DRO counter for Linear Scales
Diameter display	●
1/2 calculation	●
mm/inch conversion	●
Bolt-hole circle machining	●
Scale reference points	●
Linearity error compensation	●
Zero approach function (Incremental mode)	●
Addition of 2-scale data	●
Coordinate system switching	●
Error message	●
Lower digit blanking out	●
Measurement direction setting	●
Memory backup	●
Pitch machinig	●
Resolution setting	●
Smoothing	●

Specifications

Display	7-segment, 8-digit + sign + 8-character alphabet LED display
Resolution	With AT100 Series: 0,05 - 0,0001 mm With AT715: 0,01 - 0,001 mm
Dimensions (WxDxH)	300 x 70 x 167 mm
Operation temperature	0°C to 45°C
Macro functions	Rectangular drilling and round milling newly added
Main features	Feed speed display; taper machining function; tool data; multipoint compensation; scale check function; calculation function
Output (optional)	RS-232C / USB

Optional accessories

No.	Description
06ACB393	Adapter C KA - LGF (OP)
06ACB913	Adapter A KA - LGF
06ACF941	Load/Zero Cable f. KA
06AET993	USB/RS 232 C code out unit
09EAA094	RS-232C Cable, DP1-VR/-VA to KA-Counter, 1m, 25 Pin Connector
63AAA108	RS-232C Signal Cable, D-Sub-25-D-Sub-9, 2m
936553	Remote Switch
937179T	Footswitch for SPC
937328	Extern load box
965004	RS 232 C Extern Load Switch

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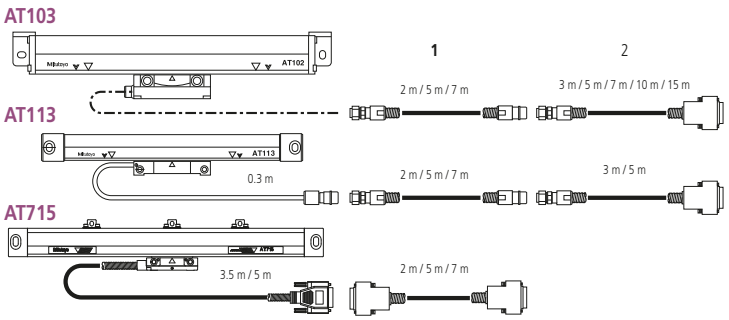
DRO Extension cables selection guide



Overview of NC Linear Scales System

	Model	Reference point	Absolute function	Output signal cycle of sinusoidal signal (μm)	Signal unit	No. of divisions	Resolution (μm)	Maximum response speed*1 (mm/s)	Minimum edge interval*2 (ns)
Separate Type Linear Scales	ST36B ST36C (ST36A) (ST36D)	Yes	—	4	— (PSU-200)	400	0.01	70	125
						200	0.02	150	
						80	0.05	360	
						40	0.1	720	
	ST46-EZA	Yes	—	20	—	400	0.05	450	100
						200	0.1	900	
						40	0.5	2600	
						20	1	2600	
						4	5	2600	
	ABS ST700	—	Yes	—	—	—	0.1	5000	—
	ABS ST1300	—	Yes	—	—	—	0.001	8000*3	—
							0.01		
Assembly Type Linear Scales	AT113	Yes	—	20	PSU-200	200	0.1	800	125
						100	0.2	1600	
						80	0.25	2000	
						40	0.5		
						20	1		
						10	2		
						8	2.5		
						4	5		
	AT211	Yes	—	20	—	200	0.1	710	125
						100	0.2	1400	
						40	0.5	2000	
						20	1		250
						8	2.5		500
						4	5		1000
	ABS AT1100	—	Yes	—	—	—	0.05	3000	—
	ABS AT1300	—	Yes	—	—	—	0.001	3000	—
							0.01		
							0.05		

*1 Maximum response speed of pulse output type uses the logical value (IC specification) with a margin of about 10%, and is limited depending on the scale response speed and resolution.
*2 For information on minimum edge interval, see "Explanation of Terms" on page 74.
The guaranteed value for minimum edge interval is +0%, -10%.
For some models, values other than shown above can also be selected.
*3 It depends on the interface.

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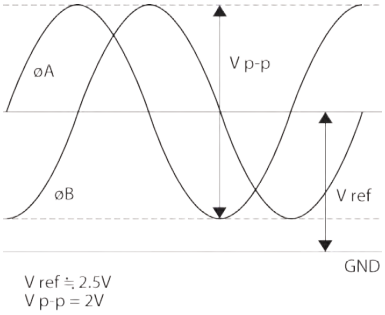
NC Linear Scales ST36

Open scales with Sine & Square-Wave Output

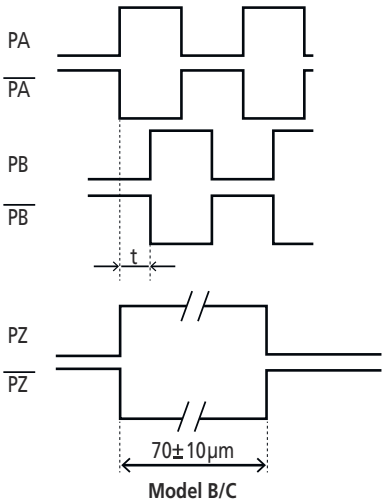
This is a high resolution, high accuracy, portable model designed for exposed installations.
The ST36 offers you the following benefits:

- High reliability with stable signal output.
- Outputs two-phase sinusoidal signal (signal pitch 4µm) and two-phase square-wave signal simultaneously.
- Outputs two-phase sinusoidal signal (signal pitch 4µm) and two-phase square-wave signal simultaneously.
- You are provided with a compact interface box as standard.
  Installation dimensions are available from Mitutoyo – please contact.

ST36



Model A/C



Model B/C

Specifications

Accuracy	10 - 300 mm ±0,5 µm 350 - 500 mm ±1 µm 600 - 1000 mm ±2 µm 1100 - 3000 mm ±2 µm/m
Output waveform	Two 90° phase-shifted sinusoidal signals 2Vpp (Model A and C) Two 90° phase-shifted square-wave signals (Model B and C) RS422 Line Driver
Scale reference points	10 -75 mm Center point scale 100 - 3000 mm every 50 mm
Max. drive speed	1200 mm/sec
Power supply	5V DC ± 10%
Signal period	8 µm
Cross section	22 x 14,9 mm
Resolution	0,01; 0,02; 0,05; 0,1 µm
Signal period	4 µm

Refer to the NC System leaflet for more details

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NC Linear Scales ST46-EZA

Fotoelectric metal tape linear scales

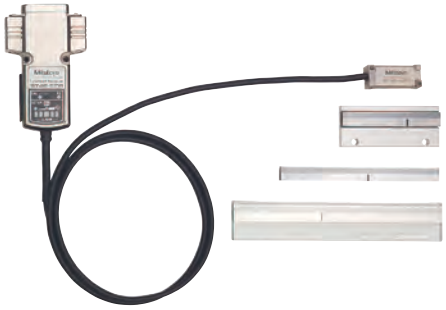
- Grating pitch 20 µm
- Zero reference not coded
- Output signal sinusoidal 2Vpp or square wave signal(RS 422) sticky or double sided tape version
- LED display function anomalie

No.	Detection Method
ST46EZA Type B	Reflective photoelectric linear encoder
ST46EZA Type C	Reflective photoelectric linear encoder

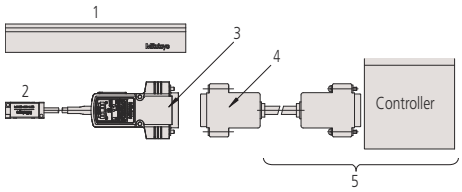
Specifications

Effective range	10 to 3000 mm
Output signal	Type B: 2-phase square wave signals, reference point pulse, external reset input Type C: 2-phase square wave signals, reference point pulse, 2 phase sinusoidal signal
Scale reference point	With scale reference point (50 mm pitch, 10 to 80 mm: Center point)
Operating temperature / humidity	0 to 40°C, 20 to 80% RH (no condensation)
Storage temperature / humidity	-20 to 60°C, 20 to 80% RH (no condensation)
Power supply voltage	5VDC ± 5%
Cross section	12,5 x 12,1mm / 17,1 x 14mm / 20 x 9,33mm (depends on the type)
Maximum response speed	2,6 m/s (at sine wave amplitude -3dB)
Internal expansion coefficient	(8±1) x 10-6°C
Scale specifications	Grating pitch 20 µm, Material: metal tape (Glas on request)

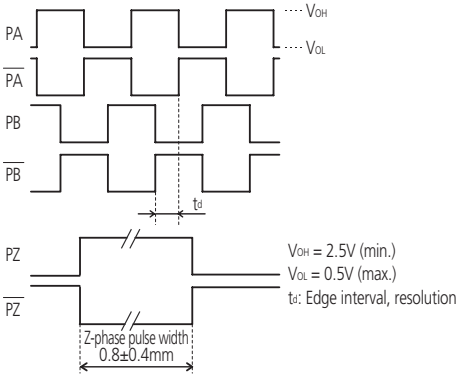
Refer to the NC System leaflet for more details



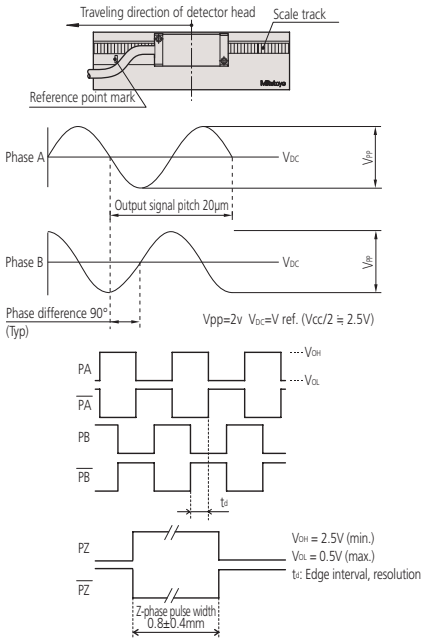
ST46-EZA



1: Main scale; 2: Detector unit; 3: Output connector (included); 4: Feedback cable; 5: To be supplied by customer (feedback cable/controller)



Output Signal Type B



Output Signal Type C

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NC Linear Scales ABS ST700

Electromagnetic induction Absolute Scale

ABSOLUTE scales have eliminated the need to re-establish the origin.
The ST700 offers you the following benefits:

- It is optimized for the control of linear motors.
- Optimized for high-speed, high-acceleration control.
- A non-contact detection system ensures a long service life for your product.
- Signal adjustment at installation is automatically performed with dedicated software.

Specifications

Detection Method	Electromagnetic induction
Effective Length	100mm - 3000 mm (3200mm - 6000mm optional)
Accuracy	(5+5L/1000)µm
Response speed	5000 mm/s
Applicable Interfaces	Fanuc, Mitsubishi, Yaskawa, Panasonic, Mitutoyo
Cross section	28 x 18,6mm
Resolution	0,1 µm

Refer to the NC System leaflet for more details

NC Linear Scales ABS ST1300

High-speed, high-resolution Absolte Tape Scales

Long, fast and diverse connectivity

- Realizes a 12m maximum effective length, 8-m/s max. response speed and 1nm minimum resolution.
- Extensive interface compatibility. See specifications below for details.
- Outstanding robustness against contamination compared to earlier photoelectric types achieved using a new detection principle.
- Choice between double-sided tape, fixed-ends and center mounting methods
- Signal validation program facilitates mounting adjustment and maintenance

Double-ended mounting type

Double-sided tape mounting type

Center mounting type

Specifications

Max. response speed	8 m/s (Varies according to the interface)
Detection Method	Optical
Maximum effective range	12 m (depending on mounting type)
Accuracy	10 µm/m (± 5µm)
Cross section	22 x 30,1 or 22 x 25,45 mm (depending on mounting type)
Min. resolution	1 nm / 10 nm
Scale specifications	Metal tape
Applicable Interfaces	FANUC, Mitsubishi, Yaskawa, Panasonic, Mitutoyo

Refer to the NC System leaflet for more details

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NC Linear Scales AT211

Specifications

Accuracy	100 to 1500 mm (3+3L/1000) µm (standard type) (2+2L/1000) µm (high-accuracy type) 500 to 1500 mm (3+3L/1000) µm L = Effective range (mm)
Output waveform	Two 90° phase-shifted quadrature signals (RS422) Differential line driver
Power supply voltage	5V DC ± 10%
Cross section	58 x 20mm / 52 x 22mm
Max. drive speed	up to 120 m/min
Resolution	0,1; 0,5; 1 µm
Signal period	20 µm

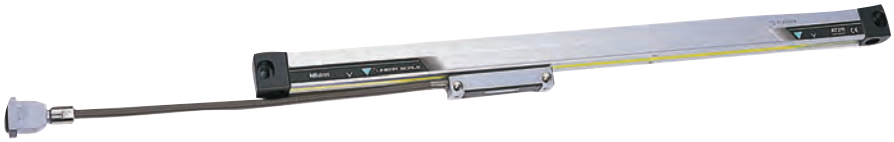
Refer to the NC System leaflet for more details

Sealed incremental - slimline size housing - high traverse speed-with very high repeteability

IP53

- 20 µm grating pitch-output signal square wave (RS 422)
- suggested resolution 1 - 0,5 µm
- high traverse speed
- Accuracy - standard version: from 100 up to 1500 mm =± 3 µm
- Accuracy - high repeteability from 100 up to 500 mm =± 2 µm
- Protection from IP 53 up to IP 64 (pressure device connection)

AT211A



AT211B

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Mitutoyo

NC Linear Scales ABS AT1100

Electromagnetic induction Absolute Scale

ABSOLUTE®

- New design to avoid infiltration of coolant and dust using a rubber highly resistant to coolant attack for highest reliability
- Widest sensor-to-scale air gap for electromagnetic induction scales of 0,4 mm - 4 times wider than conventional optical or electromagnetic encoder
- Increased air gap reduces the likelihood of failure due to the accumulation of contaminants and is one of the world's largest to be found in a machine tool scale
- De facto standard frame multipoint mounting method has been adopted to provide high resistance to vibration and shock
- 6 times higher accuracy than previous scales due to improved signal processing technology
- Compatible with the high-speed serial interface from leading machine-tool companies, allowing direct connection to an NC controller

Specifications

Detection Method	Electromagnetic induction
Maximum effective range	3040 mm
Accuracy	3+5L/1000) µm L= 140 to 2040 mm (5+5L/1000) µm L= 2240 to 3040 mm
Cross section	85 x 37mm
Response speed	3 m/s
Resolution	0.05 µm
Compatible interface	FANUC, Mitsubishi, Siemens, Mitutoyo

Refer to the NC System leaflet for more details

NC Linear Scales ABS AT1300

Absolute Scale Unit (Slim Type)

ABSOLUTE®

- High-rigidity (S-type) and high-accuracy (H-type) version available
- Outstanding resistance to contamination compared to conventional optical types by using a new detection principle
- Features a new coolant-proof design incorporating a high-performance rubber seal to provide higher reliability in the harsh factory environment.
- Delivers high accuracy and the outstanding resolution of 0,001 µm, the best-in-class in absolute scales.
- Allows space-saving design thanks to a slim form. (AT500-S and AT500-H are compatible with each other in installation.)
- Supports the interfaces of various manufacturers allowing a variety of system configurations

Specifications

Detection Method	Optical, Transmission double telecentric
Maximum effective range	100 to 2200 mm S-Type/ 100 to 1000mm H-Type
Cross section	66 x 23 mm / 24 x 65 mm
Response speed	3000 mm/s
Resolution	0,001/0,01/0,05 µm
Compatible interface	Fanuc, Mitsubishi, Mitutoyo

Refer to the NC System leaflet for more details

S-Type

H-Type

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Horizontal ABSOLUTE Scale Coolant Proof IP66

Functions	
ORIGIN (ABS-Zero)	●
Low voltage alarm	●
Data output	●

Specifications

Repeatability	0,01 mm
Max. response speed	Unlimited

Optional accessories

No.	Description
02AZD790A	U-WAVE-T Connection Cable A, with Data Button IP Caliper Type
05CZA624	Digimatic Cable with Data Button IP Type, 1 m, Caliper Type
05CZA625	Digimatic Cable with Data Button IP Type, 2 m, Caliper Type
06AFM380A	USB Input Tool Direct (Digimatic USB), Digi/Digi2, With Data Button IP Caliper Type

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

You can use this scale unit in adverse environments with water and cutting oil due to it new detection method (electromagnetic induction).

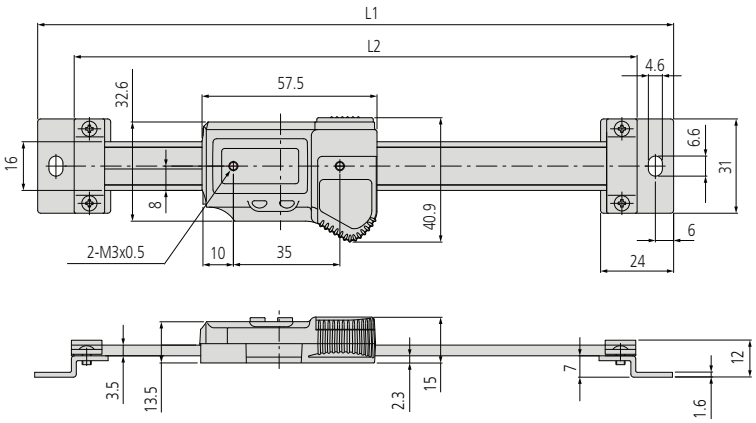
- Specially designed output cables are developed to maintain the water resistant structure.
- You will have no overspeed error since the ABSOLUTE scale does not depend on counting scale graduations.
- Once an absolute zero (origin) point is set, the Digimatic Scale Unit shows the absolute distance from this point when it is powered on, rather than „0".

572-600

572-601

Metric

No.	Range [mm]	Accuracy	L1 [mm]	L2 [mm]	Mass [kg]
572-600	0 - 100	0,03 mm	209	185	0,39
572-601	0 - 150	0,03 mm	259	235	0,41
572-602	0 - 200	0,03 mm	311	287	0,43



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Horizontal ABSOLUTE Scale Standard

ABSOLUTE®

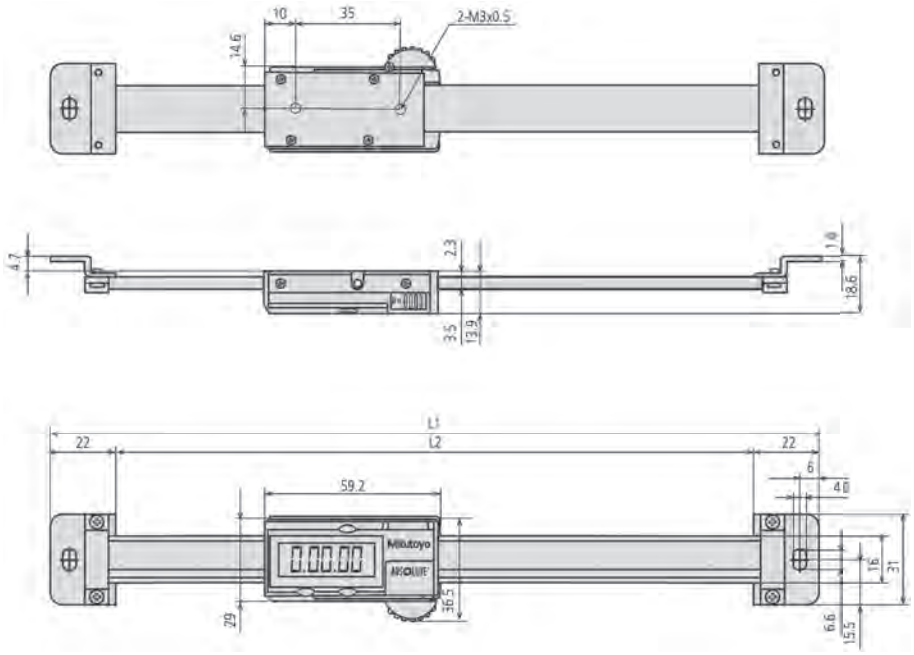
This unit has an ABSOLUTE capacitive-type scale.

- The ZERO point is set only once and is stored as the absolute ZERO point until the next battery replacement.
- You can make the highest precision measurements even at the highest drive speed.
- The display has large characters, making it easy to read.

572-202-30

Metric

No.	Range [mm]	Accuracy	L1 [mm]	L2 [mm]	Mass [kg]
572-200-30	0 - 100	0,03 mm	209	185	0,23
572-201-30	0 - 150	0,03 mm	259	235	0,25
572-202-30	0 - 200	0,03 mm	311	287	0,27
572-203-10	0 - 300	0,04 mm	444	420	0,37



100-200 mm

Functions	
ON/OFF	●
Low voltage alarm	●
Data output	●
ORIGIN	●

Specifications

Max. response speed	Unlimited

Optional accessories

No.	Description
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
905689	Digimatic Cable, Flat L-Shape Type, 1m
905690	Digimatic Cable, Flat L-Shape Type, 2m
905691	Digimatic Cable, Flat L-Shape Right Type, 1m
905692	Digimatic Cable, Flat L-Shape Right Type, 2m
905693	Digimatic Cable, Flat L-Shape Left Type, 1m
905694	Digimatic Cable, Flat L-Shape Left Type, 2m
959143	Data Hold Unit
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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Horizontal ABSOLUTE Scale Measurement Direction Switching

Functions	
ON/OFF	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●
Data output	●
ORIGIN	●

Specifications

Max. response speed	Unlimited

Optional accessories

No.	Description
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
905689	Digimatic Cable, Flat L-Shape Type, 1m
905690	Digimatic Cable, Flat L-Shape Type, 2m
905691	Digimatic Cable, Flat L-Shape Right Type, 1m
905692	Digimatic Cable, Flat L-Shape Right Type, 2m
905693	Digimatic Cable, Flat L-Shape Left Type, 1m
905694	Digimatic Cable, Flat L-Shape Left Type, 2m

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

ABSOLUTE®

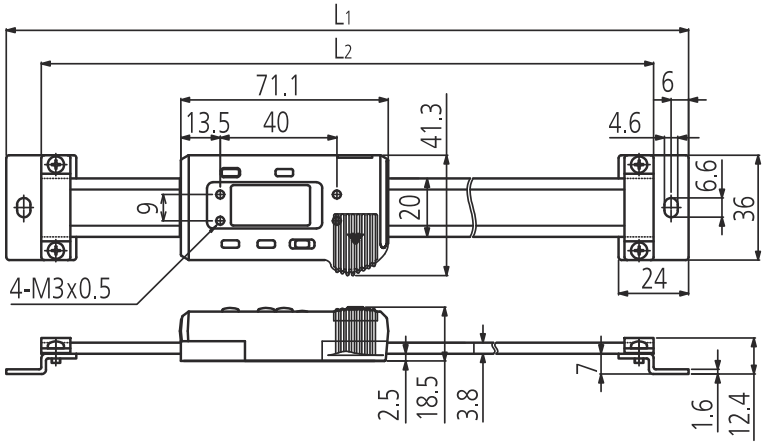
This unit has an ABSOLUTE capacitive-type scale.
It offers you the following benefits:

- The ZERO point is set only once and is stored as the ABSOLUTE ZERO point until the next battery replacement.
- You can make the highest precision measurements even at the highest drive speed.
- The display has large characters, making it easy to read.

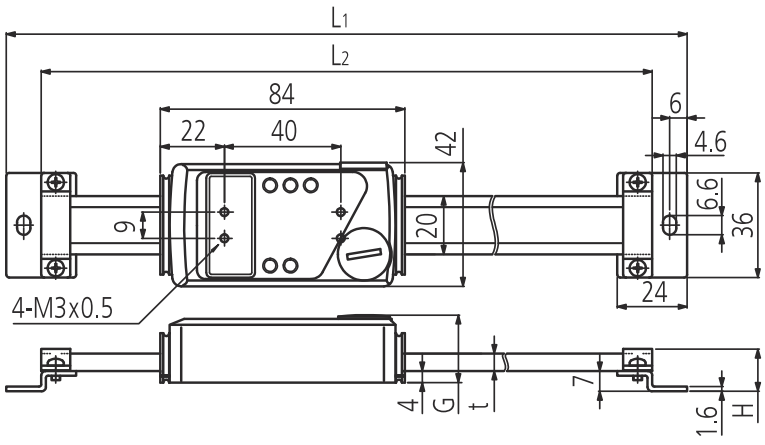
572-461

Metric — Without diameter function, with reversible counting direction

No.	Range [mm]	Accuracy	t [mm]	L1 [mm]	L2 [mm]	H [mm]	Mass [kg]
572-460	0 - 100	0,03 mm		244	220		0,25
572-461	0 - 150	0,03 mm		294	270		0,28
572-462	0 - 200	0,03 mm		344	320		0,31
572-463	0 - 300	0,04 mm		444	420		0,37
572-464	0 - 450	0,04 mm	6	594	570	14,6	0,76
572-465	0 - 600	0,05 mm	6	774	750	14,6	0,9
572-466	0 - 800	0,06 mm	10	974	950	18,6	1,71
572-467	0 - 1000	0,07 mm	10	1174	1150	18,6	2,04



100-300 mm



450-1000 mm

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Mitutoyo

Horizontal ABSOLUTE Scale Diameter Function

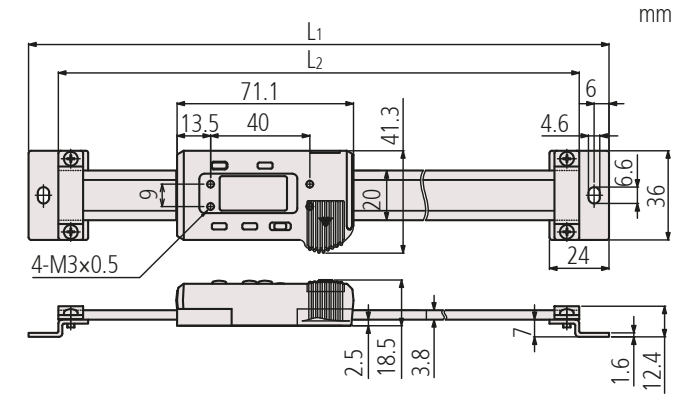
- The ZERO point is set only once and is stored as the ABSOLUTE ZERO point until the next battery replacement
- You can make the highest precision measurements even at the highest drive speed.

572-483-10

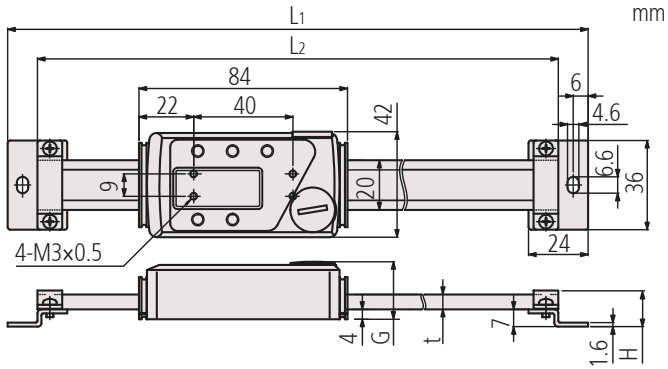
Metric

Horizontal multi-function type with diameter displaying function

No.	Range [mm]	Accuracy	L1 [mm]	L2 [mm]	H [mm]	t [mm]	Mass [kg]
572-480-10	0 - 100	0,03 mm	244	220			0,25
572-481-10	0 - 150	0,03 mm	294	270			0,28
572-482-10	0 - 200	0,03 mm	344	320			0,31
572-483-10	0 - 300	0,04 mm	444	420			0,37
572-484-10	0 - 450	0,04 mm	594	570	14,6	6	0,76
572-485-10	0 - 600	0,05 mm	774	750	14,6	6	0,9
572-486-10	0 - 800	0,06 mm	974	950	18,6	10	1,71
572-487-10	0 - 1000	0,07 mm	1174	1150	17,8	10	2,04



100-300 mm



450-1000 mm

Functions	
ON/OFF	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●
Data output	●
Diameter function	●
ORIGIN	●

Specifications

Max response speed	Unlimited

Optional accessories

No.	Description
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
905689	Digimatic Cable, Flat L-Shape Type, 1m
905690	Digimatic Cable, Flat L-Shape Type, 2m
905691	Digimatic Cable, Flat L-Shape Right Type, 1m
905692	Digimatic Cable, Flat L-Shape Right Type, 2m
905693	Digimatic Cable, Flat L-Shape Left Type, 1m
905694	Digimatic Cable, Flat L-Shape Left Type, 2m

Consumable spares

No.	Description
938882	Battery SR44 1,5 V

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Vertical ABSOLUTE Scale Standard

Functions	
ON/OFF	●
Low voltage alarm	●
Data output	●
ORIGIN	●

Specifications

Max. response speed	Unlimited

Optional accessories

No.	Description
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
905689	Digimatic Cable, Flat L-Shape Type, 1m
905690	Digimatic Cable, Flat L-Shape Type, 2m
905691	Digimatic Cable, Flat L-Shape Right Type, 1m
905692	Digimatic Cable, Flat L-Shape Right Type, 2m
905693	Digimatic Cable, Flat L-Shape Left Type, 1m
905694	Digimatic Cable, Flat L-Shape Left Type, 2m
959143	Data Hold Unit
959149	Digimatic Cable, Straight, Data Button, 1 m
959150	Digimatic Cable, Straight, Data Button, 2 m

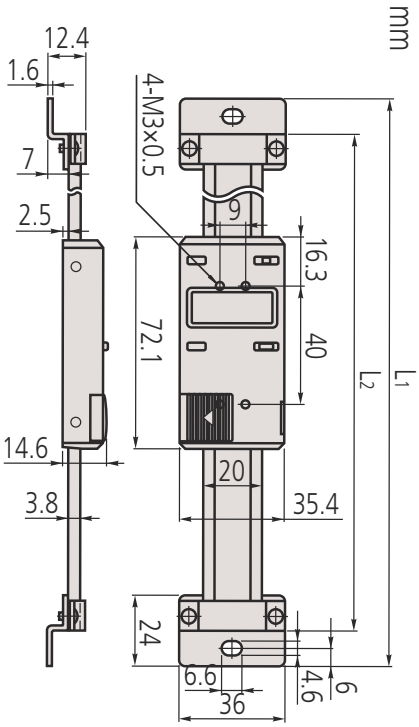
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

ABSOLUTE®

This unit has an ABSOLUTE capacitive-type scale.
It offers you the following benefits:

- The ZERO point is set only once and is stored as the absolute ZERO point until the next battery replacement.
- You can make the highest precision measurements even at the highest drive speed.
- The display has large characters, making it easy to read.



572-302-10

Metric

No.	Range [mm]	Accuracy	L1 [mm]	L2 [mm]	Mass [kg]
572-300-10	0 - 100	0,03 mm	244	220	0,25
572-301-10	0 - 150	0,03 mm	294	270	0,28
572-302-10	0 - 200	0,03 mm	344	320	0,31
572-303-10	0 - 300	0,04 mm	444	420	0,37

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Mitutoyo

Vertical ABSOLUTE Scale Measurement Direction Switching

ABSOLUTE®

This unit has an ABSOLUTE capacitive-type scale.
It offers you the following benefits:

- The ZERO point is set only once and is stored as the absolute ZERO point until the next battery replacement.
- The display has large characters, making it easy to read.
- Measurement direction switching function is included.

572-560

Functions	
ORIGIN (ABS-Zero)	●
ON/OFF	●
DATA (output with cable) / HOLD (display value)	●
Data output	●

Specifications

Max. response speed	Unlimited

Optional accessories

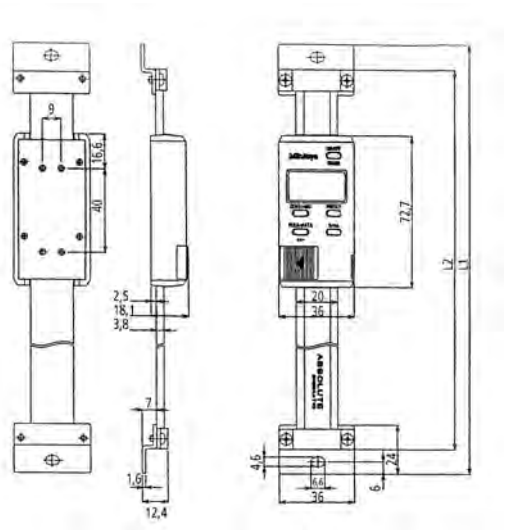
No.	Description
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
905689	Digimatic Cable, Flat L-Shape Type, 1m
905690	Digimatic Cable, Flat L-Shape Type, 2m
905691	Digimatic Cable, Flat L-Shape Right Type, 1m
905692	Digimatic Cable, Flat L-Shape Right Type, 2m
905693	Digimatic Cable, Flat L-Shape Left Type, 1m
905694	Digimatic Cable, Flat L-Shape Left Type, 2m

Consumable spares

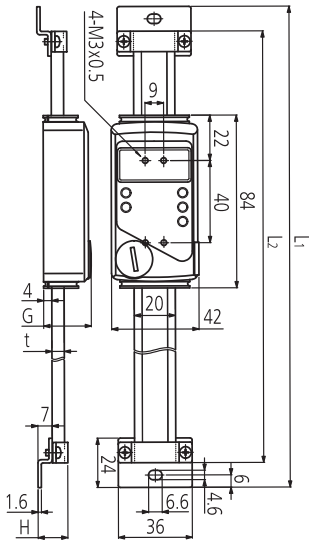
No.	Description
938882	Battery SR44 1,5 V

Metric

No.	Range [mm]	Accuracy	L1 [mm]	L2 [mm]	H [mm]	t [mm]	Mass [kg]
572-560	0 - 100	0,03 mm	244	220			0,25
572-561	0 - 150	0,03 mm	294	270			0,28
572-562	0 - 200	0,03 mm	344	320			0,31
572-563	0 - 300	0,04 mm	444	420			0,37
572-564	0 - 450	0,04 mm	594	570	14,6	6	0,76
572-565	0 - 600	0,05 mm	774	750	14,6	6	0,9
572-566	0 - 800	0,06 mm	974	950	18,6	10	1,71
572-567	0 - 1000	0,07 mm	1174	1150	18,6	10	2,04



100-300 mm



450-1000 mm

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Vertical ABSOLUTE Scale Diameter Function

ABSOLUTE®

This unit has an ABSOLUTE capacitive-type scale.

- The ZERO point is set only once and is stored as the absolute ZERO point until the next battery replacement.
- The display has large characters, making it easy to read.
- Diameter measurement function is included.

Functions	
ON/OFF	●
DATA (output with cable) / HOLD (display value)	●
Low voltage alarm	●
Data output	●
Diameter function	●
ORIGIN	●

Specifications

Max. drive speed	Unlimited

Optional accessories

No.	Description
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
905338	Digimatic Cable, Flat Straight Type, 1m
905409	Digimatic Cable, Flat Straight Type, 2m
905689	Digimatic Cable, Flat L-Shape Type, 1m
905690	Digimatic Cable, Flat L-Shape Type, 2m
905691	Digimatic Cable, Flat L-Shape Right Type, 1m
905692	Digimatic Cable, Flat L-Shape Right Type, 2m
905693	Digimatic Cable, Flat L-Shape Left Type, 1m
905694	Digimatic Cable, Flat L-Shape Left Type, 2m

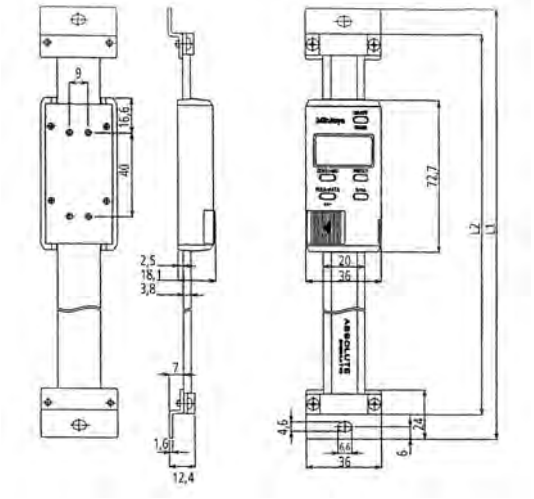
Consumable spares

No.	Description
938882	Battery SR44 1,5 V

572-580

Metric

No.	Range [mm]	Accuracy	L1 [mm]	L2 [mm]	H [mm]	t [mm]	Mass [kg]
572-580-10	0 - 100	0,03 mm	244	220			0,25
572-581-10	0 - 150	0,03 mm	294	270			0,28
572-582-10	0 - 200	0,03 mm	344	320			0,31
572-583-10	0 - 300	0,04 mm	444	420			0,37
572-584-10	0 - 450	0,04 mm	594	570	14,6	6	0,76
572-585-10	0 - 600	0,05 mm	774	750	14,6	6	0,9
572-586-10	0 - 800	0,06 mm	974	950	18,6	10	1,71
572-587-10	0 - 1000	0,07 mm	1174	1150	18,6	10	2,04



100-300 mm

450-1000 mm

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Mitutoyo

Optical Measuring Systems

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Pocket Magnifier

Mini Scope with storage pocket

Mini Scope 25x

This easy-to-carry, pen-shaped Mini Scope enables high-resolution observation of surfaces with a 25x magnification.

183-210

No.	Magnification	Field of view	Dimension main body L x ø:	Mass
183-210	25x	ø3,3 mm	127 x 12,5 mm	19 g

Clear Loupes

Clear Loupes

These loupes enables the observation of workpiece surface properties with high-resolution on high-field-of-view magnified images. Three levels of magnifications, 5x, 10x and 15x, are available for this product according to your needs.

183-310

183-311

183-312

No.	Magnification	Field of View [mm]	Aperture	Packing dimensions [mm]	Packing mass (GROSS)	Mass
183-310	5x	ø34	ø 25 mm	72 (L) x 40 (W) x 40 (H)	34 g	24 g
183-311	10x	ø28	ø 25 mm	58 (L) x 40 (W) x 40 (H)	36 g	28 g
183-312	15x	ø19	ø 19 mm	52 (L) x 40 (W) x 40 (H)	26 g	19 g

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Pocket Comparator

Pocket Comparator

This magnifier is ideal for a variety of measuring tasks. With the Precision Magnifier you can:

- Easily perform measurements including length, diameter, line thickness and thread pitch.
- Replace the reticles quickly.

Pocket Comparator 10x

Pocket Comparator 10x

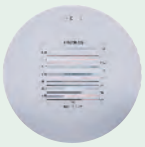
No.	Magnification	Field of view	Aperture	Dimension main body L x ø:	Mass
183-140	10x	32 mm	20 mm	42,5 x 45,5 mm	140 g

Recticle

No.	Order Number	Functions	Mass [g]
Reticle No. 1	183-141	**Diameter:** 0,1; 0,2; 0,3; 0,4; 0,5; 0,6; 0,7; 1,5; 3 mm **Grid:** 0,3" x 0,4" (Pitch 0,025"); Radius 0 – 10 mm (Pitch 0,5mm) **Angle:** 0 – 90° (Pitch 1°) **Scale:** 0 – 10 mm (Pitch 0,1 mm)	6
Reticle No. 2	183-142	**Diameter:** 0-1 mm(pitch 0,1 mm); 0,05"; 0,01"; 0,02"; 0,03"; 0,04"; 0,05"; 1/64"; 1/32"; 3/64"; 1/16" **Radius:** 0 - 10 mm; 0,1 mm pitch from 0 - 1 mm; 0,5 mm pitch from 1 - 10 mm **Angle:** 0 - 90°; pitch 5° from 0 - 80°; pitch 1° from 80° - 90°; 29°; 55°; 60°; 118° **Scale:** 0 - 0,5" (pitch= 0,005"); 0 - 1/8" (pitch= 1/64")	6
Reticle No. 3	183-143	**Thickness:** 0,02 - 0,16 (pitch= 0,01 mm)	6
Reticle No. 4	183-144	**Diameter:** 0 - 1 mm (pitch= 0,1 mm) **Grid:** Vertically 5 mm, Horizontal 10 mm scale (pitch 1 mm) **Radius:** 0 - 10 mm (pitch= 0,5 mm) **Angle:** 0° - 90°; 1° pitch from 0° - 10°; 5° pitch from 10° - 90° **Scale:** 0 - 10 mm (pitch= 0,1 mm)	6
Reticle No. 5	183-145	**Diameter:** 0,002"; 0,005"; 0,01"; 0,02"; 0,04"; 0,05"; 1/64"; 1/32"; 3/64"; 1/16" **Radius:** 1/16"; 3/32"; 1/8"; 5/32"; 3/16"; 7/32" 1/4"; 9/32"; 5/16"; 11/32"; 3/8" **Angle:** 0° - 90°, pitch = 5°; Scale: 0 -10 mm (pitch = 0,2 mm); 0 - 0,5" (pitch = 0,005"); 1/64"; 1/32"; 3/64"; 3/32"; 1/8"; 1/4"; 3/16"	6
Reticle No. 6	183-146	**Radius:** 0 - 10 mm; 0,1 mm pitch from 0- 1 mm and 0,5 mm from 1 - 10 mm **Angle:** 0° - 90°; 5° pitch from 0° - 80 ° and 1° from 80° - 90° **Scale:** 0 - 3/8" (pitch = 1/64"); 0 - 0,3" (pitch = 0,005")	6
Reticle No. 7	183-147	**Diameter:** 0 - 2,5 mm with 0,1 mm pitch from 0,1 mm - 1 mm and 0,5 mm pitch from 1 mm - 10 mm **Grid:** Vertically/Horizontal 10 x 10 mm with 0,5 mm pitch	6
Reticle No. 8	183-148	**Scale:** 0 - 10 mm (pitch = 0,1 mm)	6
Reticle No. 9	183-149	**Radius:** 0 - 10 mm (pitch = 0,5 mm) **Angle:** 0° - 180° (pitch = 1°)	6
Reticle No. 10	183-150	**Metric screw threads:** 0,25; 0,3; 0,35; 0,4; 0,45; 0,6; 0,75; 0,9; 1 mm	6
Reticle No. 11	183-151	**Inch screw threads:** 50; 32; 28; 24; 20; 18; 16; 14; 8 threads	6
Reticle No. 12	183-152	**Radius:** 1/16" to 3/8" (pitch 1/32") **Angle:** 0° to 90° (pitch = 1°) **Scale:** 0 to 10 mm (pitch 0,1 mm); 0 to 5" (pitch 0,005")	6

Reticle No. 1

Reticle No. 2

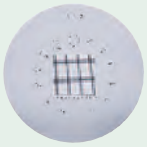


Reticle No. 3

Reticle No. 4

Reticle No. 5

Reticle No. 6



Reticle No. 7

Reticle No. 8

Reticle No. 9

Reticle No. 10

Reticle No. 11

Reticle No. 12

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Measuring Microscope TM Generation B

With this Toolmaker's Microscope you can measure dimensions and angles on small workpieces thanks to the optional analogue or digital micrometer heads and the built-in circular scale.

Further benefits of the TM Generation B include:

- Toolmakers microscopes well-suited for measuring dimensions and angles of features on small workpieces with the XY stage and rotating eyepiece scale.
- Compact design with recessed grips for better portability. The slim design makes this microscope ideal for use in areas with limited space.
- Powerful adjustable LED light sources for contour and surface illumination provide optimum lighting conditions for workpiece inspection.
- The TM Generation B is available with work stages of 50 x 50 mm or 100 x 50 mm.

Specifications

Observation image	Erect
Angle reading	Range: 360° Minimum reading: 6' (by vernier)
Objective lens	2X **(176-138)** Working distance: 67 mm Optional: 5X, 10X
Eyepiece	15X **(176-116)**, View field ø13 mm Optional: 10X, 20X
Total magnification	30X
Transmitted illumination	Light source: White LED with green filter Functions: Light intensity adjustable
Surface illumination	Light source: White LED Functions: Light intensity adjustable
Power supply	100/240V AC, 50/60Hz
Mass	TM-505B: 14 kg TM-1005B: 15 kg

Standard accessories

No.	Description
176-116	Eyepiece for TM, 15X Eyepiece
176-126	Reticle for TM, 90° Broken Cross-hair
176-138	Objective Lens for TM, 2X Eyepiece

Optional accessories

No.	Description
63AAA001	LED ring light, for TM-500 including controller
63AAA353	HDMI USB camera set for TM micro-scopes
63AAA597	ASUS AiO PC for M2 system, Intel Cele-ron N4500/8GB/256GB SSD/W11Pro/ 15.6" Touch screen
63AAA455	M2 – Geometric Measuring Software for TM Microscope, Digimatic interface

HDMI USB camera set for TM microscopes (63AAA353) - Set includes:
63AAA059 - HDMI16MDPX camera, including HDMI cable, mouse and simple calculation and reporting software on SD card
63AAA060 - 0,37X C-mount to Eyepiece adapter for TM microscopes
63AAA155 - Mechanical adapter for mounting the HDMI camera on the ocular tube

63AAA353

Rotating eyepiece with angle reading

Digital camera for TM microscopes

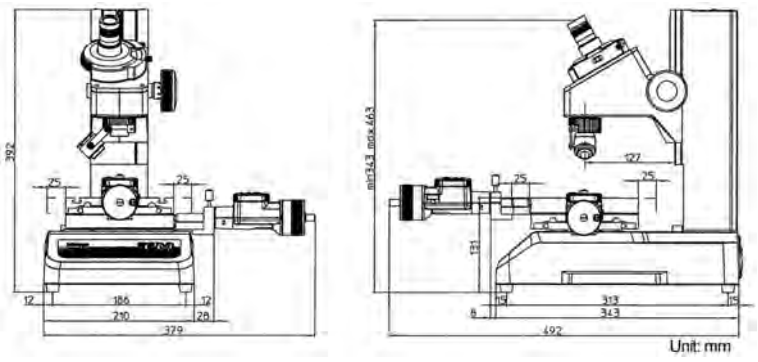
Mounting the HDMI6MDPX digital camera into the ocular tube transforms the TM microscope into a digital microscope.

1. HDMI6MDPX, 6 megapixel colour camera with direct HDMI output to a monitor, no PC necessary
2. Integrated SD card for saving images and pre-installed software for performing basic in-screen measurements
3. Intuitive operation of the software with standard supplied USB mouse

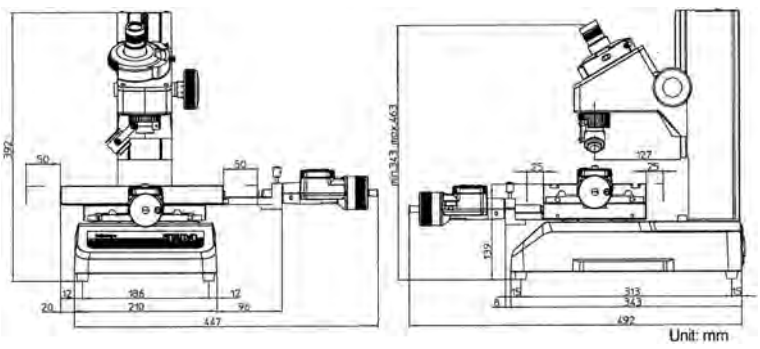
TM-505B fitted with optional digimatic micrometer heads

TM-1005B with optional LED ring light (63AAA001) and HDMI USB camera set (63AAA353)

No.	Model	XY stage table top size	Effective area of table	Remarks	XY stage travel range	Max. workpiece height	Mass
176-818D	TM-505B	152 x 152 mm	96 x 96 mm	TM-505B with optional micrometer screws	50 x 50 mm	115 mm	14 kg
176-819D	TM-1005B	240 x 152 mm	154 x 96 mm	TM-1005B with optional micrometer screws	100 x 50 mm	107 mm	15 kg



TM-505B



TM-510B

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Mitutoyo

Accessories for Measuring Microscope TM Generation B

Objectives and Eyepieces for TM

176-137

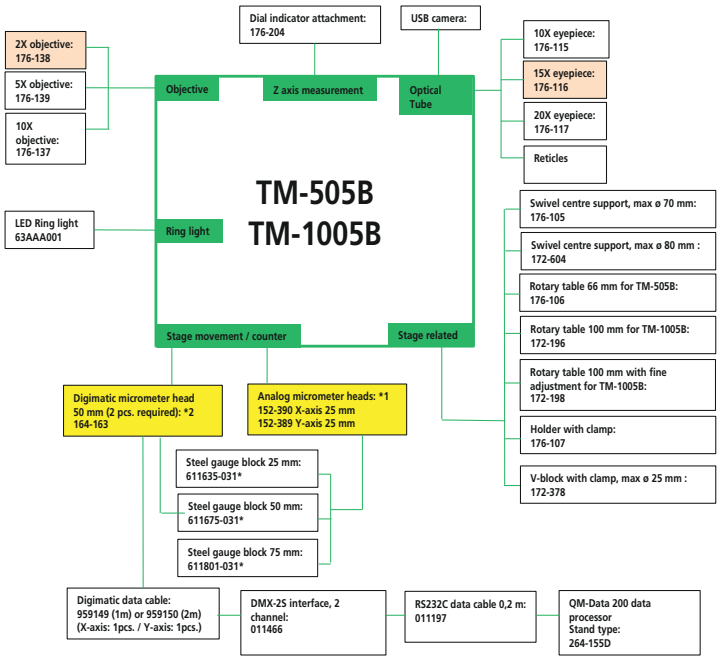
176-138

176-139

Objective Lenses and Eyepieces

No.	Numerical aperture	Working distance [mm]	Objective lens	Eyepiece 10X (176-115)	Eyepiece 15X (176-116)	Eyepiece 20X (176-117)	Mass [g]
176-138	0.07	67	2X (1)	20X (6,5 mm)	30X (6,5 mm)	40X (5 mm)	140
176-139	0.1	33	5X	50X (2,6 mm)	75X (2,6 mm)	100X (2 mm)	85
176-137	0.14	14	10X	100X (1,3 mm)	150X (1,3 mm)	200X (1 mm)	100

(1) Standard accessory
The number in brackets is the diameter of the field of view



* Necessary gauge blocks for extending stage travel range:

Stage travel range	TM with analog micrometer heads 0-25 mm	TM with digimatic micrometer heads 0-50 mm
Range 25-50 mm	X-axis:611635-031 Y-axis:611635-031	
Range 25-75 mm	X-axis:611675-031	
Range 25-100 mm	X-axis:611801-031	
Range 50-100 mm		X-axis:611675-031

Optional accessories

No.	Description
Cables	
959150	Digimatic Cable, Straight, Data Button, 2 m
959149	Digimatic Cable, Straight, Data Button, 1 m
06AFM380C	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Straight, with Data Button
02AZD790C	U-WAVE-T Connection Cable C, Straight, with Data Button
Eyepieces	
176-117	Eyepiece for TM 20X
Gauge blocks	
611675-031	Gauge Block, Metric, Inspection Cert., ISO, Grade 1, Steel, 50 mm
611635-031	Gauge Block, Metric, Inspection Cert., ISO, Grade 1, Steel, 25 mm
Lenses	
176-139	Objective Lens for TM 5X
176-137	Objective Lens for TM 10X
Materials	
176-105	Fixture/clamping material, Swivel center support
176-107	Fixture/clamping material, Holder with clamp
172-604	Swivel center support, Fixture/clamping material
Micrometer heads	
152-390	Micrometer Head XY-Stage, Thimble 49 mm, 0-25 mm, X-Axis
152-389	Micrometer Head XY-Stage, Thimble 49 mm, 0-25 mm, Y-Axis
164-163	Digital Micrometer Head, 0-50 mm, 0,001 mm, 18 mm Stem
Rotary tables	
176-106	Rotary table
172-196	Rotary table, 100 mm for TM-1005B
172-198	Rotary table, 100 mm with fine feed knob for TM-1005B
63AAA001	LED ring light, for TM-500 including controller
176-204	Dial Indicator Attachment, for TM
172-378	V-BLOCK, with clamp

176-106: for stage 50 x 50 mm
172-196 and 172-198: for stage 100 x 50 mm

152-389

152-390

164-163

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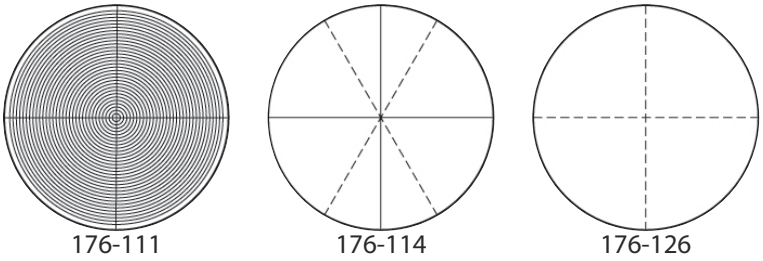
Accessories for Measuring Microscope TM Generation B

Reticles for TM

Reticles



176-111 176-114 176-126

Reticles

No.	Remarks
176-111	Concentric circle (up to ø 4 mm, 0,05 mm increment)
176-114	60° angle
176-126	Cross-hair (standard accessory)

Ring Light for TM

LED Ring Light for TM including controller

No.	Remarks
63AAA001	Ring lights can be used to illuminate your sample from above, increasing the amount of reflected light and improving your ability to observe and interact with specific types of sample specimens that aren't able to be illuminated from below. This microscope ring light is an excellent accessory for just about any microscope. It is designed to be screwed close and around the lens and fits up to 45 mm diameter, with an outer diameter of 75 mm. The controller reliably regulates all multilight lighting and offers many advantages: Brightness can be precisely and reproducibly adjusted. Visual feedback of the current setting, saving the last selected brightness. Automatic standby mode protects your LED lighting and reduces energy consumption by 90%

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Measuring Microscope MF Generation D (Manual, 2- or 3-axis)

Manual MF-A/B Models

MF Generation D: Manual models

This versatile measuring microscope, whether you use it to boost the performance with Mitutoyo's vision unit, for data management on a PC or other applications, offers you further improved measuring efficiency.

The MF offers you the following benefits:

- Measuring accuracy that is one of the highest in its class.
- Proven high-NA objectives from the ML optical series (long working distance type).
- Integration of metallurgical and measurement microscope functions enabling you to make high-resolution observations and high-accuracy measurements.
- Illumination unit (reflected/transmitted) gives you the option of a high-intensity LED or halogen bulb.
- The variable aperture diaphragm (reflected/ transmitted) allows observation measurement while suppressing light diffraction.
- Variety of standardized stages in sizes up to 400 × 200 mm.
- Quick-release mechanism enabling you to move the stage quickly when measuring large or numerous workpieces.
- High-magnification eyepiece observation up to 2000X.
- A good choice of optional accessories, including a Vision Unit, various digital cameras or data management on a PC, promises a wide field of application and excellent measuring

MF-B2017D

1010D
100x100 mm

2010D
200x100 mm

3017D
300x170 mm

4020D
400x200 mm

Specifications

Observation image	Erect
Optical tube	Monocular or binocular tube (depression: 25°) Reticle projection method, with TV mount Optical path ratio (eyepiece/TV mount: 50/50)
Eyepiece	10X, 15X, 20X
Indication accuracy (at 20°C)	XY-axis: (2,2+0,02L) µm Z-axis: (5+0,04L) µm L: Measuring length (mm) when not loaded, JIS B 7153
Floating function	X and Y axes with Quick-release mechanism
Power supply	100/110/120/220/240 VAC, 50/60Hz
Objective lens	Standard: 3X Optional: 1X, 5X, 10X, 20X, 50X, 100X

Optional accessories

No.	Description
176-392	Optical Tube, Monocular
176-393	Optical Tube, Binokular
375-054	Camera Adaptor, 0.5X incl. C-Mount
970441	Camera Adaptor, C-Mount
12BAB345	Bulb, Halogen; 12V/50W (2 Pin Fitting)
176-308	Vibration Isolator, Spring Pad
264-160-13	2D Data processor
176-370-1	Slide Type Nosepiece, Parfocal
176-370-2	Slide Type Nosepiece, w. Magnification Guaranteed
63AAA066	Mitutoyo MF Package
63AAA355	Invenio 5SCIII camera set, set consists of Invenio USB camera and 0.5X C-mount adapter for MF/MF-U microscopes
63AAA597	ASUS AiO PC for M2 system, Intel Celeron N4500/8GB/256GB SSD/W11Pro/ 15.6" Touch screen
63AAA456	M2 – Geometric Measuring Software for MF Microscope, Data processing software
12AAJ088	Footswitch
Eyepieces	
378-866-5	WF 10X/24 Eyepiece single, Wide field of view eyepiece (1 pcs.)
378-866	WF 10X/24 Eyepiece pair, Wide field of view eyepiece (2 pcs.)
378-858-5	WF 20X/12 Eyepiece single, Wide field of view eyepiece (1 pcs.)
378-858	WF 20X/12 Eyepiece pair, Wide field of view eyepiece (2 pcs.)
176-313D	Eyepiece for MF Gen. B, Digital Protractor Type
375-043	Protractor Eyepiece 10X
Filters	
12AAA643	Illumination Filter ND2
12AAA644	Illumination Filter ND8
12AAA645	Illumination Filter GIF
12AAA646	Illumination Filter, LB80
Objectives	
375-036-2	ML Objective Lens 1X
375-037-1	ML Objective Lens 3X
375-034-1	ML Objective Lens 5X
375-039	ML Objective Lens 10X
375-051	ML Objective Lens 20X
375-052	ML Objective Lens 50X
375-053	ML Objective Lens 100X

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Measuring Microscope MF Generation D (Manual, 2- or 3-axis)

Using optional slide type nosepiece with 2-lens mount (factory-fit option)

176-392
Optional monocular

176-393
Optional binocular

QM-Data 200

Invenio digital camera (63AAA058) with 0.5X C-mount adapter (63AAA067) for advanced observations

Vision Unit
PC-based vision measuring system

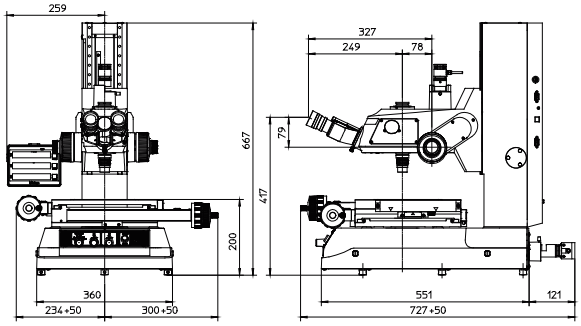
Refer to the MF / MF-U microscopes brochure

MF-A (2 axis)

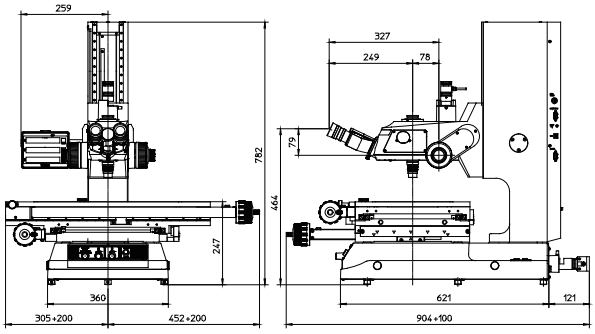
Model	MF-A1010D	MF-A2010D	MF-A2017D	MF-A3017D	MF-A4020D
No.	**176-861-10**	**176-862-10**	**176-963-13**	**176-864-10**	**176-865-10**
XY stage travel range	100 x 100 mm	200 x 100 mm	200 x 170 mm	300 x 170 mm	400 x 200 mm
Z-axis travel range	150 mm	150 mm	220 mm	220 mm	220 mm
XY stage top size	280 x 280 mm	350 x 280 mm	410 x 342 mm	510 x 342 mm	610 x 342 mm
Max. stage loading	10 kg	10 kg	20 kg	20 kg	15 kg
Effective glass size	180 x 180 mm	250 x 150 mm	270 x 240 mm	370 x 240 mm	440 x 240 mm
Max. workpiece height	150 mm	150 mm	220 mm	220 mm	220 mm
Z-axis motor	No	No	No	No	No
Mass	65.5 kg	69.5 kg	130 kg	138 kg	144 kg

MF-B (3 axis)

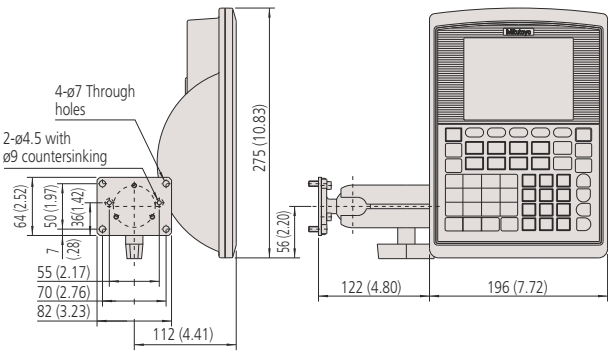
Model	MF-B1010D	MF-B2010D	MF-B2017D	MF-B3017D	MF-B4020D
No.	**176-966-13**	**176-867-10**	**176-868-10**	**176-869-10**	**176-870-10**
XY stage travel range	100 x 100 mm	200 x 100 mm	200 x 170 mm	300 x 170 mm	400 x 200 mm
Z-axis travel range	150 mm	150 mm	220 mm	220 mm	220 mm
XY stage top size	280 x 280 mm	350 x 280 mm	410 x 342 mm	510 x 342 mm	610 x 342 mm
Max. stage loading	10 kg	10 kg	20 kg	20 kg	15 kg
Effective glass size	180 x 180 mm	250 x 150 mm	270 x 240 mm	370 x 240 mm	440 x 240 mm
Max. workpiece height	150 mm	150 mm	220 mm	220 mm	220 mm
Z-axis motor	No	No	No	No	No
Mass	65.5 kg	69.5 kg	130 kg	138 kg	144 kg



1010D



4020D



Arm-mount type (Code No. 264-161-13)

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Measuring Microscope MF Generation D (Z-axis Motor Drive)

Motor-Driven Z-axis MF-J Models

MF Generation D: Models with motorized Z-axis movement

The MF Generation D version with a motorized Z-axis. This feature renders fast and accurate Auto Focus possible when used in combination with the optional Vision Unit. The MF with motorized Z-axis is available in 3 stage sizes and incorporates all the functionality of the manual MF Generation D.

The MF Generation D with motorized Z-axis offers the following benefits:

- Auto Focus function when using the optional Vision Unit.
- A measuring accuracy that is one of the highest in its class.
- Proven high-NA objectives (long working distance type).
- Integration of metallurgical and measurement microscope functions enabling you to make high-resolution observations and high-accuracy measurements.
- Illumination unit (reflected/transmitted) offers the option of a high-intensity LED or halogen bulb.
- The variable aperture diaphragm (reflected/ transmitted) allows observation measurement while suppressing light diffraction.
- Variety of 3 standardized stages in sizes up to 400 × 200 mm.
- Quick-release mechanism enabling you to move the stage quickly when measuring large or numerous workpieces.
- High-magnification eyepiece observation up to 2000X.
- A large lineup of optional accessories, including a Vision Unit, various digital cameras and data management for a PC, grants a wide field of applications and excellent measuring efficiency.

MF-J2017D

No.	Model	XY stage travel range	XY stage top size	Max. stage loading	Mass
176-891D	MF-J2017D	200 x 170 mm	410 x 342 mm	20 kg	150 kg
176-892D	MF-J3017D	300 x 170 mm	510 x 342 mm	20 kg	158 kg
176-893D	MF-J4020D	400 x 200 mm	610 x 342 mm	15 kg	164 kg

Digital camera for MF / MF-U microscopes (63AAA355) - the Set consists of:
- **Invenio 5SCIII, 5 megapixel colour camera with high speed USB3 communication (63AAA058)**
- **0.5X C-mount adapter for advanced observations (63AAA067)**

Also included is the Mitutoyo MF software package (63AAA066), which enhances the functionality of the microscope with:
- **Reporting functionality of images and measurement results**
- **Images with extended depth of focus**
- **3D topography observation by stacking images in Z-direction**
- **Counting of particles**

Specifications

Observation image	Erect
Optical tube	Monocular or binocular tube (depression: 25°), Reticle projection method, with TV mount, Optical path ratio (eyepiece/TV mount: 50/50)
Eyepiece	10X, 15X, 20X
Indication accuracy (at 20°C)	XY-axis: (2,2+0,02L) µm Z-axis: (5+0,04L) µm L: Measuring length (mm) when not loaded, JIS B 7153
Floating function	X and Y axes with Quick-release mechanism
Power supply	100/110/120/220/240 VAC, 50/60Hz
Objective lens	Standard: 3X Optional: 1X, 5X, 10X, 20X, 50X, 100X
Remote Box	- Speed adjustment - Coarse/Fine Speed switching - Jog shuttle - Emergency stop switch - AF button - Counter reset button - Data output button - Power switch - Limit setting (Z-axis) Remote Box

Vision Unit
PC-based vision measuring system

Refer to the MF / MF-U microscopes brochure

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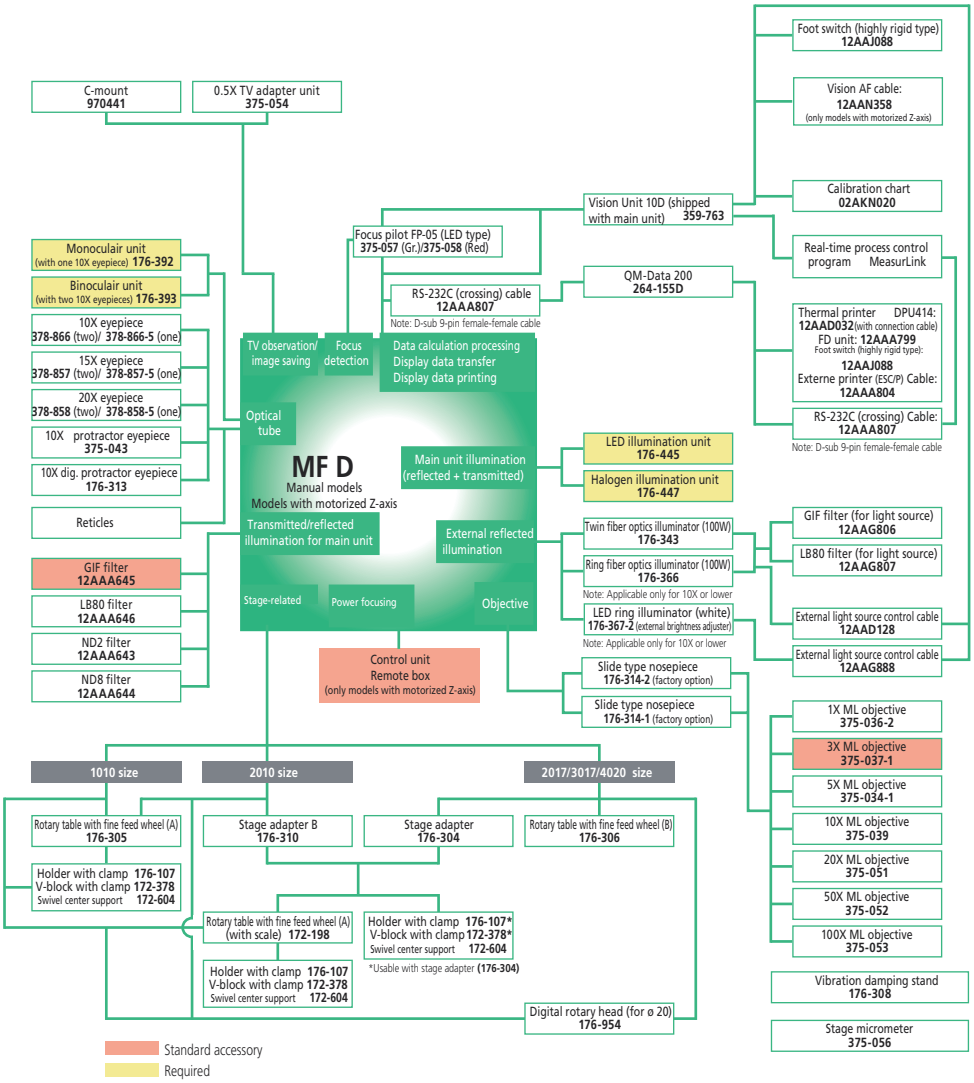
Accessories for Measuring Microscopes MF Series

Optional accessories

No.	Description
Filters	
176-343D	Illumination Filter GIF, for MF, MF-U
12AAG806	Illumination Filter LB80
Illumination Units	
176-445D	Illumination Unit LED
176-447D	Illumination Unit, Halogen
Materials	
176-107	Fixture/clamping material, Holder with clamp
172-604	Swivel center support, Fixture/clamping material
12AAG807	Fixture/clamping material
Others	
172-378	V-BLOCK, with clamp
176-367-2D	Ringlight LED
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E
12AAJ088	Footswitch
63AAA001	LED ring light, for TM-500 including controller
63AAA597	ASUS AiO PC for M2 system, Intel Celeron N4500/8GB/256GB SSD/W11Pro/ 15.6" Touch screen
63AAA456	M2 – Geometric Measuring Software for MF Microscope, Data processing software
Reticles	
12AAG838	Reticle for MF, Broken Cross-hair (7 µm line width)
12AAG836	Reticle for MF, Broken Cross-hair (5 µm line width)
12AAG873	Reticle for MF, Broken Cross-hair (3 µm line width)
12AAG840	Reticle for MF, Cross-hair and 60° Broken Lines
12AAG842	Reticle for MF, Cross-hair 20 mm scale (0,1 Reading)
12AAG843	Reticle for MF, Concentric Circles (1,2-18 mm)
12AAG844	Reticle for MF Gen. B, Scale 10 mm (0,1 mm Reading)
12AAG839	Reticle for MF, Cross-hair and 45° Broken Lines
Rotary Tables	
176-305	Rotary Table, Type A, D=240 mm
172-198	Rotary table, 100 mm with fine feed knob for TM-1005B
176-306	Rotary table with fine feed wheel, Type B, glass diameter = 238 mm

Accessories/system diagram system for MF manual and motorized Z-axis models



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Mitutoyo

Measuring Microscope MF-U Generation D (Manual, 3-axis)

MF-U Generation D: Manual models
Its infinite corrected optical system allows a wide range of applications (e.g. dark-field-, polarized- and DIC-microscopy) and the use of a turret.
The MF-U offers you the following benefits:

- Measuring accuracy that is one of the highest in its class.
- Proven high-NA objectives from the FS optical system (long working distance type).
- Integration of metallurgical and measurement microscope functions enabling you to make high-resolution observations and high-accuracy measurements.
- Illumination unit (reflected/transmitted) gives you the option of a high-intensity LED or halogen bulb.
- The variable aperture diaphragm (reflected/ transmitted) allows observation measurement while suppressing light diffraction.
- Variety of standardized stages in sizes up to 400 × 200 mm.
- Quick-release mechanism enabling you to move the stage quickly when measuring large or numerous workpieces.
- High-magnification eyepiece observation up to 2000X.
- A good choice of optional accessories, including a Vision Unit, various digital cameras or data management on a PC, promises a wide field of application and excellent measuring efficiency.

Specifications

Observation image	Erect
Optical tube	Siedentoph type (pupil distance adjustment: 51 - 76 mm), 1X tube lens, Binocular tube (depression: 30°), Reticle projection method, with TV mount, Optical path ratio (eyepiece/TV mount: 50/50)
Indication accuracy (at 20°C)	XY-axis: (2,2+0,02L) µm Z-axis: (5+0,04L) µm L: Measuring length (mm) when not loaded, JIS B 7153
Floating function	X and Y axes with Quick-release mechanism

MF-UB 3017D
(turret, objectives and illumination are optional)

Optional 5 positions motorized turret

Bright/Dark Field (BF/DF)

No.	Model	XY stage travel range	Z-axis travel range	XY stage top size	Max. work-piece height	Swiveling function (left)	Mass [kg]
176-886-10	MF-UD1010D	100 x 100 mm	150 mm	280 x 280 mm	150 mm		67
176-887-10	MF-UD2010D	200 x 100 mm	150 mm	350 x 280 mm	150 mm		71
176-888-10	MF-UD2017D	200 x 170 mm	220 mm	410 x 342 mm	220 mm	±5°	148
176-989-13	MF-UD3017D	300 x 170 mm	220 mm	510 x 342 mm	220 mm	±5°	156
176-890-10	MF-UD4020D	400 x 200 mm	220 mm	610 x 342 mm	220 mm	±3°	169

Bright Field (BF)

No.	Model	XY stage travel range	Z-axis travel range	XY stage top size	Max. work-piece height	Swiveling function (left)	Mass [kg]
176-876-10	MF-UB1010D	100 x 100 mm	150 mm	280 x 280 mm	150 mm		67
176-877-10	MF-UB2010D	200 x 100 mm	150 mm	350 x 280 mm	150 mm		71
176-978-13	MF-UB2017D	200 x 170 mm	220 mm	410 x 342 mm	220 mm	±5°	148
176-879-10	MF-UB3017D	300 x 170 mm	220 mm	510 x 342 mm	220 mm	±5°	156
176-980-13	MF-UB4020D	400 x 200 mm	220 mm	610 x 342 mm	220 mm	±3°	169

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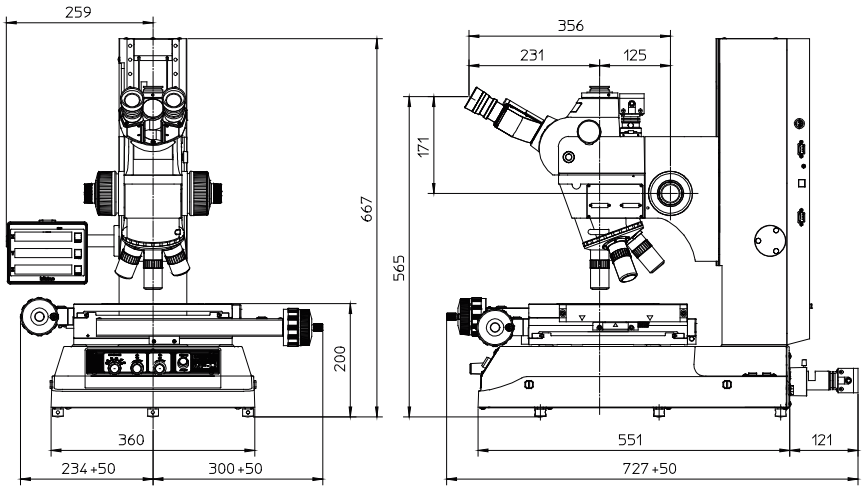
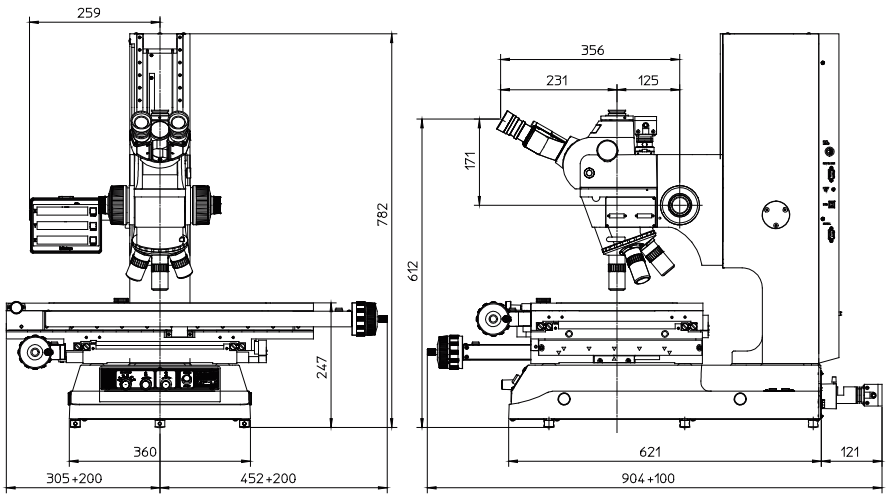
Measuring Microscope MF-U Generation D (Manual, 3-axis)

Optional accessories

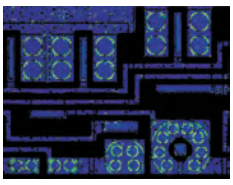
No.	Description
Bulbs	
12BAB345	Bulb, Halogen; 12V/50W (2 Pin Fitting)
517181	Bulb, Halogen, 12 V / 100 W
Camera Adaptors	
375-054	Camera Adaptor, 0.5X incl. C-Mount
970441	Camera Adaptor, C-Mount
DIC Units	
378-076	DIC Unit, 100X, SL80X, SL50X
378-078	DIC Unit 20X, 50X, SL20X
378-079	DIC Unit 20X
378-080	DIC Unit for 5X and 10x, 5X, 10X
Eyepieces	
378-858-5	WF 20X/12 Eyepiece single, Wide field of view eyepiece (1 pcs.)
378-858	WF 20X/12 Eyepiece pair, Wide field of view eyepiece (2 pcs.)
378-866-5	WF 10X/24 Eyepiece single, Wide field of view eyepiece (1 pcs.)
378-866	WF 10X/24 Eyepiece pair, Wide field of view eyepiece (2 pcs.)
Filters	
12AAA643	Illumination Filter ND2
12AAA644	Illumination Filter ND8
12AAA645	Illumination Filter GIF
12AAA646	Illumination Filter, LB80
176-343D	Illumination Filter GIF, for MF, MF-U
12AAG806	Illumination Filter LB80
Illumination Units	
12BAD602	Illumination Unit, Halogen; 12 V / 100 W
176-315D	Illumination Unit, 100 W Fiber Optic
176-448D	Illumination Unit, Halogen, Halogen
Materials	
12AAG807	Fixture/clamping material
12AAG881	Fixture/clamping material Swivel center support, Zeiss Type Pattern
176-107	Fixture/clamping material, Holder with clamp
172-604	Swivel center support, Fixture/clamping material
Others	
63AAA355	Invenio 5SCIII camera set, set consists of Invenio USB camera and 0.5X C-mount adapter for MF/MF-U microscopes
176-308	Vibration Isolator, Spring Pad
264-160-13	2D Data processor
172-378	V-BLOCK, with clamp
12AAJ088	Footswitch
Reticles	
176-316D	Reticle for MF-U Gen. B, 150 W Fiber Optic
12AAG876	Reticle for MF-U Gen. B, Broken Cross-hair (3 µm line width)
12AAG877	Reticle for MF-U Gen. B, Broken Cross-hair (5 µm line width)
12AAG878	Reticle for MF-U Gen. B, Broken Cross-hair (7 µm line width)
12AAG879	Reticle for MF-U Gen. B, Cross-hair and 45° Broken Lines
12AAG880	Reticle for MF-U Gen. B, Cross-hair and 60° Broken Lines
Rotary Tables	
176-305	Rotary Table, Type A, D=240 mm
176-306	Rotary table with fine feed wheel, Type B, glass diameter = 238 mm



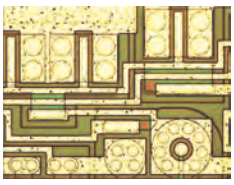
1010D



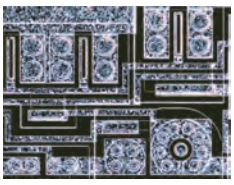
4020D



Polarized light



Bright field



Dark field

Refer to the MF / MF-U microscopes brochure

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Measuring Microscope MF-U Generation D (Z-axis Motor Drive)

Motor-Driven Z-axis MF-UJ Models (Bright Field)

Motor-driven models allows in combination with optional Vision Unit ultra-high speed auto focus function

The ultra-high speed AF function has been installed to allow focusing on a surface to be measured at a speed of about one second. Freedom from burdensome focus adjustment even on a work-piece with many asperities allows the operator to perform stress-free measurement, drastically reducing operator's fatigue.

MF-UJ3017D
(turret, objectives and illumination are optional)

MF-UJ2017D
(turret, objectives and illumination are optional)

No.	Model	XY stage travel range	XY stage top size	Max. stage loading	Effective glass size	Swiveling function (left)
176-894D	MF-UJ2017D	200 x 170 mm	410 x 342 mm	20 kg	270 x 240 mm	±5°
176-895D	MF-UJ3017D	300 x 170 mm	510 x 342 mm	20 kg	370 x 240 mm	±5°
176-896D	MF-UJ4020D	400 x 200 mm	610 x 342 mm	15 kg	440 x 240 mm	±3°

Specifications

Observation image	Erect
Optical tube	Siedentoph type (pupil distance adjustment: 51 - 76 mm), 1X tube lens, Binocular tube (depression: 30°), Reticle projection method, with TV mount, Optical path ratio (eyepiece/TV mount: 50/50)
Eyepiece	10X (field No.: 24 mm) Optional: 15X, 20X
Focusing method	Manual (coarse focusing: 10 mm/rev., fine focusing: 0,1 mm/rev.)
Indication accuracy (at 20°C)	XY-axis: (2,2+0,02L) µm Z-axis: (5+0,04L) µm L: Measuring length (mm) when not loaded, JIS B 7153
Floating function	X and Y axes with Quick-release mechanism
Power supply	220/240V AC, 50/60Hz
Turret (optional)	Manual or motorized
Objective lens (optional)	M / BD Plan Apo objective from 1X to 100X
Transmitted illumination optional but required	Light source: Halogen bulb (12V, 50W) or LED illumination Optical system: Telecentric illumination with adjustable aperture diaphragms Functions: Light intensity adjustable, Non-stepped brightness adjustment
Surface illumination optional but required	Light source: Optional halogen illumination unit (fiber-optic cold light illumination) or LED illumination Optical system: Koehler illumination with adjustable aperture diaphragms Functions: Light intensity adjustable, Non-stepped brightness adjustment
Display unit	Resolution: 0,001mm / 5E-4mm / 1E-4mm No. of axis: 2 axis or 3 axis Functions: Zero-setting, Direction switching, Data output (USB and RS-232C interface)
Remote Box	- Speed adjustment - Coarse/Fine Speed switching - Jog shuttle - Emergency stop switch - AF button - Counter reset button - Data output button - Power switch - Limit setting (Z-axis) Remote Box

Refer to the MF / MF-U microscopes brochure

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Measuring Microscope MF-U Generation D (Z-axis Motor Drive)

Optional accessories

No.	Description
Bulbs	
12BAB345	Bulb, Halogen; 12V/50W (2 Pin Fitting)
517181	Bulb, Halogen, 12 V / 100 W
Camera Adaptors	
375-054	Camera Adaptor, 0.5X incl. C-Mount
970441	Camera Adaptor, C-Mount
DIC Units	
378-076	DIC Unit, 100X, SL80X, SL50X
378-078	DIC Unit 20X, 50X, SL20X
378-079	DIC Unit 20X
378-080	DIC Unit for 5X and 10x, 5X, 10X
Eyepieces	
378-858	WF 20X/12 Eyepiece pair, Wide field of view eyepiece (2 pcs.)
378-857	Eyepiece, 15X/16
Filters	
12AAA643	Illumination Filter ND2
12AAA644	Illumination Filter ND8
12AAA645	Illumination Filter GIF
12AAA646	Illumination Filter, LB80
12AAG806	Illumination Filter LB80
176-343D	Illumination Filter GIF, for MF, MF-U
Illumination Units	
12BAD602	Illumination Unit, Halogen; 12 V / 100 W
176-315D	Illumination Unit, 100 W Fiber Optic
176-448D	Illumination Unit, Halogen, Halogen
Materials	
172-604	Swivel center support, Fixture/clamping material
176-107	Fixture/clamping material, Holder with clamp
12AAG807	Fixture/clamping material
12AAG881	Fixture/clamping material Swivel center support, Zeiss Type Pattern
Others	
12AAJ088	Footswitch
264-160-13	2D Data processor
172-378	V-BLOCK, with clamp
Reticles	
176-316D	Reticle for MF-U Gen. B, 150 W Fiber Optic
12AAG876	Reticle for MF-U Gen. B, Broken Cross-hair (3 µm line width)
12AAG877	Reticle for MF-U Gen. B, Broken Cross-hair (5 µm line width)
12AAG878	Reticle for MF-U Gen. B, Broken Cross-hair (7 µm line width)
12AAG879	Reticle for MF-U Gen. B, Cross-hair and 45° Broken Lines
12AAG880	Reticle for MF-U Gen. B, Cross-hair and 60° Broken Lines
Rotary Tables	
176-305	Rotary Table, Type A, D=240 mm
176-306	Rotary table with fine feed wheel, Type B, glass diameter = 238 mm
Stands	
176-308	Vibration Isolator, Spring Pad

Motor-Driven Z-axis MF-UK Models (Bright/Dark Field)

Motor-driven models allows in combination with optional Vision Unit ultra-high speed auto focus function

The ultra-high speed AF function has been installed to allow focusing on a surface to be measured at a speed of about one second. Freedom from burdensome focus adjustment even on a work-piece with many asperities allows the operator to perform stress-free measurement, drastically re-ducing operator's fatigue

No.	Model	XY stage travel range	XY stage top size	Max. stage load-ing	Effective glass size	Swiveling function (left)	Mass [kg]
176-897D	MF-UK2017D	200 x 170 mm	410 x 342 mm	20	270 x 240 mm	±5° (left)	150
176-898D	MF-UK3017D	300 x 170 mm	510 x 342 mm	20	370 x 240 mm	±5° (left)	158
176-899D	MF-UK4020D	400 x 200 mm	610 x 342 mm	15	440 x 240 mm	±3° (left)	164

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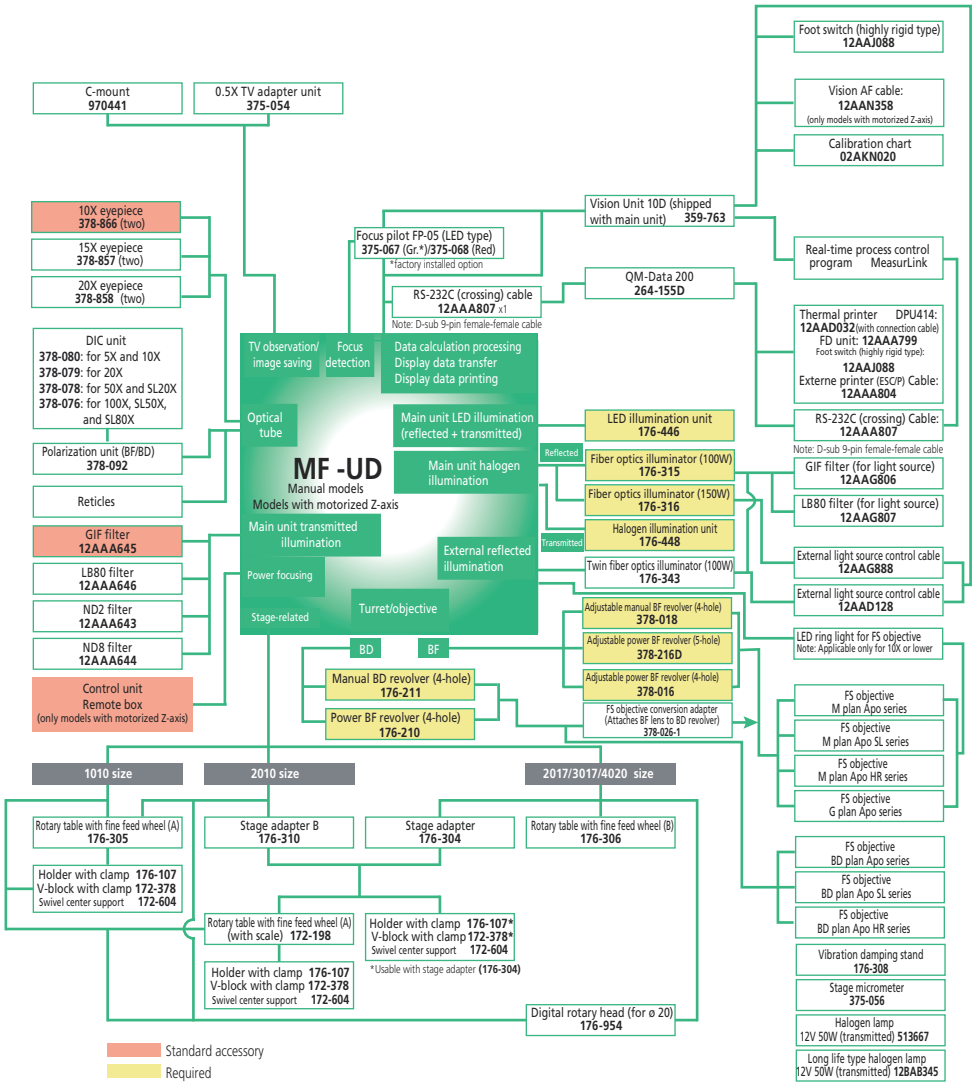
Accessories for Measuring Microscope MF-U Generation D



Optional accessories

No.	Description
Bulbs	
12BAB345	Bulb, Halogen; 12V/50W (2 Pin Fitting)
517181	Bulb, Halogen, 12 V / 100 W
Camera Adaptors	
375-054	Camera Adaptor, 0.5X incl. C-Mount
970441	Camera Adaptor, C-Mount
DIC Units	
378-076	DIC Unit, 100X, SL80X, SL50X
378-078	DIC Unit 20X, 50X, SL20X
378-079	DIC Unit 20X
378-080	DIC Unit for 5X and 10x, 5X, 10X
Eyepieces	
378-858	WF 20X/12 Eyepiece pair, Wide field of view eyepiece (2 pcs.)
Filters	
12AAA643	Illumination Filter ND2
12AAA644	Illumination Filter ND8
12AAA645	Illumination Filter GIF
12AAA646	Illumination Filter, LB80
176-343D	Illumination Filter GIF, for MF, MF-U
12AAG806	Illumination Filter LB80
Illumination Units	
12BAD602	Illumination Unit, Halogen; 12 V / 100 W
176-315D	Illumination Unit, 100 W Fiber Optic
176-448D	Illumination Unit, Halogen, Halogen
Materials	
172-604	Swivel center support, Fixture/clamping material
176-107	Fixture/clamping material, Holder with clamp
12AAG807	Fixture/clamping material
12AAG881	Fixture/clamping material Swivel center support, Zeiss Type Pattern
Others	
12AAJ088	Footswitch
176-308	Vibration Isolator, Spring Pad
172-378	V-BLOCK, with clamp
Reticles	
176-316D	Reticle for MF-U Gen. B, 150 W Fiber Optic
12AAG876	Reticle for MF-U Gen. B, Broken Cross-hair (3 µm line width)
12AAG877	Reticle for MF-U Gen. B, Broken Cross-hair (5 µm line width)
12AAG878	Reticle for MF-U Gen. B, Broken Cross-hair (7 µm line width)
12AAG879	Reticle for MF-U Gen. B, Cross-hair and 45° Broken Lines
12AAG880	Reticle for MF-U Gen. B, Cross-hair and 60° Broken Lines
Rotary Tables	
176-305	Rotary Table, Type A, D=240 mm
176-306	Rotary table with fine feed wheel, Type B, glass diameter = 238 mm

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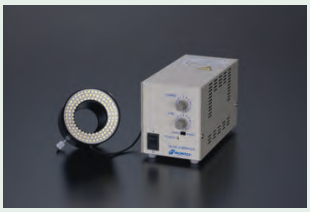
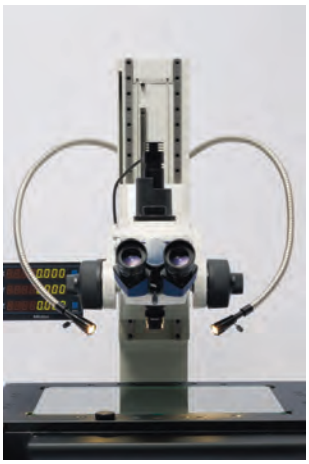
Optional Light Sources for Measuring Microscopes MF/MF-U Generation D

Twin Fiber Illumination

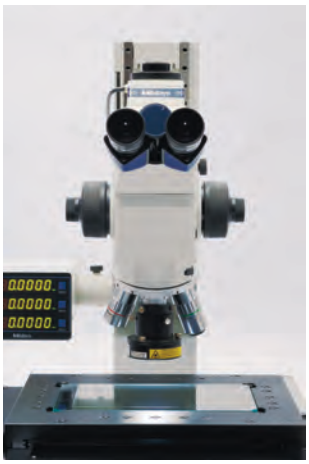
Fibre-optic Ring Light



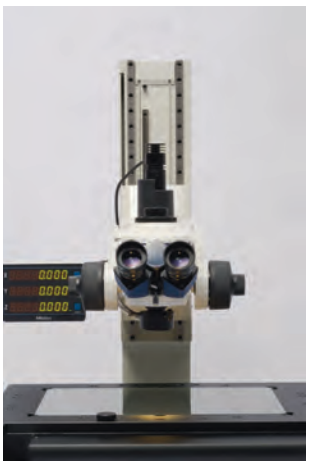
LED Ring Light



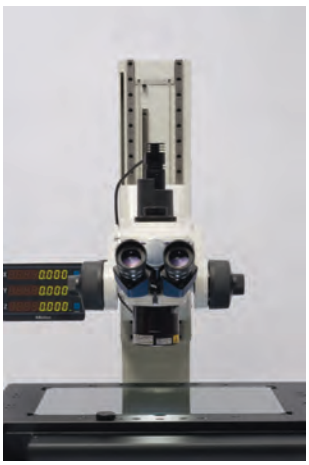
Dual Swan-neck Light-pipe



LED Ring Light (for M Plan objectives)



Fibre-optic Ring Light



LED Ring Light

No.	Model	Applicable Microscope	Length of fibre cable	Light source	Mass [kg]
176-366CED	Fibre-optic Ring Light	MF models	1000 mm	Halogen bulb (12V, 100W) (517181: halogen bulb)	2
176-367-2D	LED Ring Light	MF models with 1X, 3X, 5X, 10X objective	1500 mm	White LED	1
176-343D	Dual Swan-neck Light-pipe illuminator	MF, MF-U models	700 mm	Halogen bulb (12V, 100W) (517181: halogen bulb)	2,6

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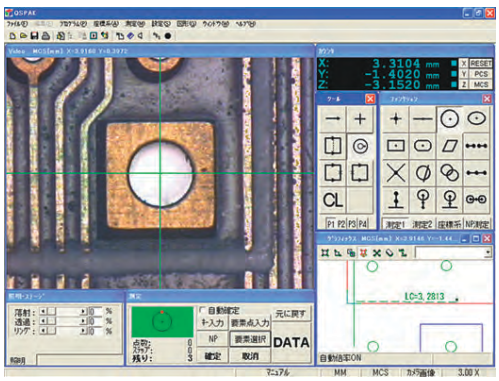
Vision Unit

This vision system retrofit for microscopes allows you to complete your measurement in one easy step with its automatic edge-detection tools and various macro functions.
The Vision Unit offers you the following benefits:

- Easy operation due to the graphics and measurement navigation functions.
- Image data input/storage function.
- Measurement results are output to Microsoft® Excel®; this lets you generate an inspection table on the same computer.
- The unit allows you to verify that measurement results are within the tolerance zones and to carry out various types of statistical processing for each item.
- Combined use with the focus pilot gives you high accuracy in height measurements (patent pending).
- You can perform a series of measuring operations using just one screen display.
- The auto-brightness control function reproduces type and degree of illumination used.

The PC system, QSPAK VUE software and microscope are optional.

No.	Model	Description
359-763	Vision Unit 10D	For MF / MF-U generation D manual and motorized models
359-727	Vision Unt 9D	For MF generation C
359-729	Vision Unit 9UD	For MF-U generation C
359-717	Vision Unit 8D	For MF generation B
359-719	Vision Unit 8UD	For MF-U generation B
359-779	Vision Unit 7D	For Hyper MF / Hyper MF-U generation B
359-707	Vision Unit 6D	For MF generation A
359-709	Vision Unit 6UD	For MF-U generation A



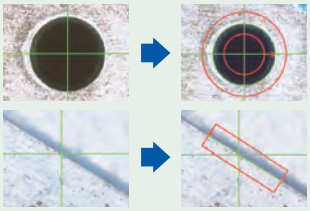
QSPAK VUE Measurement Window

Specifications

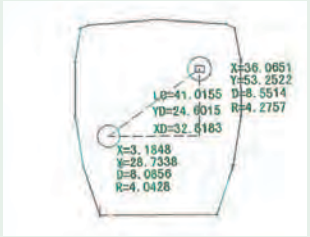
Projected image	Inverted
Camera unit	Image sensor: 1/2" / **12,7 mm** color CMOS camera Dimensions: 100 x 58 x 89 mm (W x D x H) Mass: 0,4 kg
Adapter unit	Dimensions: 45 x 123 mm Magnification: 0,5X Mass: 0,3 kg
Magnification	19X - 1900X on 22" / **56 cm** monitor (image resizable)
QSPAK VUE, optional software	**For observation/comparison of form** - Template matching function - Manual pattern matching function **For simple measurement** - One-click edge detection tool function - Smart tool function - User macro function **Functions for repeated measurement / auto-measurement** - Quick navigation - Playback - Graphic - External data output - Statistical calculation **Operating software:** QSPAK VUE (optional)

Standard accessories

No.	Description
12AAJ088	Footswitch



One-click Edge Detection
Just by clicking the mouse near the edge of a workpiece, QSPAK automatically scans the edge and detects it, showing its coordinates. This function also works with the point tool, box tool, circle tool and auto-focus tool.



Graphic Window
The measurement results and measured elements are plotted in the graphic window in real-time. By using this function the user can check the current measuring position at a glance. The graphic window can be used for geometrical calculations.

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Microscope Cameras

Microscope Cameras, Sets and Accessories

63AAA356

63AAA516

63AAA061

63AAA067

63AAA059

1) Camera sets

No.	Model	Set configuration	Remarks
63AAA353	HDMI USB camera set for TM microscopes	**Set includes:** 63AAA059 - HDMI6MDPX camera, including HDMI cable, mouse and simple calculation and reporting software on SD card 63AAA060 - 0.37X C-mount to Eyepiece adapter for TM microscopes 63AAA155 - Mechanical adapter for mounting the HDMI camera on the ocular tube Attention: Please note that the Micrometer Heads or Digital Micrometer Heads are optional and not included.	HDMI USB camera set for TM microscopes
63AAA518	HDMI 4K camera set for TM microscopes	**Set includes:** 63AAA516 - HDMI 4K camera, 4K HDMI, Flat enclosure C-mount camera 63AAA517 - 0.5X eyepiece adapter 63AAA155 - Mechanical adapter for mounting the HDMI camera on the ocular tube 63AAA061 - InSight Basic Software	
63AAA355	Invenio 5SCIII camera set	**Set includes:** 63AAA058 - Invenio 5SCIII camera, including Insight LE software on 8GB USB stick and USB3 cable 63AAA067 - 0.5x camera adapter with C-mount for MF/MF-U microscope	

2) Cameras

No.	Model
63AAA059	HDMI6MDPX camera, including HDMI cable, mouse and simple calculation and reporting software on SD card
63AAA516	HDMI 4K camera, 4K HDMI, Flat enclosure C-mount camera

3) Accessories

No.	Model
63AAA066	Mitutoyo MF Package
63AAA060	0,37x Eyepiece Adapter
63AAA517	0,5X eyepiece adapter
63AAA155	Mechanical adapter for mounting the HDMI camera on the ocular tube
63AAA067	0,5x camera adapter with C-mount for MF/MF-U microscope

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Eyepieces for Measuring Microscopes

- Extra-wide field of view type.
- Optional reticles are available.
- Applicable microscope models: MF-C, MF-UC, Hyper MF, Hyper MF-U, FS70.

378-866-5

378-858-5

No.	Model	Remarks	Magnification	Field number [mm]	Visibility Adjustment	Mass [g]
378-858-5	WF20X/12	Single	20X	12	-8 D to +5 D	55
378-858	WF20X/12	Set of pair	20X	12	-8 D to +5 D	110
378-866-5	WF10X/24	Single	10X	24	-10 D to +5 D	75
378-866	WF10X/24	Set of pair	10X	24	-10 D to +5 D	150

Optional accessories

No.	Description
516848	Reticle, Cross hair
516576	Reticle, Broken Cross hair and 60° Angle
516578	Reticle, Concentric Circles
516577	Reticle, Cross hair with 20 mm Scale
516849	Reticle, 10 mm Scale (0,01 mm reading)
516850	Reticle, 5 mm Scale (0,005 mm reading)

Refer to the microscope units and objective lenses brochure

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Video Microscope Unit VMU Series

Specifications

Magnification of tube	1X
Reflected illumination	- Telecentric system with aperture stop system - Fibre-optic illuminator (optional) is required
Light source	Halogen bulb (21V, 150W) (optional)
Objective lenses for bright field observation (Optional accessory)	M Plan Apo, M Plan Apo SL, G Plan Apo
Objective lenses for laser cutting (Optional accessory)	M plan Apo NIR, LCD Plan Apo NIR, M Plan Apo NUV and LCD Plan Apo NUV
Objective lenses for laser machining (Optional accessory)	M Plan UV **(for 378-514 only)**

Refer to the microscope units and objective lenses brochure

VMU

The VMU is a compact, lightweight and easy-to-install microscope unit for CCD camera monitoring in semiconductor fabrication facilities.
The VMU offers you the following benefits:

- The optical system features ultra-long working distance objectives and correction for the wide range of radiation wavelengths in use.
- Reflected illumination keeps your workpiece free from thermal expansion (the fibreoptic illuminator is required.)
- Also available with a laser mount or turret (objective mount).
- The objective is optional.

VMU-V
378-505

VMU-H
378-506

VMU-LB
378-513

VMU-L4B
378-514

Selection Guide to System Configuration
(Depends on each system configuration)

No.	Applicable Wavelength	Vertical camera C-mount	Horizontal camera C-mount	YAG laser mount	Fibre optic illumination unit mount	Mass [g]
378-505	Near-infrared and visible radiation	Yes			Yes	570
378-506	Near-infrared and visible radiation		Yes		Yes	590
378-513	Near-infrared, visible, near-ultraviolet radiation	Yes		Yes	Yes	1300
378-514	Near infrared, visible, near ultraviolet and ultraviolet radiation	Yes		Yes	Yes	1300

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Mitutoyo

Video Microscope Unit VMU Series

WIDE VMU

The WIDE VMU series takes video microscopy to the next level with a 7 times bigger field of view than conventional models. It supports both bright field and dark field observation.

The WIDE VMU offers the following benefits:

- Supported sensor size of 2-inch-equivalent, APS-C format
- Image field of ø30 mm with 1X tube lens
- Both F-mount and C-mount cameras can be mounted
- Bright field (BF) observations are supported by the WIDE VMU-V and -H models ,
- Bright field/Dark field (BD) observations are supported by the WIDE VMU-BDV and -BDH models
- With the flexible orientation for camera and illumination mounting very compact arrangements can be configured.
- The objective is optional.

WIDE VMU-HR

WIDE VMU-BDV

WIDE VMU-BDH

Highly compact configuration of 4 WIDE VMU units

No.	Camera mount	Observation type	Illumination mount	Suitable objectives	Mass [g]
378-517	Vertical	Bright field / Dark field (BD)	Dual port	BD Plan Apo, BD Plan Apo HR, BD Plan Apo SL	2000
378-518	Horizontal	Bright field / Dark field (BD)	Dual port	BD Plan Apo, BD Plan Apo HR, BD Plan Apo SL	2150
378-519	Vertical	Bright field (BF)	Single port	M Plan Apo, M Plan Apo HR, M Plan Apo SL, G Plan Apo	1400

Optional accessories: Motorized turret, focusing unit, polarizer

Refer to the microscope units and objective lenses brochure

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Finity Corrected Objectives for ML-Series

Specifications

Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
R: Resolving power
D.F.: Depth of field

The Mitutoyo 375 Series finity corrected objective lenses realize clear images and long working distance.

375-036-2

375-037-1

375-034-1

375-039

375-051

375-052

375-053

No.	Magnification	N.A.	W.D. [mm]	R [µm]	D.F. [µm]	Mass [g]
375-036-2	1x	0,03	61	9,2	306	80
375-037-1	3x	0,09	77	3,06	34	55
375-034-1	5x	0,13	61	2,12	23	75
375-039	10x	0,21	51	1,31	6,2	125
375-051	20X	0,42	20	0,65	1,6	310
375-052	50x	0,55	13	0,5	0,9	350
375-053	100x	0,7	6	0,4	0,6	380

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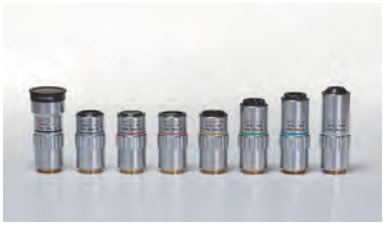
Mitutoyo

Objectives for M Plan Series

The Mitutoyo 378 Series objectives have one of the world's longest working distances and an infinitycorrection optical system. These objectives allow flexible observation at high magnifications and independent correction of chromatic aberration.



M Plan Apo and M Plan Apo SL
Objectives for bright field observation

BD Plan Apo and BD Plan Apo SL
Objectives for bright/dark field observation

Near-ultraviolet wavelength corrected M Plan Apo NUV objectives

Ultraviolet wavelength corrected M Plan UV objectives

Near-infrared wavelength corrected M Plan Apo NIR objectives

Specifications

Features

- The long working distance type objective lenses provide excellent clearance between the lens surface and the workpiece surface in focus, making it possible to observe workpieces which are usually hard-to-focus because of awkward projections.

- The metallurgical plan apochromatic (M Plan Apo) objective lens is an excellent optical system. This objective provides a flat, chromatic aberration-free image throughout the field of view, making it is suitable for any type of microscope.

- Specially designed objective lenses are also available with correction for the near-infrared, near-ultraviolet and ultraviolet regions of the spectrum, or various thicknesses of LCD screen glass.

- The mounting screw threads of objective lenses are designed to conform to JIS B-7141-1994.

Refer to the microscope units and objective lenses brochure

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Objectives for Brightfield Observation

Specifications

Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
P.D.: Parfocal distance
f: Focal distance
R: Resolving power
D.F.: Depth of field
FOV 1: Field of view when using ø24 mm eyepiece
FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

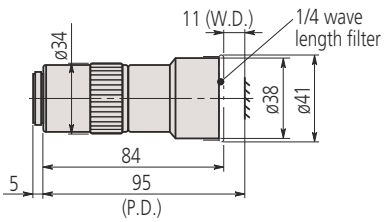
M Plan Apo

Features

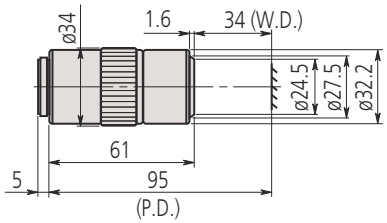
- Long Working Distances
- Infinity Corrected
- Bright Field Inspection
- High Quality Plan Apochromat Design
- Flat Image Surface over Entire Field of View

M Plan Apo for Bright Field Observation
Compatible with microscope types VMU / FS-70 / MF-U / Hyper MF-U
Note: To avoid optical flare in use of coaxial illumination 1x objectives should be used togehter with polarisation unit on microscope and attached 1/4 wavelength plate.

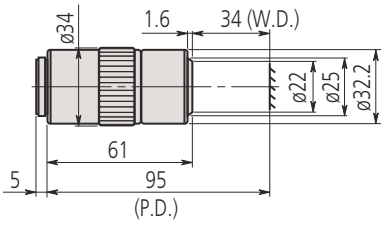
No.	Model	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-800-12	M Plan Apo 1X	0,025	11	95	200	11	440	ø24	4,8 x 6,4	300
378-801-12	M Plan Apo 2X	0,055	34	95	100	5	91	ø12	2,4 x 3,2	220
378-802-6	M Plan Apo 5X	0,14	34	95	40	2	14	ø4,8	0,96 x 1,28	230
378-807-3	M Plan Apo 7,5X	0,21	35	95	26,67	1,3	6,2	ø3,2	0,64 x 0,85	240
378-803-3	M Plan Apo 10X	0,28	34	95	20	1	3,5	ø2,4	0,48 x 0,64	240
378-804-3	M Plan Apo 20X	0,42	20	95	10	0,7	1,6	ø1,2	0,24 x 0,32	270
378-805-3	M Plan Apo 50X	0,55	13	95	4	0,5	0,9	ø0,48	0,1 x 0,13	290
378-806-3	M Plan Apo 100X	0,7	6	95	2	0,4	0,6	ø0,24	0,05 x 0,06	320



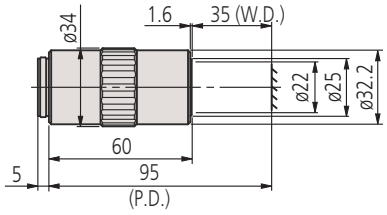
M Plan Apo 1X



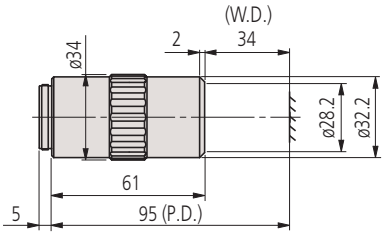
M Plan Apo 2X



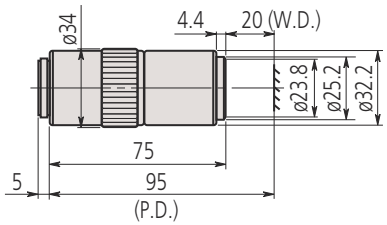
M Plan Apo 5X



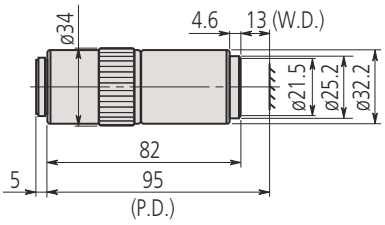
M Plan Apo 7,5X



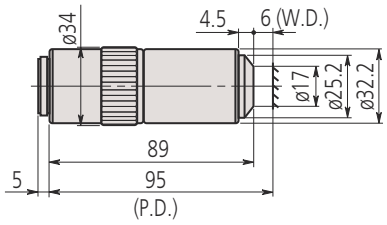
M Plan Apo 10X



M Plan Apo 20X



M Plan Apo 50X



M Plan Apo 100X

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Mitutoyo

Objectives for Brightfield Observation

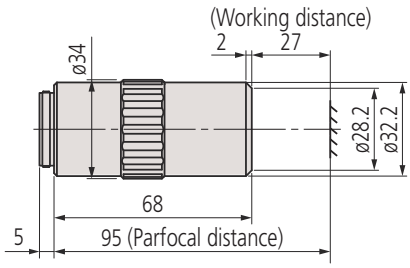
M Plan Apo HR

Features

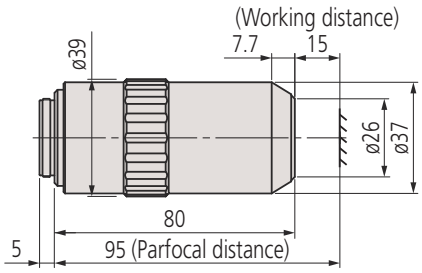
- High Resolution
- Infinity Corrected
- Breight Field Inspection
- High Quality Plan Apochromat
- Flat Image Surface over Entire Field of View

M Plan Apo HR for Bright Field Observation
Compatible with microscope types VMU / FS-70 / MF-U / Hyper MF-U
Note: These objectives offer extra-high resolving power.

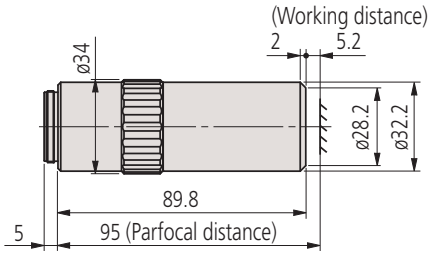
No.	Model	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-787-16	M Plan Apo HR 5X	0,21	27	95	40	1,3	6,2	ø4,8	0,96 x 1,28	285
378-788-15	M Plan Apo HR 10X	0,42	15	95	20	0,7	1,6	ø2,4	0,48 x 0,64	455
378-814-4	M Plan Apo HR 50X	0,75	5,2	95	4	0,4	0,49	ø0,48	0,1 x 0,13	400
378-815-4	M Plan Apo HR 100X	0,9	1,3	95	2	0,3	0,34	ø0,24	0,05 x 0,06	410



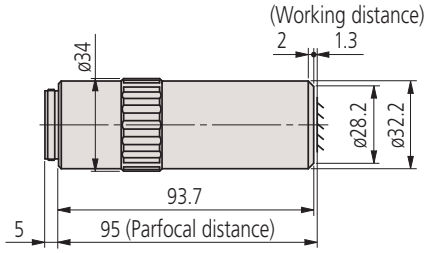
M Plan Apo HR 5X



M Plan Apo HR 10X



M Plan Apo HR 50X



M Plan Apo HR 100X

Specifications

Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
P.D.: Parfocal distance
f: Focal distance
R: Resolving power
D.F.: Depth of field
FOV 1: Field of view when using ø24 mm eyepiece
FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

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Objectives for Brightfield Observation

Specifications

Abbreviations in product table	N.A.: Numerical aperture W.D.: Working distance P.D.: Parfocal distance f: Focal distance R: Resolving power D.F.: Depth of field FOV 1: Field of view when using ø24 mm eyepiece FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

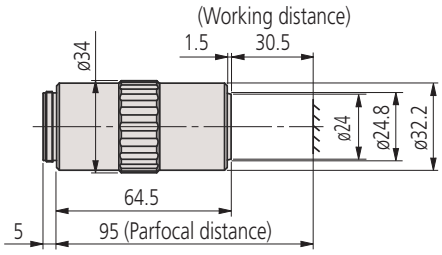
M Plan Apo SL

Features

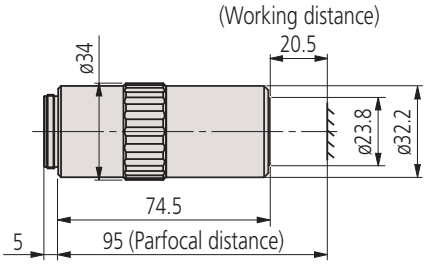
- Super Long Working Distances
- Infintiy Corrected
- Bright Field Inspection
- High Qualtiy Plan Apochromat Design
- Flat Image Surface over Entire Field of View

M Plan Apo SL for Bright Field Observation
Compatible with microscope types VMU / FS-70 / MF-U / Hyper MF-U
Note: These objectives offer extra-long working distance.

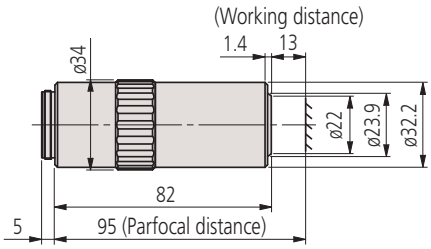
No.	Model	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-810-3	M Plan Apo SL 20X	0,28	30,5	95	10	1	3,5	ø1,2	0,24 x 0,32	240
378-811-15	M Plan Apo SL 50X	0,42	20,5	95	4	0,7	1,6	ø0,48	0,1 x 0,13	280
378-813-3	M Plan Apo SL 100X	0,55	13	95	2	0,5	0,9	ø0,24	0,05 x 0,06	290



M Plan Apo SL 20X



M Plan Apo SL 50X



M Plan Apo SL 100X

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Mitutoyo

Objectives for Brightfield Observation

G Plan Apo

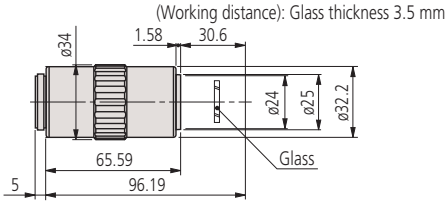
Features

- Infinity Corrected
- Bright Field Inspection
- High Qualtiy Plan Apochromat Design
- Designed to observe Objects through 3,5 mm thick Cover Glass

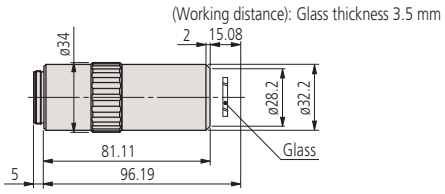
Note: Contact Mitutoyo to custom order a specific cover glass correction to suit your application if required. Thickness, material and refractive index are all specifiable within usual limits.

Glass Thickness Corrected
G Plan Apo for Bright Field Observation
Compatible with microscope types VMU / FS-70 / MF-U / Hyper MF-U
Note: The G Plan Apo Series are designed for observing a workpiece through glass (thickness: 3,5 mm).

No.	Model	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-847	G Plan Apo 20X	0,28	29,42	96,19	10	1	3,5	ø1,2	0,24 x 0,32	270
378-848-3	G Plan Apo 50X	0,5	13,89	96,19	4	0,6	1,1	ø0,48	0,1 x 0,13	320



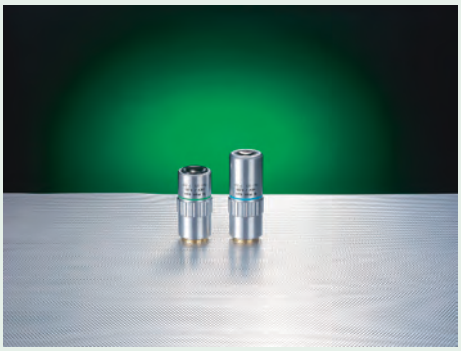
G Plan Apo 20X/t3,5



G Plan Apo 50X/t3,5

Specifications

Abbreviations in product table	Mag.: Magnification N.A.: Numerical aperture W.D.: Working distance P.D.: Parfocal distance f: Focal distance R: Resolving power D.F.: Depth of field FOV 1: Field of view when using ø24 mm eyepiece FOV 2: Field of view when using a digital camera with 1/2" chip size



Refer to the microscope units and objective lenses brochure

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Objectives for Brightfield/Darkfield Observation

Specifications

Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
P.D.: Parfocal distance
f: Focal distance
R: Resolving power
D.F.: Depth of field
FOV 1: Field of view when using ø24 mm eyepiece
FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

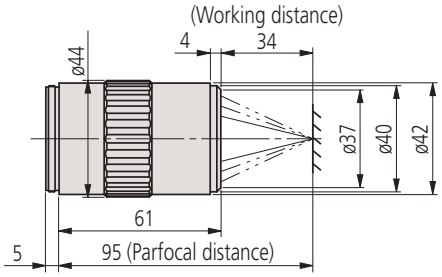
BD Plan Apo

Features

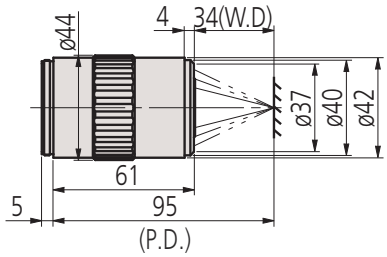
- Bright/Dark Field Inspection
- Infinity corrected
- Long Working Distance
- High Qualtiy Plan Apochromat Design
- Suited for inspection of scratches, concavity and convexity on surfaces

BD Plan Apo for Bright/Dark Field Observation
Compatible with microscope types MF-U / Hyper MF-U

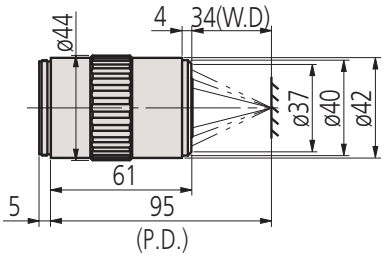
No.	Model	Magnification	N.A.	W.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-831-12	BD Plan Apo 2x	2x	0,055	34	100	5	91	ø1,2	2,4 x 3,2	340
378-832-12	BD Plan Apo 5X	5x	0,14	34	40	2	14	ø4,8	0,96 x 1,28	350
378-830-7	BD Plan Apo 7,5X	7,5x	0,21	34	26,67	1,3	6,2	ø3,6	0,64 x 0,85	350
378-833-7	BD Plan Apo 10X	10x	0,28	34	20	1	3,5	ø2,4	0,48 x 0,64	350
378-834-7	BD Plan Apo 20X	20x	0,42	20	10	0,7	1,6	ø1,2	0,24 x 0,32	400
378-835-7	BD Plan Apo 50X	50x	0,55	13	4	0,5	0,9	ø0,48	0,1 x 0,13	440
378-836-7	BD Plan Apo 100X	100x	0,7	6	2	0,4	0,6	ø0,24	0,05 x 0,06	460



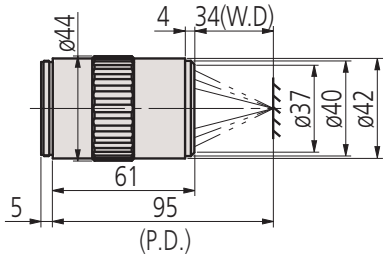
BD Plan Apo 2X



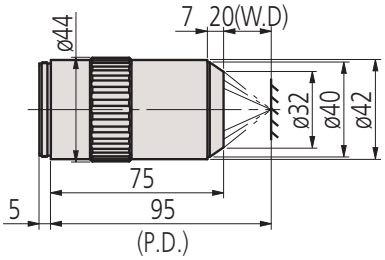
BD Plan Apo 5X



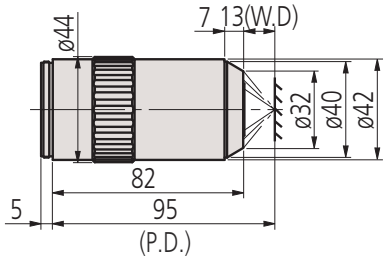
BD Plan Apo 7,5X



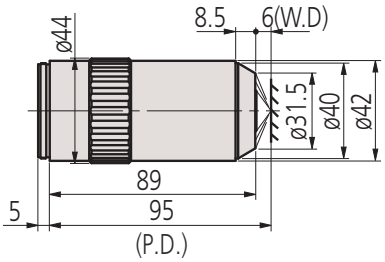
BD Plan Apo 10X



BD Plan Apo 20X



BD Plan Apo 50X



BD Plan Apo 100X

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Mitutoyo

Objectives for NIR

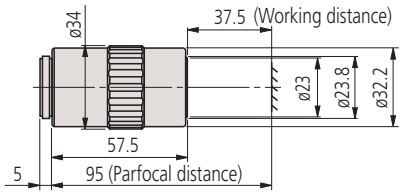
M Plan Apo NIR / M Plan Apo NIR HR

Features

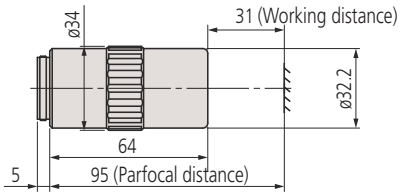
- Infinity Corrected
- Suitable for Bright Field Inspection and Laser Applications
- Long Working Distance
- High Quality Plan Apochromat Design
- Wavelength Correction from Visible to Near Infrared (1800 nm)

High-Power Type availabel (M Plan Apo NIR HR)

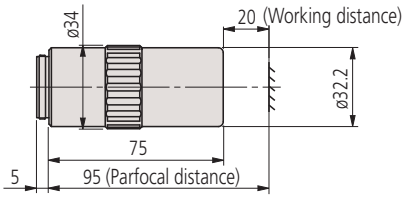
No.	Model	Magnification	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-822-5	M Plan Apo NIR 5X	5x	0,14	37,5	95	40	2	14	ø4,8	0,96 x 1,28	220
378-823-15	M Plan Apo NIR 10X	10X	0,26	31	95	20	1,1	4,1	ø2,4	0,48 x 0,64	250
378-824-16	M Plan Apo NIR 20X	20x	0,4	20	95	10	0,7	1,7	ø1,2	0,24 x 0,32	300
378-825-16	M Plan Apo NIR 50X	50x	0,42	17	95	4	0,7	1,6	ø0,48	0,1 x 0,13	315
378-863-5	M Plan Apo NIR HR 50X	50x	0,65	10	95	4	0,42	0,65	ø0,48	0,1 x 0,13	450
378-826-15	M Plan Apo NIR 100X	100x	0,5	12	95	2	0,6	1,1	ø0,24	0,05 x 0,06	335
378-864-15	M Plan Apo NIR HR 100X	100x	0,7	10	95	2	0,4	0,6	ø0,24	0,05 x 0,06	490



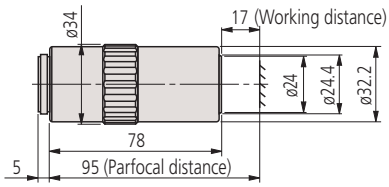
M Plan Apo NIR 5X



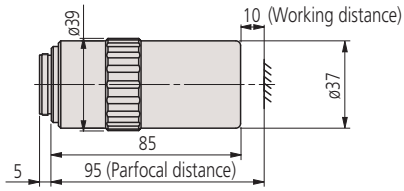
M Plan Apo NIR 10X



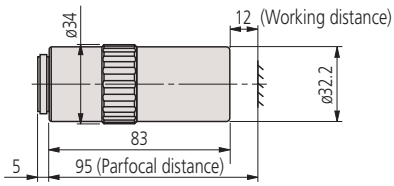
M Plan Apo NIR 20X



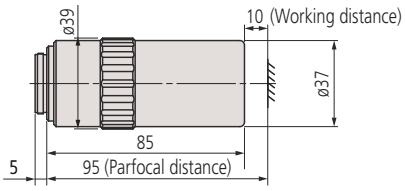
M Plan Apo NIR 50X



M Plan Apo NIR HR 50X



M Plan Apo NIR 100X



M Plan Apo NIR HR 100X

Specifications

Abbreviations in product table	N.A.: Numerical aperture W.D.: Working distance P.D.: Parfocal distance f: Focal distance R: Resolving power D.F.: Depth of field FOV 1: Field of view when using ø24 mm eyepiece FOV 2: Field of view when using a digital camera with 1/2" chip size
M Plan Apo NIR	Note: These objective lenses are designed so that the image of a workpiece remains focused within the focal depth even when the wavelength used is changed from within the visible range up to the near-infrared (480 to 1800 nm). Therefore the M Plan NIR Series are suitable for laser repair. However, when the wavelength used exceeds 1100 nm, the focussing position may deviate slightly from that in the visible range due to changes in glass dispersion and refractive index.

Refer to the microscope units and objective lenses brochure

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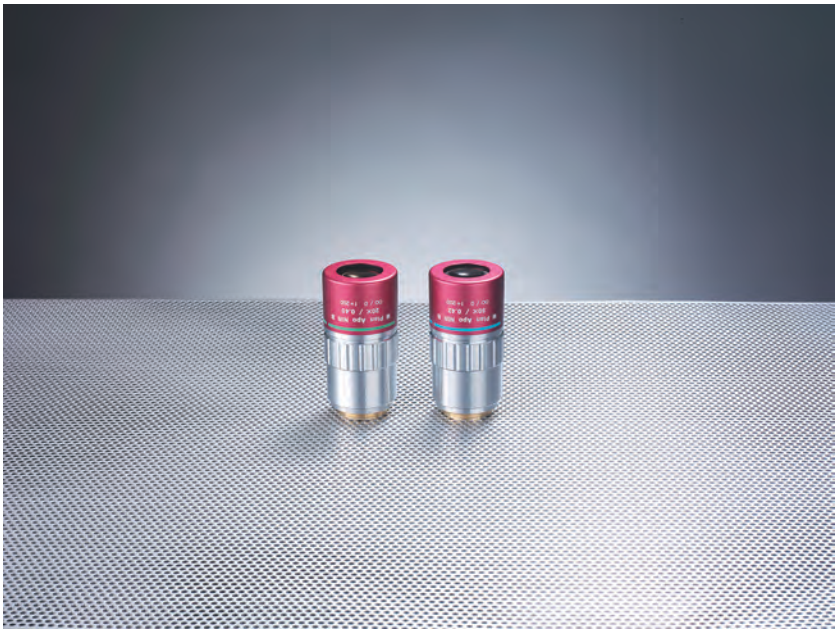
Objectives for NIR

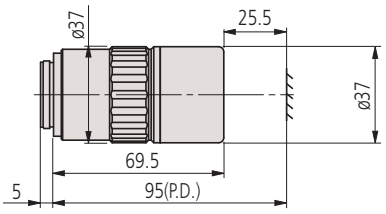
M Plan Apo NIR B

Features

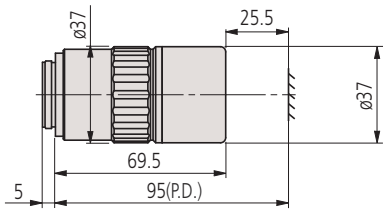
- Infinity Corrected
- Suitable for Bright Field Inspection and Laser Applications
- Long Working Distance 25,5 mm
- High Quality Plan Apochromat Design
- Wavelength Correction from Visible to Near Infrared (1800 nm)



No.	Model	Magnification	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-867-5	M Plan Apo NIR B 20X	20x	0,4	25,5	95	10	0,7	1,7	ø1,2	0,24 x 0,32	350
378-868-5	M Plan Apo NIR B 50X	50x	0,42	25,5	95	4	0,7	1,6	ø0,48	0,24 x 0,13	375



M Plan Apo NIR B 20X



M Plan Apo NIR B 50X

Specifications

Abbreviations in product table	N.A.: Numerical aperture W.D.: Working distance P.D.: Parfocal distance f: Focal distance R: Resolving power D.F.: Depth of field FOV 1: Field of view when using ø24 mm eyepiece FOV 2: Field of view when using a digital camera with 1/2" chip size
M Plan Apo NIR B	Note: This series of objective has greatly improved in operability thanks to the achievement of an ultra-long working distance of 25,5 mm while maintaining the NA of the NIR series 20X/50X.
M Plan Apo NIR	Note: These objective lenses are designed so that the image of a workpiece remains focused within the focal depth even when the wavelength used is changed from within the visible range up to the near-infrared (480 to 1800 nm). Therefore the M Plan NIR Series are suitable for laser repair. However, when the wavelength used exceeds 1100 nm, the focussing position may deviate slightly from that in the visible range due to changes in glass dispersion and refractive index.

Refer to the microscope units and objective lenses brochure

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Mitutoyo

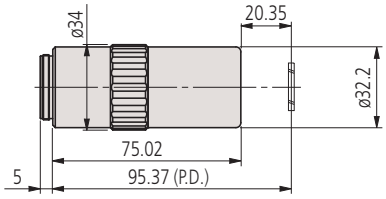
Objectives for NIR LCD

LCD Plan Apo NIR/LCD Plan Apo NIR HR

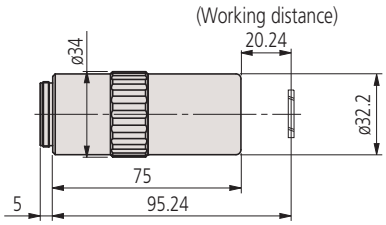
Features

- Suitabel for Bright Field Inspection and Laser-based repair Applications through 0,7 or 1,1 mm LCD cover-glass
- Long Working Distance
- High Quality Plan Apoochromat Design
- Wavelength correction from Visible to Near Infrared (1800 nm)

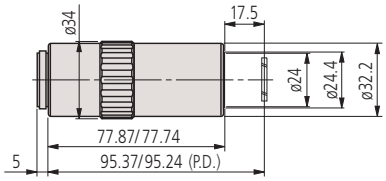
No.	Model	Magnification	N.A.	W.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-827-16	LCD Plan Apo NIR 20X (t1,1)	20x	0,4	19,98	10	0,7	1,7	ø1,2	0,24 x 0,32	305
378-821-16	LCD Plan Apo NIR 20X(t0,7)	20x	0,4	20	10	0,7	1,7	ø1,2	0,24 x 0,32	305
378-828-16	LCD Plan Apo NIR 50X (t1,1)	50x	0,42	17,13	4	0,7	1,6	ø0,47	0,1 x 0,13	320
378-829-16	LCD Plan Apo NIR 50X (t0,7)	50x	0,42	17,26	4	0,7	1,6	ø0,48	0,1 x 0,13	320
378-754-15	LCD Plan Apo NIR 100X (t0,7)	100x	0,5	12,06	2	0,6	1,1	ø0,24	0,05 x 0,06	335
378-869-5	LCD Plan Apo NIR HR 50X (t 0,7)	50x	0,65	9,6	4	0,4	0,7	ø0,48	0,1 x 0,13	450
378-870-15	LCD Plan Apo NIR HR 100X (t 0,7)	100x	0,7	9,87	2	0,4	0,6	ø0,24	0,05 x 0,06	490



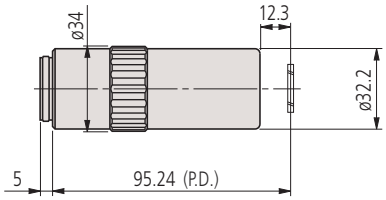
LCD Plan Apo NIR 20X (t1,1)



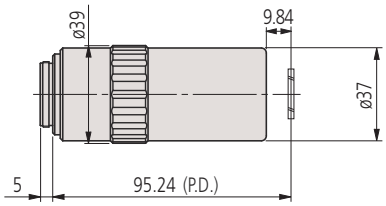
LCD Plan Apo NIR 20X (t0,7)



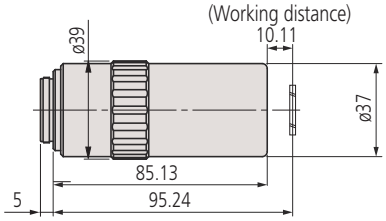
LCD Plan Apo NIR 50X (t1,1)/(t0,7)



LCD Plan Apo NIR 100X (t0,7)



LCD Plan Apo NIR HR 50X (t0,7)



LCD Plan Apo NIR HR 100X(t0,7)

Specifications

Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
P.D.: Parfocal distance
f: Focal distance
R: Resolving power
D.F.: Depth of focus
FOV 1: Field of view when using ø24 mm eyepiece
FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

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Objectives for NUV

Specifications

Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
P.D.: Parfocal distance
f: Focal distance
R: Resolving power
D.F.: Depth of focus
FOV 1: Field of view when using ø24 mm eyepiece
FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

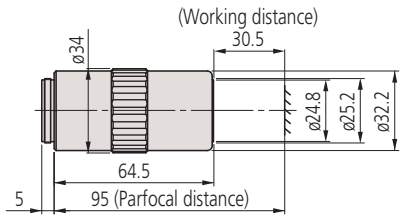
M Plan Apo NUV/M Plan Apo NUV HR

Features

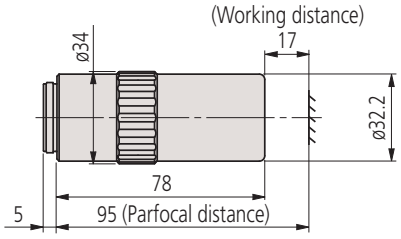
- Suitable for Bright Field Inspection and Laser Applications
- Long Working Distance
- High Quality Plan Apochromat Design
- Wavelength correction from Visible to Near Ultraviolett (355 nm)
- High Power Type available (M Plan Apo NUV HR)

NUV

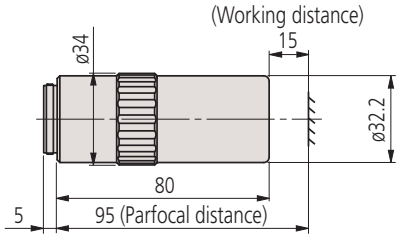
No.	Model	Magnification	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-809-5	M Plan Apo NUV 10X	10x	0,28	30,5	95	20	1	3,5	ø2,4	0,48 x 0,64	255
378-817-8	M Plan Apo NUV 20X	20x	0,42	17	95	10	0,7	1,7	ø1,2	0,24 x 0,32	350
378-818-8	M Plan Apo NUV 50X	50x	0,44	15	95	4	0,6	1,4	ø0,48	0,1 x 0,13	390
378-888-6	M Plan Apo NUV HR 50X	50x	0,65	10	95	4	0,42	0,65	ø0,48	0,1 x 0,13	550
378-819-15	M Plan Apo NUV 100X	100x	0,5	11	95	2	0,6	1,1	ø0,24	0,05 x 0,06	380



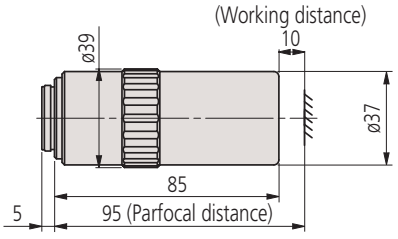
M Plan Apo NUV 10X



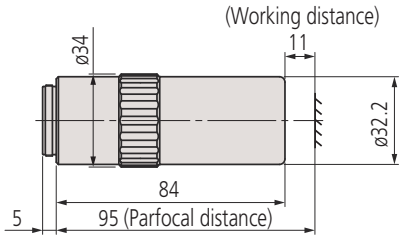
M Plan Apo NUV 20X



M Plan Apo NUV 50X



M Plan Apo NUV HR 50X



M Plan Apo NUV 100X

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Objectives for NUV LCD

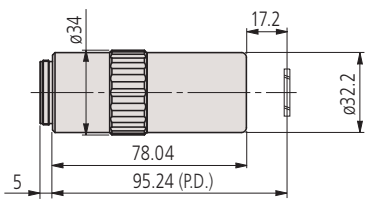
M Plan Apo NUV LCD

Features

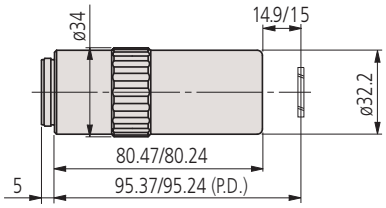
- Suitable for Bright Field Inspection and Laser Applications through 0,7 or 1,1 mm LCD conver-glass
- Long Working Distance
- High Quality Plan Apochromat Design
- Wavelength correction from Visible to Near Ultraviolett (355 nm)
- High Resolution Type available (LCD Plan Apo NUV HR)

LCD NUV

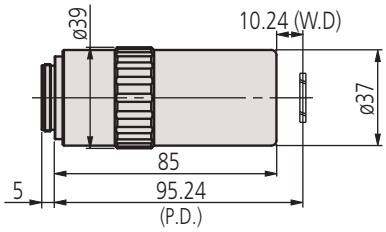
No.	Model	Magnification	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-890-8	LCD plan Apo NUV 20X (t0,7)	20x	0,42	16,96	95	10	0,7	1,6	ø1,2	0,24 x 0,32	340
378-820-8	LCD Plan Apo NUV 50X (t0,7)	50x	0,44	14,76	95	4	0,6	1,4	ø0,48	0,1 x 0,13	350
378-891-6	LCD plan Apo NUV HR 50X (t0,7)	50x	0,65	9,76	95	4	0,4	0,7	ø0,48	0,1 x 0,13	500



LCD Plan Apo NUV 20X (t0,7)



LCD Plan Apo NUV 50X (t0,7)



LCD Plan Apo NUV HR 50X (t0,7)

Specifications

Abbreviations in product table	N.A.: Numerical aperture W.D.: Working distance P.D.: Parfocal distance f: Focal distance R: Resolving power D.F.: Depth of focus FOV 1: Field of view when using ø24 mm eye-piece FOV 2: Field of view when using a digital cam-era with 1/2" chip size

Refer to the microscope units and objective lenses brochure

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Objectives for UV

M Plan UV

Features

- Suitable for Bright Field Inspection and Laser Applications
- Long Working Distance
- High Quality Plan Design
- Wavelength optimized for Visible and Ultraviolett (266 nm) Wavelength
- High Transmission in Ultraviolett Range

Specifications

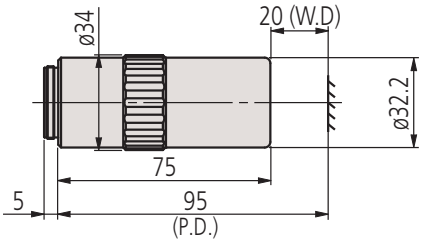
Abbreviations in product table

N.A.: Numerical aperture
W.D.: Working distance
P.D.: Parfocal distance
f: Focal distance
R: Resolving power
D.F.: Depth of focus
FOV 1: Field of view when using ø24 mm eyepiece
FOV 2: Field of view when using a digital camera with 1/2" chip size

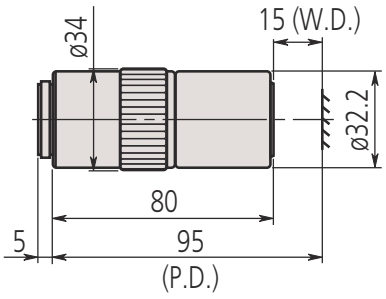
Refer to the microscope units and objective lenses brochure

UV

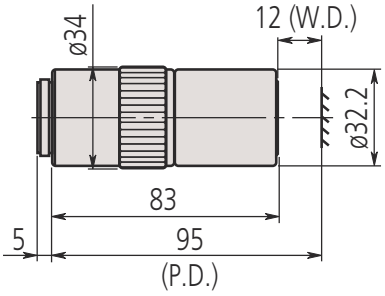
No.	Model	Magnification	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-844-15	M Plan UV 10X	10x	0,25	20	95	20	1,1	4,4	ø2,4	0,48 x 0,64	310
378-837-7	M Plan UV 20X	20x	0,36	15	95	10	0,8	2,1	ø1,2	0,24 x 0,32	330
378-838-8	M Plan UV 50X	50x	0,41	12	95	4	0,7	1,6	ø0,48	0,1 x 0,13	400
378-839-5	M Plan UV 80X	80x	0,55	10	95	2,6	0,5	0,9	ø0,3	0,06 x 0,08	380



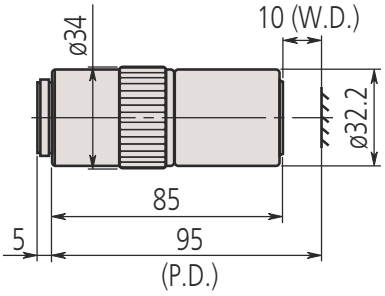
M Plan UV 10X



M Plan UV 20X



M Plan UV 50X



M Plan UV 80X

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Objectives for UV LCD

M Plan Apo UV LCD

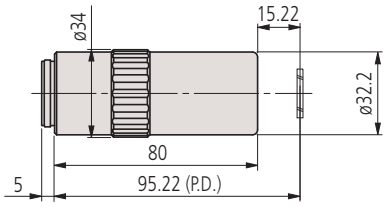
Features

- Suitable for Bright Field Inspection and Laser Applications through 0,7 mm LCD cover-glass
- Long Working Distance
- High Quality Plan Design
- Wavelength optimized for Visible and Ultraviolett (266 nm)

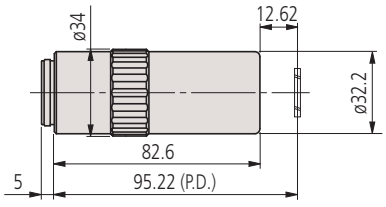
Refer to the microscope units and objective lenses brochure

LCD UV

No.	Model	Magnification	N.A.	W.D. [mm]	P.D. [mm]	f [mm]	R [µm]	D.F. [µm]	FOV 1 [mm]	FOV 2 [mm]	Mass [g]
378-892-8	LCD Plan UV 20X (t0,7)	20x	0,37	15	95	10	0,8	2,1	ø1,2	0,24 x 0,32	370
378-893-8	LCD Plan UV 50X (t0,7)	50x	0,41	12,4	95	4	0,7	1,6	ø0,48	0,1 x 0,13	400



LCD Plan UV 20X (t0,7)



LCD Plan UV 50X (t0,7)

Specifications

Abbreviations in product table	N.A.: Numerical aperture W.D.: Working distance P.D.: Parfocal distance f: Focal distance R: Resolving power D.F.: Depth of focus FOV 1: Field of view when using ø24 mm eyepiece FOV 2: Field of view when using a digital camera with 1/2" chip size

Refer to the microscope units and objective lenses brochure

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Measuring Projector PJ-PLUS Series

PJ-PLUS

The measuring projector that “can be operated intuitively” even by inexperienced people and also has
excellent durability and energy-saving performance thanks to the adoption of an “LED illumination source” and “fanless cooling system”.
It provides stable dimension and angle measurements in harsher environments, such as manufacturing and processing lines, than can be handled by conventional models.

PJ-P1010A

No.	Model	Quick-release mechanism	XY stage table top size [mm]	XY stage effective area [mm]	Stage glass No.	Max stage loading [kg]	Mass [kg]
302-801-10	PJ-P1010A	X and Y axes	250 x 250	142 x 142	12BAE041	10	114
302-802-10	PJ-P2010A	X and Y axes	350 x 280	240 x 140	12BAD760	8	118

Standard accessories

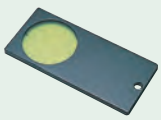
No.	Description
383876	Cover, Vinyl cover for PJ projectors

Optional accessories

No.	Description
172-116	Inspection tool, Standard scale 50 mm/ 0,1 mm
172-118	Inspection tool, Reading scale 200 mm/ 0,5 mm
172-119	Inspection tool, Reading scale 8"/0.02"
172-161	Inspection tool, Reading Scale 300 mm/ 0,5 mm
172-162	Inspection tool, Reading Scale 12"/0.02"
172-160-3	Green Filter, Colour filter
172-604	Swivel center support, Fixture/clamping material
172-229	Lens accessory, Oblique reflecting mirror for 10X lens
172-230	Lens accessory, Oblique reflecting mirror for 20X lens
172-378	V-BLOCK, with clamp
176-107	Fixture/clamping material, Holder with clamp
176-105	Fixture/clamping material, Swivel center support
12AAE671	Attachment, OPTOEYE-200 Attachment A, 250-350 mm
332-151	Sensor, Optoeye-200 edge detection sensor
176-106	Rotary table
172-196	Rotary table, 100 mm for TM-1005B
172-198	Rotary table, 100 mm with fine feed knob for TM-1005B
264-160-13	2D Data processor
264-161-13	2D Data processor, 2D Data processor w/o power cord
172-502	LED Circular Illuminator (PJ-PLUS), for 10x and 20x + adapter 12AAX044, w/o power cord
12AAX044	Damping Ring A (for PJ 20X), to connect LED illumination 172-502 to 20x lens
172-296	Projection lens set, 10X magnification
172-297	Projection lens set, 20X magnification
172-298	Projection lens set, 50X magnification
172-299	Projection lens set, 100X magnification
63AAA406	M2-2D software for PJ and PH series, Non-Edge detection unit incl. PC mounting kit
63AAA407	M2-2D software for PJ and PH series, Edge detection unit incl. PC mounting kit
63AAA597	ASUS AiO PC for M2 system, Intel Celeron N4500/8GB/256GB SSD/W11Pro/ 15.6" Touch screen

172-116
Inspection tool

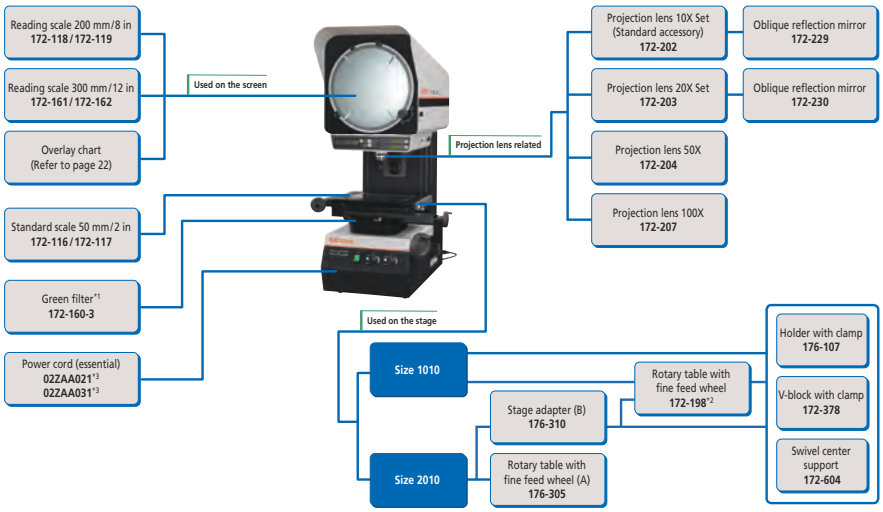
172-229
Lens accessory



172-160-3
Green filter

172-502
LED Circular Illuminator

System Diagram



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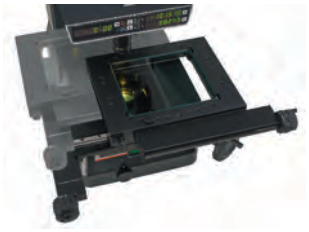
Mitutoyo

Measuring Projector PJ-H30

This measuring projector has adjustable incident illumination.
The PJ-H30 offers you the following benefits:

- By rotating the condenser lens and changing the angle of the mirror in the objective, you can represent even poorly reflecting surfaces optimally.
- Improved light intensity of a projected subject thanks to the new optical contour illumination system.
- High measuring accuracy (above JIS standard).
- Measuring stage with rapid single-handed adjustment on both axes enabling you to switch smoothly between quick positioning and fine adjustment.
- Constant current power supply unit with acceleration control to maximize the service life of the halogen lamp.
- Easily read digital counter with large digit display.
- RS-232C output.

3017B model



No.	Model	XY stage table top size [mm]	XY stage effective area [mm]	Stage glass No.	Table swiveling function	Max stage loading [kg]	Mass [kg]
303-716-13	PJ-H30A 1010B	300 x 240	180 x 150	**380412**	±3°	10	176
303-717-13	PJ-H30A 2010B	350 x 280	250 x 150	**382762**	±3°	10	178
303-718-13	PJ-H30A 2017B	410 x 342	270 x 240	**12BAD363**	±5°	20	205
303-719-13	PJ-H30A 3017B	510 x 342	370 x 240	**12BAD330**	±5°	20	212

Specifications

Projected image	Erect
Projector screen	Effective diameter: 306 mm Screen material: Fine-ground glass Screen rotation: ±360°, fine adjustment and clamp Angle display: Digital counter (LED) Resolution: 1' or 0,01° (switchable) Range: ±370°ABS/INC mode switching, Zero Set Reference lines: Cross-hairs
Projection lens	10X **(172-472)** Optional: 5X, 20X, 50X, 100X
Magnification accuracy	Contour illumination: ±0,1% or better Surface illumination: ±0,15% or better
Contor Illumination	Light source: Halogen bulb (24V, 150W) Optical system: Telecentric zoom Functions: Continuously variable brightness adjustment, Heat-absorbing filter, Cooling fan
Surface illumination	Light source: Halogen bulb (24V, 150W) Optical system: Vertical/Oblique illumination with an adjustable condenser lens Functions: Continuously variable brightness adjustment, Heat-absorbing filter, Cooling fan
Focussing	Manual focus
Power supply	220V AC, 50/60Hz
Resolution	0,001 mm

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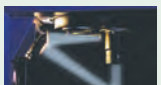
Measuring Projector PJ-H30

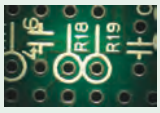
Optional accessories

No.	Description
12AAG983	Attachment, Optoeye-200 Attachment for PJ-H30 Series
12AAG981	Filter, Green filter for PJ-H30 Series projector
176-306	Rotary table with fine feed wheel, Type B, glass diameter = 238 mm
176-105	Fixture/clamping material, Swivel center support
172-271	Projection lens, 5X magnification for PJ-311
172-473	Projection lens, 20X magnification for PJ-H30 Series
172-474	Projection lens, 50X magnification for PJ-H30 Series
172-475	Projection lens, 100X magnification for PJ-H30 Series
172-378	V-BLOCK, with clamp
12AAG982	Stand, Stand for QM-Data 200 on PJ-H30 Series
264-160-13	2D Data processor
264-161-13	2D Data processor, 2D Data processor w/o power cord
011534	MC Special Cleaner
332-151	Sensor, Optoeye-200 edge detection sensor
172-116	Inspection tool, Standard scale 50 mm/0,1 mm
172-118	Inspection tool, Reading scale 200 mm/0,5 mm
172-161	Inspection tool, Reading Scale 300 mm/0,5 mm
12AAE671	Attachment, OPTOEYE-200 Attachment A, 250-350 mm
63AAA406	M2-2D software for PJ and PH series, Non-Edge detection unit incl. PC mounting kit
63AAA407	M2-2D software for PJ and PH series, Edge detection unit incl. PC mounting kit
63AAA597	ASUS AiO PC for M2 system, Intel Celeron N4500/8GB/256GB SSD/W11Pro/15.6" Touch screen
6. Printer and interface	
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E
Tables	
176-305	Rotary Table, Type A, D=240 mm
172-604	Swivel center support, Fixture/clamping material
172-198	Rotary table, 100 mm with fine feed knob for TM-1005B



Vertical/oblique switchable surface illumination

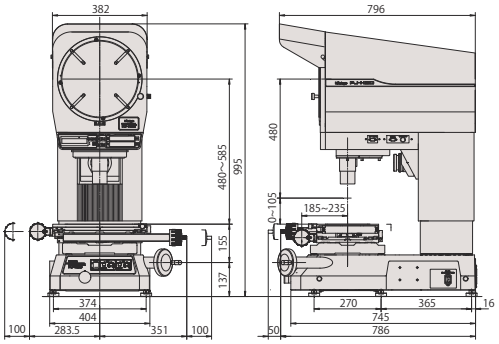
Vertical illumination



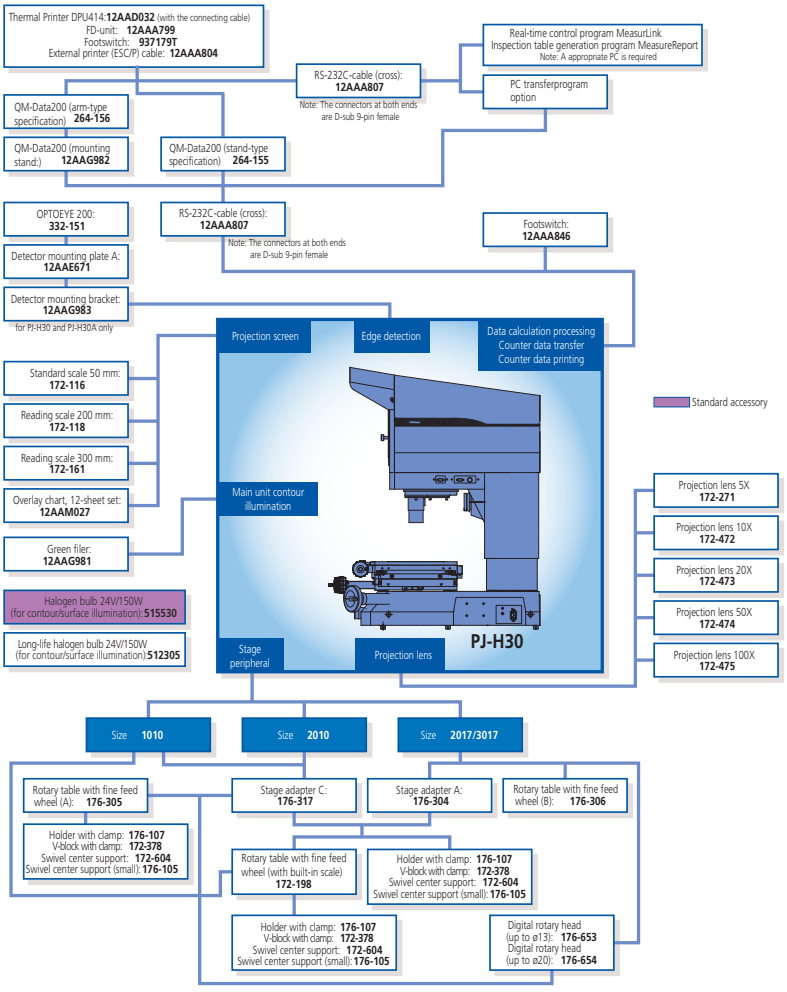
Oblique illumination

264-160-13
QM-Data 200

Profile Projector brochure on request



PJ-H30A2010B Model



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Mitutoyo

Measuring Projector PV-5110

PV-5110

- This measuring projector is a robust stand-alone device.
- The large rotatable screen guarantees you good observation and easy measuring.

304-919-12
Counter is optional

KA Counter

QM-Data 200

OPTOEYE 200

Specifications

Projected image	Inverted
Projector screen	Effective diameter: 508 mm Screen material: Fine-ground glass Screen rotation: ±360°, fine adjustment and clamp Angle reading: Digital counter (LED) Resolution: 1' or 0,01° (switchable) Range: ±370°ABS/INC mode switching, Zero Set Reference lines : Cross-hairs
Projection lens	10X **(172-402)** Optional: 5X, 20X, 50X, 100X
Magnification accuracy	Contour illumination: ±0,1% or better Surface illumination: ±0,15% or better
Contor Illumination	Light source: Halogen bulb (24V, 150W) Optical system: Telecentric zoom Functions: 2-step (High/Low) brightness switch, Heat-absorbing filter, Cooling fan
Surface illumination	Light source: Halogen bulb (24V, 150W) Optical system: Vertical illumination Functions: Adjustable condenser lens, Oblique illumination (for 5X, 10X and 20X), Heat-absorbing filter, Cooling fan
Focussing	Manual
Resolution	0,001 mm
Power supply	220 - 240V AC, 50/60Hz
Mass	210 kg

Standard accessories

No.	Description
512305	Halogen Lamp for Measuring Projector, 24V/150W
382762	Stage glass, 280 x 180 mm, for projector

No.	Model	XY stage [mm]	Measuring method	Quick-release mechanism	XY stage table top size [mm]	XY stage effective area [mm]	Stage glass No.	Table swiveling function	Max stage loading [kg]	Mass [kg]
304-919-12	PV-5110	200 x 100	Linear encoder	X and Y axes	380 x 250	266 x 170	**382762**	±3°	5	210

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Measuring Projector PV-5110

Optional accessories

No.	Description
172-198	Rotary table, 100 mm with fine feed knob for TM-1005B
172-161	Inspection tool, Reading Scale 300 mm/ 0,5 mm
172-116	Inspection tool, Standard scale 50 mm/ 0,1 mm
172-330	Inspection tool, Standard scale 80 mm/ 0,1 mm
172-329	Inspection tool, Reading scale 600 mm/ 0,5 mm
011534	MC Special Cleaner
264-161-13	2D Data processor, 2D Data processor w/o power cord
172-160-2	Green filter
172-319	Canopy
12AAF182	Counter stand, For PV-5110 projector
174-183D	Linear Scale Counter KA-212
12AAE672	Attachment, OPTOEYE-200 Attachment B, 500-600 mm
172-604	Swivel center support, Fixture/clamping material
172-378	V-BLOCK, with clamp
176-107	Fixture/clamping material, Holder with clamp
63AAA597	ASUS AiO PC for M2 system, Intel Celeron N4500/8GB/256GB SSD/W11Pro/ 15.6" Touch screen
63AAA462	M2-2D soft and hardware for PV5110, incl.edge detection unit and tablet mount

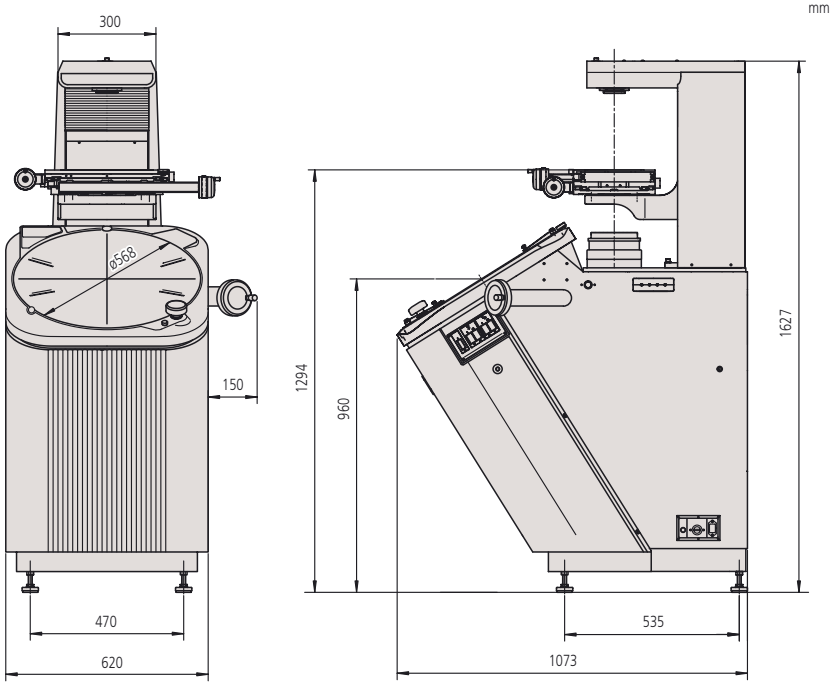
mm

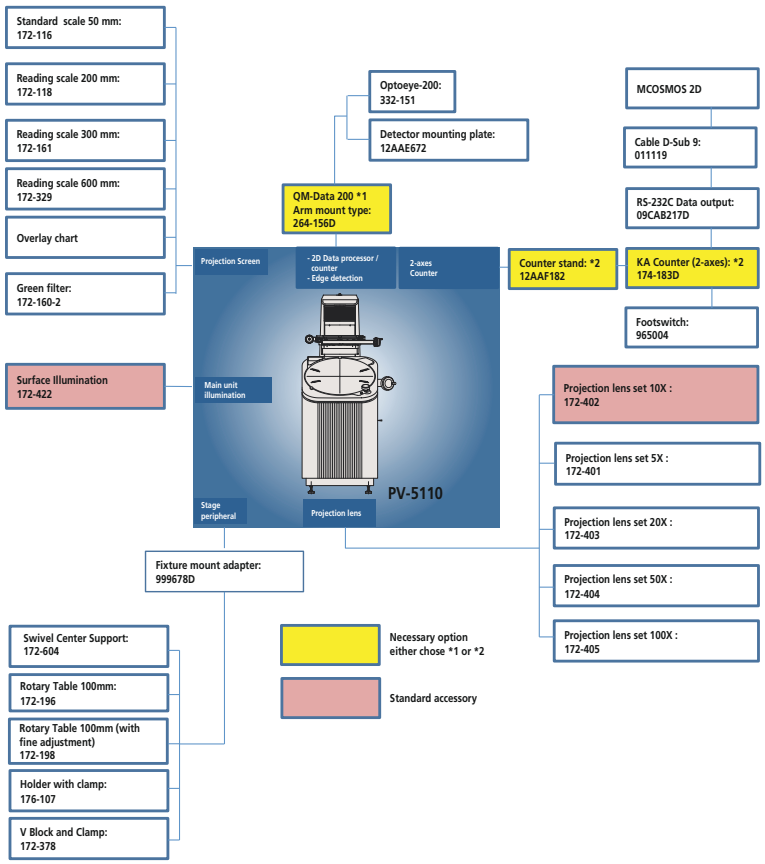
	Magnification				
	5X	10X	20X	50X	100X
View field	ø101.6	ø50.8	ø25.4	ø10.16	ø5.08
H	125	181	206	87	87
W	60 (27)	60	60	32.4	22.5
D	120	120	120	64.8	45

( ) When using surface illumination

172-319

Profile Projector brochure on request





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Measuring Projector PH-3515F

Measuring Projector PH-3515F

- Due to the PH-3515F's horizontal-beam illumination, you can easily measure larger and heavier workpieces including toothed racks and punching tools.
- You can use the projector for a wide range of applications due to its generous 254 x 152 mm stage travel and 45 kg allowable stage loading.

172-868-12

No.	Model	XY stage [mm]	Measuring method	Quick-release mechanism	XY stage table top size [mm]	Table swiveling function	Max stage loading [kg]	Mass [kg]
172-868-12	PH-3515F	254 x 152	Linear encoder	X axis	450 x 146	±10°	45	150

Specifications

Projected image	Erect
Projector screen	Effective diameter: 353 mm Screen material: Fine-ground glass Screen rotation: ±360°, fine feed and clamp Angle display: Digital counter (LED) Resolution: 1' or 0,01° (switchable) Range: ±370°ABS/INC mode switching, Zero Set Reference lines : Cross-hairs
Projection lens	10X **(172-184)** Optional: 5X, 20X, 50X, 100X
Magnification accuracy	Contour illumination: ±0,1% or better Surface illumination: ±0,15% or better
Contor Illumination	Light source: Halogen bulb (24V, 150W) Optical system: Telecentric system Functions: 2-step (High/Low) brightness adjustment, Heat-absorbing filter, Cooling fan
Surface illumination	Light source: Halogen bulb (24V, 150W) Optical system: Vertical illumination Functions: Adjustable condenser lens, 2-step (High/Low) brightness adjustment, Heat-absorbing filter, Cooling fan
Focussing	Manual
Resolution	0,001 mm
Power supply	220 - 240V AC, 50/60Hz
Mass	150 kg

Standard accessories

No.	Description
383228	Cover, Vinyl cover for PH3500 projector
512305	Halogen Lamp for Measuring Projector, 24V/150W
12BAA637	Bulb, Halogen 24V/200W for PH-3515F twin fiber

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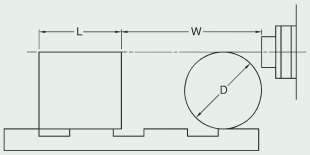
Measuring Projector PH-3515F

Optional accessories

No.	Description
332-151	Sensor, Optoeye-200 edge detection sensor
12AAE671	Attachment, OPTOEYE-200 Attachment A, 250-350 mm
172-116	Inspection tool, Standard scale 50 mm/ 0,1 mm
172-161	Inspection tool, Reading Scale 300 mm/ 0,5 mm
12AAM027	Overlay chart set, for Profile Projectors
172-118	Inspection tool, Reading scale 200 mm/ 0,5 mm
174-183D	Linear Scale Counter KA-212
172-423	Illumination, Surface illumination unit PH-3515F
172-286	Filter, Colour filter
172-600	Center support, Fixture/clamping material
172-601	Center support riser set, Fixture/clamping material
172-602	Rotary vise, Fixture/clamping material
172-603	V-block with clamp, Fixture/clamping material
172-132	Fixture/clamping material, Vertical workpiece holder
12AAF182	Counter stand, For PV-5110 projector
011534	MC Special Cleaner
63AAA597	ASUS AiO PC for M2 system, Intel Celeron N4500/8GB/256GB SSD/W11Pro/ 15.6" Touch screen
63AAA406	M2-2D software for PJ and PH series, Non-Edge detection unit incl. PC mounting kit
63AAA407	M2-2D software for PJ and PH series, Edge detection unit incl. PC mounting kit
264-161-13	2D Data processor, 2D Data processor w/o power cord



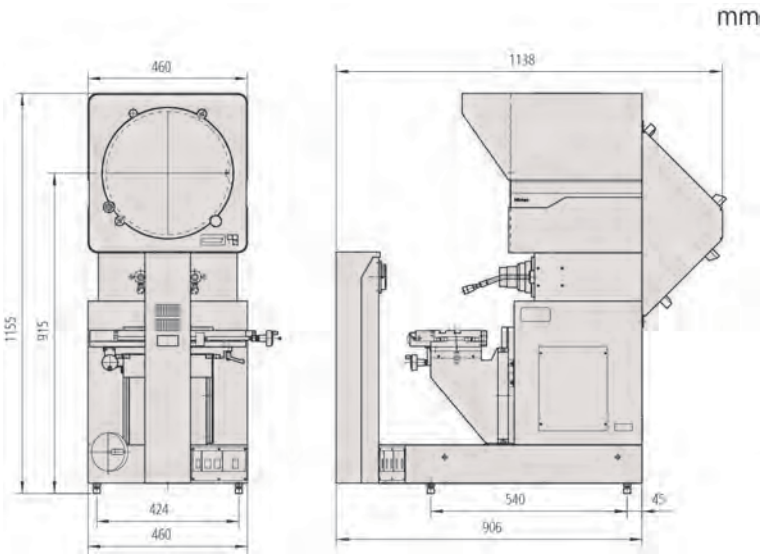
L : Max. workpiece width
W : Working distance
D : Max. workpiece diameter

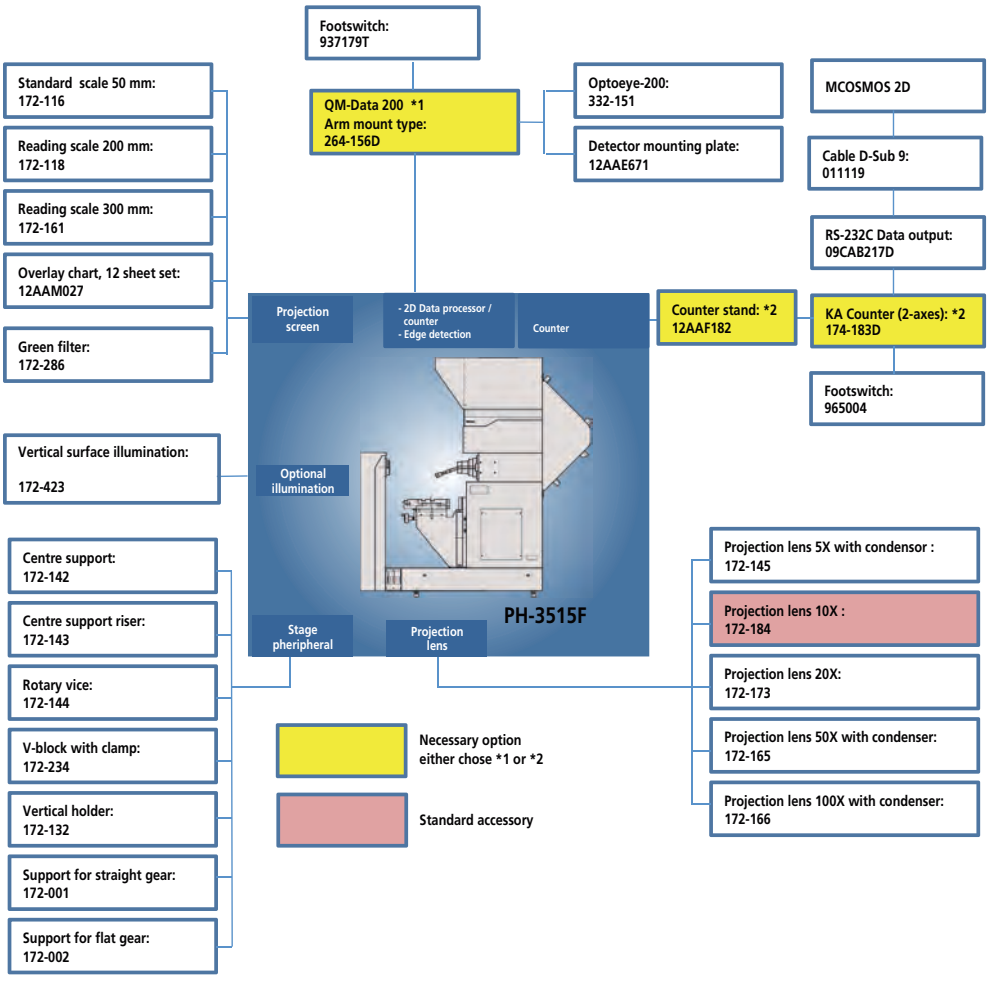
PH-3515F mm

	Magnification				
	5X	10X	20X	50X	100X
View field	70.6	35.3	17.65	7.06	3.5
L	175	235	235	80	109
W	160 (64)	93 (35)	40	14.6	9.5
D	152.4	152.4	116	30.4	19

( ) When using surface illumination

QM-Data 200





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Mitutoyo

Data Processing Unit QM-Data 200

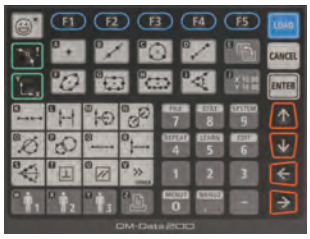
Data Processing Unit QM-Data 200

The Data Processing Unit QM-Data 200 has been especially designed to process measurement data generated by a profile projector or measuring microscope.
The QM-Data 200 offers you the following benefits:

- Measuring instructions, measuring values and calculation results for various operations are shown on the back-lit LCD in a clear, easy to understand style.
- You can also print measuring results, either on a small and convenient thermal printer (available as a special option) or on an ESC/P printer and continuous paper.

Stand-mount type

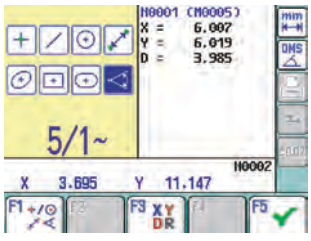
Arm-mount type



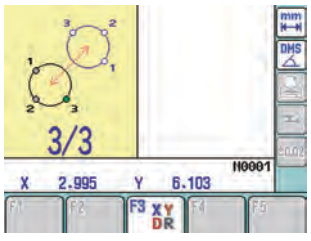
Intuitive panel design

No.	Resolution	Power supply	Data output	Data input	Description	Mass [kg]
264-161-13	1 / 0,1 µm	100/240V AC, 50/60 Hz	USB, RS-232C, Printer	USB, RS-232C, X/Y/Z-axis signal, Footswitch	Arm-mount type	2,8
264-160-13	1 / 0,1 µm	100/240V AC, 50/60 Hz	USB, RS-232C, Printer	USB, RS-232C, X/Y/Z-axis signal, Footswitch	Stand-mount type	2,9

Clear function icons



Coloured LCD display with backlight



Guided measurements

Specifications

Dimensions [mm]	260 x 242 x 310: Stand-mount type 318 x 153 x 275: Arm-mount type
Screen	Colour graphics TFT LCD (320 x 240 dots, with background lighting)
Program functions	Part program creation, execution, editing
Statisical processing	Number of data, maximum value, minimum value, mean value, standard deviation, range, histogram
Display language	Japanese/English/German/French/Italian/Spanish/Portuguese/Chech/Traditional Chinese/Simplified Chinese/Korean/Turkish/Swedish/Polish/Dutch/Hungarian
Measuring of Geometric Elements	Maximum of 1000 elements, point, line, circle, distance, ellipse, rectangular hole, slotted hole, intersection and intersecting angle and point & angle, plus a number of functions for evaluation, e.g. perpendicularity and parallelism are provided.
Measurement result file output	CSV format; MUX-10F format
Functions	**Mitutoyo's AI Function:** The AI function (AI=Artificial Intelligence) renders choosing the element type before measuring obsolete. Point measurements are analyzed by the QM-Data and the results for basic elements calculated, thus accelerating the measuring procedure. **Customized Operation:** Macro functions and the creation of part programs speed up single and repetitive measurements. Additionally macro commands and part programs as well as frequently used standard operations can be stored as user settings.

Optional accessories

No.	Description
12AAA807	Cable RS-232C, 2m for LH-600 B, C, D, E
63AAA108	RS-232C Signal Cable, D-Sub-25-D-Sub-9, 2m
332-151	Sensor, Optoeye-200 edge detection sensor

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Data Processing Unit QM-Data 200

Specifications

Min. diameter	2 mm on the screen
Min. width	1 mm on the screen

Optional accessories

No.	Description
12AAE671	Attachment, OPTOEYE-200 Attachment A, 250-350 mm
12AAE672	Attachment, OPTOEYE-200 Attachment B, 500-600 mm

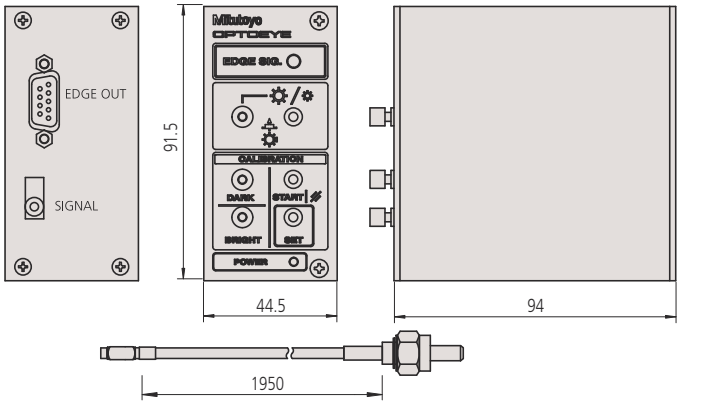
Edge Detection Sensor OPTOEYE 200

This edge sensor allows you to make accurate measurements independant of your skill level by automatically detecting edges used in measurements.
The Optoeye 200 offers you the following benefits:

- OPTOEYE 200 reduces the effect of operator skill level on accuracy by automatically detecting edges used in measurements.
- PJ-H30: You can use the OPTOEYE edge detector on models PJ-H30A (requires adapter plate 12AAG983).
- PV-5110, PJ-3515F and PJ-A14: You can use the OPTOEYE edge detector in combination with the QM-Data 200.
- PJ-PLUS: You can use the OPTOEYE edge detector on models 302-801-10/302-802-10 in combination with the QM-Data 200.
- When you are using the OPTOEYE all projector scales must be connected to QM-Data 200 directly and built-in counters can no longer be used (except PJ-H30D type).

No.	Function	Description
332-151	Automatic edge detection	Edge detection sensor OPTOEYE 200

mm



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Accessories for Measuring Projectors

Overlays

For measuring projectors

These standard overlay charts increase the range of application and the efficiency of Mitutoyo profile projectors.
This chart set offers you the following benefits:

- The charts are supplied in sizes ø250, 300, 340, 500 to suit the screens of Mitutoyo projectors.
- A large range of scales and profiles is provided that enables you to test workpiece features quickly and easily. You can test length, height, parallelism, angle, radius, taper, bore position, diameter, as well as all standardized thread and tooth profiles.
- All charts are made of a distortion-free special plastics compound and are provided with a protective coating.

Grid/protractor chart
Angle: 15° increments
Features: Ideal for checking diameters, concentricity of diameters, radii, angles and cams.

No.	Diameter [mm]	Mass [g]
201380	250	100
63AAA536	300	100
201392	340	100
63AAA538	500	100

ISO Metric threads

No.	Diameter [mm]	Mass [g]
201384	250	100
63AAA561	300	100
63AAA562	340	100
512625	500	200

Protractor chart
Angle: Divisions at 1° and 30'
Features: Ideal for checking diameters, concentricity of diameters, radii, angles, radii and cams.

No.	Diameter [mm]	Mass [g]
63AAA545	250	100
63AAA551	300	100
201395	340	100
63AAA553	500	100

Radius and Protractor chart
Angle : Divisions at 1° and 30'
Features: Dedicated chart especially designed for checking angles with exceptional clarity. Suitable for use at any magnification.

No.	Diameter [mm]	Mass [g]
63AAA530	250	100
63AAA579	300	100
201393	340	100

Radius chart
Features: Dedicated chart especially designed for checking radii, diameters and concentricity with exceptional clarity.

No.	Diameter [mm]	Mass [g]
63AAA531	250	100
63AAA546	300	100
63AAA547	340	100
63AAA548	500	100

Specifications

Grid divisions	10X: 0,1 mm 20X: 0,05 mm 50X: 0,02 mm 100X: 0,01 mm

Grid/protractor chart

Radius/protractor chart

Radius chart

Protractor chart

ISO Metric threads

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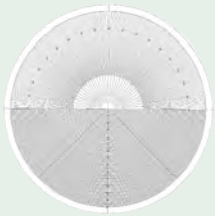
Accessories for Measuring Projectors

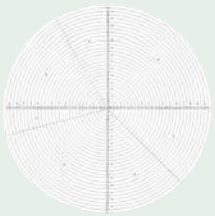
Group 2 - Makes inspection of projected images an easy process.

Optional accessories

No.	Description
12AAM027	Overlay chart set, for Profile Projectors



12AAM587



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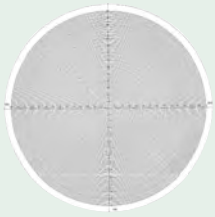

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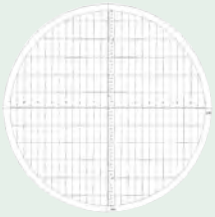
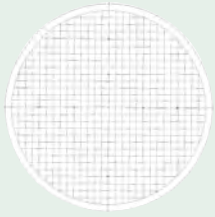


12AAM590

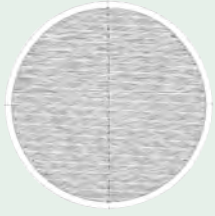


12AAM591

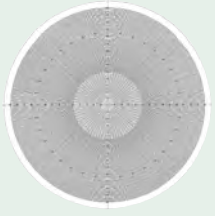
12AAM592

12AAM593

12AAM594



12AAM595



12AAM596

12AAM597

12AAM598

Metric

No.	Diameter [mm]	Model	Mass [g]
12AAM587	300	Circle/protractor chart metric	8
12AAM588	300	Circle chart 5 mm pitch metric	8
12AAM589	300	Circle chart 1 mm pitch metric	8
12AAM590	300	Grid chart 20X-50X, 1mm pitch	8
12AAM591	300	Grid chart 10 mm pitch metric	8
12AAM592	300	Crossed lines chart metric	8
12AAM593	300	Grid chart 1 mm pitch metric	8
12AAM594	300	Protractor chart 1° pitch metric	8
12AAM595	300	Hor.lines chart 1 mm pitch	8
12AAM596	300	Circle/protractor chart metric	8
12AAM597	300	Thread chart Metric, Unified, Whitworth	8
12AAM598	300	Thread/gear chart metric	8

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Accessories for Measuring Projectors

Workpiece Fixtures

For Profile Projectors and Measuring Microscopes

Centre Support

No.	Max. workpiece height	Mass [kg]
172-600	120 mm	3,3

172-600

Centre Support Riser

No.	Max. workpiece height	Mass [kg]
172-601	240 mm	3,3

172-601

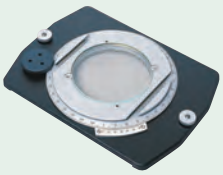
Holder with Clamp

No.	Max. workpiece height	Mass [kg]
176-107	35 mm	0,42

176-107

Rotary Tables

No.	Effective glass dia. [mm]	Angular resolution °	Fine feed	Mass [kg]
176-106	66	6		1,7
172-196	100	1		2,5
172-198	96	1	Available	2,4
176-305	182		Available	5,5
176-306	238		Available	6,5



172-198

Rotary Vice

No.	Rotary range	Angle graduations °	Max. workpiece height	Mass [kg]
172-602	360°	5°	60 mm	2,8

172-602

Swivel Centre Support

No.	Max workpiece dia. [mm]	Swivel range	Max. workpiece length [mm]	Mass [kg]
176-105	70 (45) when swiveled 10°	±10°	140	2,4
172-604	80 (65) when swiveled 10°	±10°	140	2,5

172-604

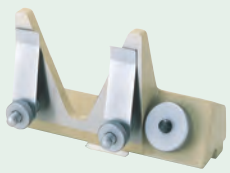
V-Block with Clamp

No.	Max workpiece dia. [mm]	Width of block [mm]	Mass [kg]
172-603	50	60	1,24
172-378	25	41	0,8

172-603

Vertical Holder

No.	Mass [kg]
172-132	1,3



172-132

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Accessories for Measuring Projectors

Optional Illuminations

LED illumination light can emphasize the contrast of projected workpiece images, providing stereoscopic and sharp observation. Projected image can be observed with high color reproducibility, which is never realized by the existing halogen-type surface illumination.

LED Illuminator

No.	Model	Compatible models	Illumination source	Illumination angle	Power consumption	LED life (reference)	Mass [g]
172-501	LED Circular Illuminator for Profile Projectors (PJ-H30)	PJ-H30 (10x Projection Lens with C mount, Projection lens 10x and 20x)	Bullet type white LED	52°	12 V /17,4 W (power cord has to be ordered seperatly)	30000 H	Approx. 640g + AC adapter: approx. 250g
172-502	LED Circular Illuminator for Profile Projectors (PJ-PLUS). Damping ring 12AAX44 is necessary for the connection to PJ-PLUS 20x.	PJ-PLUS (Projection lens 10x and 20x).	Bullet type white LED	52°	22 V /17,4 W (power cord has to be ordered seperatly)	30000 H	Approx. 640g + AC adapter: approx. 250g

Consumables for measuring projectors

932987

Half Mirror

No.	Model
932987	Half Mirror 10x For Projector PJ-300, PJ-3000, PJ-A3000
932988	Half Mirror 20x For Projector PJ-300, PJ-3000, PJ-A3000

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M2 for Measuring Microscopes and Projectors

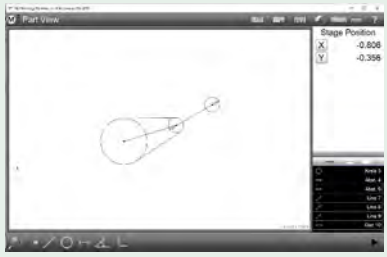
M2 Software for Measuring Microscopes and Projectors

Quick and easy measuring, with the innovative M2 software

Spend more time measuring and less time reading manuals thanks to the M2 software's straightforward and easy to operate user interface. Thanks to the familiar use of a touch screen, the M2 software can be quickly integrated into your process and drastically improve work efficiency.

- The M2 software interface is available for use in both portrait and landscape mode, providing maximum flexibility for the display or mounting device of your choosing.
- Gain access to many powerful features and an intuitive measuring interface whether you are using an optical edge equipped system or an externally generated crosshair device. Precise optical edge detection mechanisms provide accurate results as well as access to powerful, industrial grade, measurement functionality.

Geometric tolerancing
With only a few taps of the screen, you can measure features, apply tolerances, set nominals and view deviation results.



Graphics-based constructions
Construction types such as intersections and endpoints can be created from within the graphical part view.

Microscope MF Series

Microscope TM Series

PJ-PLUS

PV-5110

PJ-H30

M2 Software, 63AAA455

M2 Software, 63AAA456

ASUS AiO PC 63AAA597

M2 Software for Measuring Microscopes

No.	Applicable models	System consist of	Function	Optional but necessary accessory
63AAA455	TM-Microscopes	M2 Metrology software on USB stick, 2 axis interface box for Digimatic, Power supply and USB cable	Without edge detection	**2x 164-164 or 164-163** Digimatic Micrometer Head, **2x 905388** Digimatic cable, **630AAA597** All-in-One-PC with touch screen
63AAA456	MF/MF-U microscopes with XY or XYZ counter	M2 Metrology software on USB stick, 3(2) axis interface box, 3 connecting cables (XYZ) for scales, Power supply and USB cable	Without edge detection	**63AAA597**All-in-One-PC with touch screen

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M2 for Measuring Microscopes and Projectors

M2 Software for Measuring Projectors

No.	Applicable models	System consist of	Function	Optional but necessary accessory
63AAA406	PJ-PLUS, PJ-H30, PV5110, PH-3515F	M2 Metrology software, 2 axis interface box and 15 pin connecting cables, Power supply and USB cable, Machine bracket, RAM Ball, RAM arm, VESA mount (75 x 75 mm) for mounting the optional tablet PC to the projector body	Without edge detection	**63AAA597** All-in-One-PC with touch screen
63AAA407	PJ-PLUS, PH-3515F	M2 Metrology software, 2 axis interface box and 15 pin connecting cables, Optical fibre and magnetic holder for sensor, Power supply and USB cable Machine bracket, RAM Ball, RAM arm, VESA mount (75 x 75 mm) for mounting the optional tablet PC to the projector body	With edge detection	**63AAA597** All-in-One-PC with touch screen
63AAA462	PV5110	M2 Metrology software, 2 axis interface box and 15 pin connecting cables, Optical fibre and magnetic holder for sensor, Power supply and USB cable Machine bracket, RAM Ball, RAM arm, VESA mount (75 x 75 mm) for mounting the optional tablet PC to the projector body	With edge detection	**63AAA597** All-in-One-PC with touch screen

PC for M2 system

No.	System consist of
63AAA597	**Operating system**: Windows 11 Pro **Display**: 15,6'' (39,6 cm), 16:9 Wide Screen, 1366 x 768/LED-Backlight Tuch Screen: Multi-touch (10 fingers touch) **Processor**: Intel® Celeron® N4500 **Chipset**: Integrated **Graphic**: Intel® UHD Graphics (iGPU) **Memory**: RAM - 8GB DDR4-2933 SO-DIMM (1x 8GB Modul) **Storage**: SSD: 256GB M.2 PCIe 3

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TAGLENS and Software

TAGLENS

The Mitutoyo TAGLENS
Ultra-deep-focus eliminates the most important conventional lens limitation. In optical inspection of three-dimensional targets the complicating factors of variable distance, inclination and movement inevitably result in some surfaces being out of focus in every image captured, which has always been the major issue with conventional lenses.
Ultra-high speed, varifocal lens.
A dedicated controller and the software TAGPAK-C V1,2 is equipped as standard.

No.	Mass [g]	Delivered
379-010-1A	1500	TAGLENS -T1 includes software TAGPAK-C
379-011-1A	1500	TAGLENS-T1 E-Set includes software TAGPAK-C and –E (2NEA67B)

TAGLENS-T1

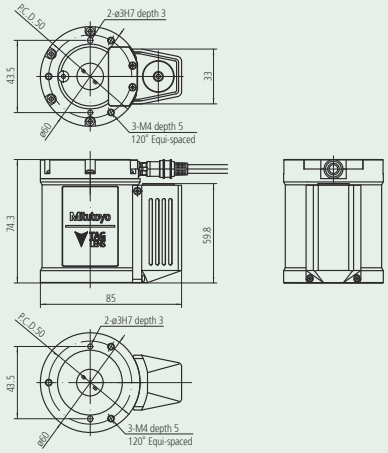
Controller
The controller supplies power to the TAGLENS main unit and controls the lens main unit via TAGPAK-C. Other than the connector to the main unit, output connectors for synchronization with external devices are equipped. The AC adapter supplied should be used to supply power to the controller.

Specifications

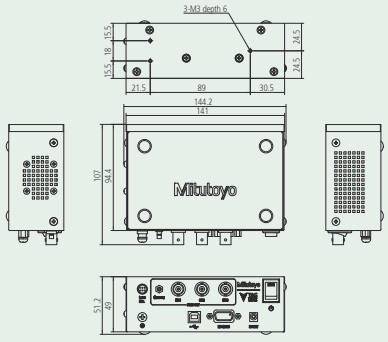
Resonance frequency	70 kHz
Effective aperture	ø11 mm
Transmittance	90% or more (400 nm to 700 nm)
Refractivity range	0,7 D to 1 D
Mountable posture	All directions
Accuracy guaranteed temperature range	15°C to 30°C
Operating Environment / Humidity	10°C to 40°C / 40% to 70% RH or less (non-condensing)

Optional accessories

No.	Description
379-110	VMU-T1 for TAGLENS-T1
379-200A	Pulsed Light Source (PLS), for TAGLENS-T1
02NEA067B	Software for TAGLENS-T1, TAGPAK-E V1.1



TAGLENS-T1 Dimensions



Controller Dimensions

All products to be sold to commercial customers.
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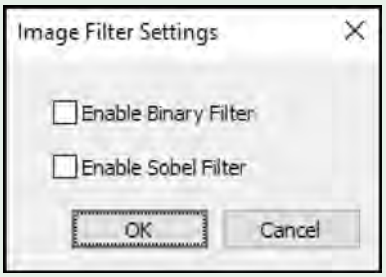
TAGLENS and Software

Specifications

Software	Optional Software for TAGLENS-T1 (Required for EDOF and checking inspection images)
OS compatibility	Windows10 Pro 64 bit
TAGLENS control software	TAGPAK-C Ver.1.2
CPU	Clock frequency: 2 GHz or more Number of physical cores: 4 cores or more (Recommendation: 8 cores or more)
Memory	8 GB or more
Hard disk	25 GB or more
Optical Drive	DVD-ROM Drive for installation software
Communication port	TAGLENS control: USB 2.0 x 1 port and RS-232C x 1 port GigE Vision control: 1000BASE-T x 1 port USB3 Vision control: USB 3.0 x 1 port Dongle: USB 2.0 x 1 port Pulsed Light Source control: USB 2.0 x 1 port
Monitor	SXGA (1280x1024 Pixel) or more



Two filters, the binarization filter and the Sobel* filter, are available for the image displayed on the viewer.

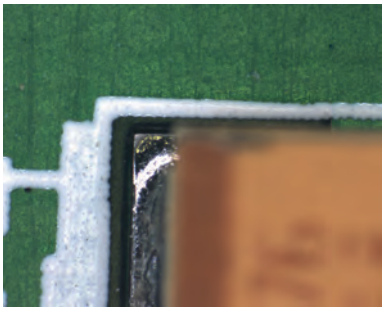
*** A filter function to emphasize a contour.**

TAGPAK-E (Optional Software)

TAGPAK-E software converts images captured by the optical system using TAGLENS for extended depth of field (EDOF) images.
The software provides functions relating to EDOF images such as parameter setting, image ON/OFF and saving and loading the images.

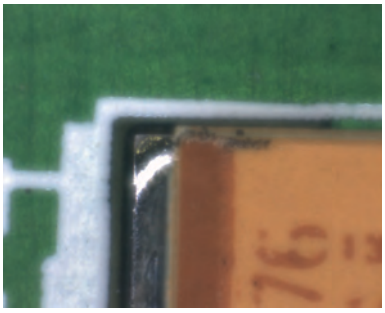
An included SDK (Software Development Kit) enables the integration of TAGLENS functions into customers' software.

No.	Description	Remarks
02NEA067B	Software for TAGLENS-T1, TAGPAK-E V 1	Software version V1.1 or higher is required for use in combination with the Pulsed Light Source (PLS) for TAGLENS.

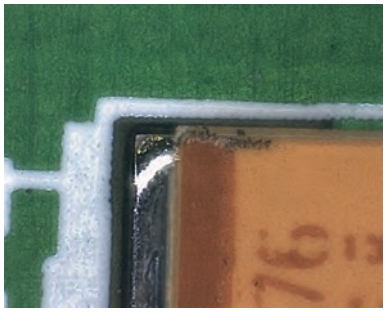


Normal microscope observation (lower)
With a height difference, only the upper or lower plane can be focused.

Normal microscope observation (upper)
With a height difference, only the upper or lower plane can be focused.



When using TAGLENS (TAGLENS ON)
TAGLENS changes the focus point at high speed. However, because the capturing time per frame is longer than the focusing time, the images will have optically mixed focus points from different heights,and the image will be blurred.



When using TAGLENS (EDOF ON)
Eliminate the blurriness caused by a change in the optical system or focus position, and you obtain an entirely sharper image. This is called the EDOF image.

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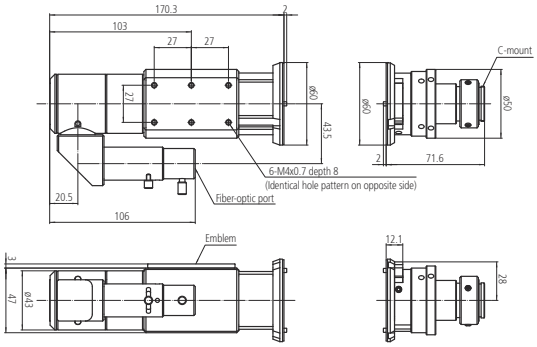
Accessories for TAGLENS

Video Microscope Unit

By integrating the TAGLENS-T1 and incorporating the objective lens with the camera enables configuring a varifocal optical system.

No.	Description	Mass [g]
379-110	VMU-T1 for TAGLENS-T1	1000



Dimensions VMU-T1

Specifications

Compatible TAGLENS	TAGLENS-T1
Imaging lens magnification	1x
Imaging area	ø11 mm
Applicable objective lenses	M Plan Apo Series

Standard accessories

No.	Description
379-010-1A	TAGLENS-T1, with TAGPAK-C

Optional accessories

No.	Description
378-800-12	M Plan Apo 1X, Objective for bright-field observation in visible range
378-801-12	M Plan Apo 2X, Objective for bright-field observation in visible range
378-802-6	M Plan APO 5X, Objective for bright-field observation in visible range
378-807-3	M Plan APO 7.5X, Objective for bright-field observation in visible range
378-803-3	M Plan APO 10X, Objective for bright-field observation in visible range
378-804-3	M Plan APO 20X, Objective for bright-field observation in visible range
378-805-3	M Plan APO 50X, Objective for bright-field observation in visible range
379-011-1A	TAGLENS-T1 E-Set, with TAGPAK-C and -E
379-200A	Pulsed Light Source (PLS), for TAGLENS-T1

Pulsed Light Source for TAGLENS

The new Pulsed Light Source (PLS) is an ultrafast LED pulse illuminator that combines with TAGLENS-T1 to achieve focused image acquisition and two-dimensional image synthesis at a desired position.
Using the PLS and TAGLENS software (TAGPAK-C), the brightness and focus position can be adjusted.

No.	Mass [g]	Lighting system
379-200A	2700	Pulse lighting

Dimensions Pulsed Light Source

Specifications

Luminous color	White
Frequency	75 kHz or less
Maximum light output	30 lm
Input pulse width	10 ns to 85 ns
Optical pulse width	50 ns to 100 ns
Operating temperature range	5 to 40°C, 80% RH max.

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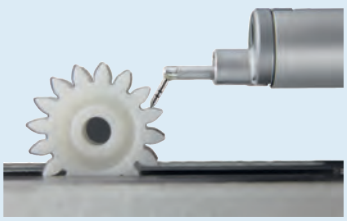
Form Measurement

Surface Roughness Measuring Instruments
Page 454

Contour Measuring Instruments
Page 470

Surface Roughness and Contour Measuring Instruments
Formtracer
Page 475

Form Measuring Instruments
Roundtest + Roundtracer
Page 483



Styli & Arms Form Measurement
Page 497

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Surftest SJ-210

Series 178 - Portable Surface Roughness Measuring Instrument

This is a portable measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SJ-210 offers you the following benefits:

- Skid system gives you user friendly and intuitive menu navigation.
- It works independently of mains power, allowing you to make on-site measurements.
- The **6 cm** [2,4"] colour graphic, back-lit LCD gives you excellent readability.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- Different drivers expanding the range of applications.
- Calculation results, assessed profiles, bearing and amplitude curves can be displayed.
- Support of 21 languages.
- Operation by keys on the front and under the sliding cover.

SJ-210

Metric

Switchable between 16 languages: Japanese, English, German, French, Italian, Spanish, Portuguese, Czech, Polish, Hungarian, Turkish, Swedish, Dutch, Korean, Traditional Chinese, Simplified Chinese

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Description	Mass
178-560-11D	0,75	60°	2	SJ-210 model	500 g
178-562-11D	0,75	60°	2	SJ-210R model	500 g
178-564-11D	0,75	60°	2	SJ-210S model	500 g

Metric

Switchable between 16 languages: Japanese, English, Russian, Slovenian, Romanian, Bulgarian, Finnish, German, French, Italian, Spanish, Czech, Polish, Hungarian, Turkish, Swedish

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Description	Mass
178-560-13D	0,75	60°	2	SJ-210 model	500 g

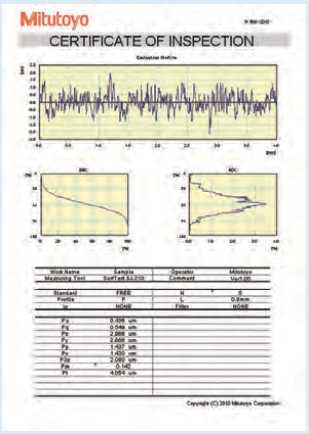
Standard

R-type

S-type

Specifications

Drive unit	
Measuring range	16 mm, [S-type] 4,8 mm
Traverse	17,5 mm, 5,6 mm [S-type]
Measuring speed	0,25 mm/s; 0,5 mm/s; 0,75 mm/s
Detector	
Measuring method	Differential inductance
Range	360 µm
Stylus	Diamond Tip
Skid radius	40 mm
Display unit	
Profiles	Roughness Profile (R), R-Motif, DF-Profile and more
Roughness standard	EN ISO, VDA, JIS, ANSI and customize settings
Digital filter	Gauss, 2CR75, PC75
Cut-off length	λc : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm λs : 2,5 µm; 8 µm
Tolerance	Coloured upper / lower limit
Interface	USB, Digimatic, RS-232C, Foot switch
Power supply	AC adapter or rechargeable battery



USB COMMUNICATION TOOL
as a free download on www.mitutoyo.eu registration required
(refer to page Optional Software USB Communication Tool)

Refer to Surftest SJ-210 brochure

Scan QR Code with your mobile device and watch our product videos on YouTube

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Surftest SJ-210

Series 178 - Portable Surface Roughness Measuring Instrument

The SJ-210R – Retract System is a portable measuring instrument for surface roughness that includes a safety system.

- The detector starts in a safety position, not in contact with the workpiece surface. When measurement starts, the detector is lowered onto the workpiece while the drive unit moves in X measuring direction. During the return movement, the detector lifts up from the workpiece surface before returning to the start position. This is useful for avoiding stylus damage in applications where you cannot easily see the test surface.

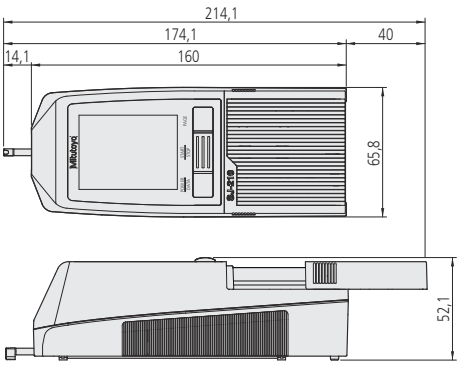
SJ-210S (detailed information further on in this chapter)

- The SJ-210S model is a portable measuring instrument for surface roughness that has a transverse drive capability. This allows you to test shrouded surfaces in the transverse direction, such as crankshaft bearing surfaces, flanged features or deep grooves.

Keyboard protective cover open

Back view

SJ-210



Dimensions

178-029 (displayed with SJ-210)

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Surftest SJ-310

Series 178 - Portable Surface Roughness Measuring Instrument

This is a portable measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SJ-310 offers you the following benefits:

- Skid system with touch-screen functionality and built-in printer.
- It works independently of mains power, allowing you to make on-site measurements.
- Easy and intuitive menu navigation.
- The large **14,5 cm** [5,7"] colour LCD gives you high visibility.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- You can store up to 10 different measuring conditions inside the SJ-310, and up to 500 with an optional SD card.
- Statistical analysis and coloured tolerance judgement.
- 2 different evaluation conditions within 1 measurement adjustable.
- You can separately password protect many functions.
- It comes with support for 16 languages.

Metric

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Description	Mass
178-570-21D	0,75	60°	2	SJ-310 model	1.7 kg
178-572-11D	0,75	60°	2	SJ-310R model	1.7 kg
178-574-21D	0,75	60°	2	SJ-310S model	1.7 kg

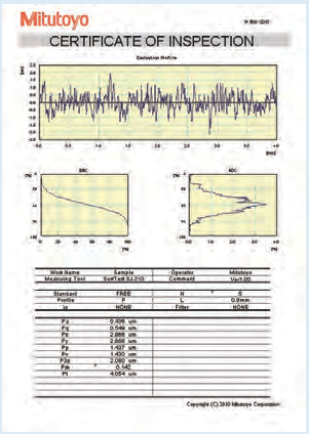
Standard

R-type

S-type

Specifications

Drive unit	
Measuring range	16 mm [S-type] 4,8 mm
Traverse	17,5 mm [S-type] 5,6 mm
Measuring speed	0,25 mm/s; 0,5 mm/s; 0,75 mm/s
Detector	
Measuring method	Differential inductance
Range	360 µm
Stylus	Diamond Tip
Skid radius	40 mm
Display unit	
Profiles	Roughness Profile (R), R-Motif, DF-Profile and more
Roughness standard	EN ISO, VDA, JIS, ANSI and customize settings
Digital filter	Gauss, 2CR75, PC75
Cut-off length	λc : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm λs : 2,5 µm; 8 µm
Printer	Thermal Printer
Tolerance	Coloured upper / lower limit
Interface	USB, Digimatic, RS-232C, Foot switch
Mass	1,7 kg
Power supply	AC adapter or rechargeable battery



USB COMMUNICATION TOOL
as a free download on www.mitutoyo.eu registration required
(refer to page Optional Software USB Communication Tool)

Refer to Surftest SJ-310 brochure

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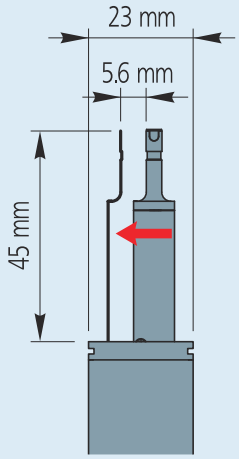
Surftest SJ-210 and SJ-310 - S-Type

Specifications

Traverse	5,6 mm
Measuring speed	0,25 mm/s; 0,5 mm/s; 0,75 mm/s



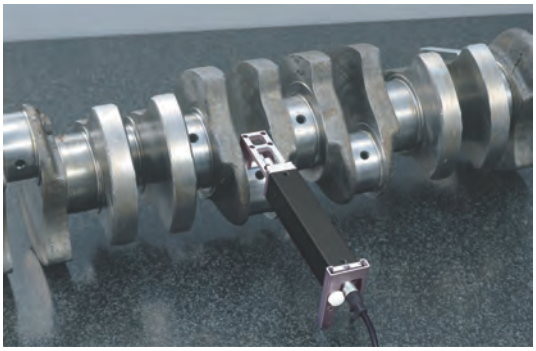
Linear movement of S-Type

Series 178 – Portable Transverse Measurement with S-Type Drive Unit

This is an S-Type drive unit for the Surftest SJ-210 and SJ-310 that provides portable transverse measurement.

It offers you the following benefits:

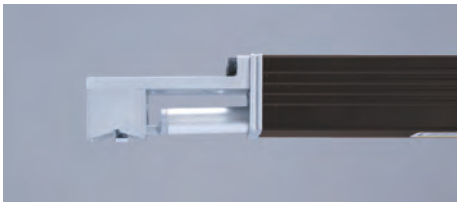
- It is compatible with the conventional drive units of the Surftest SJ-210 and SJ-310.
- You can simply connected it to the display unit.
- A typical application would be to position the S-Type unit on a crankshaft journal bearing, as shown in the photograph below. Once started the S-Type drive will track the stylus across the surface transversely to its own axis and reliably measure surface roughness in the direction of the crankshaft axis. Transverse tracking simplifies the measurement of surface roughness even in very confined situations, which has long been a problem with conventional instruments which allow only longitudinal measurement.



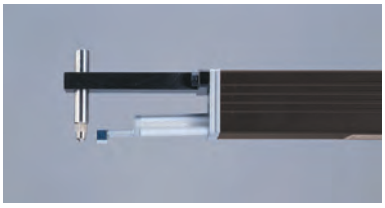
178-234-3 S-Type Drive Unit Set: [incl. 178-233-3 - 12AAE644 - 12AAE643]

S - Type Drive Unit Set: [incl. 178-233-3 - 12AAE644 - 12AAE643]

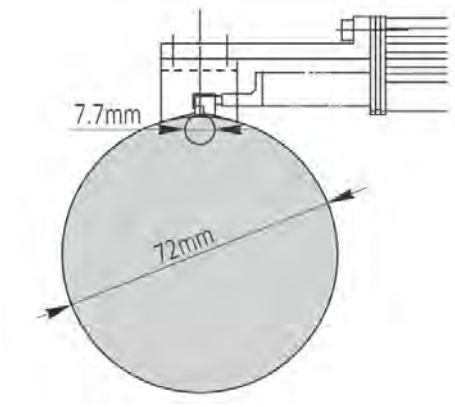
No.	Traverse	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Mass [g]
178-234-3	5,6 mm	0,75	60°	2	300

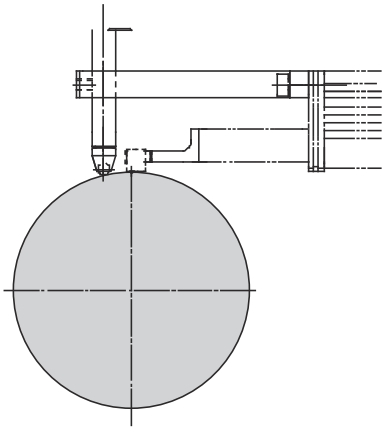


12AAE644
V-type adapter



12AAE643
Point - contact adapter





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Accessories for SJ-210 and SJ-310

Series 178 - Standard and Optional Accessories for Surftest SJ-210 / SJ-310

Model		Surftest SJ-210		Surftest SJ-210R		Surftest SJ-210S		Surftest SJ-310		Surftest SJ-310R		Surftest SJ-310S	
No.	Description	Std	Opt	Std	Opt	Std	Opt	Std	Opt	Std	Opt	Std	Opt
12AAA210	Extension rod length 50 mm		●		●				●		●		
12AAA216	Height adjustment feet		●		●			●					
12AAA217	Nosepiece (flat)		●		●			●		●			
12AAA218	Nosepiece (cylindrical)		●		●			●		●			
12AAA219	Adapter for vertical position		●		●				●		●		
12AAA221	Adapter for magnetic stand		●		●		●		●		●		●
12AAA222	Height gauge adapter		●		●		●		●		●		●
12AAA882D	RS-232C connection cable								●		●		●
12AAD510	USB cable for SJ-310 / SJ-410								●		●		●
12AAE643	Point - contact adapter					●						●	
12AAE644	V-type adapter					●						●	
12AAL066	Protective sheets for display (5 sheets)		●		●		●						
12AAL067	RS-232C cable for printer		●		●		●						
12AAN040	Protective film								●		●		●
12AAN046	Battery							●		●		●	
12AAW452	Memory card 2GB		●		●		●		●		●		●
12BAA303	Connecting cable for extension 1 m	●		●		●			●		●		●
12BAG834	Touch pen							●		●		●	
12BAK700	Calibration table	●		●		●		●		●		●	
12BAL402	Touch Panel Protection							●		●		●	
12BAR954	AC adaptor	●		●		●							
178-029*	Granite stand		●		●		●		●		●		●
178-230-3	Standard Drive unit 17,5 mm	●			●		●	●			●		●
178-233-3	S-Type drive unit 5,6 mm		●		●	●			●		●	●	
12AAJ088	Footswitch		●		●		●		●		●		●
178-235-3	R-Type drive unit 17,5 mm		●	●			●		●	●			●
178-296	Standard detector 2 µm; 60°; 0,75 mN	●		●				●		●			
178-383	Detector for small holes Ø4,5 mm; 2 µm; 60°; 0,75 mN		●		●		●		●		●		●
178-384	Detector for small holes Ø2,8 mm; 2 µm; 60°; 0,75 mN		●		●				●		●		●
178-385	Deep groove detector 2 µm; 60°; 0,75 mN		●		●				●		●		
178-386	Detector for S-drive 5 µm; 90°; 4 mN		●		●	●			●		●	●	
178-387	Detector for S-drive 2 µm; 60°; 0,75 mN		●		●	●			●		●	●	
178-388	Detector for gear tooth surface 2 µm; 60°; 0,75 mN		●		●		●		●		●		●
178-390	Detector 5 µm; 90°; 4 mN		●		●				●		●		
178-391	Detector for soft materials 10 µm; 90°; 4 mN		●		●				●		●		●
178-392	Detector for small holes Ø4,5 mm; 5 µm; 90°; 4 mN		●		●		●		●		●		●
178-393	Detector for small holes Ø2,8 mm; 5 µm; 90°; 4 mN		●		●		●		●		●		●
178-394	Deep groove detector 5 µm; 90°; 4 mN		●		●				●		●		
178-398	Detector for geartooth surface 5 µm; 60°; 4 mN		●		●		●		●		●		●
178-421D	Printer set for SJ-210 with cable and battery		●		●		●						
178-423D	Printer for SJ-210 with cable		●		●		●						
178-601	Roughness specimen Ra 3 µm	●		●			●	●		●		●	
178-604	Roughness specimen Ra 0,4 µm /3 µm		●		●		●		●		●		●
178-605	Roughness specimen Ra 1 µm		●		●	●			●		●	●	
270732	Printer papers (5 rolls)		●		●		●	●		●		●	
357651	AC Adapter 12V							●		●		●	
63AAA211	USB cable for SJ-210		●		●		●						

*12AAA221 is needed

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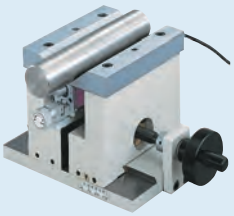
Accessories for SJ-210 and SJ-310

Series 178

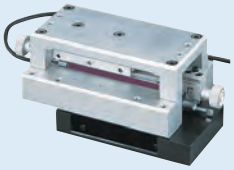
Optional accessories

No.	Description
178-033	Device for cylindrical workpieces, for Surftest SJ-210 / SJ-310
178-034	Device as universal fixture
178-035	Device for measuring inside diameter

178-029

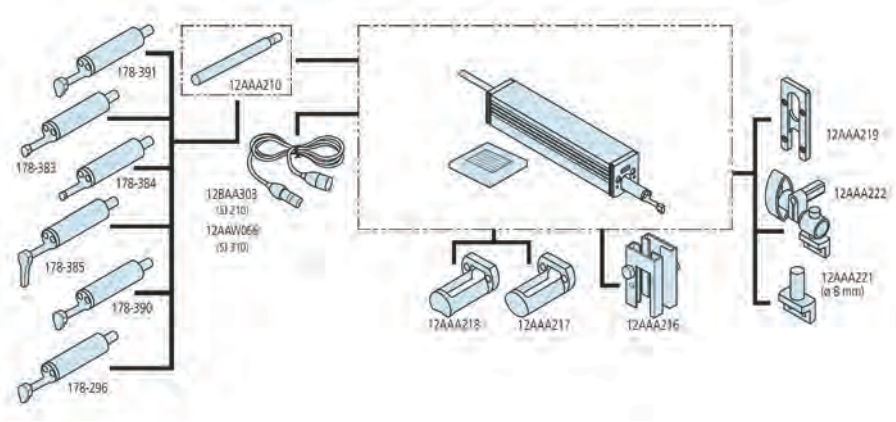


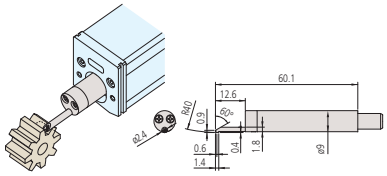
178-033



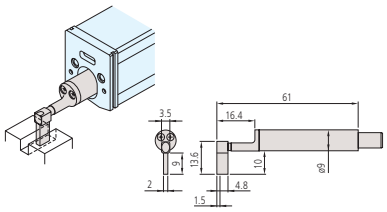
178-034

178-035

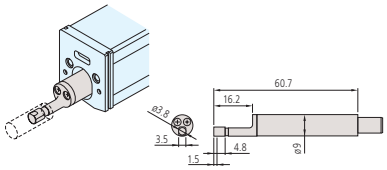




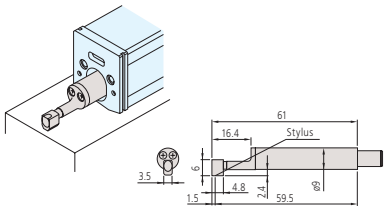
178-388/178-398



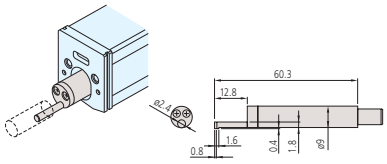
178-385/178-394



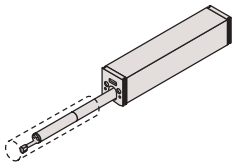
178-383/178-392



178-390/178-387
178-296/178-386



178-384/178-393



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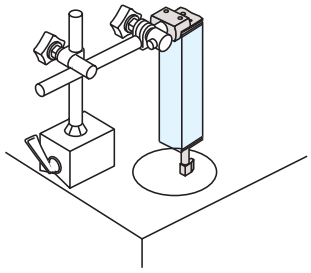

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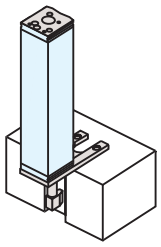

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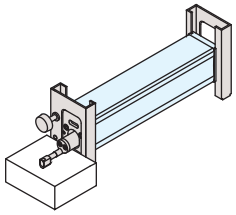

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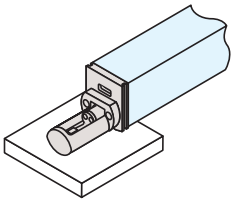

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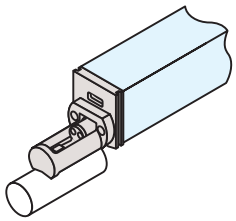

12AAA218

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Mitutoyo

Surftest SJ-410

Series 178 - Portable Surface Roughness Measuring Instrument

This is a portable measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SJ-410 offers you the following benefits:

- Skidless system with touch-screen functionality and built-in printer.
- It works independently of mains power, allowing you to make on-site measurements.
- Easy and intuitive menu navigation.
- The large **14,5 cm** [5,7"] colour LCD gives you high visibility.
- The skidless detector allows you to measure the primary profile (P), roughness profile (R), waviness profile (W) and more.
- Surface compensation of curved, radial and tilted surfaces.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- You can store up to 10 different measuring conditions inside the SJ-410, and up to 500 with an optional SD card.
- It allows two different evaluation conditions within one measurement adjustable.
- You can separately password protect many functions.
- It comes with support for 16 languages.
- Available options include an auto-set unit, X-axis fine adjustment and digital levelling unit.

SJ-410

Surftest SJ-411
Traverse : 25 mm
Traverse straightness : 0,3 µm / 25 mm

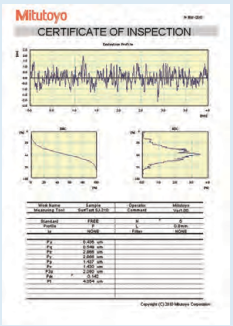
No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Mass [kg]
178-580-31D	0,75	60°	2	2,8
178-580-32D	4	90°	5	2,8

Surftest SJ-412
Traverse : 50 mm
Traverse straightness : 0,5 µm / 50 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]	Mass [kg]
178-582-31D	0,75	60°	2	2,9
178-582-32D	4	90°	5	2,9

Specifications

Drive unit	
Traverse	SJ-411: 25 mm SJ-412: 50 mm
Measuring speed	0,05 mm/s; 0,1 mm/s; 0,2 mm/s; 0,5 mm/s; 1 mm/s
Detector	
Measuring method	Skidless - Differential inductance
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Positioning	±1,5° (tilting), 10 mm (up/down)
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Standard	EN ISO, VDA, JIS, ANSI and customize settings
Analysis graphs	BAC, ADC
Digital filter	Gauss, 2CR75, PC75
Cut-off length	λc : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm λs : 2,5 µm; 8 µm; 25 µm
Printer	Thermal Printer
Tolerance	Coloured upper / lower limit
Interface	USB, Digimatic, RS-232C, Foot switch
Power supply	AC adapter or rechargeable battery



USB COMMUNICATION TOOL
as a free download on www.mitutoyo.eu registration required
(refer to page Optional Software USB Communication Tool)

Refer to Surftest SJ-410 brochure

Scan QR Code with your mobile device and watch our product videos on YouTube

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Surftest SJ-410

Series 178 - Portable Surface Roughness Measuring Instrument

Optional accessories | Other optional and standard accessories are listed later in different sections for accessories and styli.

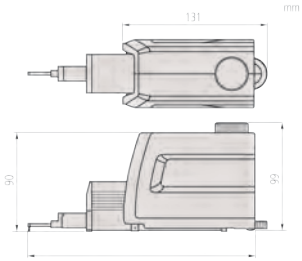
Optional accessories

No.	Description
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
12AAB358	Cylinder attachment Ø 15-60 mm
12AAD510	USB cable for SJ-310 / SJ-410 series
178-019	Precision vise
178-039	Granite stand, for SJ-410
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-185	Digimatic XY travel + leveling table[mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-195	Leveling Table, Leveling range +/- 1,5°
178-196	Digital leveling table [mm], Leveling range +/- 1,5°
178-198	Digital XY travel table [mm], Travel +/-12,5 mm
178-396-2	Detector, 0,75 mN
178-397-2	Detector, 4 mN
178-605	Roughness specimen Ra 1 µm [mm], Ra 1 µm
178-610	Reference step gauge (1, 2, 5, 10) µm, (1, 2, 5, 10) µm
178-611	Reference step specimen (2, 10) µm, (2, 10) µm
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
965014	Digimatic Cable, Flat 10-Pin Type, 2 m
12AAW452	Memory card 2GB, for SJ-210

Consumable spares

No.	Description
12AAN046	Replacement battery, for Surftest SJ-310 / SJ-410
12BAL402	Touch Panel Protecting Sheet
270732	Printer paper, 5 rolls SJ series / SV-2100

R-surface measurement



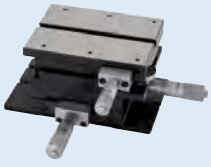
SJ-411: 207,5 mm / SJ-412: 234 mm
Drive unit

Optional:
- Autoset unit 178-010
- X-axis adjustment unit 178-020
- Digital leveling unit 178-030

Scope of delivery

178-196
Digital leveling table

178-182
Digital three-axis adjustment table



178-183
XY travel + leveling table [mm]

178-039
(displayed with SJ-411)

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Surftest SJ-500

Series 178 - Surface Roughness Measuring Instrument

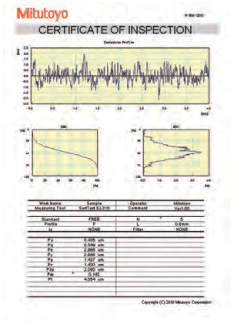
This is a measuring instrument that allows you to easily and accurately measure surface roughness.

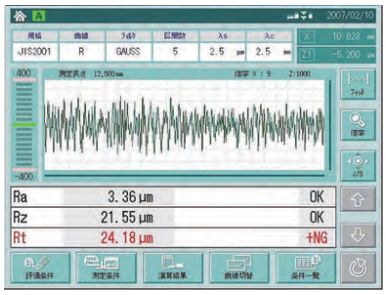
The Surftest SJ-500 offers you the following benefits:

- The skidless detector allows you to measure the primary profile (P), roughness profile (R), waviness profile (W) and more.
- User friendly control unit for high precision surface roughness measurement.
- The large **19 cm** [7,5"] colour TFT LCD with touch-screen functionality gives you high visibility and ease of use.
- The display menu is easy to read and simple to operate.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- The built-in joystick on the control unit enables quick and easy positioning. The manual adjustment knob allows you to finely position a small stylus to measure the inside surface of small holes.
- The detector unit allows a 90° displacement of the stylus, which is ideal for crankshaft and narrow space measurement.
- You can use the instrument stand-alone or mounted on a stand.

SJ-500

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-532-01D	0,75	60°	2





Preview

USB COMMUNICATION TOOL
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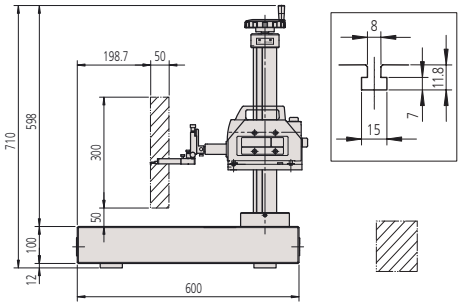
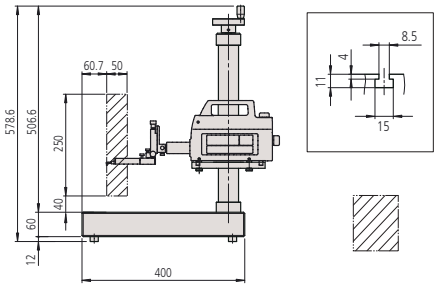
(refer to page Optional Software USB Communication Tool)



178-085
600x450x710 mm



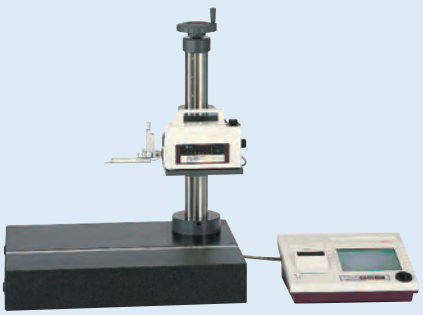
178-089
400x250x578 mm

Specifications

Drive unit	
Traverse	50 mm
Measuring speed	0,02 - 5 mm/s
Drive speed	0 - 20 mm/s or joystick operation
Traverse straightness	0,2 µm / 50 mm
Detector	
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Positioning	±1,5° (tilting) 30 mm (up/down)
Measuring method	Skidless - Differential inductance
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Analysis graphs	BAC, ADC
Digital filter	Gauss, 2CR75, PC75, Robust Spline
Cut-off length	λc : 0,025 mm; 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm; 25 mm λs : 0,25 µm; 0,8 µm; 2,5 µm; 8 µm; 25 µm; 80 µm; 250 µm; None λf : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8mm; 25mm; None
Printer	Thermal printer

Optional accessories

No.	Description
12AAG202	Extension rod, 50 mm
12AAG203	Extension rod, 100 mm
178-085	Granite stand 600 x 450 x 710 mm
178-089	Granite stand 400 x 250 x 578 mm
178-093-1	Desktop vibration isolator pump type, with max loading mass 120 kg
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-185	Digimatic XY travel + leveling table[mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-196	Digital leveling table [mm], Leveling range +/- 1,5°
178-396-2	Detector, 0,75 mN
178-397-2	Detector, 4 mN



SJ-500 with optional manual column stand

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Surftest SV-2100

Series 178 - Surface Roughness Measuring Instrument

This is a stationary measuring instrument that allows you to easily and accurately measure surface roughness.

The Surftest SV-2100 offers you the following benefits:

- It is mounted on a granite base with a manual or power column.
- The large **19 cm** [7,5"] colour TFT LCD gives you high visibility and touch-screen functionality.
- It has a user friendly display unit for high precision surface roughness measurement.
- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- Designed for usage in workshop areas.

SV-2100S4

SV-2100M4

SV-2100H4 model
Vertical travel : 550 mm power column
Granite base size (WxD) : 600 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-682-01D	0,75	60°	2

SV-2100M4 model
Vertical travel : 350 mm manual column
Granite base size (WxD) : 600 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-636-11	0,75	60°	2

SV-2100S4 model
Vertical travel : 350 mm power column
Granite base size (WxD) : 600 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-680-01D	0,75	60°	2

SV-2100W4 model
Vertical travel : 550 mm power column
Granite base size (WxD) : 1000 x 450 mm

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-684-01D	0,75	60°	2

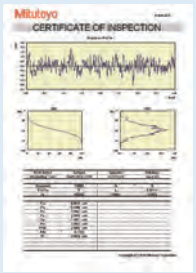
Specifications

Drive unit	
Traverse	100 mm
Measuring speed	0,02 - 5 mm/s
Drive speed	X = 0-40 mm/s Z2 = 0-20 mm/s [S4, H4, W4] or joystick operation
Traverse straightness	0,15 µm / 100 mm
Detector	
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Measuring method	Skidless - Differential inductance
Display unit	
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Standard	EN ISO, VDA, JIS, ANSI and customize settings
Analysis graphs	BAC, ADC
Digital filter	Gauss, 2CR75, PC75, Robust Spline
Cut-off length	λc : 0,025 mm; 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm; 25 mm; 80 mm λs : 0,25 µm; 0,8 µm; 2,5 µm; 8 µm; 25 µm; 80 µm; 250 µm; none λf : 0,08 mm; 0,25 mm; 0,8 mm; 2,5 mm; 8 mm; 25 mm; 80 mm; none
Printer	Thermal printer

Optional accessories

No.	Description
12AAG202	Extension rod, 50 mm
12AAG203	Extension rod, 100 mm
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice

Preview



Software
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(refer to page
Optional Software USB Communication Tool)

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Surftest SJ-500P

Series 178 - Surface Roughness Measuring Instruments with Software FORMTRACEPAK

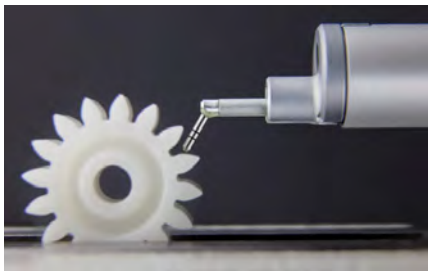
This is a surface roughness measuring instrument with software FORMTRACEPAK.

Software FORMTRACEPAK offers you the following benefits:

- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- It can be used for several contour calculations within the measuring range.
- It offers total support for measurement system control, analysis and inspection report.
- All advantages of the SJ-500 also apply to the P Type.

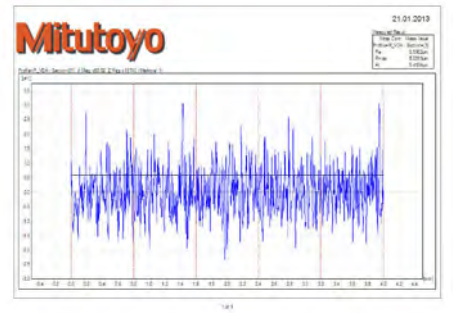
SJ-500P

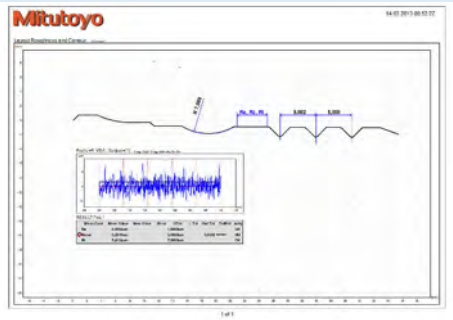
No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-534-21	0,75	60°	2



Specifications

Drive unit	
Traverse	50 mm
Drive speed	0-20 mm/s
Measuring speed	0,02 - 5 mm/s
Traverse straightness	0,2 µm / 50 mm
Detector	
Measuring method	Skidless - Differential inductance
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Positioning	±1,5° (tilting) 30 mm (up/down)
Software	**FORMTRACEPAK**





Formtracepak layout

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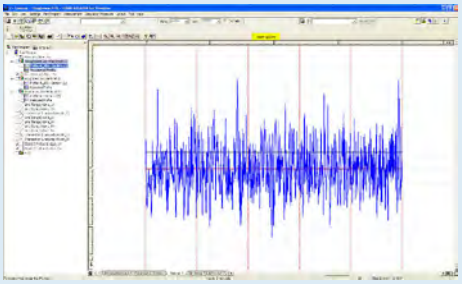
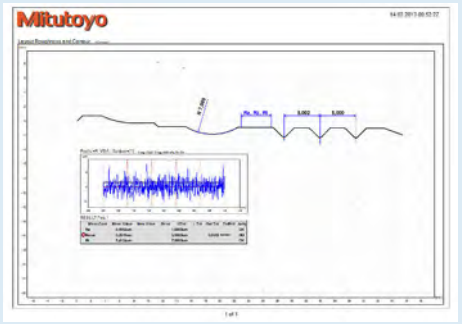
Surftest SV-2100P

Specifications

Drive unit	
Traverse	100 mm
Drive speed	X = 0-40 mm/s
Measuring speed	0,02 - 5 mm/s
Traverse straightness	0,15 µm / 100 mm
Detector	
Measuring method	Skidless - Differential inductance
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Software	**FORMTRACEPAK**





Formtracepak layout

Series 178 - Surface Roughness Measuring Instruments with Software FORMTRACEPAK

This is a surface roughness measuring instrument with software FORMTRACEPAK.

Software FORMTRACEPAK offers you the following benefits:

- It performs roughness analyses conform to various international standards (EN ISO, VDA, ANSI, JIS) and customized settings.
- It can be used for several contour calculations within the measuring range.
- It offers total support for measurement system control, analysis and inspection report.
- All advantages of the SV-2100 also apply to the P Type.

SV-2100P

No.	Detector measuring force [mN]	Stylus tip angle	Stylus tip radius [µm]
178-638-21	0,75	60°	2

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Mitutoyo

Formtracer Avant FTA-S3000

Serie 178 - Surface Roughness Measuring Instrument with Software FORMTRACEPAK

The Formtracer Avant FTA-S3000 is a surface roughness measuring machine that boasts outstanding operability and a wide variety of measurement functions because of the further expansion of the optional equipment range.

The Formtracer Avant FTA-S3000 offers you the following benefits:

- Easy to operate
- High-accuracy surface roughness testers
- A large range of optional styli ensure access to restricted features
- Remote control box for quick and accurate machine positioning
- The detector holders (optional) enables both crank and /or upward measurement
- 3D/Y-axis table (optional) with a travel range of 100 mm enables 3D surface roughness measurement
- DAT unit (optional) can tilt the X-axis drive unit to allow a workpiece to be levelled easily
- Retrofit options for contour measurement
- X-axis tilting

FTA-S3000

Specifications

Traverse	100 mm / 200 mm
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Measuring speed	0,02-30 mm/s
Drive speed	X = 0-80 mm/s Z2 = 0-40 mm/s
Inclining range	±45°
Vertical travel	Z2 = 300 / 500 / 700 mm
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Software	**FORMTRACEPAK** • Enables control of all axes and rotary table for realizing efficient measurement automation. • Perform surface roughness evaluation. • Able to create an original inspection certificate by setting the print format to suit particular requirements.

Detector Holder S-3000C

Detector holder S-3000CR

Detector holder S-3000MR

Refer to FORMTRACER AVANT brochure

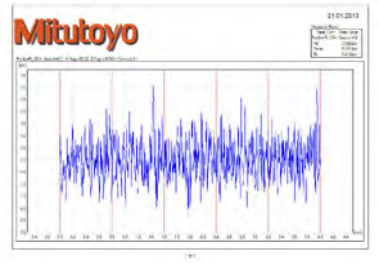
All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Formtracer Avant FTA-S3000

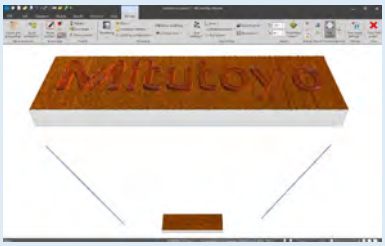
Serie 178 - Surface Roughness Measuring Instrument with Software FORMTRACEPAK

Optional accessories

No.	Description
12AAD975	Theta-1 axis
12AAG202	Extension rod, 50 mm
12AAG203	Extension rod, 100 mm
12AAV701	Detector stand for retrofit
178-050	DAT unit
178-077	3D leveling table
178-078	Theta-2 axis, Rotary Axis
178-096	3 D/Y-axis table
178-097	Y-axis table
178-141	Detector holder S3000C-D
178-142	Detector holder S3000CR-D set
178-143	Detector holder S3000MR-D set
178-181	Side table
178-182	Digital three-axis adjustment table
178-183	XY travel + leveling table [mm], Travel +/-12,5 mm; Leveling range +/-1,5°
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
178-195	Leveling Table, Leveling range +/- 1,5°
178-198	Digital XY travel table [mm], Travel +/-12,5 mm
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice
178-397-2	Detector, 4 mN
178-611	Reference step specimen (2, 10) µm, (2, 10) µm
218-261-11	C3200 retrofit kit [mm]
218-271-11	C4500 retrofit kit [mm]



Formtracepak Layout



Optional MCubeMap
(in combination with 3D Y-axis 178-096)

Metric

Traverse: 100 mm

Model	FTA - S4 S3000	FTA - H4 S3000	FTA - W4 S3000	FTA - L4 S3000
No.	**178-151-11**	**178-152-11**	**178-153-11**	**178-154-11**
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Detector measuring force mN	0,75	0,75	0,75	0,75
Mass kg	140	150	220	270

Metric

Traverse: 200 mm

Model	FTA - S8 S3000	FTA - H8 S3000	FTA - W8 S3000	FTA - L8 S3000
No.	**178-156-11**	**178-157-11**	**178-158-11**	**178-159-11**
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Detector measuring force mN	0,75	0,75	0,75	0,75
Mass kg	140	150	220	270

Formtracer Avant FTA-S3000
with vibration isolator and side table

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Surftest Extreme SV-3000CNC

Series 178 – CNC Surface Roughness Measuring Instrument

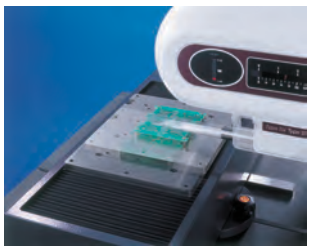
These is a fully CNC surface roughness measuring instrument with powerful software FORMTRACEPAK.

The Surftest Extreme SV-3000CNC offers you the following benefits:

- It is perfectly made for increased throughput of multiple profile and workpiece measurement tasks.
- Each axis has a drive speed of up to 200 mm/s.
- You can take continuous measurement over horizontal and inclined surfaces by power-tilting the drive unit.
- Within the measuring range of the styli software FORMTRACEPAK supports contour calculation features.
- 3D topography measurement as option available.
- Inclined plane measurement is possible through 2-axis simultaneous control in the X and Y directions.
- The detector unit incorporates an anti-collision safety device, causing it to automatically stop if its main body collides with a workpiece or jig.
- All models equipped with Y-axis.
- Z-axis tracking measurement for models without α-axis.

SV-3000CNC

Model	SV-3000CNC-S	SV-3000CNC-H	SV-3000CNC-S.	SV-3000CNC-H.
No.	**178-508-12**	**178-509-12**	**178-528-12**	**178-529-12**
Z2-axis range [mm]	300	300	500	500
Y-axis table unit	Installed	Installed	Installed	Installed
α-axis unit	-	Installed	-	Installed



Automatic measurement

Specifications

Traverse	X = 200 mm Y = 200 mm
Measuring speed	0,02 - 2 mm/s
Drive speed	CNC mode: max. 200 mm/s Joystick mode: 0 - 50 mm/s
Traverse straightness	0,5 µm / 200 mm
Inclining range	-45° (CCW) to +10° (CW)
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Software	**FORMTRACEPAK** • Allows control of all axis, motor-driven Y-axis table and optional rotary table for efficient automated measurement. • Surface roughness analysis • An inspection certificate can be created by setting the print format as required.
Optional accessories	Other optional and standard accessories are listed later in different sections for accessories and styli.

Optional accessories

No.	Description
12AAD975	Theta-1 axis
12AAE032	Special anti-vibration table
178-037	2D auto-leveling table, for CNC Surftest and Formtracer
178-077	3D leveling table
178-078	Theta-2 axis, Rotary Axis

All products to be sold to commercial customers.
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Surftest Extreme SV-M3000CNC

Series 178 - CNC Surface Roughness Measuring Instrument

This is a top performance CNC surface roughness measuring instrument with powerful software FORMTRACEPAK.

The Surftest Extreme SV-M3000CNC offers you the following benefits:

- You can measure large and heavy workpieces such as engine blocks and crankshafts.
- It has an 800 mm moving column configuration to largely eliminate workpiece size restrictions.
- Each axis has a drive speed of up to 200 mm/s.
- When combined with the optional detector swivelling unit, continuous measurement over the bottom, top and side surface of a workpiece is possible.
- The huge load table has a self-contained structure ensuring that you can easily accommodate various size workpieces, standard and custom jigs, and auto-feed devices.

Specifications

Traverse	X = 200 mm Y = 800 mm Z2 = 500 mm
Measuring speed	0,02 - 2 mm/s
Drive speed	CNC mode: max. 200 mm/s Joystick mode: 0 - 50 mm/s
Traverse straightness	X = 0,5 µm / 200 mm (standard) X = 0,7 µm / 200 mm (long-type detector) X = 0,5 µm / 200 mm (rotary-type detector) Y = 0,5 µm / 50 mm; 2 µm / 800 mm (standard) Y = 0,7 µm / 50 mm; 3 µm / 800 mm (long-type detector) Y = 0,7 µm / 50 mm; 3 µm / 800 mm (rotary-type detector)
Inclining range	-45° (CCW) to +10° (CW)
Range	800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus)
Standard	EN ISO, VDA, JIS, ANSI and customize setting
Profiles	Primary Profile (P), Roughness Profile (R), Waviness (W), MOTIF (R, W) and more
Loading weight	300 kg
Software	**FORMTRACEPAK** • Enables control of all axes for realizing efficient measurement automation. • Perform roughness evaluation. • Able to create an original inspection certificate by setting the print format to suit particular requirements.

No.	Model	Detector hold type (Essential option)
178-549-2	178-071	Standard
	178-072	Long type
	178-073	Rotary type

Typical measurement task

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Mitutoyo

Contracer CV-2100

Series 218 - Contour Measuring Instruments

This contour measuring instrument is designed to support "easy to use" and "speedy" measurements.

The Contracer CV-2100N4 and CV-2100M4 offer you the following benefits:

- Extensive contour measurement quick and easy.
- Quick movement in Z2 because of an easy to use quick grip. [M4 type]
- Auto execution and multi point measurement with the new stylus up-and down function.
- X-axis drive up to 20 mm/s by jog shuttle.
- Easy part programming as well as single measurement with software FORMTRACEPAK.
- Automatic evaluation, best fit of contours, CAD comparison and many more features as standard.
- CV-2100 M4 mounted with quick grip stand on a granite base.
- CV-2100 N4 can be mounted on an optional granite base with a manual column.
- Centralized front control panel.

CV-2100M4

CV-2100N4

Model	CV-2100N4	CV-2100M4
No.	**218-613-11**	**218-633-11**
Z2-axis range [mm]	-	350
Z1-axis range [mm]	50	50
Z2-axis column type	Optional: Manual	Manual: Quick up and down motion, fine feed
X1-axis range [mm]	100	100

Specifications

Measuring range	Z1 = 50 mm X = 100 mm
Measuring speed	0,02 - 5 mm/s
Drive speed	X = 0 - 20 mm/s
Accuracy	X = (2,5 + 0,02L) µm [L: drive length (mm)] Z1 = (2,5 + l0,1Hl) µm [H: Measurement height from the horizontal position (mm)]
Traverse straightness	2,5 µm / 100 mm
Column type	M4: 350 mm
Software	**FORMTRACEPAK** • Allows control of measuring conditions for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour toleranCing as standard. • An inspection certificate can be created by setting the print format as required.
Optional accessories	Other optional and standard accessories are listed later in different sections for accessories and styli.

Optional accessories

No.	Description
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice

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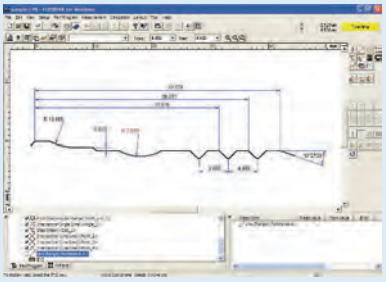
Contracer CV-2100

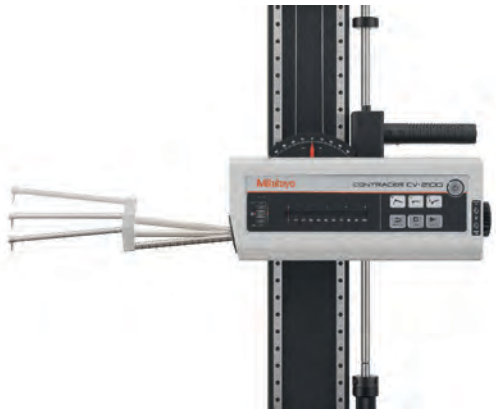


FORMTRACEPAK

Optional column stand 218-042

Refer to CV-2100 brochure

Scan QR Code with your mobile device and watch our product videos on YouTube



CV-2100 stylus up-and-down function

CV-2100M4 with centralized front control panel

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Formtracer Avant FTA-C3000 and FTA-C4000

Formtracer Avant FTA-C3000 and FTA-C4000

Serie 218 – Contour Measuring Instruments

These are high-accuracy 2D contour measuring instruments as single or dual stylus system. The Avant FTA-C3000 and FTA-C4000 series are benchtop machines and come with a motorised granite column and stand.

The Formtracer Avant FTA-C3000 and FTA-C4000 offers you the following benefits:

- Easy to operate
- Accurate measurement of small features
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Magnetic joint for a quick change of arms - quick and simple calibration
- Simplified CNC operation
- Optional motorised accessories
- Retrofit options for surface roughness measurement

Formtracer Avant FTA-C4000
with vibration isolator and side table

Specifications

Vertical travel	Z2 = 300 / 500 / 700 mm
Traverse	100 mm / 200 mm
Measuring range	Z1 = 60 mm
Measuring speed	0,02 - 30 mm/s
Drive speed	X = 0 - 80 mm/s Z2 = 0 - 30 mm/s
Inclining range	±45°
Accuracy	X = (0,8+0,01L) µm (S4, H4, W4, L4 model) X = (0,8+0,015L) µm (S8, H8, W8, L8 model) [L : Drive length (mm)] **FTA-C3000 :** Z1 = (1,2+2H/100) µm **FTA-C4000 :** Z1 = (0,8+2H/100) µm [H : Measurement height from the horizontal position (mm)]
Software	**FORMTRACEPAK** • Allows control of all axis, optional motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.

Optional accessories

No.	Description
12AAD975	Theta-1 axis
178-077	3D leveling table
178-078	Theta-2 axis, Rotary Axis
178-097	Y-axis table
178-181	Side table
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice
178-190-11	S3000 retrofit kit [mm], for Formtracer Avant series

Refer to FORMTRACER AVANT brochure

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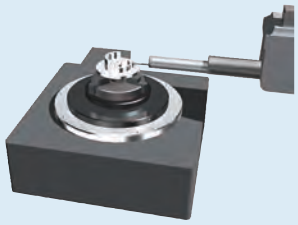
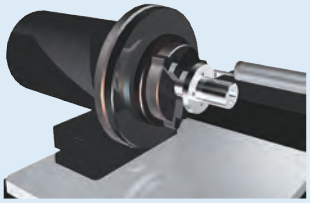
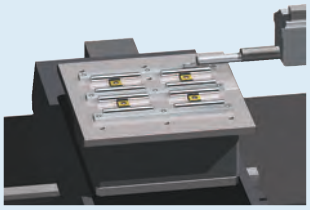
Formtracer Avant FTA-C3000 and FTA-C4000



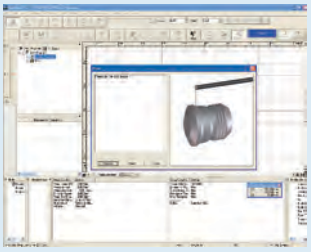
Optional Rotary table θ1 - 12AAD975



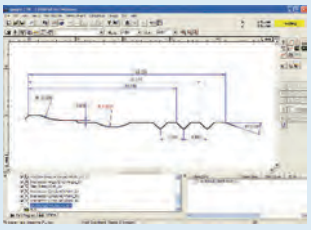
Optional Rotary table θ2 - 178-078



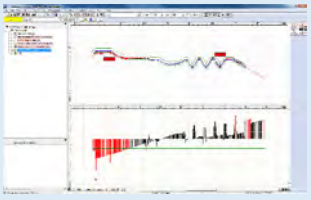
Optional Y-axis - 178-097



Measurement control screen



Contour analysis screen



Contour comparison FORMTRACEPAK

Formtracer Avant FTA-C3000 series

A high-accuracy 2D contour measuring instrument; the Avant C3000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-C3000 offers you the following benefits:

- Easy to operate
- Accurate measurement of small features
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Magnetic joint for a quick change of arms - quick and simple calibration
- Simplified CNC operation
- Optional motorised accessories
- Retrofit options for surface roughness measurement

Metric Traverse: 100 mm

Model	FTA - S4 C3000	FTA - H4 C3000	FTA - W4 C3000	FTA - L4 C3000
No.	**218-361-11**	**218-362-11**	**218-363-11**	**218-364-11**
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700

Metric Traverse: 200 mm

Model	FTA - S8 C3000	FTA - H8 C3000	FTA - W8 C3000	FTA - L8 C3000
No.	**218-366-11**	**218-367-11**	**218-368-11**	**218-369-11**
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700

FTA-C3000

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Formtracer Avant FTA-C3000 and FTA-C4000

Formtracer Avant FTA-C4000 series

A high-accuracy 2D contour measuring instrument with dual stylus system; the Avant FTA-C4000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer FTA-C4000 offers you the following benefits:

- Easy to operate upward/downward measurements at double sided contours
- Variable measuring force controlled by software FORMTRACEPAK
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Magnetic joint for a quick change of arms - quick and simple calibration
- Simplified CNC operation
- Optional motorised accessories
- Retrofit options for surface roughness measurement

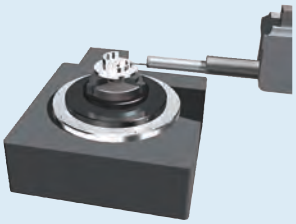
Metric Traverse: 100 mm

Model	FTA - S4 C4000	FTA - H4 C4000	FTA - W4 C4000	FTA - L4 C4000
No.	**218-371-11**	**218-372-11**	**218-373-11**	**218-374-11**
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700

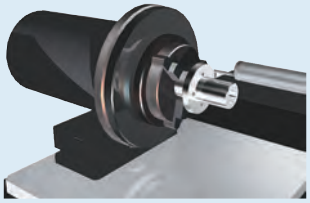
Metric Traverse: 200 mm

Model	FTA - S8 C4000	FTA - H8 C4000	FTA - W8 C4000	FTA - L8 C4000
No.	**218-376-11**	**218-377-11**	**218-378-11**	**218-379-11**
Z1-axis range [mm]	60	60	60	60
Granite base size (WxD) [mm]	600 x 450	600 x 450	1000 x 450	1000 x 450
Vertical travel [mm]	300	500	500	700

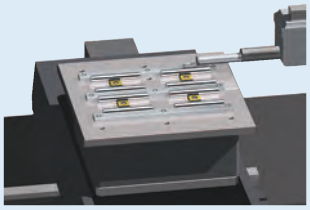
FTA-C4000



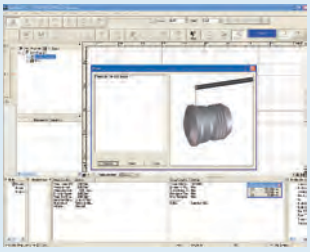
Optional Rotary table θ1 - 12AAD975



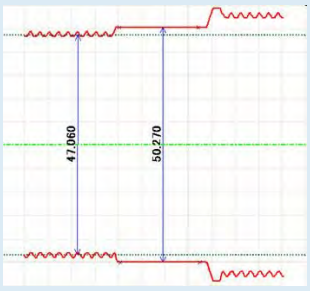
Optional Rotary table θ2 - 178-078



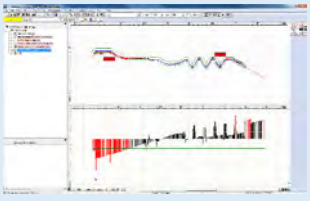
Optional Y-axis - 178-097



Measurement control screen



Double sided contour



Contour comparison FORMTRACEPAK

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Formtracer Avant
FTA-D3000 / FTA-D4000 Series

Specifications

Vertical travel	Z2 = 300 / 500 / 700 mm
Traverse	X = 100 mm / 200 mm
Measuring range	Contour Z1 = 60 mm Roughness Z1 = 800 µm / 80 µm / 8 µm
Measuring speed	0,02 - 30 mm/s
Drive speed	X = 0 - 80 mm/s Z2 = 0 - 30 mm/s
Software	**FORMTRACEPAK** • Allows control of all axis, optional motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour toleranCing as well as surface roughness evaluation as standard. • An inspection certificate can be created by setting the print format as required.

Optional accessories

No.	Description
12AAD975	Theta-1 axis
178-077	3D leveling table
178-078	Theta-2 axis, Rotary Axis
178-096	3 D/Y-axis table
178-097	Y-axis table
178-181	Side table
178-188	Vibration isolator standard base
178-189	Vibration isolator wide base
218-171	Cross-travel table [mm], 100 x 50 mm XY travel
218-173	Rotary vice

Refer to FORMTRACER AVANT brochure

Formtracer Avant FTA-D3000 and FTA-D4000

A high-accuracy 2D surface roughness and contour measuring instrument; the Avant D type is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-D3000 and FTA-D4000 offer you the following benefits:

- "Hot plug" exchange of drive units
- Easy to operate
- Dual stylus system for upward and downward contour measurements with D4000 type
- Variable contour measuring force set with Formtracepak software with D4000 type
- High accurate surface roughness and contour measurements
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Simplified CNC operation
- Optional motorised accessories

Formtracer Avant FTA-D4000
with monitor arm, vibration isolator and side table

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Formtracer Avant
FTA-D3000 / FTA-D4000 Series

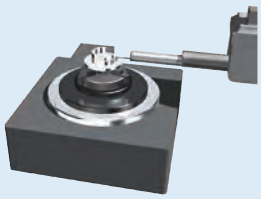
Formtracer Avant FTA-D3000 series

A high-accuracy 2D surface roughness and contour measuring instrument; the Avant FTA-D3000 is a benchtop machine and comes with a motorised granite column and stand.

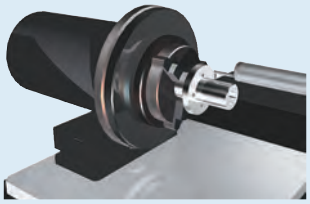
The Formtracer Avant FTA-D3000 offers you the following benefits:

- "Hot plug" exchange of drive units
- Easy to operate
- High accurate surface roughness and contour measurements
- Large vertical range and very high resolution
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Simplified CNC operation
- Optional motorised accessories

FTA-D3000

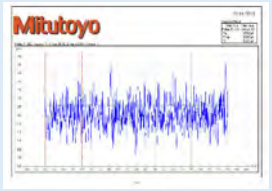


Optional Rotary table θ1 - 12AAD975



Optional Rotary table θ2 - 178-078

Optional Y-axis - 178-097



Formtracepak Layout

Contour analysis screen

Optional MCubeMap
(in combination with 3D Y-axis 178-096)

Metric

No.	Model	Detector 0,75 mN	X-axis 100 mm	X-axis 200 mm	Z2-axis 300 mm	Z2-axis 500 mm	Z2-axis 700 mm	Granite size (WxD) [mm]
525-311-11	FTA - S4 D3000	●	●		●			600 x 450
525-312-11	FTA - H4 D3000	●	●			●		600 x 450
525-313-11	FTA - W4 D3000	●	●			●		1000 x 450
525-314-11	FTA - L4 D3000	●	●				●	1000 x 450
525-316-11	FTA - S8 D3000	●		●	●			600 x 450
525-317-11	FTA - H8 D3000	●		●		●		600 x 450
525-318-11	FTA - W8 D3000	●		●		●		1000 x 450
525-319-11	FTA - L8 D3000	●		●			●	1000 x 450

All products to be sold to commercial customers.
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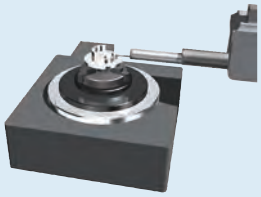
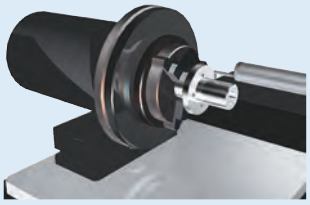
Formtracer Avant
FTA-D3000 / FTA-D4000 Series

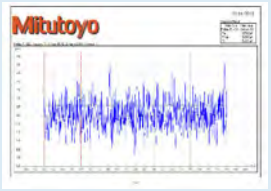


Optional Rotary table θ1 - 12AAD975

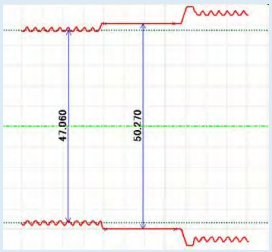


Optional Rotary table θ2 - 178-078

Optional Y-axis - 178-097



Formtracepak Layout



Double sided contour

Optional MCubeMap
(in combination with 3D Y-axis 178-096)

Formtracer Avant FTA-D4000 series

A high-accuracy 2D surface roughness and contour measuring instrument; the Avant FTA-D4000 is a benchtop machine and comes with a motorised granite column and stand.

The Formtracer Avant FTA-D4000 offers you the following benefits:

- "Hot plug" exchange of drive units
- Easy to operate
- Dual stylus system for upward and downward contour measurements
- Variable contour measuring force set with Formtracepak software
- High accurate surface roughness and contour measurements
- A large range of optional arms and styli ensures access to restricted features
- Remote control box for quick and accurate machine positioning
- Simplified CNC operation
- Optional motorised accessories

FTA-D4000

Metric

No.	Model	Detector 0,75 mN	X-axis 100 mm	X-axis 200 mm	Z2-axis 300 mm	Z2-axis 500 mm	Z2-axis 700 mm	Granite size (WxD) [mm]
525-321-11	FTA - S4 D4000	●	●		●			600 x 450
525-322-11	FTA - H4 D4000	●	●			●		600 x 450
525-323-11	FTA - W4 D4000	●	●			●		1000 x 450
525-324-11	FTA - L4 D4000	●	●				●	1000 x 450
525-326-11	FTA - S8 D4000	●		●	●			600 x 450
525-327-11	FTA - H8 D4000	●		●		●		600 x 450
525-328-11	FTA - W8 D4000	●		●		●		1000 x 450
525-329-11	FTA - L8 D4000	●		●			●	1000 x 450

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Formtracer Extreme SV-C4500CNC

Series 525 - Surface and Contour Measuring Instrument

High accurate fully CNC surface and contour measuring instrument.

The Formtracer Extreme SV-C4500CNC offers you the following benefits:

- Powerful as two separate, fully CNC instruments.
- Measurement of long distances in Z2-axis for models without α- axis.
- Each axis has a drive speed up to 200 mm/s.
- Dual stylus system for upward and downward contour measurement at doubled sided contours.
- It´s variable contour measuring force is controlled by software FORMTRACEPAK.
- The contour drive unit is equipped with an arc encoder detector giving excellent accuracy and resolution in Z1-axis.
- Perfectly made for increased throughput of multiple profile and workpiece measurement tasks.
- The detector unit incorporates an anti-collision safety device, causing it to stop automatically if its main body collides with a workpiece or jig.

SV-C4500CNC equipped with two powerful exchangeable drive units

Surface Roughness drive unit

Contour drive unit

Specifications

Measuring range	Z2= [S] 300 mm / [H] 500 mm
Measuring speed	0,02 - 2 mm/s
Drive speed	CNC mode: max. 200 mm/s Joystick mode: 0-50 mm/s
Accuracy	Contour detector: X= (8 +4L/2000) µm [L: Drive length (mm)] Contour Z1= (8 + 12H/1000) µm [H: Measurement height from the horizontal position (mm)] Z2=(3,5 + 15H/1000) µm
Inclining range	-45° (CCW) to +10° (CW) (for models equipped with with α - axis)
Measuring force	0,75 mN
Software	**FORMTRACEPAK** • Allows control of all axis, motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.
Optional accessories	Other optional and standard accessories are listed later in different sections for accessories and styli.

Optional accessories

No.	Description
12AAD975	Theta-1 axis
178-037	2D auto-leveling table, for CNC Surftest and Formtracer
178-077	3D leveling table
178-078	Theta-2 axis, Rotary Axis
178-397-2	Detector, 4 mN

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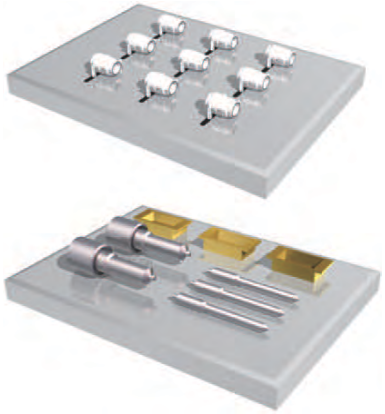
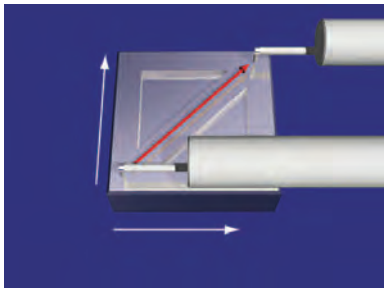
Formtracer Extreme SV-C4500CNC

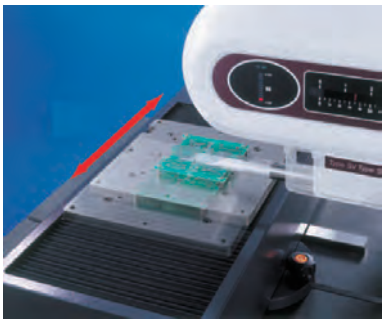
No.	Z2-axis range [mm]	Y-axis table unit	α-axis unit
525-701-12	300	Installed	-
525-702-12	300	Installed	Installed
525-703-12	500	Installed	-
525-704-12	500	Installed	Installed



Multiple measurements



Through 2-axis simultaneous control in the X and Y directions



Y-axis

α-axis

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Formtracer Extreme SV-C4500CNC HYBRID Type 1

Series 525 - Surface and Contour Measuring Instrument

This measuring system is equipped with a surface roughness detector, a contour detector and a confocal chromatic point sensor (CPS) employing axial chromatic aberration.

The Formtracer Extreme SV-C4500CNC Hybrid Type 1 offers you the following benefits:

- Powerful as three separate fully CNC instruments.
- High accurate fully CNC surface and contour measuring instrument.
- Non-contact and contact measurement combined in one instrument.
- Two machine types with different CPS sensors available, depending on measuring range and resolution.
- Drive speed of up to 200 mm/s in all axes.
- Vibration isolator as standard.

SV-4500CNC Hybrid Type

Surface roughness drive unit

Contour drive unit

CPS sensor drive unit

No.	Model	Roughness	Contour	Non-contact
525-676-12	Type 1A	0,75 mN	Dual contour stylus	CPS2525
525-677-12	Type 1B	0,75 mN	Dual contour stylus	CPS0517

Specifications

Vertical travel	Z2 = 500 mm
Measuring range	X= 200 mm Y= 200 mm **Contour:** Z1= 60 mm **Roughness:** Z1= 800 µm; 80 µm; 8 µm (up to 2,4 mm with an optional stylus) mm
Measuring speed	0,02 - 2 mm/s
Accuracy	Contour detector: X= (8 +4L/2000) µm [L: Drive length (mm)] Contour Z1= (8 + [2H]/1000) µm [H: Measurement height from the horizontal position (mm)] Z2=(3,5 + 15H/1000) µm
Software	**FORMTRACEPAK** • Allows control of all axis, motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as standard. • An inspection certificate can be created by setting the print format as required.
Non-contact detector	
Measuring range	CPS0517 = 100 µm CPS2525 = 1200 µm
Working distance	CPS0517 = 12 mm CPS2525 = 21 mm
Resolution	CPS0517 = 5 nm CPS2525 = 25 nm

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Formtracer Extreme CS-5000CNC and CS-H5000CNC

Series 525 - CNC Surface and Contour Measuring Instruments

This is the highest-accuracy stylus type CNC surface roughness and contour measuring instrument.

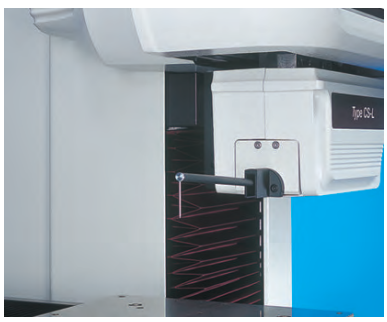
The Formtracer Extreme CS-5000CNC / CS-H5000CNC offers you the following benefits:

- It meets the highest demands of accuracy and repeatability.
- You can carry out simultaneous analysis of roughness and contour within one measurement.
- It includes a cabin and a vibration stand as standard to avoid external influences.
- High resolution in X1-axis: 5 nm and Z1-axis: 0,8 nm/1,6 nm.

Specifications

Vertical travel	Z2 = 300 / 500 mm
Traverse	200 mm
Measuring range	Z1 = 12 mm
Measuring speed	Roughness measurement: 0,02 - 0,2 mm/s Contour measurement: 0,02 - 2 mm/s
Drive speed	CNC mode: max. 40 mm/s Joystick mode 0 - 40 mm/s
Accuracy	**CS-5000CNC:** X = (0,3+0.002L) µm Z1 = (0,3+[0,02H]) µm **CS-H5000CNC:** X = (0,16+0,001L) µm Z1 = (0,07+[0,02H]) µm [L : Drive length (mm)] [H : Measurement height from the horizontal position (mm)]
Traverse straightness	**CS-5000CNC:** X = (0,1+0,0015L) µm [standard stylus] X = (0,2+0,0015L) µm [double length stylus] **CS-H5000CNC:** X = (0,05+0,0003L) µm [standard stylus] X = (0,1+0,0015L) µm [double length stylus]
Resolution	X = 0,005 µm Z1 = 0,0008 µm [standard stylus] Z1 = 0,0016 µm [double length stylus]
Software	**FORMTRACEPAK** • Allows control of all axis, optional motor-driven Y-axis table and rotary table for efficient automated measurement. • Contour evaluation can be performed using analysis of level differences, angle, pitch, area and contour tolerancing as well as surface roughness evaluation as standard. • An inspection certificate can be created by setting the print format as required.

CS-H5000CNC



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Mitutoyo

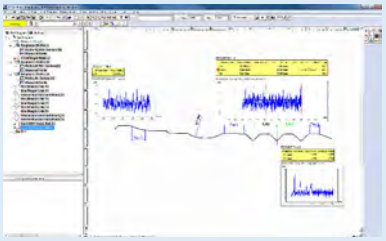
Formtracer Extreme CS-5000CNC and CS-H5000CNC

CS-5000CNC

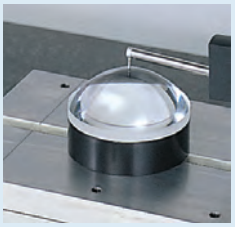
Model	CS-5000CNC S	CS-5000CNC S + Y-axis	CS-5000CNC H	CS-5000CNC H + Y-axis
No.	**525-727-12**	**525-729-12**	**525-747-12**	**525-749-12**
Z2-axis range [mm]	300	300	500	500
Y-axis table unit	-	Installed	-	Installed
α-axis unit	Installed	Installed	Installed	Installed

CS-H5000CNC

Model	CS-H5000CNC S	CS-H5000CNC S + Y-axis	CS-H5000CNC H	CS-H5000CNC H + Y-axis
No.	**525-776-12**	**525-777-12**	**525-706-12**	**525-707-12**
Z2-axis range [mm]	300	300	500	500
Y-axis table unit	-	Installed	-	Installed
α-axis unit	-	-	-	-

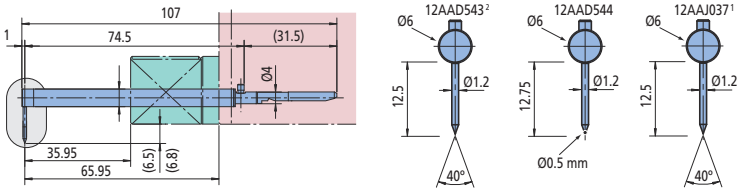


Contour and roughness analysis

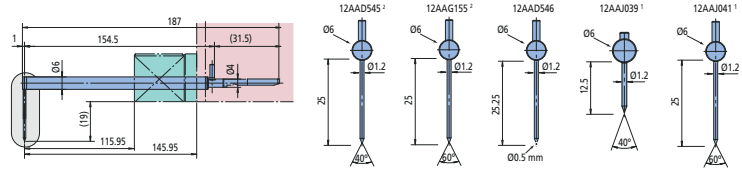


Optional:
Aspherical lens analysis program
ASLPAK

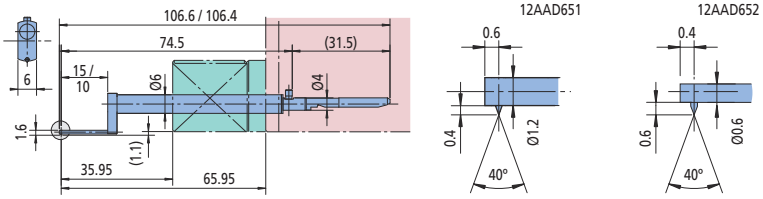
Standard



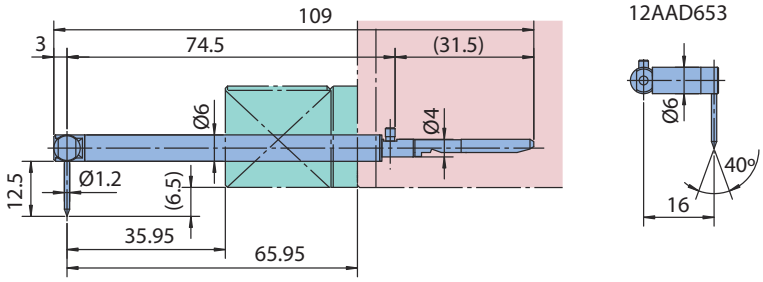
Double length

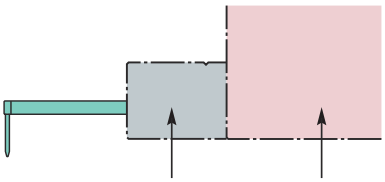


For small holes



Eccentric





Nosepiece Detector

1 = only for CS-H5000CNC
2 = only for CS-5000CNC

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Roundtest RA-10

Series 211 - Form Measuring Instrument

This is a compact and affordable form measuring instrument.

The Roundtest RA-10 offers you the following benefits:

- It combines outstanding cost and performance with full measurement capabilities.
- The machine has a compact body with integrated electronics and printer, making it ideal for installation in space-restricted locations.
- You can easily view measurement results and recorded profiles on the large coloured LCD panel display.
- Despite being a low-priced model, the turntable with air bearings gives you rotational accuracy as high as (0,04+0,0006H) µm, assuring a precision that compares well with that of higher priced models.
- The control panel has large keys and an intuitive layout for easy operation.
- One-key calling function.
- One-key zero-set function.
- Support of 16 languages.
- It complies with EN ISO standard like 12181-1, 12181-2, 12781-1 and 12781-2.
- USB Communication Program – Microsoft® Excel ® based – to import results and create, save and print out inspection certificates on PC.

Specifications

Range	±1000 µm
Turntable	
Rotational accuracy	**Radial:** (0,04+0,0006H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,04+0,0006X) µm X: Radial distance from center (mm)
Max. probing Ø	100 mm
Max. turntable loading	10 kg
Vertical column	
Vertical travel [mm]	117 mm
Max. probing height	152 mm
Display unit	
Data analysis items	Roundness, Coaxiality, Concentricity, Flatness, Runout radial
Printer	Built-in thermal line printer

RA-10

Optional accessories

No.	Description
12AAH318	Z-axis scale unit
12AAH320	X-axis stopper
12AAH402	Collet (Ø 0,5-1,0 mm)*
12AAH403	Collet (Ø 1,0-1,5 mm)*
12AAH404	Collet (Ø1,5-2,0 mm)*
12AAH405	Collet (Ø 2,0-2,5 mm)*
12AAH406	Collet (Ø2,5-3,0 mm)*
12AAH407	Collet (Ø3,0-3,5 mm)*
12AAH408	Collet (Ø3,5-4,0 mm)*
12AAH409	Collet (Ø4,5-5,0 mm)*
12AAH410	Collet (Ø5,0-6,0 mm)*
12AAH411	Collet (Ø6,0-7,0 mm)*
12AAH412	Collet (Ø 7,0-8,0 mm)*
12AAH413	Collet (Ø8,0-9,0 mm)*
12AAH414	Collet (Ø 9,0-10,0 mm)*
12AAH420	Spacer for reference hemisphere
211-013	Micro vibration isolator
211-016	Reference hemisphere
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
211-051	Collet chuck holder (OD: 0,5-10 mm)*
211-052	Quick chuck
211-053	V-block A (Screw clamp)
211-054	V-block B (spring clamp)
211-055	Spigot / Socket fixture
356038	Auxiliary stage for low height workpiece, for Roundtest
997090	Gauge block set for calibration, for Roundtest
K551133	eco-fix kit Form S, 53 pcs., CMM fixtures, eco-fix series

*Individual collet for collet chuck holder should be ordered seperately.

Z-axis scale unit

Consumable spares

No.	Description
12AAH181	Printer paper (10 rolls)

No.	Model	Max. probing Ø [mm]	Max. turntable loading [kg]
211-541-13	RA-10	100	10

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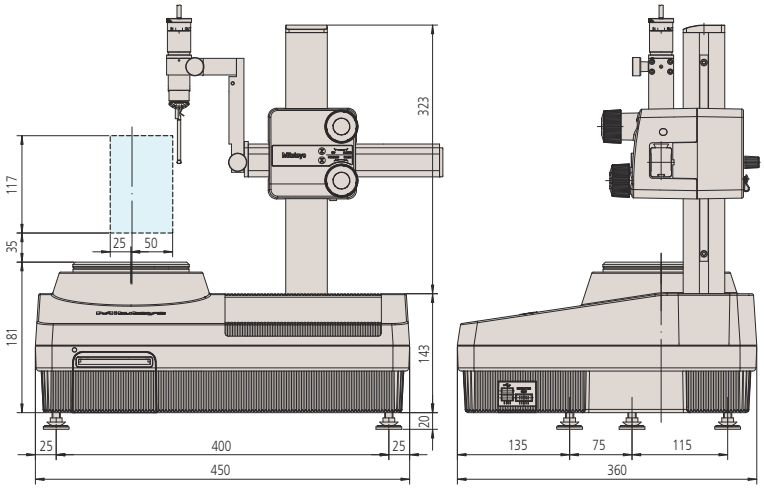
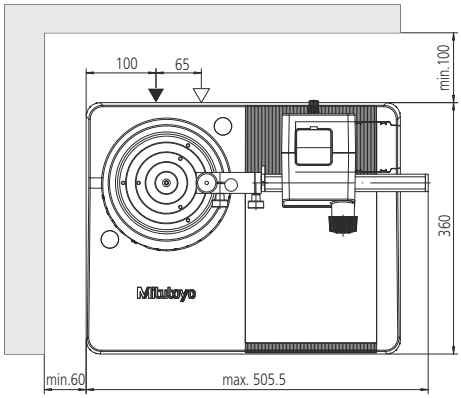
Mitutoyo

Roundtest RA-10





211-031

211-032

211-051

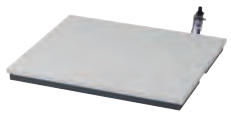
211-052

211-053

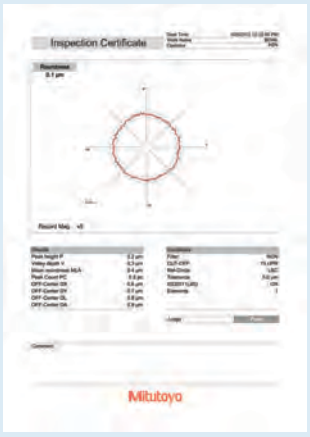
211-054

211-055

12AAH425



211-013



Software USB Communication Program as a free download on www.mitutoyo.eu (registration required)

Refer to ROUNDTEST RA-10 brochure

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Roundtest RA-120 and RA-120P

Series 211 - Form Measuring Instrument

These are compact, affordable and simple-to-use instruments for measuring roundform geometry.

The Roundtest RA-120 and RA-120P offer you the following benefits:

- The turntable accuracy of (0,04+0,0006H) µm provides high level form analysis.

RA-120

- The RA-120 has a compact body with integrated electronics and printer, making it ideal for installation in space-restricted locations.
- You can easily view measurement results and recorded profiles on the large coloured LCD panel display.
- One-key operations.
- Support of 16 languages.
- It complies with EN ISO standard like 12181-1, 12181-2, 12781-1 and 12781-2
- USB Communication Program – Microsoft® Excel ® based – to import results and create, save and print out inspection certificates on PC.

RA-120P

- The RA-120P is a PC based model with all operations controlled via powerful ROUNDPAK software.
- Software ROUNDPAK gives you excellent possibilities for single measurement and part programming.

RA-120

RA-120P

Specifications

Turntable	
Rotational accuracy	**Radial:** (0,04+0,0006H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,04+0,0006X) µm X: Radial distance from center (mm)
Max. probing Ø	280 mm 380 mm in reverse position mm
Max. workpiece ø	440 mm
Max. turntable loading	25 kg
Centering range	±3 mm
Leveling range	±1°
Vertical column	
Vertical travel	280 mm
Max. probing height	280 mm above turntable surface 480 mm in reverse position
Max. probing depth	100 mm (minimum ID: 30 mm)
Display unit	
Data analysis items	Roundness, Coaxiality, Flatness, Runout (radial), Runout (axial), Thickness deviation, Parallelism, Perpendicularity
Printer	Built-in thermal line printer (RA-120)
Software	**ROUNDPAK** (only RA-120P)

Software
USB Communication Program
as a free download on www.mitutoyo.eu
(registration required)
(only RA-120)

Refer to ROUNDTEST RA-120 brochure

Scan QR Code with your mobile device and watch our product videos on YouTube

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Roundtest RA-120 and RA-120P

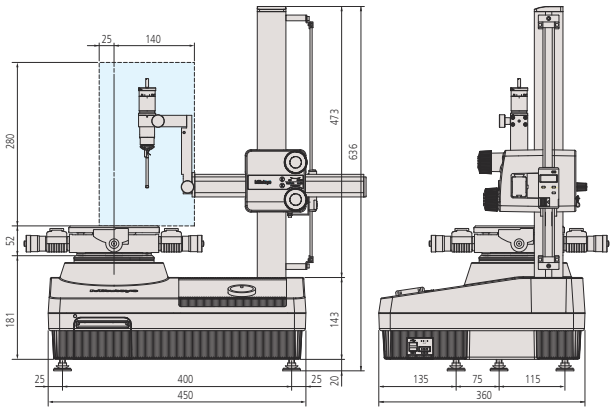
Series 211 - Form Measuring Instrument

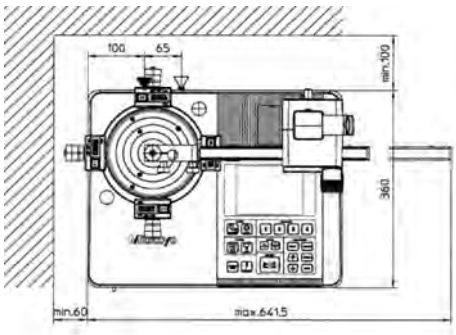
This is a compact roundness tester with mechanical table or D.A.T. (Digital Adjustment Table).

The D.A.T. gives you the following benefits:

- The turntable displays centering and leveling adjustments digitally, making this challenging task easy enough for even an untrained operator to perform, through these four simple steps:

1. Preliminary measurement of two cross sections on the workpiece.
2. The centering and leveling adjustment values are displayed.
3. The digital micrometer heads on the rotary table are adjusted to match the values displayed.
4. Centering and leveling is complete. [Centering range : ±3 mm - Leveling range : ±1°]





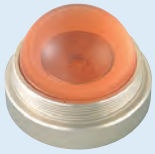
No.	Model	Max. probing diameter [mm]	Max. workpiece ø [mm]	Max. turntable loading [kg]
211-543-13	RA-120 with D.A.T. function	280	440	25
211-544-13	RA-120 with mechanical turntable	280	440	25
211-546-13	RA-120P with D.A.T. function	280	440	25
211-547-11	RA-120P with mechanical turntable	280	440	25

Optional accessories

Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
12AAH320	X-axis stopper
211-013	Micro vibration isolator
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-016	Reference hemisphere
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
211-061	Collect chuck holder
356038	Auxiliary stage for low height workpiece, for Roundtest
997090	Gauge block set for calibration, for Roundtest
K551133	eco-fix kit Form S, 53 pcs., CMM fixtures, eco-fix series



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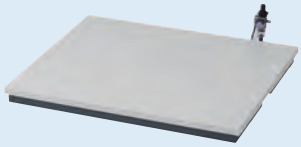

211-013

Z-axis scale unit (optional)

X-axis stop

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Roundtest RA-1600

Series 211 - Form Measuring System

This is a PC-compliant form measuring system which allows you to measure roundform geometry like cylindricity.

The Roundtest RA-1600 offers the following benefits:

- It is equipped with a high accurate turntable accuracy of (0,02+0,0006H) µm.
- You can carry out simple & accurate centering and leveling of the workpiece with D.A.T. (Digital Adjustment Table).
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- A remote control box is including allowing you easy operation.
- There is also an auto follow function for easy and quick pre-centering of the workpiece.

RA-1600

No.	Model	Max. probing Ø [mm]	Max. turntable loading [kg]
211-733-13	RA-1600	280	25

Specifications

Rotational accuracy	**Radial:** (0,02+0,0006H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,02+0,0006X) µm X: Radial distance from center (mm)
Rotational speed	4, 6, 10 rpm
Max. probing Ø	280 mm
Centering range	±3 mm
Leveling range	±1°
Max. probing height	300 mm above turntable surface
Max. probing depth	91 mm (minimum ID : ø32 mm) 50 mm (minimum ID : ø7 mm)
Straightness	0,2 µm / 100 mm 0,3 µm / 300 mm
Parallelism with turntable axis	1,5 µm / 300 mm
Software	**ROUNDPAK**
Optional accessories	Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
12AAF203	Double length detector holder
12AAF204	Large diameter detector holder
12AAH402	Collet (Ø 0,5-1,0 mm)*
12AAH403	Collet (Ø 1,0-1,5 mm)*
12AAH404	Collet (Ø1,5-2,0 mm)*
12AAH405	Collet (Ø 2,0-2,5 mm)*
12AAH406	Collet (Ø2,5-3,0 mm)*
12AAH407	Collet (Ø3,0-3,5 mm)*
12AAH408	Collet (Ø3,5-4,0 mm)*
12AAH409	Collet (Ø4,5-5,0 mm)*
12AAH410	Collet (Ø5,0-6,0 mm)*
12AAH411	Collet (Ø6,0-7,0 mm)*
12AAH412	Collet (Ø 7,0-8,0 mm)*
12AAH413	Collet (Ø8,0-9,0 mm)*
12AAH414	Collet (Ø 9,0-10,0 mm)*
12AAK120	Monitor arm, for vibration isolator 12AAK120
12AAL090	Sliding detector holder
178-181	Side table
178-188	Vibration isolator standard base
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
211-061	Collect chuck holder
356038	Auxiliary stage for low height workpiece, for Roundtest
358592	Element for air filter
358593	Element for filter regulator
997090	Gauge block set for calibration, for Roundtest
K551133	eco-fix kit Form S, 53 pcs., CMM fixtures, eco-fix series

*Individual collet for collet chuck holder should be ordered seperately.

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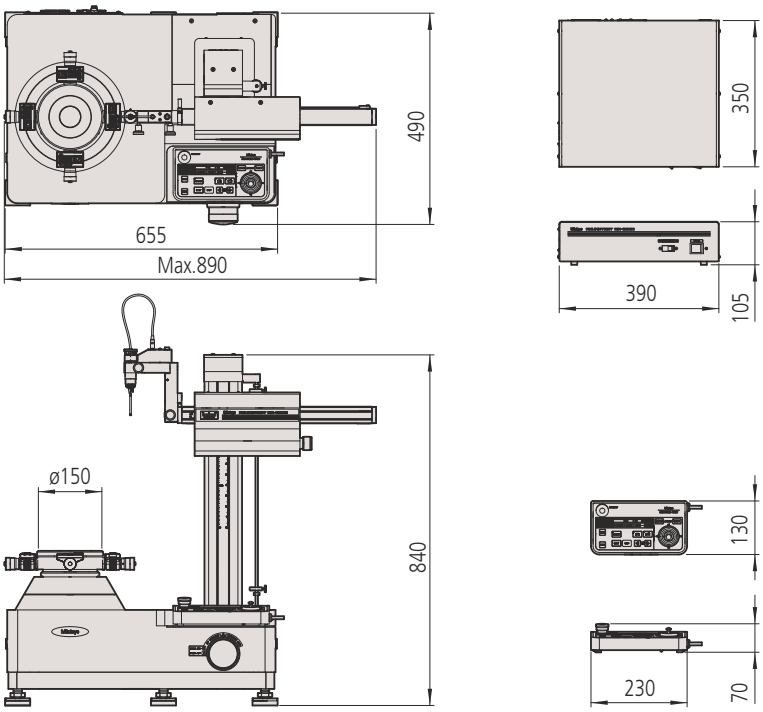
Roundtest RA-1600



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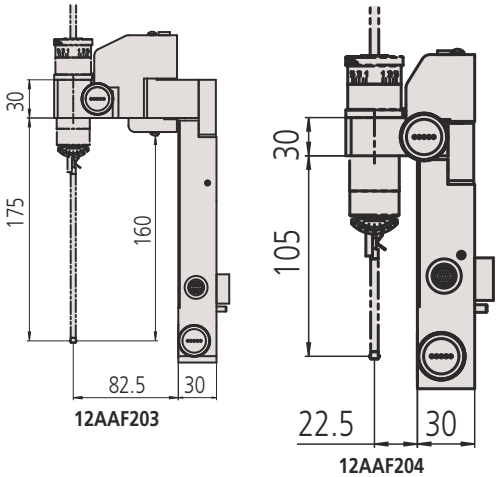
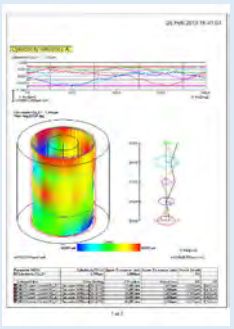


12AAF203

12AAF204

Measuring screen



Result screen

Refer to ROUNDTEST RA-1600 brochure

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Roundtest RA-2200

Series 211 - Form Measuring Instrument

This is a highly accurate form measuring system which allows you to measure roundform geometry like cylindricity.

The Roundtest RA-2200 offers the following benefits:

- It has fully motorised axes movement.
- Its extremely high turntable accuracy of (0,02+0,00035H) µm gives you excellent form analysis.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- A huge number of styli provides you with maximum flexibility.
- There is an auto follow function for easy and quick pre-centering of the workpiece.

There is a wide variety of models available to suit any application.
RA-2200DS/DH: These models have a navigation function supplied as standard, to quickly and simply guides you through the centering and leveling task. The models are equipped with the D.A.T. (Digital Adjustment Table).

RA-2200AS/AH: The models have an automatic centering and leveling turntable supplied as standard, freeing you from the centering and leveling task. The models are equipped with the A.A.T. (Automatic Adjustment Table).

RA-2200AS

Specifications

Turntable	
Rotational accuracy	**Radial:** (0,02+0,00035H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,02+0,00035X) µm X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm
Max. probing Ø	300 mm
Max. workpiece Ø	580 mm
Centering range	**DS / DH:** ±5 mm **AS / AH:** ±3 mm
Leveling range	±1°
Vertical column	
Max. probing height	**AS / DS :** 300 mm **AH / DH:** 500 mm above turntable surface
Max. probing depth	85 mm (minimum ID : ø32 mm) 50 mm (minimum ID : ø7 mm)
Straightness	0,1 µm / 100 mm **AS / DS :** 0,15 µm / 300 mm **AH / DH:** 0,25 µm / 500 mm
Parallelism with rotation center	**AS / DS :** 0,7 µm / 300 mm **AH / DH:** 1,2 µm / 500 mm
Horizontal axis	
Straightness	0,7 µm / 150 mm
Perpendicularity to rotation center	1 µm / 150 mm
Software	**ROUNDPAK** FORMTRACEPAK-AP (optional for roughness detection unit)

Optional accessories

No.	Description
12AAF203	Double length detector holder
12AAF204	Large diameter detector holder
12AAK110	Vibration isolator
12AAK120	Monitor arm, for vibration isolator 12AAK120
12AAL019	Side table
12AAY644	Roughness detection unit
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
356038	Auxiliary stage for low height workpiece, for Roundtest
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series

No.	Model	Centering/leveling adjustment 1*	Vertical travel	Max. probing Ø [mm]	Max. workpiece Ø [mm]	Max. turntable loading [kg]
211-511-11	RA-2200AS	AAT	300 mm	300	580	30
211-512-11	RA-2200AH	AAT	500 mm	300	580	30
211-514-13	RA-2200DS	DAT	300 mm	300	580	30
211-516-13	RA-2200DH	DAT	500 mm	300	580	30

1*AAT: Automatic adjustment table
DAT: Digital adjustment table

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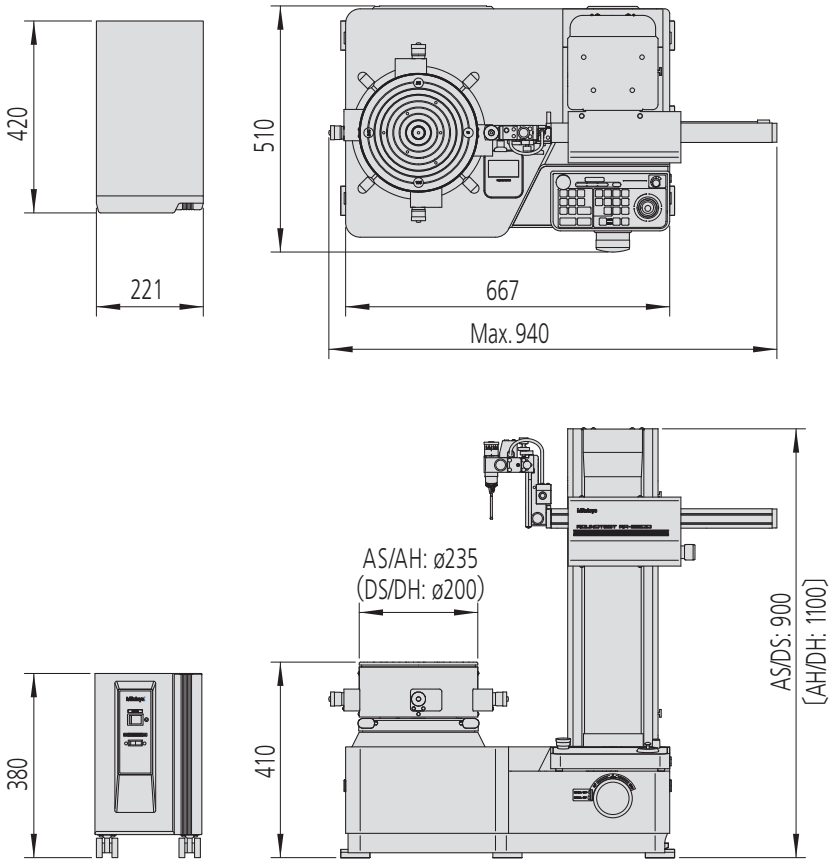
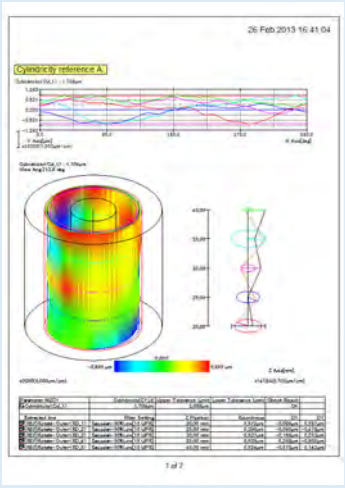
Roundtest RA-2200





ROUNDPAK
Simple to operate even with a full set of parameters and analysis functions.

Refer to ROUNDTEST RA-2200 brochure

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Roundtest RA-H5200

Series 211 - High-precision Form Measuring Instrument

This is a highly accurate, precision form measuring system developed to give you the highest accuracy as well as high flexibility and analytical capability.

The Roundtest RA-H5200 offers the following benefits:

- Its integrated vibration isolator helps you to measure within the best conditions.
- It has a high measuring range and loading mass.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- A.A.T. (Automatic Adjustment Table) gives you fully automatic centering and leveling.
- There is an auto follow function for easy and quick pre-centering of the workpiece.

RA-H5200

Specifications

Turntable	
Rotational accuracy	**Radial:** (0,02+0,00035H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,02+0,00035X) µm X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm Auto centering: 20 rpm
Max. probing Ø	400 mm
Max. workpiece Ø	680 mm
Max. turntable loading	80 kg w/o auto centering 65 kg
Centering range	±5 mm
Leveling range	±1°
Vertical column	
Max. probing height	**AS :** 350 mm **AH:** 550 mm above turntable surface
Max. probing depth	85 mm (minimum ID : ø32 mm) 50 mm (minimum ID : ø7 mm)
Straightness	**AS / AH :** 0,05 µm / 100 mm **AS :** 0,14 µm / 350 mm **AH :** 0,2 µm / 550 mm
Parallelism with rotation center	**AS :** 0,2 µm / 350 mm **AH :** 0,32 µm / 550 mm
Horizontal axis	
Straightness	0,4 µm / 200 mm
Perpendicularity to rotation center	0,5 µm / 200 mm
Software	**ROUNDPAK** FORMTRACEPAK-AP (optional for roughness detection unit)
Optional accessories	Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
12AAF203	Double length detector holder
12AAF204	Large diameter detector holder
12AAF205	Triple length holder for exta-deep holes
12AAL019	Side table
12AAY644	Roughness detection unit
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series

Highly accurate, automatic centering/leveling turntable

The performance of this turntable has been achieved through exceptional manufacturing accuracy of the critical components, in addition to a high-accuracy air-bearing that provides superior rigidity. The resulting rotational accuracy, the heart of a Roundtest measuring system, is at 0,02+0,00035H µm.

No.	Model	Centering/leveling adjustment 1*	Max. workpiece Ø [mm]
211-531-11	RA-H5200AS	AAT	680
211-532-11	RA-H5200AH	AAT	680

1*AAT: Automatic adjustment table

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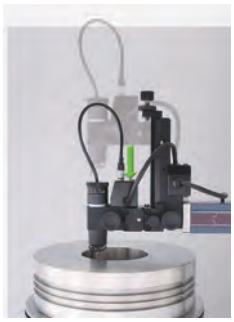
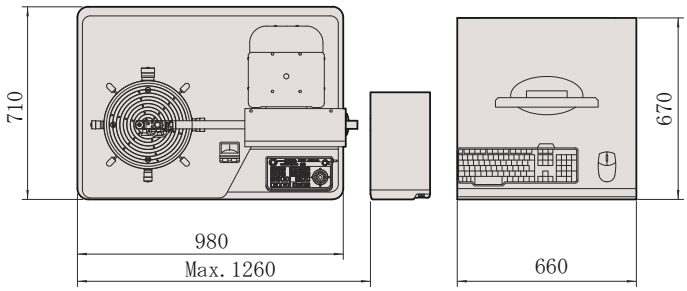
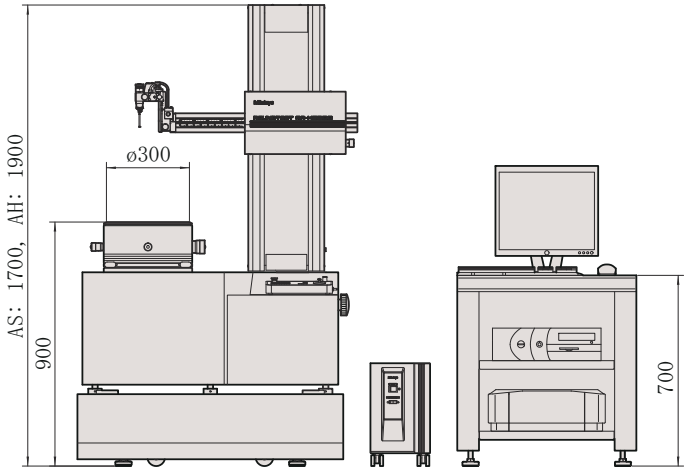
Roundtest RA-H5200



Sliding detector-unit holder provided as a standard feature

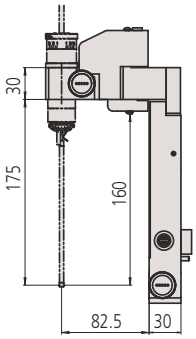
The detector-unit holder is equipped with a sliding mechanism, enabling one-touch measurement of a workpiece with a deep hole having a thick wall, which has been difficult with the conventional standard arm. Sliding distance : 112 mm.





Dimensions

mm



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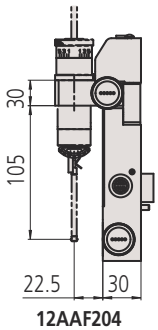

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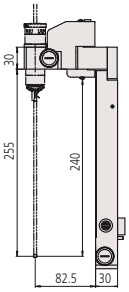

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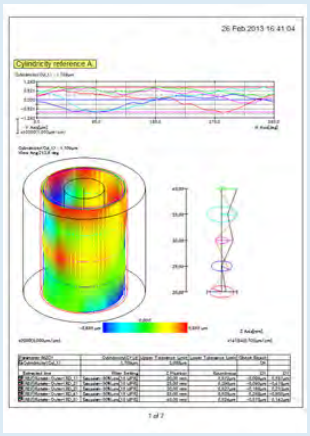
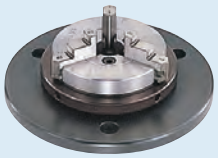


ROUNDPAK

Simple to operate even with a full set of parameters and analysis functions.

211-014



211-032

211-031

211-045

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Roundtest Extreme RA-2200 PLUS

Series 211 - High-precision Form Measuring Instrument

This is a fully automatic CNC form measuring instrument that gives highly accurate results.

The Roundtest Extreme RA-2200 PLUS offers you the following benefits:

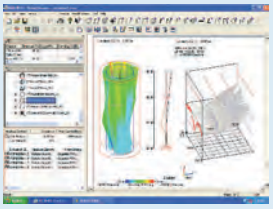
- It has a CNC controlled measuring system with orientation steps of 1°.
- The extremely high turntable accuracy of (0,02+0,00035H) µm gives you highly accurate form analysis.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- An automatic centering and leveling turntable A.A.T. (Automatic Adjustment Table) is supplied as standard, freeing you from the centering and leveling task.

Specifications

Turntable	
Rotational accuracy	**Radial:** (0,02+0,00035H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,02+0,00035X) µm X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm
Max. probing Ø	256 mm
Max. workpiece Ø	580 mm
Max. turntable loading	30 kg
Centering range	±3 mm
Leveling range	±1°
Vertical column	
Max. probing height	**AS :** 300 mm **AH:** 500 mm above turntable surface
Max. probing depth	104 mm (minimum ID : ø32 mm) 26 mm (minimum ID : ø12,7 mm)
Straightness	**AS / AH :** 0,1 µm / 100 mm **AS :** 0,15 µm / 300 mm **AH :** 0,25 µm / 500 mm
Parallelism with rotation center	**AS :** 0,7 µm / 300 mm **AH :** 1,2 µm / 500 mm
Horizontal axis	
Straightness	0,7 µm / 150 mm
Perpendicularity to rotation center	1 µm / 150 mm
Software	**ROUNDPAK** FORMTRACEPAK-AP (optional for roughness detection unit)

Optional accessories

No.	Description
12AAK110	Vibration isolator
12AAK120	Monitor arm, for vibration isolator 12AAK120
12AAL019	Side table
12AAX859	Roughness detection unit; 0,75 mN, for Roundtest RA PLUS series
12AAX861	Roughness detector 4 mN, for Roundtest RA PLUS series
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series



ROUNDPAK
Simple to operate even with a full set of parameters and analysis functions.

Refer to ROUNDTEST RA-2200 brochure

RA-2200 PLUS

No.	Model	Centering/leveling adjustment 1*	Vertical travel	Max. probing Ø [mm]	Max. workpiece Ø [mm]
211-517-11	RA-2200AS PLUS	AAT	300 mm	256	580
211-518-11	RA-2200AH PLUS	AAT	500 mm	256	580

1* AAT : Automatic Adjustment Table

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Roundtest Extreme RA-H5200 PLUS

Series 211 - High-precision Roundness/Cylindricity Measuring System

This is a CNC form measuring instrument that combines high accuracy with automatic CNC measurements.

The Roundtest Extreme RA-H5200 PLUS offers you the following benefits:

- An integrated vibration isolator helps you to measure within best conditions.
- It will greatly improve your productivity and efficiency.
- You can take highly accurate, fast and operator-free measurements.
- The user friendly software, ROUNDPAK, gives you easy drag and drop usage and a wide range of parameters.
- ROUNDPAK also has easy-to-use part programming and single measurement functions.
- An automatic centering and leveling turntable A.A.T. (Automatic Adjustment Table) is supplied as standard, freeing you from the centering and leveling task.

RA-H5200 PLUS

No.	Model	Centering/leveling adjustment 1*	Vertical travel	Max. probing Ø [mm]	Max. workpiece Ø [mm]
211-533-11	RA-H5200AS PLUS	AAT	350 mm	356	680
211-534-11	RA-H5200AH PLUS	AAT	550 mm	356	680

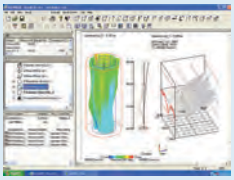
1* AAT : Automatic Adjustment Table

Specifications

Turntable	
Rotational accuracy	**Radial:** (0,02+0,00035H) µm H: Measuring height from turntable surface (mm) **Axial:** (0,02+0,00035X) µm X: Radial distance from center (mm)
Rotational speed	2, 4, 6, 10 rpm Auto centering: 20 rpm
Max. probing Ø	356 mm
Max. workpiece Ø	680 mm
Max. turntable loading	80 kg w/o auto centering 65 kg
Centering range	±5 mm
Leveling range	±1°
Vertical column	
Max. probing height	**AS :** 350 mm **AH:** 550 mm above turntable surface
Max. probing depth	104 mm (minimum ID : ø32 mm) 26 mm (minimum ID : ø12,7 mm)
Parallelism with rotation center	**AS :** 0,2 µm / 350 mm **AH :** 0,32 µm / 550 mm
Horizontal axis	
Straightness	0,4 µm / 200 mm
Perpendicularity to rotation center	0,5 µm / 200 mm
Software	**ROUNDPAK** FORMTRACEPAK-AP (optional for roughness detection unit)
Optional accessories	Other optional and standard accessories are listed later in this section for accessories and styli.

Optional accessories

No.	Description
12AAX859	Roughness detection unit; 0,75 mN, for Roundtest RA PLUS series
12AAX861	Roughness detector 4 mN, for Roundtest RA PLUS series
K551134	eco-fix kit Form L, 82 pcs., CMM fixtures, eco-fix series
178-181	Side table
211-014	Three-jaw chuck, OD: 2-78 mm, ID: 25-68 mm
211-031	Micro chuck, OD: 0,1-1,5 mm
211-032	Quick chuck, OD: 1-79 mm, ID: 16-69 mm
211-045	Magnification calibration gauge, for Roundtest



ROUNDPAK
Simple to operate even with a full set of parameters

All products to be sold to commercial customers.
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Roundtracer Flash

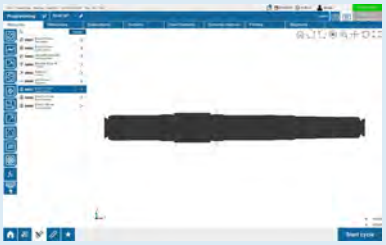
Specifications

Range Z-axis	100 / 300 mm
Measuring range Ø [mm]	60
Max. turntable loading	6 kg

Optional accessories

No.	Description
12AAX422MEU	3-jaw chuck incl. shank set
12AAX423MEU	Face plate incl. shank set
12AAX424MEU	6-jaw chuck incl. shank set
12AAX425MEU	Pivoting Arm for the Display, for Roundtracer Flash
12AAX426MEU	Industrial Keyboard, for Roundtracer Flash
12AAX427MEU	Verification Master for S100, for Roundtracer Flash
12AAX429MEU	Verification Master for S300, for Roundtracer Flash
63AAA984	Fastener measurement kit for Roundtracer Flash
63AAA988	Easybox 8I/O Kit for Roundtracer Flash
63AAA989	Gagepod Profinet/Profibus Kit for Roundtracer Flash
63AAA991	Instant manual thermal probe kit for Roundtracer Flash
63AAA990	Kit Datamatrix reader, for Roundtracer Flash

Home screen



Programming screen

Result screen

Serie 211 - Form Measuring Instrument

The Roundtracer Flash is a flexible optical measuring system, fast and precise. The instrument is a good solution for accurate quality control in a laboratory as well as in the production environment.

The Roundtracer Flash offers you following benefits:

- Dimensional, position, form analysis in static or dynamic mode.
- Image sensors integrated in a fixed position across the product structure to cover the entire measurement range.
- Less mechanical stress
- Side-by-side 2D image architecture
- Short cycle time
- One-click measuring cycle activation
- Graphical user interface via touchscreen monitor
- Easy part loading
- IO Communication via Profinet, Profibus, Ethernet IP
- Machine tool feedback compensation

Extensive toolkits to measure:

- Thread for fastener and medical industry
- Camshafts
- Impellers including blade-by-blade analysis

Roundtracer Flash with optional pivot arm

No.	Model	Range Z-axis [mm]	Measuring range Ø [mm]
211-581-01MEU	Roundtracer Flash S100	100	60
211-583-01MEU	Roundtracer Flash S300	300	60

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Roundtracer Extreme RTX-605-A

Serie 211 - Form Measuring Instrument

Full-fledged CNC roundness measuring system with dramatically-enhanced measurement flexibility, measurement throughput, and measurement result reproducibility.
A complete new system which can combine form, contour and surface roughness measurement into one device.

The Roundtracer Extreme offers you following benefits:

- 3 in 1
- Motorized detector slider
- Stylus positioning
- High measurement throughput
- High reproducibility & repeatability
- Enhanced optional measurement functions like contour & surface roughness and twist measurement

No.	Model	Centering/leveling adjustment 1*	Vertical travel	Max. workpiece Ø [mm]	Max. probing Ø [mm]	Max. turntable loading [kg]
211-552-12	RTX-605-A	AAT	550 mm	680	328	60

1* AAT Automatic adjustment table

Specifications

Turntable	
Rotational accuracy	**Radial**: (0,02+0,00035H) µm H: Measuring height (mm) **Axial**: (0,02+0,00035R) µm R: Measuring radius (mm)
Max. turntable loading [kg]	60
Vertical column	
Max. measurement height	500 mm

Form measurement

Contour measurement

Surface roughness measurement

Refer to ROUNDTRACER RTX brochure

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Optional Styli for Roundtest

Interchangeable styli for RA-10, RA-120, RA-120P, RA-1600, RA-2200, RA-H5200

Standard accessories

No.	Description
12AAL021	Standard stylus

Optional accessories

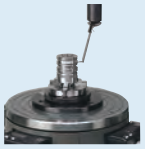
No.	Description
12AAL022	Stylus for notches, Ø3 mm, tungsten carbide
12AAL023	Stylus for deep groove, R 0,25 mm, Sapphire
12AAL024	Stylus for corner, R 0,25 mm, Sapphire
12AAL025	Stylus for cutter marks, R 15 mm, tungsten carbide
12AAL026	Stylus for small holes, Ø0,8 mm, tungsten carbide
12AAL027	Stylus for small holes, Ø1 mm, tungsten carbide
12AAL028	Stylus for small holes, Ø1,6 mm, tungsten carbide
12AAL029	Stylus for extra small hole, Ø0,5 mm, tungsten carbide
12AAL030	Stylus ball type, Ø1,6 mm, tungsten carbide
12AAL031	Stylus disc type, Ø12 mm
12AAL032	Stylus for cranks, Ø0,5 mm, tungsten carbide
12AAL033	Stylus for cranks, Ø1 mm, tungsten carbide
12AAL034	Stylus for flat surface, tungsten carbide
12AAL035	Stylus 2X-long standard type, Ø1,6 mm, tungsten carbide*1
12AAL036	Stylus 2X-long type for notches, Ø3 mm, tungsten carbide*1
12AAL037	Stylus 2X-long type for deep grooves, R 0,25 mm, Sapphire*1
12AAL038	Stylus 2X-long type for corners, R 0,25 mm, Sapphire*1
12AAL039	Stylus 2X-long type for cutter marks, R 15 mm, tungsten carbide*1
12AAL040	Stylus 2X-long type for small hole, Ø1 mm, tungsten carbide*1
12AAL041	Stylus 3X-long standard type, Ø1,6 mm, tungsten carbide*1
12AAL042	Stylus 3X-long type for deep grooves, R 0,25 mm, Sapphire*1
12AAL043	Stylus shank, for mounting M2-CMM stylus
12AAL044	Stylus shank for grooves, for mounting M2-CMM stylus
12AAL045	Stylus shank 2X-long type for grooves, for mounting M2-CMM stylus*1

*1 Not available for RA-10, RA-120, RA-120P
*2 Measuring is only possible in the vertical direction

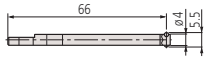
Notches

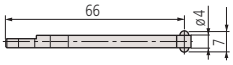
Flat surface

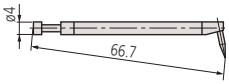
Cutter marks

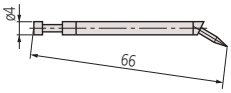

Corner

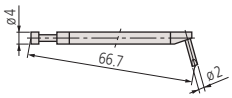
Small hole

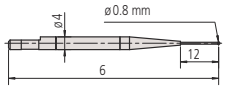

12AAL021 - Standard
ø 1,6 mm tungsten carbide

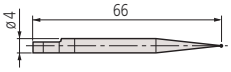

12AAL022 - Notch
ø 3 mm tungsten carbide

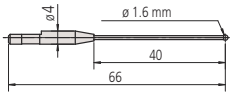

12AAL023 - Deep groove
R 0,25 mm sapphire

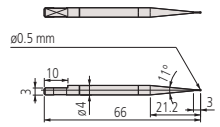

12AAL024 - Corner
R 0,25 mm sapphire

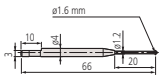

12AAL025 - Cutter mark
R 15 mm tungsten carbide

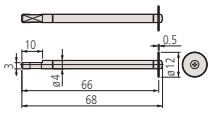

12AAL026 - Small hole
ø 0,8 mm tungsten carbide

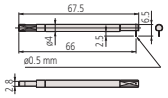

12AAL027- Small hole
ø 1 mm tungsten carbide

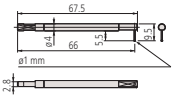

12AAL028 - Small hole
ø 1,6 mm tungsten carbide

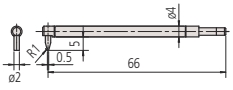

12AAL029- Extra small hole
ø 0,5 mm tungsten carbide

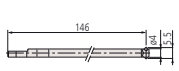

12AAL030- ø 1,6 mm ball
ø 1,6 mm tungsten carbide

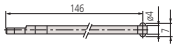

12AAL031- Disc
ø 12 mm

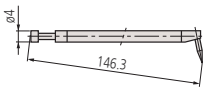

12AAL032- Crank
ø 0,5 mm tungsten carbide

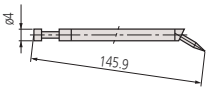

12AAL033- Crank
ø 1 mm tungsten carbide

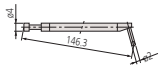

12AAL034- Flat surface
Tungsten carbide

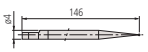

12AAL035- 2X-long standard
ø 1,6 mm tungsten carbide

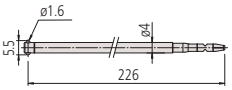

12AAL036- 2X-long notch
ø 3 mm tungsten carbide

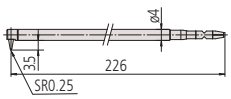

12AAL037- 2X-long deep groove
R 0,25 mm sapphire

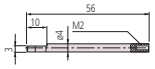

12AAL038- 2X-long corner
R 0,25 mm sapphire

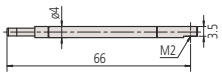

12AAL039- 2X-long type cutter mark
R 15 mm tungsten carbide

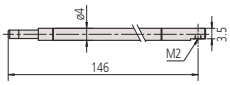

12AAL040- 2X-long small hole
ø 1 mm tungsten carbide


12AAL041- 3X-long standard
ø 1,6 mm tungsten carbide


12AAL042- 3X-long deep groove
R 0,25 mm sapphire


12AAL043- Stylus shank
for mounting M2 - CMM stylus


12AAL044- Stylus shank groove
for mounting M2 - CMM stylus


12AAL045- Stylus shank 2X groove
for mounting M2 - CMM stylus

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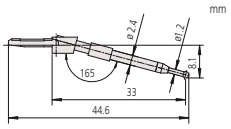
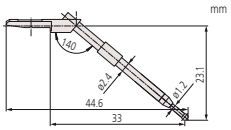
Mitutoyo

Optional Styli for Roundtest

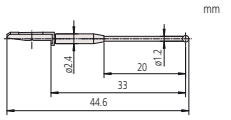
Interchangeable styli for RA-2200 PLUS, RA-H5200 PLUS



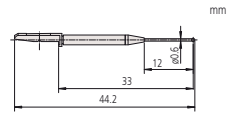
12AAE301 - Standard
ø 1,6 mm tungsten carbide



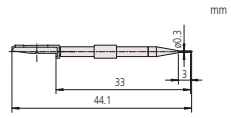
12AAE302 - Flat surface
ø 1,6 mm tungsten carbide



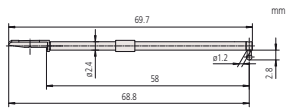
12AAE303 - ø 1,6 mm ball
ø 1,6 mm tungsten carbide



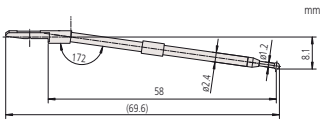
12AAE304 - ø 0,8 mm ball
ø 0,8 mm tungsten carbide



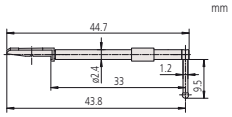
12AAE305 - ø 0,5 mm ball
ø 0,5 mm tungsten carbide



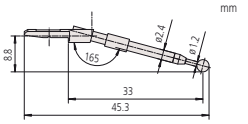
12AAE306 - Deep hole
ø 1,6 mm tungsten carbide



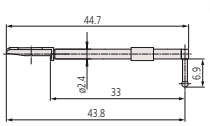
12AAE307 - Deep hole
ø 1,6 mm tungsten carbide



12AAE308 - Deep groove
ø 1,6 mm tungsten carbide



12AAE309 - Notch
ø 3 mm tungsten carbide



12AAE310 - Groove
ø 1,6 mm tungsten carbide

Standard accessories

No.	Description
12AAE301	Stylus standard type for CNC, Ø1,6 mm, tungsten carbide
12AAE302	Stylus for flat surfaces for CNC, Ø1,6 mm, tungsten carbide

Optional accessories

No.	Description
12AAE303	Ball stylus for CNC, Ø1,6 mm, tungsten carbide
12AAE304	Ball stylus for CNC, Ø0,8 mm, tungsten carbide
12AAE305	Ball stylus for CNC, Ø0,5 mm, tungsten carbide
12AAE306	Stylus for deep holes, Ø1,6 mm, tungsten carbide
12AAE307	Stylus for deep holes, Ø1,6 mm, tungsten carbide
12AAE308	Stylus for deep grooves, Ø1,6 mm, tungsten carbide
12AAE309	Stylus for notches, Ø3,0 mm, tungsten carbide
12AAE310	Stylus for grooves, Ø1,6 mm, tungsten carbide

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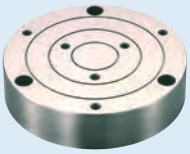
Optional Accessories for Roundtest

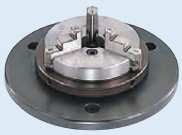
Optional accessories for Roundtest and Roundtest Extreme



356038

Auxiliary stage for a low-height workpiece

No.	Description
356038	Used for measuring a workpiece whose diameter is 40 mm or less and whose height is 20 mm or less



211-032

Chuck - Quick chuck

This chuck is useful when measuring small workpieces. You can easily clamp them with its knurled ring.

No.	Holding capacity [mm]	External dimensions [mm]
211-032.	Internal jaw: ID = ø 16 - 69 External jaw: OD = ø 1 - 79	ø118 x 41
211-031.	Internal jaw: ø 0,1 - 1,5	ø 118 x 48,5

211-031

Chuck - Three jaw chuck (key operated)

No.	Holding capacity [mm]	External dimensions [mm]
211-014	Internal jaw: ID = ø 25 - 68 Internal jaw: OD = ø 2 - 35 External jaw: OD = ø 35 - 78	ø157 x 70,6

211-014

Cylindric square

No.	Cylindricity [µm]	Perpendicularity [µm]	Straightness [µm]
350850	2	3	1

Gauge block set for calibration

No.	Description
997090	Standard accessory for RA-2200, RA-2200 PLUS Standard accessory for RA-H5200 and RA-H5200 PLUS

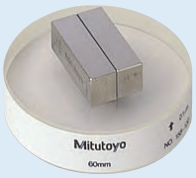
350850

Magnification checking gauge

No.	Graduation [µm]
211-045	0,2

Origin point gauge

No.	Description
998382	Standard accessory for RA-1600, RA-2200 and RA-H5200



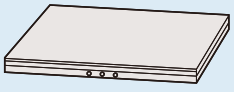
997090

Vibrator isolator and accessories (WxDxH)

No.	External dimensions [mm]	Description
12AAK110	830 x 800 x 700	Vibration isolator
12AAL019	660 x 670 x 700	Side table
178-023-1	765 x 565 x 48	Manually charged vibration isolator
178-025	750 x 550 x 59	Automatically charged vibration isolator

211-045

998382



178-025

12AAK110 + 12AAK120

12AAK110 + 12AAL019

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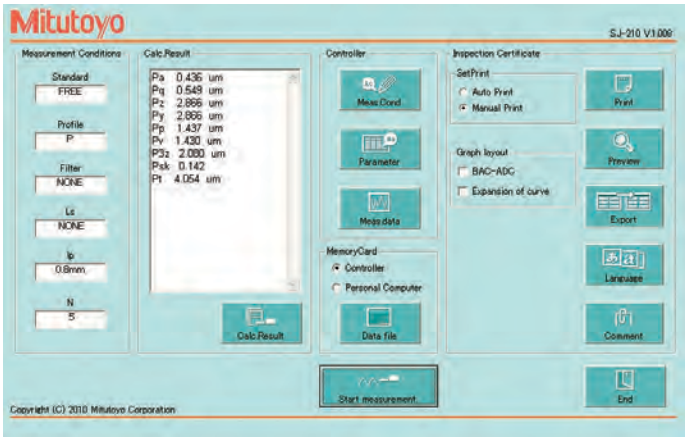
Mitutoyo

Optional Software USB Communication Tool

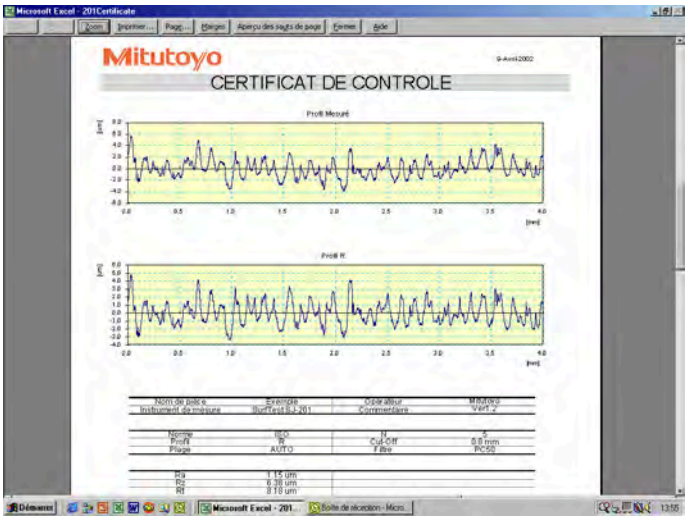
Series 178 - Control Software for SJ series, SV-2100

This is a control software for Surftest SJ-210 / SJ-310 / SJ-410 / SJ-500 and SV-2100 which offers you the following benefits:

- It is available as a free download on www.mitutoyo.eu (registration is required).
- Output software is based on Microsoft® Excel® for controlling the devices, reproducing and storing measurement data.
- Measurement device control.
- It provides definition of measurement variables.
- Graphic representation of the profile.
- Storage of measurement records.
- Documentation of measurements result.
- A USB connecting cable is necessary.



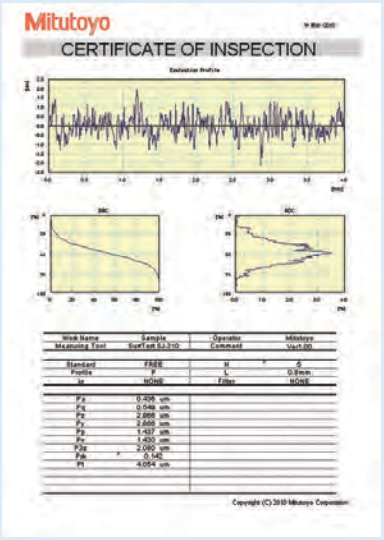
Input mask for Surftest SJ series



Output record from Microsoft® Excel® in 18 languages as standard.

Optional accessories

No.	Description
12AAD510	USB cable for SJ-310 / SJ-410 series
12AAH490	USB Cable for SJ-500 / SV-2100
63AAA211	USB communication cable for SJ-210, Length 1,8 m



Output record from Microsoft® Excel®

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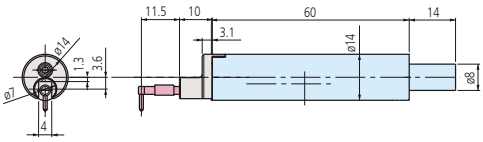
Optional Styli
for Surftest, Formtracer Avant and SV-C series

12AAG202 Extension rod 50 mm
(*not suitable for SJ-210/-310/-410)

12AAG203 Extension rod 100 mm
(*not suitable for SJ-210/-310/-410)

Detectors

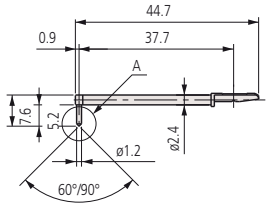
mm



Order No	Measuring Force	Angle/Radius	Inclusive Stylus
178-396-2	0,75 mN	R2 µm, 60°	12AAC731
178-397-2	4 mN	R5 µm, 90°	12AAB403

No.	Angle	Radius
12AAE882	60°	1 µm
12AAE924	90°	1 µm
12AAC731	60°	2 µm
12AAB403	90°	5 µm
12AAB415	90°	10 µm
12AAE883	60°	250 µm

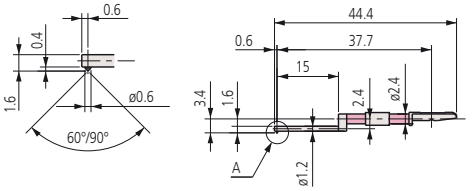
mm



Standard

No.	Angle	Radius
12AAC732	60°	2 µm
12AAB404	90°	5 µm
12AAB416	90°	10 µm

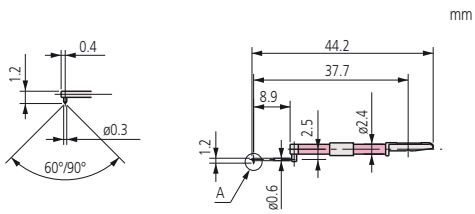
mm



For small hole

No.	Angle	Radius
12AAC733	60°	2 µm
12AAB405	90°	5 µm
12AAB417	90°	10 µm

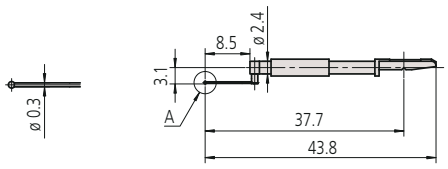
mm



For extra-small hole

No.	Angle	Radius
12AAJ662	-	250 µm

mm



For ultra-small hole

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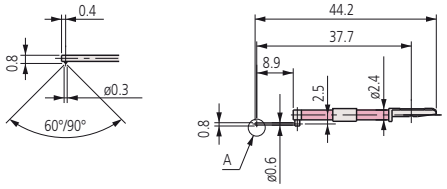
Mitutoyo

Optional Styli
for Surftest, Formtracer Avant and SV-C series

mm

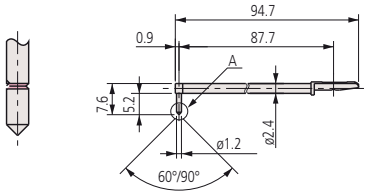
No.	Angle	Radius
12AAC734	60°	2 µm
12AAB406	90°	5 µm
12AAB418	90°	10 µm



For ultra-small hole

mm

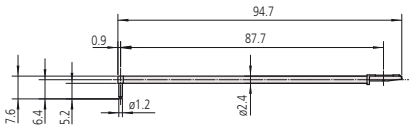
No.	Angle	Radius
12AAC740	60°	2 µm
12AAB413	90°	5 µm
12AAB425	90°	10 µm



For deep hole [double-length]

mm

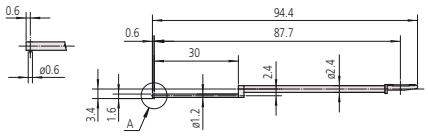
No.	Angle	Radius
12AAE886	60°	250 µm



For rolling circle waviness [double-length]

mm

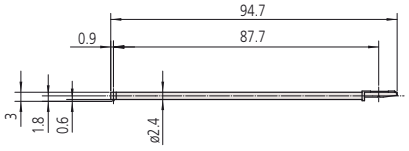
No.	Angle	Radius
12AAE892	60°	2 µm
12AAE908	90°	5 µm



For small deep hole [double-length]

mm

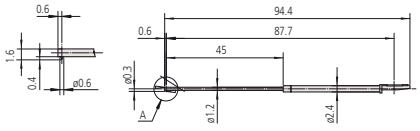
No.	Angle	Radius
12AAE898	60°	2 µm
12AAE914	90°	5 µm



For deep hole [double-length]

mm

No.	Angle	Radius
12AAE938	60°	2 µm
12AAE940	90°	5 µm



For small slotted hole [double-length]

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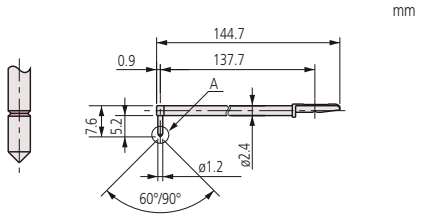
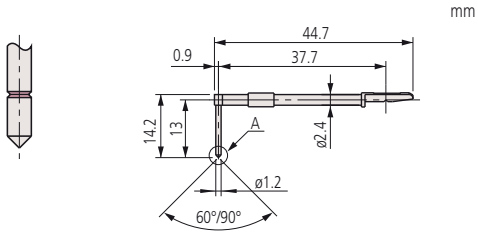
Optional Styli
for Surftest, Formtracer Avant and SV-C series

No.	Angle	Radius
12AAC741	60°	2 µm
12AAB414	90°	5 µm
12AAB426	90°	10 µm



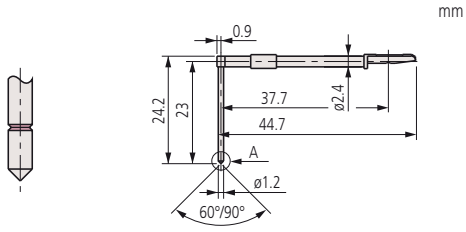
For deep hole [triple-length]

No.	Angle	Radius
12AAC735	60°	2 µm
12AAB409	90°	5 µm
12AAB421	90°	10 µm



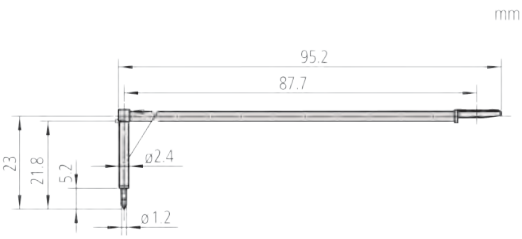
For deep groove 10 mm

No.	Angle	Radius
12AAC736	60°	2 µm
12AAB408	90°	5 µm
12AAB420	90°	10 µm



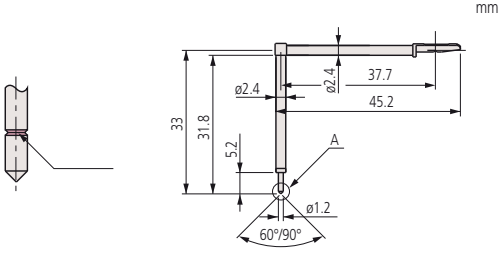
For deep groove 20 mm

No.	Angle	Radius
12AAE893	60°	2 µm
12AAE909	90°	5 µm



For deep groove 20 mm [double-length]

No.	Angle	Radius
12AAC737	60°	2 µm
12AAB407	90°	5 µm
12AAB419	90°	10 µm



For deep groove 30 mm

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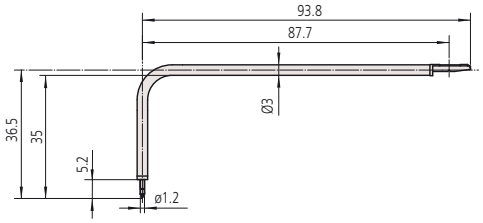
Optional Styli
for Surftest, Formtracer Avant and SV-C series

mm

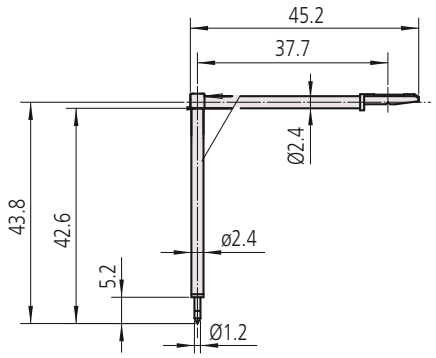
No.	Angle	Radius
12AAE894	60°	2 µm
12AAE910	90°	5 µm



For deep groove 30 mm [double-length]

mm

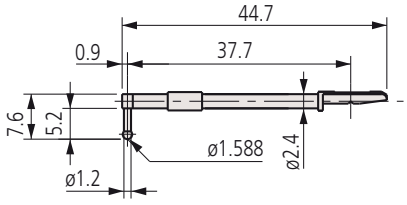
No.	Angle	Radius
12AAE895	60°	2 µm
12AAE911	90°	5 µm



For deep groove 40 mm

mm

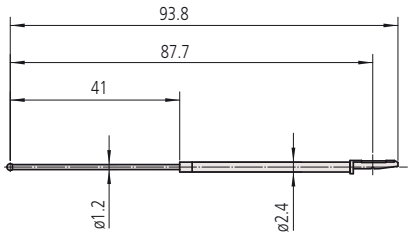
No.	Radius
12AAB338	0,8 mm



For rolling circle waviness surface roughness (Roughness specimen 178-611 required)

mm

No.	Radius
12AAE884	0,8 mm



For rolling circle waviness surface roughness [double-length] (178-611 required)

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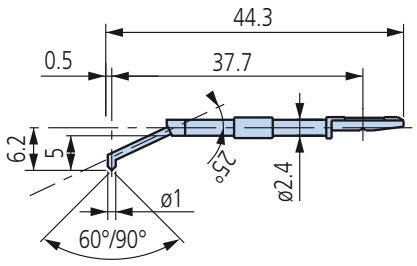
Optional Styli
for Surftest, Formtracer Avant and SV-C series

No.	Angle	Radius
12AAE899	60°	2 µm
12AAE915	90°	5 µm

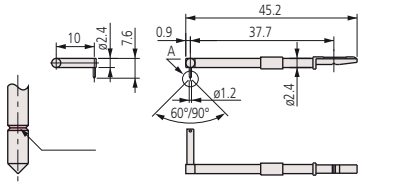
mm



For hole bottom

No.	Angle	Radius
12AAC739	60°	2 µm
12AAB412	90°	5 µm
12AAB424	90°	10 µm

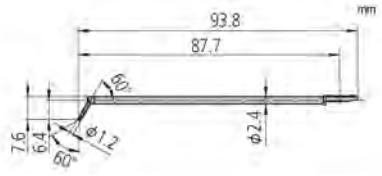
mm



For eccentric arm

No.	Angle	Radius
12AAM601	60°	2 µm
12AAM603	60°	5 µm

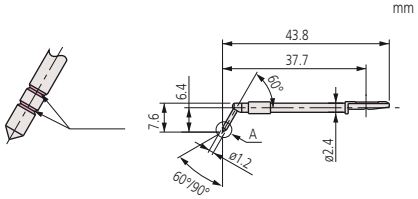
mm



For corner

No.	Angle	Radius
12AAB339	60°	2 µm
12AAB410	60°	5 µm
12AAB422	60°	10 µm

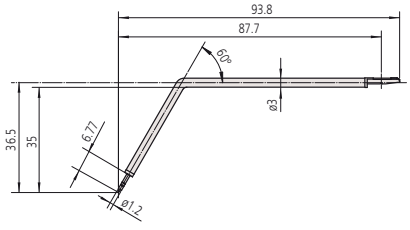
mm



For gear tooth

No.	Angle	Radius
12AAE896	60°	2 µm
12AAE912	60°	5 µm

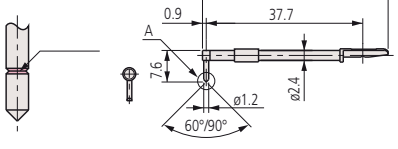
mm



For gear tooth [double-length]

No.	Angle	Radius
12AAC738	60°	2 µm
12AAB411	90°	5 µm
12AAB423	90°	10 µm

mm



For knife-edge

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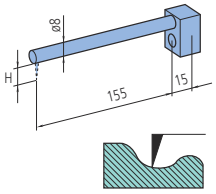
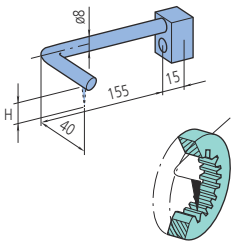
Mitutoyo

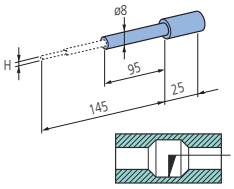
Optional Styli and Arms for Contracer, Formtracer Avant and SV-C Series



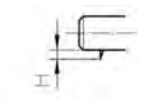
Arm straight type
CV-2100



Arm eccentric type
CV-2100



Arm for small-hole stylus
CV-2100



Arm for small-hole
stylus CV-2100

Applicable arms for CV-2100

No.	Arm	Arm No.	Compatible stylus height (H) [mm]
935110	Small hole	AB-11	0,4 / 1 / 2,5
935111	Straight type	AB-51	6
935112	Straight type	AB-61	12
935113	Straight type	AB-71	20
935114	Straight type	AB-81	30
935115	Straight type	AB-91	42
935116	Eccentric type	AB-52	6
935117	Eccentric type	AB-62	12
935118	Eccentric type	AB-72	20
935119	Eccentric type	AB-82	30
935120	Eccentric type	AB-92	42

Applicable arms for FTA-C3000 / FTA-C4000 / FTA-D3000 / FTA-D4000 / SV-C4500CNC

No.	Arm	Arm No.	Compatible stylus height (H) [mm]
12AAQ762	Eccentric arm	AB-37	SPH-5*, 6*, 7*, 8*, 9*
12AAM101	Straight type	AB-31	SPH-5*, 6*, 7*,8*,9*, SPHW-56, 66, 76
12AAM103	Small hole	AB-33	SPH-41, SPH-42, SPH-43

Applicable styli for CV-2100

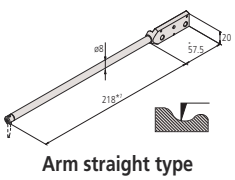
No.	Stylus	Stylus No.	Stylus height (H) [mm]
932693	Small hole, carbide-tipped one-sided cut	SP-11	2
932694	Small hole, carbide-tipped one-sided cut	SP-12	4
932695	Small hole, carbide-tipped one-sided cut	SP-13	6,5
12AAE873	Small hole, carbide-tipped cone	SP-31	2
12AAE874	Small hole, carbide-tipped cone	SP-32	4
12AAE875	Small hole, carbide-tipped cone	SP-33	6,5

Applicable styli for FTA-C3000 / FTA-C4000 / FTA-D3000 / FTA-D4000 / SV-C4500CNC

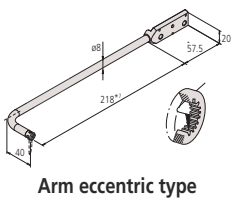
No.	Stylus	Stylus No.	Stylus height (H) [mm]
12AAM104	Small hole, carbide tipped one sided cut	SPH-41	2
12AAM105	Small hole, carbide tipped one sided cut	SPH-42	4
12AAM106	Small hole, carbide tipped one sided cut	SPH-43	6,5

Arm and stylus set

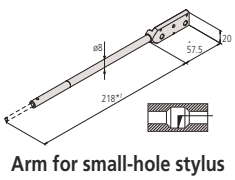
No.	Included arms	Included styli	Included arm stylus	Applicable models
12AAR587	AB-33, AB-37	SPH-41, -43, -51, -72, -76		FTA-C3000, FTA-C4000, FTA-D3000, FTA-D4000, SV-C4500CNC
12AAR588	AB-33, AB-37	SPH-41, -43, -51, -72, -76, SPHW-66, -76	SPHW-32	FTA-C4000, FTA-D4000, SV-C4500CNC



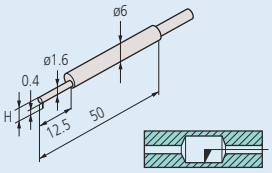
Arm straight type
FTA-C3000 / FTA-C4000
FTA-D3000 / FTA-D4000
SV-C4500CNC



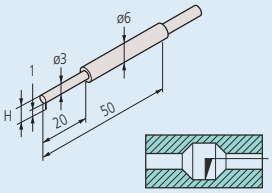
Arm eccentric type
FTA-C3000 / FTA-C4000
FTA-D3000 / FTA-D4000
SV-C4500CNC



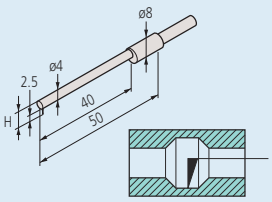
Arm for small-hole stylus
CV-2100 / FTA-C3000
FTA-C4000 / FTA-D3000
FTA-D4000 / SV-C4500CNC



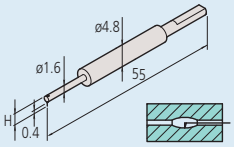
Small hole: 932693 / 12AAE873
Tip shape: Single bevel / Cone
Tip angle: 20° / 30°
Tip radius: 25 µm / 25 µm
Tip material: Carbide / Carbide



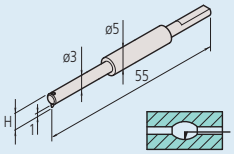
Small hole: 932694 / 12AAE874
Tip shape: Single bevel / Cone
Tip angle: 20° / 30°
Tip radius: 25 µm / 25 µm
Tip material: Carbide / Carbide



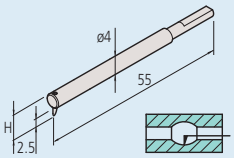
Small hole: 932695 / 12AAE875
Tip shape: Single bevel / Cone
Tip angle: 20° / 30°
Tip radius: 25 µm / 25 µm
Tip material: Carbide / Carbide



Small hole: 12AAM104
Tip shape: One-sided cut
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



Small hole: 12AAM105
Tip shape: One-sided cut
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



Small hole: 12AAM106
Tip shape: One-sided cut
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide

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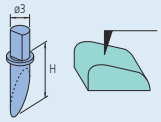
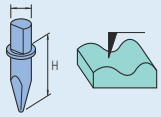
Optional Styli and Arms for Contracer, Formtracer Avant and SV-C Series

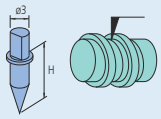
Styli



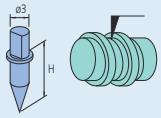
Single bevel
Tip angle: 12°
Tip radius: 25 µm
Tip material: Carbide



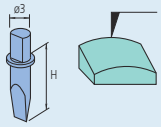
Cross ground
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



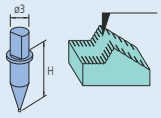
Cone
Tip angle: 30°/50°
Tip radius: 25 µm
Tip material: Carbide / Sapphire / Diamond
(355129: 50°, Diamond)



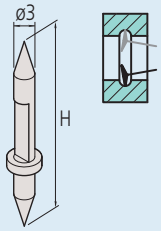
Cone
Tip angle: 20°
Tip radius: 25 µm
Tip material: Carbide



Knife edge
Tip angle: 20°
Edge width: 3 mm
Tip radius: 25 µm
Tip material: Carbide



Ball
Ball: ø1 mm
Tip material: Carbide



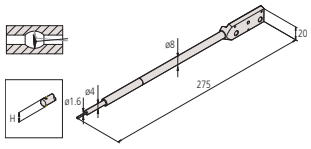
Both sides conical stylus
Tip angle: 30°
Tip radius: 25 µm
Tip material: Carbide

Applicable styli for
CV-2100 / FTA-C3000 / FTA-C4000 / FTA-D3000 / FTA-D4000 / SV-C4500CNC

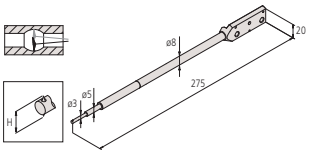
No.	Stylus	Stylus No.	Stylus height (H) [mm]
354882	Single bevel, carbide tipped	SPH-51	6
354883	Single bevel, carbide tipped	SPH-61	12
354884	Single bevel, carbide tipped	SPH-71	20
354885	Single bevel, carbide tipped	SPH-81	30
354886	Single bevel, carbide tipped	SPH-91	42
354887	Cross ground, carbide tipped	SPH-52	6
354888	Cross ground, carbide tipped	SPH-62	12
354889	Cross ground, carbide tipped	SPH-72	20
354890	Cross ground, carbide tipped	SPH-82	30
354891	Cross ground, carbide tipped	SPH-92	42
12AAE865	Cone, carbide-tipped angle 20°	SPH-57	6
12AAE866	Cone, carbide-tipped angle 20°	SPH-67	12
12AAE867	Cone, carbide-tipped angle 20°	SPH-77	20
12AAE868	Cone, carbide-tipped angle 20°	SPH-87	30
12AAE869	Cone, carbide-tipped angle 20°	SPH-97	42
354892	Cone, sapphire-tipped angle 30°	SPH-53	6
354893	Cone, sapphire-tipped angle 30°	SPH-63	12
354894	Cone, sapphire-tipped angle 30°	SPH-73	20
355129	Cone, diamond-tipped angle 50°	SPH-79	20
354895	Cone, sapphire-tipped angle 30°	SPH-83	30
354896	Cone, sapphire-tipped angle 30°	SPH-93	42
12AAA566	Cone, carbide-tipped angle 30°	SPH-56	6
12AAA567	Cone, carbide-tipped angle 30°	SPH-66	12
12AAA568	Cone, carbide-tipped angle 30°	SPH-76	20
12AAA569	Cone, carbide-tipped angle 30°	SPH-86	30
12AAA570	Cone, carbide-tipped angle 30°	SPH-96	42
354897	Knife edge, carbide tipped	SPH-54	6
354898	Knife edge, carbide tipped	SPH-64	12
354899	Knife edge, carbide tipped	SPH-74	20
354900	Knife edge, carbide tipped	SPH-84	30
354901	Knife edge, carbide tipped	SPH-94	42
354902	Ball, carbide tipped	SPH-55	6
354903	Ball, carbide tipped	SPH-65	12
354904	Ball, carbide tipped	SPH-75	20
354905	Ball, carbide tipped	SPH-85	30
354906	Ball, carbide tipped	SPH-95	42

Applicable styli for only FTA-C4000 / FTA-D4000 / SV-C4500CNC

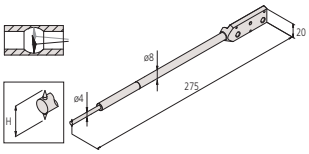
No.	Stylus	Stylus No.	Stylus height (H) [mm]
12AAT469	Both sides small hole arm stylus 20°	SPHW-21	2,4
12AAT470	Both sides small hole arm stylus 20°	SPHW-22	5
12AAM095	Both sides conical stylus	SPHW-56	20
12AAM096	Both sides conical stylus	SPHW-66	32
12AAM097	Both sides conical stylus	SPHW-76	48
12AAM108	Both sides small hole arm stylus	SPHW-31	2,4
12AAM109	Both sides small hole arm stylus	SPHW-32	5
12AAM110	Both sides small hole arm stylus	SPHW-33	9



SPHW-31
SPHW-21



SPHW-32
SPHW-22



SPHW-33

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Mitutoyo

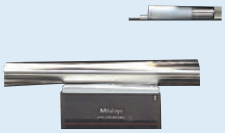
Optional Accessories for Surftest, Contracer and Formtracer

For SV series, Avant series, SV-C series, CS series and CNC models

Automatic-leveling table : 178-037 (for CNC models)
Automatic-leveling table : 178-087 (for SV, Avant, SV-C, CS)
This is a stage that performs fully automatic leveling as measurement starts, freeing the user from this troublesome operation. Fully automatic leveling can be done quickly by anyone. In addition, the operation is easy and reliable.

No.	Inclination adjustment angle	Maximum load [kg]	Effective table dimensions [mm]	Mass [kg]
178-037	± 2°	7	130 x 112	4
178-087	± 2°	7	130 x 112	3,5

178-087



Using 178-087

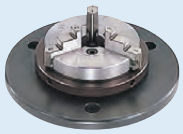
Micro-chuck
This chuck is suitable for clamping extra-small diameter workpieces (ø1.5 mm or less), which cannot be retained with the centering chuck.

No.	Dimensions [mm]	Retention range [mm]	Mass [kg]
211-031	ø118 x 48,5	OD: Ø 0,1 - Ø 1,5	0,62

211-031

Quick chuck
This chuck is useful when measuring small workpieces. You can easily clamp them with its knurled ring.

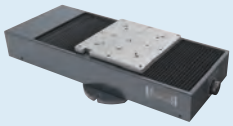
No.	Dimensions [mm]	Retention range [mm]	Mass [kg]
211-032	ø118 x 41	Inner latch : OD ø1 - ø36 Inner latch : ID ø16 - ø69 Outer latch : OD ø25 - ø79	1,1



211-032

Y-axis table for Avant (not CNC models)
Enables efficient, automatic measurement of multiple aligned workpieces and multiple points on a single measurement surface. It allows semi-automatic measurement with non CNC models by using these items.

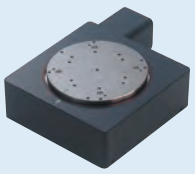
No.	Resolution	Travel range [mm]	Positioning accuracy [µm]	Maximum load [kg]	Drive speed	Mass [kg]
178-097	0,05	200	±3	50	Max. 80 mm/s	28



178-097

θ1-axis:*1
For efficient measurement in the axial / transverse directions. When measuring a cylindrical workpiece, automatic alignment can be performed in combination with the Y-axis table.
*1 = **12AAE630** mounting plate is required when directly installing on the base of the machine.

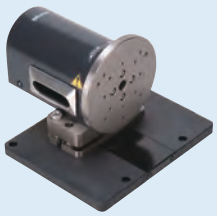
No.	Resolution	Rotational speed	Displacement	Maximum load [kg]	Mass [kg]
12AAD975	0,004°	Max. 10°/s	360°	12	7



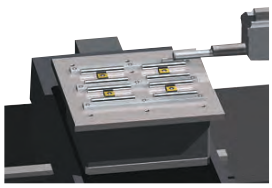
12AAD975

θ2-axis:*1
For efficent measurement of multiple points on a cylindrical workpiece and automate front/rear-side measurement.
*1 = **12AAE718** mounting plate is required when directly installing on the base of the machine.
*1 = **12AAE705** attachment plate is required when installing on θ1-axis table.
*1 = **12AAE707** mounting plate is required when directly installing on Y-axis table with automatic leveling table.

No.	Resolution	Rotational speed	Displacement	Maximum load [kg]	Mass [kg]
178-078	0,0072°	Max. 18°/s	360°	4	5

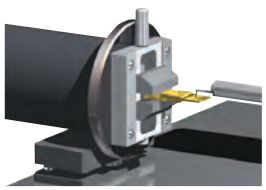


178-078



178-097
using Y-axis

12AAD975
using θ1-axis



178-078
using θ2-axis

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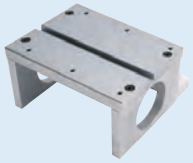
Optional Accessories for Surftest, Contracer and Formtracer



12AAG175

Calibration stage

No.	Description	Mass [kg]
12AAG175	For mounting a roughness specimen or step gauge during calibration	1,6

218-171

Cross-travel table

No.	Description	XY travel [mm]
218-171	The cross-travel table [mm] enables the fine adjustment (X and Y direction) of measurement positions.	100 x 50

Digimatic XY leveling table

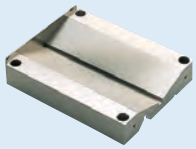
No.	Leveling range	Table top [mm]	XY travel [mm]	Mass [kg]
178-185	±1,5°	130 x 100	±12,5	6,3

178-185

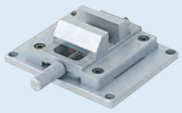
178-182

Digital three-axis adjustment table

No.	Description
178-182	The digital three-axis adjustment table helps to make the alignment adjustments required when measuring cylindrical surfaces. The corrections for the pitch angle and the swivel angle are determined from a preliminary measurement and the Digimatic micrometers are adjusted accordingly. A flat-surfaced workpiece can also be leveled with this table.



998291



178-019

Precision V-Block

No.	Description	Mass [kg]
998291	Workpiece diameter : 1 mm to 160 mm Can be mounted on a leveling table	1,2

Precision vise

No.	Description	Mass [kg]
178-019	Max. workpiece size : 36 mm Can be mounted on a leveling table	1,2

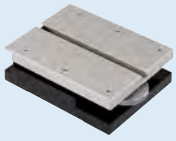
218-173

Rotary vise

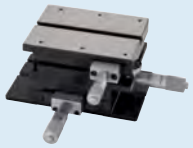
No.	Description	Mass [kg]
218-173	Two-slide jaw type Max. workpiece size : ø60 mm Minimum reading : 1°	9

Vibration isolator

No.	Description	Mass [kg]
178-188	Standard base	155
178-189	Large type base	239



178-195



178-183

XY leveling table

No.	Leveling range	Table top [mm]	XY travel [mm]
178-195	±1,5°	130 x100	
178-183	±1,5°	130 x100	± 12,5

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Micro-Vickers Hardness HM-Series
Page 511

Vickers Hardness HV-Series
Page 516

Rockwell, Rockwell Superficial, Brinell
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Portable Hardness Testers
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Micro-Vickers Hardness Testing Machines HM-210/220

Series 810

This is a high performance hardness testing machine that uses advanced technology and is ideal for quality control.
The manual line up of the HM-200 Series has the following benefits:

- 144 mm (5,7 inch) colored touchsreen display (Type A) with higher visibility, easy to operate user interface
- Digimatic output for report creation.
- USB stick data export
- Electromagnetic test force generation system for higher accuracy.
- A high performance optical system provides a high quality image of the indentation load.
- A long working distance greatly reduces the possibility of collision.
- A range of six different objectives: 2x, 5x, 10X, 20X, 50X and 100X for measuring the indentation images.
- LED lighting gives you an observation image in natural colour, with better contrast, as well as longer operation.
- You can set different kinds of conditions on a touch panel, and display test results for easy operation.
- Vickers, Knoop and KC fracture toughness measurement.
- Test force ranges from 0,05g to 2kg.

Specifications

Indenter / Objective turret	Motor driven and manual operation
Standard	ISO 6507-2, ISO 4545-2, JIS B 7725
Data output	RS-232C, Digimatic, USB 2 interface
XY stage [mm]	Travel range system A+B: 25 x 25 / 50 x 50 manual Travel range system C+D: 50 x 50 / 100 x 100 motorized
Arbitrary test force	1 type [Default: 245,2mN (25gf)]
Control panel	Built-in touch panel, 5,7" Color LCD (HM-210A/220A for System A), Control software (PC for System B/C/D)
External dimensions Main unit mass	System A: 315(W)×671(D)×595(H)mm/38,5kg System B/C/D: 315(W)×586(D)×741(H)mm/37,4kg
Functions	Calculation of Vickers / Knoop*2 hardness, and ceramic fracture toughness based on IF method (JIS R1697), 3 display format (standard, list, simple), GO/NG judgment, test condition guide, curve and user correction, hardness corresponding value, statistics calculation
Objective lens unit	Up to 4 pcs. mountable (one mounted 50X as standard)
Output	Digimatic, serial, USB2 series A (for memory)*1, USB2 B Type (for system communication)
Resolution of diagonal length of an indentation	Objective lens less than 50X: 0,1µm (Objective lens more than 50X: 0,01µm)
Specimen dimensions	System A/B: height 133mm, depth 160mm (when using manual XY stage 25X25) System C: height 112mm, depth 160mm, System D: height 72mm, depth 160mm
Test force control	Electromagnetic generation of force (force motor) and automatic control (load, duration, unload)
Turret drive	Motor-driven and manual operation

Hardness Testing Machines brochure on request

Touchscreen type

Software type

HM-210 Testforce range

No.	Test force								
HM-210	V.S.*	HV0,01	HV0,02	HV0,03	HV0,05	HV0,1	HV0,2	HV0,3	HV0,5	HV1
	mN	98,07	196,1	294,2	490,3	980,7	1.961,0	2.942,0	4.903,0	9.807,0
	(gf)	10,0	20,0	30,0	50,0	100,0	200,0	300,0	500,0	1.000,0

*V.S. = Vickers scale

HM-220 Testforce range

No.	Test force									
HM-220	V.S.*	HV0,00005	HV0,0001	HV0,0002	HV0,0003	HV0,0005	HV0,001	HV0,002	HV0,003	HV0,005	HV0,01
	mN	0,4903	0,9807	1,961	2,942	4,903	9,807	19,61	29,42	49,03	98,07
	(gf)	0,05	0,1	0,2	0,3	0,5	1,0	2,0	3,0	5,0	10,0
	V.S.*	HV0,02	HV0,03	HV0,05	HV0,1	HV0,2	HV0,3	HV0,5	HV1	HV2	
	mN	196,1	294,2	490,3	980,7	1.961,0	2.942,0	4.903,0	9.807,0	19.610,0	
	(gf)	20,0	30,0	50,0	100,0	200,0	300,0	500,0	1.000,0	2.000,0	

*V.S. = Vickers scales

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Mitutoyo

Micro-Vickers Hardness Testing Machines HM-210/220

Manual or complete automatic testing

System A

HM-210A/HM-220A

Features:

- Touch-panel operation
- Measurement of indentation dimensions using a measuring microscope
- Positioning using a manual XY stage

System B

HM-210B/HM-220B
Automatic measurement by AVPAK-20 eliminates operator measurement errors.

Features:

- Operation using AVPAK-20
- Automatic measurement of indentations
- Positioning using a manual XY stage

System C

HM-210C/HM-220C

Features:

- Operated using AVPAK-20
- Automatic indentation reading
- Automatic positioning with motorized XY stage

System D

HM-210D/HM-220D
Top-end model with autofocus

Features:

- Operated using AVPAK-20
- Automatic identation reading
- Automatic positioning with motorized XY stage
- Autofocusing

Vickers HDMI camera system
(To be used with manual Vickers testing machines)
The 1/3" 1.2 Mpixel HDMI camera and a 24"standard monitor enables observation and measurement of indentations at high magnification, thereby reducing operator error. Additionally, images can be stored on the included 16GB SD card. No PC needed due to built in processor. Scope of delivery includes HDMI cable and wireless mouse. Please order 63AAA356, 11AAC729 and NEC EA21N for complete set.

AVPAK-20 software 11AAE270-DEE for automatic hardness testing systems.
Software that supports control, testing and report creation related to hardness testing. Supports parameter setting and automatic measurement.

High-functionality PC and TFT monitor
Compatible with Windows® 10 Professional. Supports a wide-screen TFT and provides improved operability.
*depending the version

Optional accessories

No.	Description
63ETB601	500HV0,1 Vickers Hardness Reference Material, with ASTM E92 DAkkS calibration certificate, 30x30x6mm, steel
63ETB606	750HV0,1 Vickers Hardness Reference Material, with ASTM E92 DAkkS calibration certificate, 30x30x6mm, steel
63ETB635	500HV0,3 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 30x30x6mm, steel
63ETB640	750HV0,3 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 30x30x6mm, steel
63ETB670	500HV1 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 30x30x6mm, steel
63ETB675	750HV1 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 30x30x6mm, steel
810-017	Special vise, (opening width 100mm)
810-013	Sheet specimen table
810-015	Thin specimen table, (vertical type)
810-019	Tilting specimen table
810-020	Adjustable specimen holder, Ø15-30mm
810-018	Rotary table, 360°
810-085	Sheet specimen table
810-095	Rotary tilting specimen table, vise Ø15-50mm
810-650-1	Resin mold specimen table, Ø25.4 mm
810-650-2	Resin mold specimen table, Ø30 mm
810-650-3	Resin mold specimen table, Ø31.75 mm
810-650-4	Resin mold specimen table, Ø38.1 mm
810-650-5	Specimen holder f. resin molded specimen, 1 specimen Ø40 mm
810-641	Vibration Isolator, (for testing machine)

Code number	Description
63AAA602	HDMI camera
11AAC729	C-mount
NEC EA241WM	24" monitor

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Micro-Vickers Hardness Testing Machines HM-210/220

A-Type*

B-Type*

C-Type*

D-Type*

*Please order AVPAK-20 Software **11AAE270-DEE** and the PC additionally!

All items listed below the set code number are included in the scope of delivery.

Single indenter configuration for HM-200 Series

A-Type set

No.	Code No.:	Description	Content of Set
HM-210 A-Type set	810-401-13-ASET1	Single indenter configuration	**810-401-13** - Manual main unit HM-210 **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-420** - Manual XY stage 25x25mm
HM-220 A-Type set	810-406-13-ASET1	Single indenter configuration	**810-406-13** - Manual main unit HM-210 **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens, Standard lens **11AAE669** - 100x Objective lens **810-420** - Manual XY stage 25x25mm

B-Type set

No.	Code No.:	Description	Content of Set
HM-210 B-Type set	810-404-11-BSET1	Single indenter configuration	**810-404-11** - System main unit HM-210 **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-420** - Manual XY stage 25x25mm
HM-220 B-Type set	810-409-11-BSET1	Single indenter configuration	**810-409-11** - System main unit HM-220 **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-420** - Manual XY stage 25x25mm

C-Type set

No.	Code No.:	Description	Content of Set
HM-210 C-Type set	810-404-11-CSET1	Single indenter configuration	**810-404-11** - Systemmain unit HM-210 **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-462-10** - Motorized XY stage 100x100mm
HM-220 C-Type set	810-409-13-CSET1	Single indenter configuration	**810-409-11** - System main unit HM-220 **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-462-10** - Motorized XY stage 100x100mm

D-Type set

No.	Code No.:	Description	Content of Set
HM-210 D-Type set	810-404-11-DSET1	Single indenter configuration	**810-404-11** - System main unit HM-210 **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-462-10** - Motorized XY stage 100x100mm **810-465** - Auto Focus unit
HM-220 D-Type set	810-409-13-DSET1	Single indenter configuration	**810-409-11** - System main unit HM-220 **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-462-10** - Motorized XY stage 100x100mm **810-465** - Auto Focus unit

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Micro-Vickers Hardness Testing Machines HM-210/220

Double indenter configuration HM-200 Series

A-Type set

No.	Code No.:	Description	Content of Set
HM-210 A-Type set 2	810-401-13-ASET2	Double indenter configuration	**810-401-13** - Manual main unit HM-210 **11AAB997 -** Second indentershaft for Knoop test **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-420** - Manual XY stage 25x25mm
HM-220 A-Type set 2	810-406-13-ASET2	Double indenter configuration	**810-406-13** - Manual main unit HM-210 **11AAB998 -** Second indentershaft for Knoop test **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-420** - Manual XY stage 25x25mm

B-Type set

No.	Code No.:	Description	Content of Set
HM-210 B-Type set 2	810-404-11-BSET2	Double indenter configuration	**810-404-11** - System main unit HM-210 **11AAB997 -** Second indentershaft for Knoop test **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-420** - Manual XY stage 25x25mm
HM-220 B-Type set 2	810-409-11-BSET2	Double indenter configuration	**810-409-11** - System main unit HM-220 **11AAB998 -** Second indentershaft for Knoop test **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-420** - Manual XY stage 25x25mm

C-Type set

No.	Code No.:	Description	Content of Set
HM-210 C-Type set 2	810-404-11-CSET2	Double indenter configuration	**810-404-11** - System main unit HM-210 **11AAB997 -** Second indentershaft for Knoop test **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-462-10** - Motorized XY stage 100x100mm
HM-220 C-Type set 2	810-409-11-CSET2	Double indenter configuration	**810-409-11** - System main unit HM-220 **11AAB998 -** Second indentershaft for Knoop test **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-462-10** - Motorized XY stage 100x100mm

D-Type set

No.	Code No.:	Description	Content of Set
HM-210 D-Type set 2	810-404-11-DSET2	Double indenter configuration	**810-404-11** - System main unit HM-210 **11AAB997 -** Second indentershaft for Knoop test **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **810-462-10** - Motorized XY stage 100x100mm **810-465** - Autofocus unit
HM-220 D-Type set 2	810-409-11-DSET2	Double indenter configuration	**810-409-11** - System main unit HM-220 **11AAB998 -** Second indentershaft for Knoop test **11AAE665** - 2x Objective lens **2ALP300**- 10x Objective lens **2ALP500** - 50x Objective lens **11AAE669** - 100x Objective lens **810-462-10** - Motorized XY stage 100x100mm **810-465** - Autofocus unit

A-Type*

B-Type*

C-Type*

D-Type*

*Please order AVPAK-20 Software **11AAE270-DEE** and the PC additionally!

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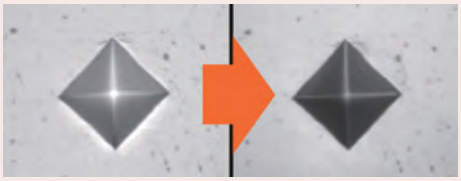
Micro-Vickers Hardness Testing Machines HM-210/220

Objectives	Vickers-Scale		
	HV 0,00005 - 0,02	HV 0,2 - 1	HV 1-2
2x	Use this objectives only for probe overview		
5x	Use this objectives only for probe overview		
10x			
20x			
50x			
100x			
10x objective for easy focus			
Use this table for first orientation			



Observation image of the indentation (50X) Stray light reduction around the indentation

Wide range of lenses available for different magnifications

Configuration

Up to three additional objective lenses can be added.

System A - Touch Screen Models

No.	Minimum system configuration	Selectable factory options
HM-210 SYSTEM A standard test force	Main unit: 810-401-13 Standard objective lens: 10x / 50x Selectable option manual XY stage: 810-420: 25x25 mm 810-423: 50x50 mm	Video camera unit: 810-454-20 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE670 with Knoop indenter
HM-220 SYSTEM A low test force	Main unit: 810-406-13 Standard objective lens: 10x / 50x Selectable option manual XY stage: 810-420: 25x25 mm 810-423: 50x50 mm	Video camera unit: 810-454-20 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE671 with Knoop indenter

System B Semi automatic - Software Models

No.	Minimum system configuration	Software	Selectable factory options
HM-210 SYSTEM B standard test force	Main unit: 810-404-11 Standard objective lens: 10x / 50x Selectable option manual XY stage: 810-420: 25x25 mm 810-423: 50x50 mm	11AAE270-DEE	Measuring microscope: 11AAE677 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE670 with Knoop indenter
HM-220 SYSTEM B low test force	Main unit: 810-409-11 Standard objective lens: 10x / 50x Selectable option manual XY stage: 810-420: 25x25 mm 810-423: 50x50 mm	11AAE270-DEE	Measuring microscope: 11AAE677 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE671 with Knoop indenter

System C Automatic - Software Models

No.	Minimum system configuration	Software	Selectable factory options
HM-210 SYSTEM C standard test force	Main unit: 810-404-11 Standard objective lens: 10x / 50x Selectable option motorized XY stage: 810-461-10: 50x50 mm 810-462-10: 100x100 mm	11AAE270-DEE	Measuring microscope: 11AAE677 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE670 with Knoop indenter
HM-220 SYSTEM C low test force	Main unit: 810-409-11 Standard objective lens: 10x / 50x Selectable option motorized XY stage: 810-461-10: 50x50 mm 810-462-10: 100x100 mm	11AAE270-DEE	Measuring microscope: 11AAE677 Objective lens 2X:11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE671 with Knoop indenter

System D Fully automatic - Software Models

No.	Minimum system configuration	Autofocus unit	Software	Selectable factory options
HM-210 SYSTEM D standard test force	Main unit: 810-404-11 Standard objective lens: 10x / 50x Selectable option motorized XY stage: 8810-461-10: 50x50 mm 810-462-10: 100x100 mm	810-465	11AAE270-DEE	Measuring microscope: 11AAE677 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE670 with Knoop indenter
HM-220 SYSTEM D low test force	Main unit: 810-409-11 Standard objective lens: 10x / 50x Selectable option motorized XY stage: 8810-461-10: 50x50 mm 810-462-10: 100x100 mm	810-465	11AAE270-DEE	Measuring microscope: 11AAE677 Objective lens 2X: 11AAE665 Objective lens 5X: 11AAE666 Objective lens 20X: 11AAE668 Objective lens 100X: 11AAE669 Indentershaft unit HM-210: 11AAE671 with Knoop indenter

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Vickers Hardness Testing Machine HV-110/120

Series 810

The manual line up of the HV-100 Series has the following benefits:

- 144 mm (5,7 inch) colored touchsreen display (Type A) with higher visibility, easy to operate user interface
- Digimatic output for report creation.
- USB stick data export
- Electronic test force change.
- Max. specimen height up to 210mm
- LED illumination for best image.
- High number of accessories
- Vickers, Knoop, Brinell and KC fracture toughness measurement.
- Supports Brinelltest up to 62,5KG with an optional test force weight.

Manual type A

Software type D

HV-110 Testing force range

No.	Test force								
HV-110	V.S.*	HV1	HV2	HV3	HV5	HV10	HV20	HV30	HV50
	N	9,807	19,61	29,42	49,03	98,07	196,1	294,2	490,3
	(kgf)	1	2	3	5	10	20	30	50

*V.S. = Vickers Scale

HV-120 Testing force range

No.	Test force								
HV-120	V.S.*	HV0,3	HV0,5	HV1	HV2,5	HV5	HV10	HV20	HV30
	N	2,942	4,903	9,807	24,51	49,03	98,07	196,1	294,2
	(kgf)	0,3	0,5	1	2,5	5	10	20	30

*V.S. = Vickers Scale

Hardness Testing Machines brochure on request

Scan QR Code with your mobile device and watch our product videos on YouTube

Specifications

External dimensions [mm]	System A: 307(W)×696(D) ×786(H)mm System B/C/D: 307(W)×627(D) ×875(H)mm
Objective lens	Up to 3 pcs. mountable (one standard lens 10X mounted as standard)
Force dwell time	5-999 sec (selectable)
Load control	Automatic (load, dwell, unload)
Optical system	Infinity corrected optical system
Illumination unit	LED light
Standard	JIS B 7725, ISO 6507-2
Data output	RS-232C, Digimatic, USB 2. 0 interface
Working distance	50X = 2,5 mm (other objectives available)
Indenter approach speed	60 µm/s, 150 µm/s selectable
Mass	43 kg
Control panel	Built-in touch panel, 5,7" Color LCD (HM-110A/ 120A for System A), Control software (PC for System B/C/D)
Functions	Calculation of Vickers / Knoop*2 / Brinell*3 hardness, and ceramic fracture toughness based on IF method (JIS R1697), 3 display format (standard, list, simple), GO/NG judgment, test condition guide, curve and user correction, hardness corresponding value, statistics calculation
Main unit mass	HV-110: Approx. 60kg, HV-120: Approx. 58kg
Output	Digimatic, serial, USB2 series A (for memory)*1, USB2 B Type (for system communication)
Resolution of diagonal length of an indentation	Objective lens less than 50X: 0,1µm (Objective lens more than 50X: 0,01µm)
Specimen dimensions	System A: height 210mm, depth 170mm (when using flat anvil) System B: height 181mm, depth 170mm (when using manual XY stage 50X50mm) System C: height 172mm, depth 170mm, System D: height 132mm, depth 170mm
Test force control	Lever method and automatic control (load, duration, unload)
Turret drive	Motor driven and manual operation

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Vickers Hardness Testing Machine HV-110/120

Manual or complete automatic testing

Optional accessories

No.	Description
63ETB775	750HV1 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
63ETB749	500HV10 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
63ETB754	750HV10 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
63ETB875	500HV20 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
63ETB880	750HV20 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
63ETB897	500HV30 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
63ETB902	750HV30 Vickers Hardness Reference Material, with ISO 6507-3 DAkkS calibration certificate, 60x60x16mm, steel
810-038	Round table, Ø250 mm
810-040	V-anvil, groove length 40 mm, Ø15 mm-Ø60 mm
810-041	V-anvil, groove length 40 mm, Ø3 mm-Ø9 mm

Vickers HDMI camera system

Code number	Description
63AAA602	HDMI camera
11AAC729	C-mount
NEC EA241WM	24" monitor

System A

HV-110A/HV-120A

Features:

- 144 mm (5.7 inch) color LCD display
- 3 types of display styles settable
- Equipped measuring microscope allows diagonal length measurement by visual observation
- Positioning using a manual XY stage

System B

HV-110B/HV-120B

Features:

- Operation using highly functional AVPAK-20 software
- Light intensity of LED illumination adjusted with aperture or AVPAK
- Positioning using a manual XY stage

System C

HV-110C/HV-120C

Features:

- Operation using highly functional AVPAK-20 software
- Light intensity of the LED illumination adjusted with aperture diaphragm or through AVPAK.
- Automatic indentation reading.
- Automatic positioning using motorized XY stage.

System D

HV-110D/HV-120D

Features:

- Operation using highly functional AVPAK software
- Light intensity of the LED illumination adjusted with aperture diaphragm or through AVPAK
- Automatic positioning with motorized XY stage
- Auto focussing

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Mitutoyo

Vickers Hardness Testing Machine HV-110/120

Configuration

Two additional objective lenses can be selected

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks
TOUCH SCREEN MODELS	SYSTEM A	HV-110 SYSTEM A	Main unit standard test force	810-440-13	Video camera unit	810-454-20	
					Objective lens 2X	11AAE672	
					Objective lens 5X	11AAE673	
					Objective lens 20X	11AAE674	
					Objective lens 50X	11AAE675	
					Manual XY stage 50X50	810-423	
		HV-120 SYSTEM A	Main unit low test force	810-445-13	Video camera unit	810-454-20	
					Objective lens 2X	11AAE672	
					Objective lens 5X	11AAE673	
					Objective lens 20X	11AAE674	
					Objective lens 50X	11AAE675	
					Manual XY stage 50X50	810-423	

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks
SOFTWARE MODELS	SYSTEM B	HV-110 SYSTEM B	Main unit standard test force	810-443-11	Measuring microscope	11AAE678	Cannot be used simultaneously with the vision unit
					Objective lens 2X	11AAE672	
					Objective lens 5X	11AAE673	
					Objective lens 20X	11AAE674	
					Objective lens 50X	11AAE675	
			AVPAK-20*	11AAE270-DEE	Manual XY stage 50X50	810-423	
		HV-120 SYSTEM B	Main unit low test force	810-448-11	Measuring microscope	11AAE678	Cannot be used simultaneously with the vision unit
					Objective lens 2X	11AAE672	
					Objective lens 5X	11AAE673	
					Objective lens 20X	11AAE674	
					Objective lens 50X	11AAE675	
			AVPAK-20*	11AAE270-DEE	Manual XY stage 50 x 50	810-423	

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks
SOFTWARE MODELS	SYSTEM C	HV-110 SYSTEM C	Main unit standard test force	810-443-11	Measuring microscope	11AAE678	Cannot be used simultaneously with the vision unit
			Motorized XY stage 50 x 50mm	810-461-10	Objective lens 2X	11AAE672	
			AVPAK-20*	11AAE270-DEE	Objective lens 5X	11AAE673	
					Objective lens 20X	11AAE674	
		HV-110 SYSTEM C	Main unit standard test force	810-443-11	Objective lens 50X	11AAE675	
			Motorized XY stage 100 x 100mm	810-462-10	Objective lens 100X	11AAE676	
			AVPAK-20*	11AAE270-DEE			
		HV-120 SYSTEM C	Main unit low test force	810-448-11	Measuring microscope	11AAE678	Cannot be used simultaneously with the vision unit
			Motorized XY stage 50 x 50mm	810-461-10	Objective lens 2X	11AAE672	
			AVPAK-20*	11AAE270-DEE	Objective lens 5X	11AAE673	
					Objective lens 20X	11AAE674	
		HV-120 SYSTEM C	Main unit standard test force	810-448-11	Objective lens 50X	11AAE675	
			Motorized XY stage 100 x 100mm	810-462-10	Objective lens 100X	11AAE676	
			AVPAK-20*	11AAE270-DEE			

		Minimum system configuration			In addition selectable FACTORY OPTIONS		Remarks
SOFTWARE MODELS	SYSTEM D	HV-110 SYSTEM D	Main unit standard test force	810-443-11	Measuring microscope	11AAE678	Cannot be used simultaneously with the vision unit
			Motorized XY stage 50 x 50mm	810-461-10	Objective lens 2X	11AAE672	
			Auto Focus stage unit	810-465	Objective lens 5X	11AAE673	
			AVPAK-20*	11AAE270-DEE	Objective lens 20X	11AAE674	
					Objective lens 50X	11AAE675	
		HV-110 SYSTEM D	Main unit standard test force	810-443-11	Objective lens 100X	11AAE676	
			Motorized XY stage 100 x 100mm	810-462-10			
			Auto Focus stage unit	810-465			
			AVPAK-20*	11AAE270-DEE			
		HV-120 SYSTEM D	Main unit low test force	810-448-11	Measuring microscope	11AAE678	Cannot be used simultaneously with the vision unit
			Motorized XY stage 50 x 50mm	810-461-10	Objective lens 2X	11AAE672	
			Auto Focus stage unit	810-465	Objective lens 5X	11AAE673	
			AVPAK-20*	11AAE270-DEE	Objective lens 20X	11AAE674	
					Objective lens 50X	11AAE675	
		HV-120 SYSTEM D	Main unit low test force	810-448-11	Objective lens 100X	11AAE676	
			Motorized XY stage 100 x 100mm	810-462-10			
			Auto Focus stage unit	810-465			
			AVPAK-20*	11AAE270-DEE			

* The above configuration does not include PC.

For all systems: 10 x objective as standard.

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Micro-Vickers and Vickers Set

Configuration

A-Type

B-Type

C-Type

D-Type

Please order AVPAK-20 Software **11AAE270-DEE** and the PC additionally!

All items listed below the set code number are included in the scope of delivery.

A-Type set

No.	Code No.:	Description	Content of Set
HV-110 A-Type Set	810-440-13-ASET	Single indenter configuration	**810-440-13** - Manual main unit HV-110 **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens
HV-120 A-Type Set	810-445-13-ASET	Single indenter configuration	**810-445-13** - Manual main unit HV-120 **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens

B-Type set

No.	Code No.:	Description	Content of Set
HV-110 B-Type Set	810-443-11-BSET	Single indenter configuration	**810-443-11** - System main unit HV-110 **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens
HV-120 B-Type Set	810-448-11-BSET	Single indenter configuration	**810-448-11** - System main unit HV-120 **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens

C-Type set

No.	Code No.:	Description	Content of Set
HV-110 C-Type Set	810-443-11-CSET	Single indenter configuration	**810-443-11** - System main unit HV-110 **11AAE672** - 2x Objective lens **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens **810-462-10** - Motorized XY stage 100x100mm
HV-120 C-Type Set	810-448-11-CSET	Single indenter configuration	**810-448-11** - System main unit HV-120 **11AAE672** - 2x Objective lens **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens **810-462-10** - Motorized XY stage 100x100mm

D-Type set

No.	Code No.:	Description	Content of Set
HV-110 D-Type Set	810-443-11-DSET	Single indenter configuration	**810-443-11** - System main unit HV-110 **11AAE672** - 2x Objective lens **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens **810-462-10** - Motorized XY stage 100x100mm **810-465** - Autofocus unit
HV-120 D-Type Set	810-448-11-DSET	Single indenter configuration	**810-448-11** - System main unit HV-120 **11AAE672** - 2x Objective lens **02ALP300** - 10x Objective lens **11AAE674** - 20x Objective lens **810-462-10** - Motorized XY stage 100x100mm **810-465** - Autofocus unit

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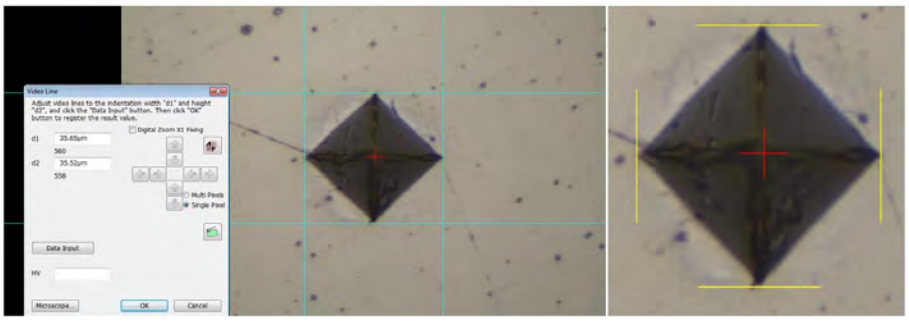
Hardness Testing Software

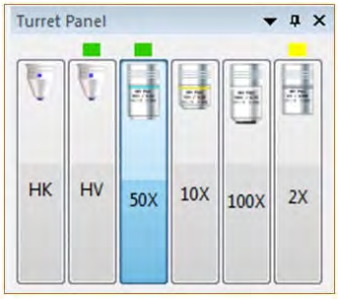
Software AVPAK-20 for System B,C and D No. 11AAE270-DEE

Software to control test sequence, evaluate hardness and make report
Supports Windows® 10, 64 bit operating system

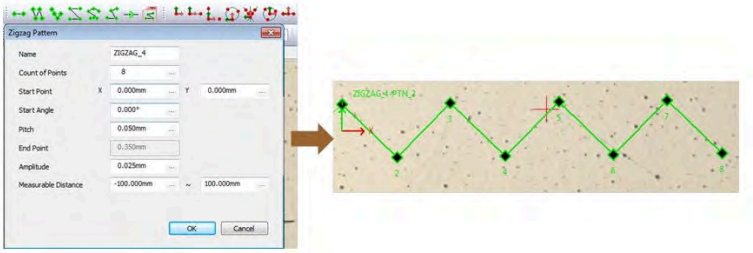
.



Automatic and manual video line measurement of indentation diagonals



Turret control function with color indicator

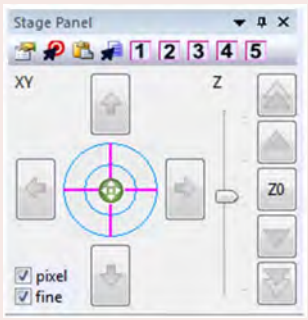


Test pattern function
Operator friendly presets of test patterns (line, zigzag, grid or circle/ arc) with adjustable indentation spacings. Additionally patterns can be combined or test points can be set freely as a teach in pattern.

Coordinate alignment function
Several test pattern alignment methods (1-point, 2-points, 3-points, arc, and centre of circle, bisector, midpoint) are available to place the pattern in the correct position. The automatic contour recognition allows to place indentations in accordance with the obtained contour or a specified excerpt from the contour. Therefore lines, patterns or a matrix of indentations can be placed accordingly.

Analysis and report function
Provides to display several types of graph (carburize transition, carburize distribution, X-R control chart) and layouts. It is possible to edit these graphs on the report. Tracebility comments, indentation images and tables of test data can be inserted as well.

Overview image generation



Stage control function

Functions

Stitching
Generates specimen overview images by stitching several images together. Indentation patterns can be placed on the overview image precisely and easily. (motorized XY stage is required)

Automatic indentation measurement
Automatically measure the indentation's diagonal lengths according EN ISO 6507-1

Illumination control
Set the illumination level manually or automatically according to the specimen surface. Additionally display the saturation on the camera image

Stage control function
Control the motorized XY stage unit (for C- and D-Types) and the autofocus stage unit (type D) by the virtual joystick on the AVPAK-20 window. (Hardware joystick box is always included in the motorized XY stage's scope of delivery) Insert XY positioning steps in your part program and store 5 settable postions.

Turret control function
Choose and change the Objective lens on the turret panel. Green colour marks indicate the indenter and objective lenses that are set for measurement in the software. The objective lens set for overview image stitching is marked in yellow.

Automatic execution function
Record any kind of operation, store and rerun as part programs.

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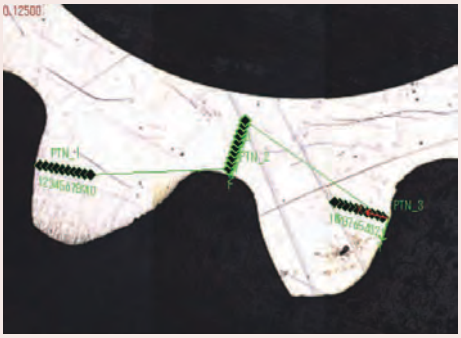
Hardness Testing Software

Software AVPAK-20 for System B, C and D



Graphic view (of stored images)
For displaying the specimen overview images and checking the pattern positioning The digital zoom function can be used to easily magnify and check the indentation site.

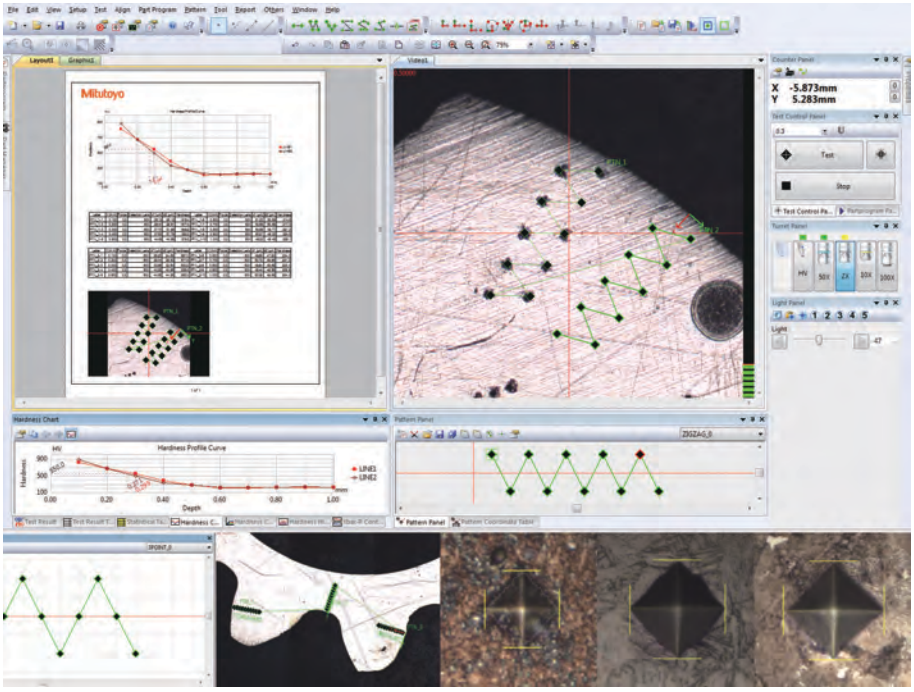
FUNCTIONS

Layout view
Indentation images, graphs, tables, etc., can be laid out freely to create the report in need.

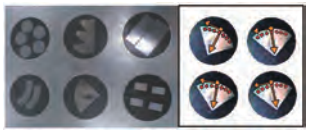
Stitching
Takes images of an entire rectangular field from the moving stage then combines the images. Use stitching for a complete overview of sample.

Auto trace
Automatically traces the shape of the sample. Take images as the stage moves along the outer contours of the specimen, then combines the images.

Navigation function for the manual XY stage
(System B)
When the test position is to be moved during multi-point testing (CHD etc.), this function guides the positioning of the manual XY fine adjustment stage to the next position by pop up on screen menu. User positioning errors are reduced drastically



Screen layout for control, testing status, result display and reporting can be changed freely.



Handling of multiple specimens
Part program and Part Manager function support testing of multiple and irregular specimens.

Multi-specimen testing
Executes different part programs for each irregular specimen.

Parts Manager
Executes a common part program for specimens having the same shape. Parts can be arranged in grid positions.

Pattern creation:
This tool supports the creation of test patterns such as straight lines, zigzag lines and teaching patterns.

Pattern pasting :
This tool supports the pasting of created test patterns by applying a coordinate system. It adjusts the origin, direction, etc. of the before created pattern. Works coordinate systems for complex applications can be generated.

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Hardness Testing Software

Type	B	C	D	B	C	D	A	B
No.	**HM-210B HM-220B**	**HM-210C HM-220C**	**HM-210D HM-220D**	**HV-110B HV-120B**	**HV-110C HV-120C**	**HV-110D HV-120D**	**HR-610A HR-620A**	**HR-620B**
Indentation control function	●	●	●	●	●	●	●	●
Auto reading function	●	●	●	●	●	●	-	-
Focusing function (Contrast level indicator)	●	●	●	●	●	●	-	-
Focusing function (Auto Focus)	-	-	●	-	-	●	-	-
Illumination control function	●	●	●	●	●	●	-	-
Stage control function	●	●	●	-	●	●	-	●
Turret control function	●	●	●	●	●	●	-	-
Test pattern function	●	●	●	●	●	●	-	●
Coordinate alignment function	●	●	●	●	●	●	-	●
Wide area image synthesis function	-	●	●	-	●	●	-	-
Automatic execution function	●	●	●	●	●	●	●	●
Multiple specimens testing function	●	●	●	-	●	●	-	●
Wizard function for single test/pattern test/ standard test	●	●	●	●	●	●	●	●
Image analysis function	●	●	●	●	●	●	-	-
Report creation	●	●	●	●	●	●	-	●
Hardness scale conversion, spherical compensation, judgment, statistical factor	●	●	●	●	●	●	●	●
Extemal output function	●	●	●	●	●	●	●	●
Security level function	●	●	●	●	●	●	●	●
Simple dimension function	●	●	●	●	●	●	-	-
Edging surface reading function	●	●	●	●	●	●	-	-
Jominy test function	●	●	●	●	●	●	-	●
User layout save function for software window	●	●	●	●	●	●	●	●
FORMEio compatibility for automation	●	●	●	●	●	●	●	●
Status Monitor compatibility	●	●	●	●	●	●	●	●
Inch system (mm/inch main unit required)	●	●	●	●	●	●	●	●
Retrofittable to C-type	●	-	-	●	-	-	-	-
Retrofittable to D- type	●	●	-	●	●	-	-	-

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Rockwell HR-200/300/400

Series 963

These are four economical Rockwell hardness testing machines to suit practically every application you need.
The Rockwell HR-200/300/400 offers you the following benefits:

- The newly designed frame provides maximum clearance for positioning the work piece, all you need is a flat table for mounting these testing machines.
- They are very simple to operate: the analogue type HR-210 uses an automatic presetting dial gauge.
- Digital models HR-430MR/MS use automatic steering wheel braking and load sequencing for easy handling.
- Digital models HR-320MS and HR-430MR/MS can use our Digimatic Mini-processor (DP-1VR) for printing results, and you can use an input tool (USB-ITN-E) to connect to a PC for data transfer, analysis and storage.
- You can perform Brinell hardness tests by using the following optional accessories: a Brinell indenter, a weight set and a measurement microscope.

Specifications

Height	Max. 180 mm (100 if cover is attached) mm
Measuring depth	Max. 165 mm (from the center of the endenter axis)
Functions	HR-320MS, HR-430MR, HR-430MS : GO/NG, Compensation fubction, Hardness conversion

K543817
Workpiece clamping device for:
HR-210MR
HR-430MR

HR-210MR dial gauge

HR-300-400 digital display

HR-400 Automatic preliminary test force brake

SPC Digimatic and RS-232C interface

Scan QR Code with your mobile device and watch our product videos on YouTube

HR-210MR
Rockwell hardness testing machine

Manual weight changing
(with total test force selected)
and handling of preload force.
Motor drive controls loading sequence.

HR-320MS

Dual type (Rockwell / Rockwell Superficial) hardness testing machine:

Manually handles test force and preload force selection.
Motor drive controls loading sequence.

HR-430MR

Rockwell hardness testing machine:

Economy type, but supports dial switching, power steering and support of all test standards and is equipped with automatic brake handle auto start feature.
Motor drive controls loading sequence.

HR-430MS

Dual type (Rockwell / Rockwell Superficial) hardness testing machine:

Economy type, but supports dial switching, power steering and support of all test standards and is equipped with automatic brake handle auto start feature.
Motor drive controls loading sequence.

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Rockwell HR-200/300/400

Model	HR-210MR	HR-320MS	HR-430MR	HR-430MS
No.	**810-191-21**	**810-192-31**	**810-193-31**	**810-194-31**
Rockwell (EN ISO 6508, ASTM E-18, JIS B7726)	ISO 6508	●	●	●
Brinell, Indentation only (non standard due to application of preliminary load)	Optional	Optional	●	Optional
Analog type	●	-	-	-
Digital type LCD matrix with backlight	-	Optional	●	●
HR unit resolution	0,5 HR	0,1 HR	0,1 HR	0,1 HR
Test force range 60-150KG, 588- 1471N Rockwell	●	-	●	-
Test force range 62,5-187,5KG, 612,9-1839N Brinell**	Optional	-	Optional	-
Test force range 3-150KG, 29,42- 1471N Rockwell, Rockwell Superficial	-	●	-	●
Test force range 30-187,5KG, 29,42- 1839N Brinell**	-	Optional	-	Optional
Test force switching	Manual	Manual	By dial	By dial
Test force duration	Fixed 3-5.5s or manual	1-99s setting or manual operation	1-99s setting or manual operation	1-99s setting or manual operation
Preliminary test force 10kg/98,07N	-	-	●	-
Preliminary test force 3kg and 10kg/29,42 N and 98,07N	-	●	-	●
Preliminary test force (handling support)	-	Loading navigator indication	Automatic elevation unit brake	Automatic elevation unit brake
Preliminary test force switching - by dial	-	-	●	●
Total test force load operation Manual/lever operation	-	Motor drive, Button start	Motor drive, Automatic start	Motor drive, Automatic start
LED workroom illumination	●	●	●	●
RS-232C, Digimatic interface	-	●	●	●
Compensation	-	●	●	●
Cylindrical compensation	-	●	●	●
Acoustic signal for end of test, error	-	●	●	●
Conversion	-	●	●	●
Limit indication	-	●	●	●
Jominy-test capability	Additional accessories required	Additional accessories required	Additional accessories required	Additional accessories required
Workpiece clamping device K543817 capability	●	-	●	-
Basic test surface Ø 64mm	●	●	●	●
Anvil adaption	Ø 19mm	Ø 19mm	Ø 19mm	Ø 19mm
Max. specimen height	180 mm	180 mm	180 mm	180 mm
Throat depth	165 mm	165 mm	165 mm	165 mm
Max. specimen weight	20 kg	20 kg	20 kg	20 kg
External dimensions 235(W) x 512(D) x 780(H)mm	●	●	●	●
Approx. mass main unit	47 kg	46,3 kg	49,3 kg	49,9 kg
Power supply 100-240V AC 1.2A (AC adapter DC12V 3.5A)	●	●	●	●

** requires optional Brinell weight set
*** can be enhanced with additional accesories
** requires optional Brinell weight set

All main units are supplied without power cord, indenters and hardness reference materials.
Please choose the required accessories separately.

Please choose for example:

63DIA023 diamond indenter ISO 6508 and ASTM E18
63ETB040DG 60HRC hardness reference material ISO 6508 and ASTM E18
02ZAA021 power cord

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Rockwell, Rockwell Superficial, Brinell Hardness Tester HR-530 and HR-600

Specifications

Functions	• Conversion function [HV, HK, HR (Rockwell hardness A, B, C, D, F, G / Rockwell Superficial 15T, 30T, 45T, 15N, 30N, 45N), HS, HB, tensile strength] • GO/NG judgment function Serial test function (for specimens of the same thickness) • Cylindrical correction, spherical correction, offset correction, multi-point correction functions • Statistical calculation function • Graph generation function (X-R control charts)
Power supply	AC100V, 120V, 220V, 240V Auto-selection
Preleminary test force	29,42; 98,07 N
Statistic function	Maximum value, minimum value, mean value, standard deviation, upper limit, lower limit, GO count, range, NG count
Test force setting	By software setting
Table lifting	Manual (automatic breaking and load sequencing)
Standard	ISO 6508; JIS 7726; ISO 6506, JIS 7726; ISO 2039-2, ASTM D785, JIS K 7202; VDI/VDE 2616-1
Load control	Automatic (load/hold/unload)
Max. specimen depth	150 mm
Brinell Scale [N]	61,29; 98,07; 153,2; 245,2; 294,2; 306,5; 612,9; 980,7; 1226; 1839 N
Data output	RS-232C Digimatic, USB2
Force dwell time	1-120s (Selectable in units of 1s)

All main units are supplied without power cord, indenters and hardness reference materials.
Please choose the required accessories separately.

Please choose for example:
63DIA023 diamond indenter ISO 6508 and ASTM E18
63ETB040DG 60HRC hardness reference material ISO 6508 and ASTM E18
02ZAA021 power cord

Series 810

The HR-530 series offers five different hardness testing methods: Rockwell, Rockwell Superficial, Brinell, Brinell Depth Measurement and Plastic Testing in a single unit.

This makes it a versatile tool ready to tackle tasks in production, goods inwards inspection and quality control in general.

- A real time electronic test force control system is built into the compact body along with an electronic force gage. The test force control prevents the system from applying too much test force at the point of reaching total testforce.
- Real time force control provides accurate test force generation and stable time cycle sequences conform to ISO standards.
- The serial measurement mode enables fast execution of a high numbers of tests on identical workpieces.
- A magnet brake system stops the spindle movement immediately at sensing of workpiece contact. This enables the HR-530 to perform semi automatic test sequences, eliminating the user influence.
- The lever indenter arm design enables not only interior and exterior measurements but also an excellent specimen surface overview. The functionality is furthermore enhanced by an LED workroom illumination.
- The intelligent lever arm design allows testing at inside positions without cutting the specimen. The minimum diameter that can be entered by the lever arm with the standard size diamond indenter is 35 mm.
- The optional short type diamond indenter (Part No. 63DIA007) additionally enables inside testing from Ø22 mm.
- HR-530L long type with an optional max. specimen height of 395 mm.
- Indenters, test blocks and power cord are not included in the scope of delivery and have to be ordered separately.

HR-530 (810-233-33)

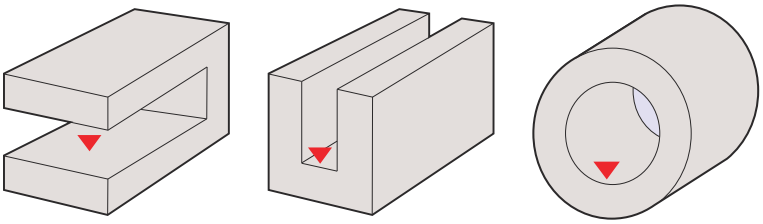
Maximum workpiece size:

Height 250mm
Depth 150 mm

HR-530L (810-333-33)

Maximum workpiece size:

Height 395 mm
Depth 150 mm



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Mitutoyo

Rockwell, Rockwell Superficial, Brinell Hardness Tester HR-530 and HR-600

Metric

No.	Model	Rockwell Scale Diamond	Rockwell Scale Ball 1,5875 mm	Rockwell Scale Ball 3,175 mm	Rockwell Scale Ball 6,35 mm	Rockwell Scale Ball 12,7 mm	Rockwell Superficial Scale Diamond
810-233-33/810-333-33/810-512-23	HR-530 HR-530L HR-610A	HRA HRD HRC	HRF HRB HRG	HRH HRE HRK	HRL HRM HRP	HRR HRS HRV	HR15N HR39N HR45N
810-522-23/810-527-21	HR-620A HR-620B	HRA HRD HRC	HRF HRB HRG	HRH HRE HRK	HRL HRM HRP	HRR HRS HRV	HR15N HR39N HR45N

No.	Rockwell Superficial Scale Ball 1,5875 mm	Rockwell Superficial Scale Ball 3,175 mm	Rockwell Superficial Scale Ball 6,35 mm	Rockwell Superficial Scale Ball 12,7 mm	Ball Indentation plastic test	Rockwell Plastic Test Scales Ball 3,175 mm	Rockwell Plastic Test Scales Ball 6,35 mm	Rockwell Plastic Test Scales Ball 12,7 mm
810-233-33/810-333-33/810-512-23	HR15TW HR20TW HR45TW	HR15WW HR30WW HR45WW	HR15XW HR30XW HR54XW	HR15YW HR30YW HR45YW		HRE HRK	HRL HRM	HRR
810-522-23/810-527-21	HR15TW HR20TW HR45TW	HR15WW HR30WW HR45WW	HR15XW HR30XW HR54XW	HR15YW HR30YW HR45YW	HB 49N HB 132N HB 358N HB 961N	HRE HRK	HRL HRM	HRR

No.	Rockwell α Test Ball 12,7 mm	Vickers Depth Measurement	Brinell Scales indentation only Ball 1,0 mm	Brinell Scales indentation only Ball 2,5 mm	Brinell Scales indentation only Ball 5,0 mm	Brinell Scales indentation only Ball 10,0 mm	Brinell depth measurement Ball 2,5 mm
810-233-33/810-333-33/810-512-23	(HRR)		HBW 1/10 HBW 1/30	HBW 2,5/6,25 HBW 2,5/15625 HBW2,5/31,25 HBW 2,5/62,5 HBW 2,5/187,5	HBW 5/25 HBW 5/62,5 HBW 5/125	HBW 10/100	HBD 2,5/62,5 HBD 2,5/187,5
810-522-23/810-527-21	(HRR)	HVD 30 HVD 50	HBW 1/1 HBW 1/2,5 HBW 1/5 HBW 1/10 HBW 1/30	HBW 2,5/6,25 HBW 2,5/15625 HBW2,5/31,25 HBW 2,5/62,5 HBW 2,5/187,5	HBW 5/25 HBW 5/62,5 HBW 5/125 HBW5/250	HBW 10/100 HBW 10/250	HBD 2,5/62,5 HBD 2,5/187,5 HBD 5/250

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Rockwell Automatic Hardness Testing HR-600

Optional accessories

No.	Description
K543390	Base plate 330x500 HR-600A, Rockwell hardness testing machines
06AFM380D	USB Input Tool Direct (Digimatic USB), Digi/Digi2, Flat 10-Pin Type
K543391	Guide rail f. base plate 330x500 HR-600A, Rockwell hardness testing machines
11AAD385	Contact unit HR-600 large, for 5,0 mm, 10,0 mm, 6,35 mm, 12,7 mm ball indenters
02AZD880G	U-WAVE-T, Buzzer Type, Wireless Transmitter
02AZD730G	U-WAVE-T, IP67 Type, Wireless Transmitter
02AZD790D	U-WAVE-T Connection Cable D, Flat 10-Pin Type
11AAD630	V-anvil HR-600 Ø 20,0 -55,0 mm, L 180,0 mm, Rockwell hardness testing machines
11AAD668	Steel stand HR-600A, Rockwell hardness testing machines
810-530	X-axis 160 mm HR-600A, Rockwell hardness testing machines
810-531	X-axis 300 mm HR-600A, Rockwell hardness testing machines
936937	Digimatic Cable, Flat 10-Pin Type, 1 m
64AAB607R	(R)ML REAL-TIME PROFESSIONAL V9
11AAD537	Foot switch with aluminum housing, Hardness testing machines
264-505D	Statistic Processing Printer DP-1VA, Data Printer and Logger CEE Type
02AZD810D	U-WAVE-R Receiver, with U-WAVEPAK

Series 810 - HR 600 Basic automatic models

With innovative design and functionality that enables a wide variety of measurements, the HR-600 Series delivers hardness testing that defies conventional thinking.

Go above and beyond

- High-End CNC Rockwell Hardness Testing Machine, providing a fully automatic Rockwell hardness test sequence.
- It is operated either with the provided display unit or by the use of AVPAK 3,1 hardness testing software (11AAE525-DEE AVPAK for HR-600A).
- When run with AVPAK 3,1, it can easily be integrated in an automation cell via the programmable Mitutoyo Form EIO automation interface.

The HR-600 Series combines the functionality of several test methods:

- Rockwell hardness testing
- Brinell hardness testing (indentation only)
- Brinell depth measurement hardness testing
- Vickers depth measurement hardness testing
- Hardness testing of plastic materials

Supporting all test methods in a single machine, this new series expands the range of available measurements.

With its high-resolution scale load cell developed uniquely by Mitutoyo that allows for high-precision test load feedback control and state-of-the-art design that delivers both aesthetics and usability on the ground, the new HR-600 Series enables hardness testing that defies conventional thinking.

New design with functional beauty.
With a table for mounting workpieces and head with vertical mobility, the HR-600 Series is built for operability and usability.
Its new design is highly focused on end-user usability, and the entire product structure has been inventively modified for functional beauty — a true embodiment of Mitutoyo's pioneering spirit.

Indenters, hardness reference aterials and power cord are not included in the scope of delivery and must be ordered separately.

Attention:

* requires optional accessories

** more on request

*** can be enhanced with additional accesories

All products to be sold to commercial customers.
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Rockwell Automatic Hardness Testing HR-600

No.	Rockwell Scale Diamond	Rockwell Scale Ball 1,5875 mm	Rockwell Scale Ball 3,175 mm	Rockwell Scale Ball 6,35 mm	Rockwell Scale Ball 12,7 mm	Rockwell Superficial Scale Diamond	Rockwell Superficial Scale Ball 1,5875 mm	Rockwell Superficial Scale Ball 3,175 mm	Rockwell Superficial Scale Ball 6,35 mm	Rockwell Superficial Scale Ball 12,7 mm
810-512-23	HRA; HRC, HRD	HRFW; HRBW; HRGW	HRHW; HREW; HRKW	HRLW; HRMW; HRPW	HRRW; HRSW; HRVW	HR15N; HR30N; HR45N	HR15TW, HR30TW; HR45TW	HR15WW, HR30WW; HR45WW	HR15XW, HR30XW; HR45XW	HR15YW, HR30YW; HR45YW

No.	Rockwell Plastic Test Scales Ball 3,175 mm	Rockwell Plastic Test Scales Ball 6,35 mm	Rockwell Plastic Test Scales Ball 12,7 mm	Rockwell α Test Ball 12,7 mm	Model	Brinell Scales indentation only Ball 1,0 mm	Brinell Scales indentation only Ball 2,5 mm	Brinell Scales indentation only Ball 5,0 mm	Brinell Scales indentation only Ball 10,0 mm	Brinell depth measurement Ball 2,5 mm
810-512-23	HRE; HRK	HRL; HRM	HRR	(HRR)	HR-610A	HBW 1/5; 1/10; HBW 1/30	HBW 2,5/6,25; HBW 2,5/15625; HBW 2,5/31,25; HBW 2,5/62,5; HBW 2,5/187,5	HBW 5/25; HBW 5/62,5; HBW 5/125	HBW 10/100	HBD 2,5/62,5; HBD 2,5/187,5

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Rockwell Automatic Hardness Testing HR-600

Series 810 - HR-600 Series

With innovative design and functionality that enables a wide variety of measurements, the HR-600 Series delivers hardness testing that defies conventional thinking.

Go above and beyond
High-End CNC Rockwell Hardness Testing Machine, providing a fully automatic Rockwell hardness test sequence.

It is operated either with the provided display unit or by the use of AVPAK 3,1 hardness testing software (11AAE525-DEE AVPAK for HR-600A).
When run with AVPAK 3,1, it can easily be integrated in an automation cell via the programmable Mitutoyo Form EIO automation interface.

The HR-600 Series combines the functionality of several test methods:

- Rockwell hardness testing
- Brinell hardness testing (indentation only)
- Brinell depth measurement hardness testing
- Vickers depth measurement hardness testing
- Hardness testing of plastic materials

Supporting all test methods in a single machine, this new series expands the range of available measurements.

With its high-resolution scale load cell developed uniquely by Mitutoyo that allows for high-precision test load feedback control and state-of-the-art design that delivers both aesthetics and usability on the ground, the new HR-600 Series enables hardness testing that defies conventional thinking.

New design with functional beauty.
With a table for mounting workpieces and head with vertical mobility, the HR-600 Series is built for operability and usability.

Its new design is highly focused on end-user usability, and the entire product structure has been inventively modified for functional beauty — a true embodiment of Mitutoyo's pioneering spirit.

Indenters, hardness reference materials and power cord are not included in the scope of delivery and must be ordered separately.

Attention:
* requires optional accessories

810-512-23
Model HR-610A

810-527-21
Model HR-620B with Display

810-527-21
Model HR-620B with PC

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Rockwell Automatic Hardness Testing HR-600

810-512-23

No.	Hardness testing methods*	Initial test force N (kgf)	Test force N (kgf)
Model HR-610A	Rockwell: JIS B 7726.0:2017.0, ISO 6508.0-2.0:2015.0, ASTM E18.0-20.0 Brinell (indentation only): JIS B 7724.0:2017.0, ISO 6506.0-2.0:2017.0, ASTM E10.0-18.0 Plastic: JIS K 7202.0-2.0:2001.0, ISO 2039.0-2.0:1987.0, ASTM D785.0-08.0 [A&B] Brinell Depth Measurement HBT HBD: VDI/VDE 2616.0	Rockwell: 29.42 (3) 98.07 (10) Plastic: 98.07 (10) Brinell Depth Measurement HBT HBD: 98.07 (10) 490.3 (50)	Rockwell: 147.1 (15.0) 294.2 (30.0) 441.3 (45.0) 588.4 (60.0) 980.7 (100.0) 1471.0 (150.0) Brinell (indentation only): 49.03 (5.0) to 1839.0 (187.5) Plastic: 588.4 (60.0) 980.7 (100.0) 1471.0 (150.0) Brinell Depth Measurement HBT HBD: 612.9 (62.5) 1839.0 (187.5)

810-522-23

No.	Hardness testing methods*	Initial test force N (kgf)	Test force N (kgf)
Model HR-620A	Rockwell: JIS B 7726.0:2017.0, ISO 6508.0-2.0:2015.0, ASTM E18.0-20.0 Brinell (indentation only): JIS B 7724.0:2017.0, ISO 6506.0-2.0:2017.0, ASTM E10.0-18.0 Plastic: JIS K 7202.0-2.0:2001.0, ISO 2039.0-2.0:1987.0, ASTM D785.0-08.0 [A&B], ISO 2039.0-1.0:2001.0 Brinell Depth Measurement HBT HBD: VDI/VDE 2616.0 Vickers Depth Measurement HVT HVD: VDI/VDE 2616.0	Rockwell: 29.42 (3) 98.07 (10) Plastic: 9.807 (1), 98.07 (10) Brinell Depth Measurement HBT HBD: 98.07 (10) 490.3 (50) Vickers Depth Measurement HVT HVD: 9.807 (1)	Rockwell: 147.1 (15.0) 294.2 (30.0) 441.3 (45.0) 588.4 (60.0) 980.7 (100.0) 1471.0 (150.0) Brinell (indentation only): 9807.0 (1.0) to 2452.0 (250.0) Plastic: 588.4 (60.0) 980.7 (100.0) 1471.0 (150.0), 49.03 (5.0) 132.4 (13.5) 358.0 (36.5) 962.1 (98.1) Brinell Depth Measurement HBT HBD: 612.9 (62.5) 1839.0 (187.5) 2452.0 (250.0) Vickers Depth Measurement HVT HVD: 294.2 (30.0) 490.3 (50.0)

810-527-21

No.	Hardness testing methods*	Initial test force N (kgf)	Test force N (kgf)
Model HR-620B	Rockwell: JIS B 7726.0:2017.0, ISO 6508.0-2.0:2015.0, ASTM E18.0-20.0 Brinell (indentation only): JIS B 7724.0:2017.0, ISO 6506.0-2.0:2017.0, ASTM E10.0-18.0 Plastic: JIS K 7202.0-2.0:2001.0, ISO 2039.0-2.0:1987.0, ASTM D785.0-08.0 [A&B], ISO 2039.0-1.0:2001.0 Brinell Depth Measurement HBT HBD: VDI/VDE 2616.0 Vickers Depth Measurement HVT HVD: VDI/VDE 2616.0	Rockwell: 29.42 (3) 98.07 (10) Plastic: 9.807 (1), 98.07 (10) Brinell Depth Measurement HBT HBD: 98.07 (10) 490.3 (50) Vickers Depth Measurement HVT HVD: 9.807 (1)	Rockwell: 147.1 (15.0) 294.2 (30.0) 441.3 (45.0) 588.4 (60.0) 980.7 (100.0) 1471.0 (150.0) Brinell (indentation only): 9807.0 (1.0) to 2452.0 (250.0) Plastic: 588.4 (60.0) 980.7 (100.0) 1471.0 (150.0), 49.03 (5.0) 132.4 (13.5) 358.0 (36.5) 962.1 (98.1) Brinell Depth Measurement HBT HBD: 612.9 (62.5) 1839.0 (187.5) 2452.0 (250.0) Vickers Depth Measurement HVT HVD: 294.2 (30.0) 490.3 (50.0)

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Rockwell optional accessories

Accessories for Rockwell, Rockwell Superficial, Brinell Hardness Tester HR-530 and HR-600

Code number	Description	HR-210MR	HR-320MS	HR-430MR	HR-430MS	HR-530	HR-530L	HR-610A	HR-620A	HR-620B
11AAD600	Display unit HR-600 mm/inch									●*
11AAE270-DEE	AVPAK V3.1 hardness Testing Software									●
11AAE525-DEE	AVPAK V3.1 hardness Testing Software HR-600A							●	●	
12AAU423	Form Eio V4 Automation Software (AVPAK required)							●	●	●
264-505	DP-1VA Data logger		●	●	●	●	●	●*	●*	
936937	Digimatic cable 1m					●	●	●*	●*	
937387	Digimatic cable 1m		●	●	●					
02AZD810D	U-WAVE-R		●	●	●	●	●	●*	●*	●*
02AZD730G	U-WAVE-T		●	●	●	●	●	●*	●*	●*
02AZD880G	U-WAVE-T Buzzer type		●	●	●	●	●	●*	●*	●*
02AZD790E	U-WAVE-T Connection cable 6 Pin round		●	●	●					
02AZD790D	U-WAVE-T connection cable					●	●	●*	●*	●*
264-016-10	IT-016U Digimatic Input Tool		●	●	●	●	●	●*	●*	●*
06AFM380E	USB Input tool direct Connection cable 6 Pin round		●	●	●					
06AFM380D	USB Input tool direct Connection cable Flat Straight Type					●	●	●*	●*	●*
64AAB837R	(R)ML REAL-TIME PROFESSIONAL V10	●	●	●	●	●	●	●	●	●
64AAB838R	(R)ML REAL-TIME PROFESSIONAL 3D V10	●	●	●	●	●	●	●	●	●

●* only without AVPAK

Code number	Description	HR-210MR	HR-320MS	HR-430MR	HR-430MS	HR-530	HR-530L	HR-610A	HR-620A	HR-620B
K543817	Clamping device	●		●						
K543390	Extension plate HR-600A 500,0 x 330,0 mm							●	●	
K543391	Guide rail for extension plate HR-600A							●	●	
K543392	Adaption plate for eco-fix base plate HR-600 300,0 mm X-Aaxis							●	●	●
K543394	eco-fix base plate HR-600 300,0 x 200,0 mm w. handles							●	●	●
K543393	Levelling device for angled workpieces 120,0 x 150,0 mm	●	●	●	●	●	●	●	●	●
K543632	8,0mm contact unit HR-600 to be used with 63DIA009 or 63DIA024							●	●	●

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Rockwell optional accessories

11AAD385	Contact unit HR-600 large							•	•	•
810-027	Adjustable support for long workpieces	•	•	•	•	•	•			
810-028	Height adjustable jack rest	•	•	•	•	•	•			
810-037	Round table ø180,0 mm	•	•	•	•	•	•			
810-038	Round table ø250,0 mm	•	•	•	•	•	•			
810-039	Anvil, round ø64,0 mm	•	•	•	•	•	•			
810-029	V-anvil Ø50,0 mm- Ø100,0 mm L 400,0 mm	•	•	•	•	•	•			
810-040	V-anvil Ø15,0 mm- Ø60,0 mm L40,0 mm	•	•	•	•	•	•			
810-041	V-anvil Ø3,0 mm- Ø9,0 mm L40,0 mm	•	•	•	•	•	•			
810-042	V-anvil, stepped Ø4,0 mm- Ø16,0 mm L10,0 mm, step height 13,0 mm	•	•	•	•	•	•			
11AAD630	V-anvil Ø20,0 -55,0 mm L 180,0 mm							•	•	•
810-043	Spot anvil Ø12,0 mm	•	•	•	•	•	•			
810-044	Stepped spot anvil Ø5.5 mm, step height 13,0 mm	•	•	•	•	•	•			
810-030	Diamond spot anvil for superficial test									

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Impact Type Hardness Testing Unit HARDMATIC HH-411

Series 810

This is a lightweight, digital-reading portable hardness testing instrument for metal workpieces. The Hardmatic HH-411 offers you the following benefits:

- It operates on the rebound hardness principle (standardised according to ASTM A 956).
- Measurement is conducted with hardness value L (Leeb-value) but you can convert to any desired hardness scale.
- The display automatically shows GO/±NO GO with the tolerance function set and selected.
- It has a memory function for 1800 measured values, and automatic measuring direction angle-compensation.
- Expak software gives you simple data collection 11AAC238

Sample application

Specifications

Impact device	Impact hammer with integrated carbide-ball tip, D scale (ASTM A 956)
Functions	Auto angle compensation, Offset, OK/NG judgement, Hardness scale conversion, Data storage (1800 data entries), Statistical analysis (Average value, Max. value, Min. value, Dispersion), Auto sleep function, Impact counter display function
Power supply	Battery LR6 (2 pcs.) or AC adapter (optional)
Data output	RS-232C, SPC

Standard accessories

No.	Description
19BAA258	Cleaning brush, HH-411
810-287-10	Impact Hammer D

Optional accessories

No.	Description
19BAA458	Impact hammer, DL impact device
19BAA238	Leeb rebound hardness testing device, RS232C cable HH-411
Computer accessories	
937387	Digimatic Cable, Round 6-Pin Type, 1m
Indenters	
810-288-10	Leeb impact device, HLDC impact device UD-412
810-289-10	Leeb impact device, HLD+15 impact device UD-413
810-290-10	Leeb impact device, HLDL impact device UD-414
Support rings for D/DC type impact devices	
19BAA248	Support ring cylindrical specimen, R10-20 HH-411
19BAA249	Support ring hollow cylindrical specim., R14-20 HH-411
Support rings for D/DC type impact devices	
19BAA250	Support ring spherical specimen, R10-27.5 HH-411
19BAA251	Support ring hollow spherical specim., R13.5-20 HH-411 (D/DC impact devices)

Model	HH-411
No.	**810-298-10**
Accuracy	±12 HL (800 HL +/- 1.5%)
Display unit	7-segment LCD
Hardness Display range	Leeb hardness: 1 to 999HL
	Conversion range / Increment
Vickers	43-950HV / 1 HV
Brinell	20-894 HB / 1 HB
Rockwell C	19,3-68,2 HRC / 0,1 HRC
Rockwell B	13,5-101,7 HRB / 0,1 HRB
Shore	13,2-99,3 HS / 0,1 HS
Tensile strength	499-1996 MPa / 1 MPa
Specimen Thickness	Min. 5 mm
Specimen Mass	5 kg or more
Specimen requirements	Min. specimen thickness of 5mm or more and mass of 5kg or more (However, a specimen of mass of 0.1 to 5kg is measurable by securing to a massive base) Testing point: 5mm or more from edge of specimen, 3mm or more between testing points Specimen surface roughness: Ra of 2µm or less
Mass	320 g
Connector cable for	HH-411
PIN	Round 6
USB-ITN	06AFM380E
DP-1VA (264-505)	965013
IT-016U 264-016-10 Hardmatic table	937387

UD-412 Impact device
HLDC scale
Use for inner walls of cylinders. The grip is short to allow positioning within a cylinder.

UD-413 Impact device
HLD+15 scale
Use for concave workpieces such as gear teeth, grooves, etc.

UD-414 impact device
HLDL scale
Use for gear teeth, welded corners, etc.

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Digital and Analogue Durometers HARDMATIC HH-300

Series 811 - Shore A

These compact digital/dial durometers in the Shore A scale can test a range of different materials and offer you the following benefits:

- You can use them for testing the hardness of the materials including soft rubber, elastomers, natural rubber, casting resin, neoprene, polyesters, soft PVC, leather, etc.

Model	HH-331	HH-332	HH-335	HH-336	HH-335-01	HH-336-01
No.	**811-331-10**	**811-332-10**	**811-335-10**	**811-336-10**	**811-335-11**	**811-336-11**
Shore Scale	Shore A	Shore A	Shore A	Shore A	Shore A	Shore A
Display	Analog Dial	Digital	Analog Dial	Digital	Analog Dial	Digital
Indenter b	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm
Indenter d	ø 0,79 mm	ø 0,79 mm	ø 0,79 mm	ø ,079 mm	ø 0,79 mm	ø 0,79 mm
θ	35°	35°	35°	35°	35°	35°
Pressure foot a	ø 3 mm	ø 3 mm	ø 3 mm	ø 3 mm	ø 3 mm	ø 3 mm
Pressure foot f	ø 18 mm	ø 18 mm	44 x 18 mm	44 x 18 mm	ø 18 mm	ø 18 mm
Indenter protrusion	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm
Spring force WE, WA, WD	WA=550+75 HA [mN]	WA=550+75 HA [mN]	WA=550+75 HA [mN]	WA=550+75 HA [mN]	WA=550+75 HA [mN]	WA=550+75 HA [mN]
Mass	0.32 kg	0.31 kg	0.3 kg	0.29 kg	0.27 kg	0.26 kg
Connector cable for	HH-300 Series	HH-300 Series	HH-300 Series	HH-300 Series	HH-300 Series	HH-300 Series
PIN	Flat	Flat	Flat	Flat	Flat	Flat
USB-ITN	06AFM380F	06AFM380F	06AFM380F	06AFM380F	06AFM380F	06AFM380F
DP-1VA (264-505)	959149	959149	959149	959149	959149	959149
IT-016U 264-016-10 Hardmatic table	937387	937387	937387	937387	937387	937387

811-331-10

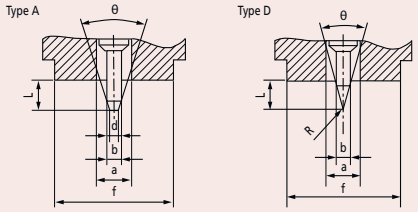
811-332-10

811-335-11

811-336-11

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
811-013	Testing stand, HH-300 Series Shore A compact types
Testing stand	
811-019	Testing stand, HH-300 Series Shore A long types
218000MIT	35, 60, 90 Shore A Shore Hardness Reference Material Set



Indenter geometry Shore A and D

Testing stand
- Workstage dimension: Ø90 mm
- Max. specimen height: 90mm

218000MIT Shore A

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Digital and Analogue Durometers HARDMATIC HH-300

Series 811 - Shore E

These compact digital/dial durometers in the Shore E scale can test a range of different materials and offer you the following benefits:

- You can use them for testing the hardness of the materials including soft rubber, elastomers, natural rubber, casting resin, neoprene, polyesters, soft PVC, leather, etc.

Model	HH-329	HH-330
No.	**811-329-10**	**811-330-10**
Shore Scale	-	Shore E
Display	Analog Dial	Digital
Indenter b	ø 1,25 mm	ø 5 mm
Indenter r	R 0,1 mm	ø 2,5 mm
θ	30°	-
Pressure foot a	ø 3 mm	ø 5,4 mm
Pressure foot f	ø 18 mm	44 x 18 mm
Indenter protrusion	2,5 mm	2,5 mm
Spring force WE, WA, WD	WD=444,5H D [mN]	WE=550+75 HE [mN]
Mass	0.32 kg	0.29 kg
Connector cable for	HH-300 Series	HH-300 Series
PIN	Flat	Flat
USB-ITN	06AFM380F	06AFM380F
DP-1VA (264-505)	959149	959149
IT-016U 264-016-10 Hardmatic table	937387	937387

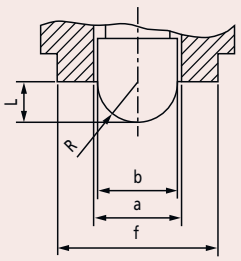
811-329-10

811-330-10

Optional accessories

No.	Description
218010AOMI	27, 62, 90 Shore AO Shore Hardness Reference Material Set
905338	Digimatic Cable, Flat Straight Type, 1m
Testing stand	
811-013	Testing stand, HH-300 Series Shore A compact types

Type E



Indenter geometry Shore E

Testing stand
- Workstage dimension: Ø90 mm
- Max. specimen height: 90mm

218010AOMI

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Digital and Analogue Durometers HARDMATIC HH-300

Series 811 - Shore D

These compact digital/dial durometers in the Shore D scale can test a range of different materials and offer you the following benefits:

- You can use them for testing the hardness of the materials including hard rubber, hard plastics, acrylic glass, Polystyrene, rigid thermoplastics, vinyl, cellulose acetate, etc.

Model	HH-333	HH-334	HH-337	HH-338	HH-337-01	HH-338-01
No.	**811-333-10**	**811-334-10**	**811-337-10**	**811-338-10**	**811-337-11**	**811-338-11**
Display	Analog Dial	Digital	Analog Dial	Digital	Analog Dial	Digital
Indenter b	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm	ø 1,25 mm
Indenter r	R 0,1 mm	R 0,1 mm	R 0,1 mm	R 0,1 mm	R 0,1 mm	R 0,1 mm
θ	30°	30°	30°	30°	30°	30°
Pressure foot a	ø 3 mm	ø 3 mm	ø 3 mm	ø 3 mm	ø 3 mm	ø 3 mm
Pressure foot f	ø 18 mm	ø 18 mm	44 x 18 mm	44 x 18 mm	ø 18 mm	ø 18 mm
Indenter protrusion	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm	2,5 mm
Spring force WE, WA, WD	WD=444,5H D [mN]	WD=444,5H D [mN]	WD=444,5H D [mN]	WD=444,5H D [mN]	WD=444,5H D [mN]	WD=444,5H D [mN]
Mass	0.32 kg	0.31 kg	0.3 kg	0.29 kg	0.27 kg	0.26 kg
Connector cable for	HH-300 Series	HH-300 Series	HH-300 Series	HH-300 Series	HH-300 Series	HH-300 Series
PIN	Flat	Flat	Flat	Flat	Flat	Flat
USB-ITN	06AFM380F	06AFM380F	06AFM380F	06AFM380F	06AFM380F	06AFM380F
DP-1VA (264-505)	959149	959149	959149	959149	959149	959149
IT-016U 264-016-10 Hardmatic table	937387	937387	937387	937387	937387	937387

811-333-10

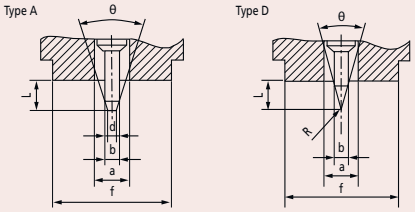
811-334-10

811-337-11

811-338-11

Optional accessories

No.	Description
905338	Digimatic Cable, Flat Straight Type, 1m
811-012	Testing stand, HH-300 Series Shore D all types
218000DMIT	35, 60, 85 Shore D Shore Hardness Reference Material Set



Indenter geometry Shore A and D

218000DMIT Shore D

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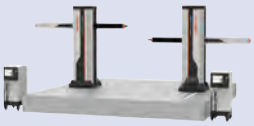
Coordinate Measuring Machines

Small- and Medium Size CMMs
Page 538

In-Line and Shopfloor CMMs
Page 544



Large Size CMMs
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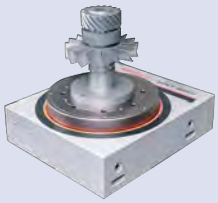

CMM Rotary Tables
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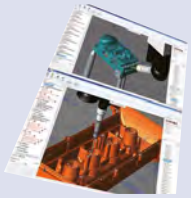
CMM Probes
Page 551



CMM Software
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CMM Fixtures and Enclosures
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Mitutoyo

CRYSTA-Apex V500, 700, 900 Series

CRYSTA-APEX V500, 700 & 900 Series

The latest generation CRYSTA-Apex coordinate measuring machines, the new CRYSTA-Apex V Series, is packed with state of the art technology, necessary for performing very accurate measurements at high speed. All new, using Mitutoyo's world-renowned ABS scales, the CRYSTA-Apex V series has a high resistance to environmental conditions and does not require to perform homing upon start-up. SMS capability enables status and service monitoring, ready for use in a Smart Factory environment.

A future proof investment, the CRYSTA-Apex V is capable of tackling any task you might have in the future thanks to its ability to change or add probe systems and software with ease.

Main benefits:

- Proven lightweight bridge-type construction with high rigidity air-bearings on every axis
- High accuracy, high speed and high acceleration
- Temperature sensors for compensation of machine and workpiece from 16° to 26°C and monitoring of the environmental temperature.
- ABS linear scales provide high environmental resistance and saves time at start-up as homing is not necessary
- UC480 controller supporting Multi-sensor and SMS functionality (Smart Measuring System)

CRYSTA-Apex V9106

CRYSTA-Apex V Models:

No.	Model	Range [mm]	Comments
191-121	CRYSTA-Apex V544	500 x 400 x 400	Standard stand
191-122	CRYSTA-Apex V544	500 x 400 x 400	Anti vibration stand
191-125	CRYSTA-Apex V574	500 x 700 x 400	Standard stand
191-126	CRYSTA-Apex V574	500 x 700 x 400	Anti vibration stand
191-561	CRYSTA-Apex V776	700 x 700 x 600	Standard stand
191-562	CRYSTA-Apex V776	700 x 700 x 600	Anti vibration stand
191-565	CRYSTA-Apex V7106	700 x 1000 x 600	Standard stand
191-566	CRYSTA-Apex V7106	700 x 1000 x 600	Anti vibration stand
191-569	CRYSTA-Apex V9106	900 x 1000 x 600	Standard stand
191-571	CRYSTA-Apex V9106	900 x 1000 x 600	Anti vibration stand
191-574	CRYSTA-Apex V9166	900 x 1600 x 600	Standard stand
191-575	CRYSTA-Apex V9166	900 x 1600 x 600	Anti vibration stand
191-578	CRYSTA-Apex V9206	900 x 2000 x 600	Standard stand
191-579	CRYSTA-Apex V9206	900 x 2000 x 600	Anti vibration stand
191-583	CRYSTA-Apex V9108	900 x 1000 x 800	Standard stand
191-584	CRYSTA-Apex V9108	900 x 1000 x 800	Anti vibration stand
191-587	CRYSTA-Apex V9168	900 x 1600 x 800	Standard stand
191-588	CRYSTA-Apex V9168	900 x 1600 x 800	Anti vibration stand
191-592	CRYSTA-Apex V9208	900 x 2000 x 800	Standard stand
191-593	CRYSTA-Apex V9208	900 x 2000 x 800	Anti vibration stand

Specifications

Accuracy	E0, MPE from: (1,7+3L/1000) µm
Max. drive speed	519 mm/s (3-axis)
Digital step	0,1 µm

Accuracy is specified for the following environmental conditions for the CMM:

Temperature range		18°C - 22°C	16°C - 26°C
Temperature change	Per hour	2°C	2°C
	Per 24 hours	2°C	5°C
Temperature gradient	Vertical	1°C/m	1°C/m
	Horizontal	1°C/m	1°C/m

Mitutoyo eco-fix fixture kits:
- flexible & quick setup
- time & cost saving
- easy adaption of product changes

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Optional joystick-box M2 with speed adjustment knob

CRYSTA-Apex V brochure on request

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CRYSTA-Apex V1200, 1600 & 2000 Series

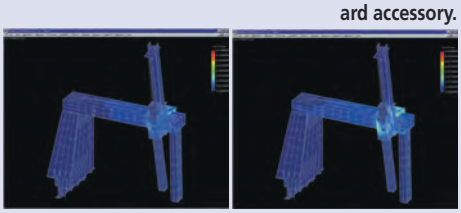
Specifications

Accuracy	E0, MPE from: V1200 (2,3+3L/1000) µm E0, MPE from: V1600 & V2000 (3,3+4,5L/1000) µm
Max. drive speed	693 mm/s (3-axis)
Digital step	0,1 µm

Accuracy is specified for the following environmental conditions for the CMM:

Temperature range		18°C - 22°C	16°C - 26°C
Temperature change	Per hour	2°C	2°C
	Per 24 hours	2°C	5°C
Temperature gradient	Vertical	1°C/m	1°C/m
	Horizontal	1°C/m	1°C/m

Joystick-box V2 with speed adjustment knob, standard accessory.



The machine structure has been optimized using FEM (Finite-element Method) and modal analysis

CRYSTA-Apex V brochure on request

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CRYSTA-Apex V1200, 1600 & 2000Series

The CRYSTA-Apex V1200, 1600 & 2000 series offers you up to 12,8m³ measuring volume and still keeps an excellent 4,5 µm accuracy or better.

This series is developed for supporting quality evaluation of volumetric parts.
This high performance, cost effective coordinate measuring machine, designed and constructed according to Mitutoyo's extensive experience in CNC CMM technology.

Ready for touch trigger probe, scanning probe, optical probe and laser scanner probe.

Main benefits:

- Proven lightweight bridge-type construction with high rigidity air-bearings on every axis
- High accuracy, high speed and high acceleration
- Temperature sensors for compensation of machine and workpiece from 16° to 24°C and monitoring of the environmental temperature.
- ABS linear scales provide high environmental resistance and saves time at start-up as homing is not necessary
- UC480 controller supporting Multi-sensor and SMS functionality (Smart Measuring System)

CRYSTA-Apex V162012

CRYSTA-Apex V Models:

No.	Model	Range [mm]	Comments
191-481	CRYSTA-Apex V121210	1200 x 1200 x 1000	Standard stand
191-482	CRYSTA-Apex V121210	1200 x 1200 x 1000	Anti vibration stand
191-485	CRYSTA-Apex V122010	1200 x 2000 x 1000	Standard stand
191-486	CRYSTA-Apex V122010	1200 x 2000 x 1000	Anti vibration stand
191-489	CRYSTA-Apex V123010	1200 x 3000 x 1000	Standard stand
191-491	CRYSTA-Apex V123010	1200 x 3000 x 1000	Anti vibration stand
191-848	CRYSTA-Apex V 162012	1600 x 2000 x 1200	Standard stand
191-848H	CRYSTA-Apex V 162016	1600 x 2000 x 1600	Standard stand
191-849	CRYSTA-Apex V 162012	1600 x 2000 x 1200	Anti vibration stand
191-849H	CRYSTA-Apex V 162016	1600 x 2000 x 1600	Anti vibration stand
191-853	CRYSTA-Apex V 163012	1600 x 3000 x 1200	Standard stand
191-853H	CRYSTA-Apex V 163016	1600 x 3000 x 1600	Standard stand
191-854	CRYSTA-Apex V 163012	1600 x 3000 x 1200	Anti vibration stand
191-854H	CRYSTA-Apex V 163016	1600 x 3000 x 1600	Anti vibration stand
191-857	CRYSTA-Apex V 164012	1600 x 4000 x 1200	Standard stand
191-857H	CRYSTA-Apex V 164016	1600 x 4000 x 1600	Standard stand
191-858	CRYSTA-Apex V 164012	1600 x 4000 x 1200	Anti vibration stand
191-858H	CRYSTA-Apex V 164016	1600 x 4000 x 1600	Anti vibration stand
191-812H	CRYSTA-Apex V 203016	2000 x 3000 x 1600	Standard stand
191-813H	CRYSTA-Apex V203016	2000 x 3000 x 1600	Anti vibration stand
191-817H	CRYSTA-Apex V 204016	2000 x 4000 x 1600	Anti vibration stand

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CRYSTA-Apex EX1200R Series

REVO-2, 5-axis scanning operation

5-axis operation reduces the time required for probe repositioning movements and allows more flexible positioning. This also facilitates access to complex workpieces and saves time during both programming and measurement.

The CRYSTA-Apex EX1200R series are equipped with the REVO-2 probe head which allows ultra high-speed 5-axis scanning (max. 500 mm/s), far surpassing conventional -axis control.

Support for high-speed sampling of up to 4 points per second allows acquisition of densely spaced measurement points, even during fast scanning.

- Internal implementation of laser sensing technology ensures high-accuracy measurement, even with long styli (up to 500 mm*1).

*1 Distance from probe rotation center to stylus tip

No.	Model	Range [mm]	Comments
191-481V	CRYSTA-Apex EX121210R	1200 x 1200 x 1000	Standard stand
191-482V	CRYSTA-Apex EX121210R	1200 x 1200 x 1000	Anti vibration stand
191-485V	CRYSTA-Apex EX122010R	1200 x 2000 x 1000	Standard stand
191-486V	CRYSTA-Apex EX122010R	1200 x 2000 x 1000	Anti vibration stand
191-489V	CRYSTA-Apex EX123010R	1200 x 3000 x 1000	Standard stand
191-491V	CRYSTA-Apex EX123010R	1200 x 3000 x 1000	Anti vibration stand

Specifications

Accuracy	E0, MPE from: (2,9+4L/1000) µm
Max. drive speed	300 mm/s (3-axis)
Digital step	0,1 µm

Refer to the CRYSTA-Apex V brochure

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STRATO-Active Series

Specifications

Accuracy	E0, MPE from: (1,2+3L/1000) µm
Max. drive speed	300 mm/s (each axis)

Accuracy is specified for the following environmental conditions for the CMM

Temperature range	18°C - 22°C	
Temperature change	Per hour	1°C
	Per 24 hours	2°C
Temperature gradient	Vertical	1°C/m
	Horizontal	1°C/m

STRATO-Active with rotary table MRT320

Surface Measure 201FS (02AQJ900)

Refer to the STRATO-Active brochure

STRATO-Active Series 700/900

High precision CNC CMM, designed to provide top scanning performance with high accuracy measuring, ready for touch trigger probe, scanning probe, optical probe including laser scanner probe.

Main benefits:

- Improve structural rigidity bridge type construction with new compensation technology.
- High accuracy
- High speed and acceleration
- Temperature compensation from 18° to 22°C, including the work piece (2 contact sensors).
- Adoption of ABS scale, saving time no homing necessary and high resistance of environmental conditions.
- Granite working table with M8 threads
- Optional Multi-Function Joystick Box including two levers and a speed adjustment knob.

STRATO-Active 776

No.	Model	Range [mm]	Comments
355-731	STRATO-Active 776	700 x 700 x 600	Standard stand
355-733	STRATO-Active 7106	700 x 1000 x 600	Standard stand
355-735	STRATO-Active 9106	900 x 1000 x 600	Standard stand
355-737	STRATO-Active 9166	900 x 1600 x 600	Standard stand

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STRATO-Apex 500, 700 & 900 Series

STRATO-Apex 500, 700 & 900 Series

The challenges for measurement equipment are rising. Products are continuously improving as a result the lifetime of products is increasing while their energy consumption is reduced. Additionally, the throughput of production is driven up. All these facts must be taken into account for your measuring equipment.
With the STRATO-Apex CMM, Mitutoyo offers you the opportunity to match both: precision and velocity.

This high accuracy CNC coordinate measuring machine that allows you to get accurate results at lightning speed.

Main benefits:

- High measurement accuracy and high-speed motion
- High-performance scanning
- Ultra high precision scales on each axis, resolution 0,02 µm
- Temperature sensors for monitoring of the environmental temperature and compensation of machine and workpiece
- Anti-vibration system reduces the impact of nearby vibration sources (optional for 574)
- Multi-sensors capability
- UC480 controller supporting Multi-sensor and SMS functionality (Smart Measuring System)

STRATO-Apex 9166

STRATO-Apex Models:

No.	Model	Range [mm]	Comments
355-701	STRATO-Apex 574	500 x 700 x 400	Standard stand
355-702	STRATO-Apex 574	500 x 700 x 400	Anti vibration stand
355-705-10	STRATO-Apex 776	700 x 700 x 600	Anti vibration stand
355-707-10	STRATO-Apex 7106	700 x 1000 x 600	Anti vibration stand
355-709-10	STRATO-Apex 9106	900 x 1000 x 600	Anti vibration stand
355-712-10	STRATO-Apex 9166	900 x 1600 x 600	Anti vibration stand

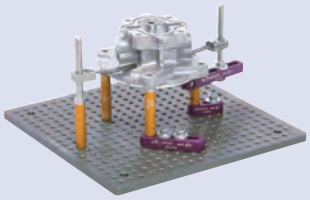
Specifications

Accuracy	E0, MPE from: (0,7+2,5/1000) µm
Max. drive speed	519 mm/s (3-axis)
Digital step	500/700/900: 0,02 µm

Accuracy is specified for the following environmental conditions for the CMM:

Temperature range	Series 500: 18°C -22°C Series 700/900: 19°C -21°C	
Temperature change	Per hour	1°C
	Per 24 hours	2°C
Temperature gradient	Vertical	1°C/m
	Horizontal	1°C/m

Optional joystick-box M2 with speed adjustment knob



Mitutoyo eco-fix fixture kits:
- flexible & quick setup
- time & cost saving
- easy adaption of product changes

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Refer to the STRATO-Apex brochure

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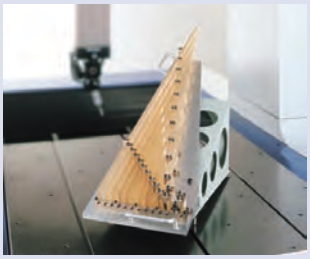
LEGEX Series

Specifications

Accuracy	E0, MPE from: (0,23+0,7L/1000) µm
Max. drive speed	200 mm/s (3-axis)
Digital step	0,01 µm

Optional joystick-box M2 with speed adjustment knob



CMM calibration using a virtually zero thermal expansion glass gauge

Mitutoyo offers you over 1000 styli products plus highly specialised equipment for your measuring task.

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LEGEX [Takumi Model] Series

The LEGEX Series is an ultra-high precision CNC coordinate measuring machine.

A fixed bridge structure and precision air bearings running on highly rigged guideways, ensure superior motion stability and ultrahigh geometrical accuracy. Drive systems placed in the "Center of gravity" of the sliders, gives best possible dynamic performance. In addition, an active anti-vibration stand has have been utilized to provide ultra-high accuracy.

The construction is designed for thermal stability, low expansion crystallized glass scales and temperature compensation, results in guaranteed high accuracy within a temperature range of 19 °C to 21 °C.

Main benefits:

- Rigorous analysis of all possible error-producing factors, and elimination or minimization of their effects, delivers unsurpassed accuracy of 0,23µm
- Ultra-high accuracy crystallized-glass scale with the ultra-low expansion coefficient of 0,01x10-6/K is used on each axis
- The fixed bridge structure and precision air bearings, running on highly rigid guideways, give you superior motion stability and ultra-high geometrical accuracy
- UC480 controller supporting Multi-sensor and SMS functionality (Smart Measuring System)
- You can use several different types of optional probe systems, including Mitutoyo's high precision MPP310Q scanning probe

LEGEX Takumi

LEGEX Models:

No.	Model	Range [mm]	Comments
356-407-10	LEGEX 574	500 x 700 x 450	Anti vibration stand
356-417-10	LEGEX 774	700 x 700 x 450	Anti vibration stand
356-427-10	LEGEX 776	700 x 700 x 600	Anti vibration stand
356-437-10	LEGEX 9106	900 x 1000 x 600	Anti vibration stand

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MACH Ko-ga-me

MACH Ko-ga-me Series

Agile Measurement System

The MACH Ko-ga-me is a unique and compact CMM ideal for integration into in-line systems for automated measurements. Perfect for automated cells and stand-alone solutions, this compact metrology solution delivers reliability in a lightweight and easy to mount form factor. The CMM also provides flexible production performance for any manufacturing environment thanks to its guaranteed accuracy within a temperature range of 10 °C up to 35 °C.

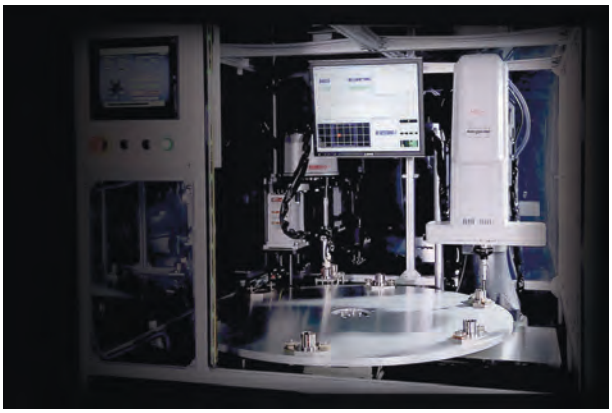
Main benefits:

- High measurement speed and acceleration
- Extremely small footprint saves valuable space for production
- Ideal for single feature inspection and usable with both scanning and touch-trigger probes
- Absolute measurements
- Maintenance-free linear-guidings (no air bearings)
- Multi-function joystick box-M2, including two levers and a speed adjustment knob
- Measuring range 120 x 120 x 80 mm
- High precision scales with 0,02 µm resolution
- UC400K controller supporting SMS functionality (Smart Measuring System)

MACH Ko-ga-me Models:

No.	Model	Range [mm]
357-172-10	MACH-Ko-ga-me 12128-C	120 x 120 x 80

MACH Ko-ga-me

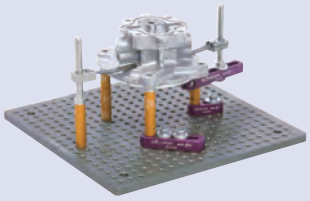


In-line Application example with MACH Ko-ga-me

Specifications

Accuracy	E0, MPE from: (2,4+5,7L/1000) µm
Max. drive speed	340 mm/s (3-axis)
Digital step	0,02 µm

Joystick-box M2 with speed adjustment knob, standard accessory.



Mitutoyo eco-fix fixture kits:
- flexible & quick setup
- time & cost saving
- easy adaption of product changes

Refer to the INLINE Measuring systems brochure

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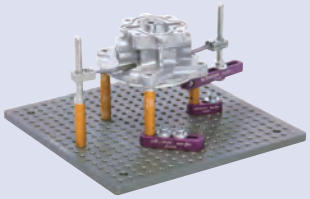
MiSTAR 555

Specifications

Accuracy	E0, MPE from: (2,2+3L/1000) µm
Max. drive speed	606 mm/s (3-axis)
Digital step	0,1 µm



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- easy adaption of product changes

K543667 Shop-floor CMM loading station eco-load duo for MiSTAR

MiSTAR 555 Series

Compact shop floor CNC CMM

The MiSTAR 555 is a CNC coordinate measuring machine conceived to be the "measuring machine for any environment." It comes with a wide accuracy-guaranteed temperature range, environment-resistant absolute scale, and an all-in-one space-saving design. With performance that sets it apart from conventional coordinate measuring machines, the MiSTAR 555 is guaranteed to boost your productivity. MiSTAR 555 can be equipped with PH6M, PH10MQ and PH20 probe head.

Main benefits:

- High accuracy, high speed and high acceleration
- Temperature sensors for compensation of machine and workpiece from 10° to 40°C and monitoring of the environmental temperature.
- ABS linear scales provide high environmental resistance and saves time at start-up as homing is not necessary
- New UC480 controller supporting Multi-sensor and SMS functionality (Smart Measuring System)

MiSTAR 555

Quick launcher for easy part program execution

Equipped with the PH6M probe head

Equipped with the PH10MQ probe head

No.	Model	Range [mm]
357-305	MiSTAR 555	570 x 500 x 500

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MACH-3A 653

MACH-3A 653 Series

High Speed In-Line CMM

The MACH-3A 653 is a horizontal spindle type with index table coordinate measuring machine and is designed for fast and precise inline measurement. It grants outstanding throughput will allow you to boost up your measuring process. His small foot print and protection against rough production environments makes him suitable for workshop and inline production measurements.

Main benefits:

- Super High speed and acceleration
- Drastic reduction of the measurement cycle compared with any conventional CMM
- All in One Compact design to minimize the foot print in the workshop and to improve the dust resistance
- Work piece handling and routing in the same posture as for other horizontal spindle machining centres
- Control unit and PC are installed in the dust-tight rack with heat exchanger
- Ease-of-maintenance construction and air-free operation using high accuracy linear ball bearing
- Temperature compensation from 5°C to 40°C
- Glass scale with high resolution 0,1 µm
- Safety joystick box with deadman switch and speed adjustment
- UC400K controller supporting SMS functionality (Smart Measuring System)
- Optional with index table for higher flexibility

MACH-3A 653

No.	Model	Range [mm]
360-417	MACH-3A 653	600 x 500 x 280

Specifications

Accuracy	E0, MPE from: (2,2+3,5L/1000) µm
Max. drive speed	1212 mm/s (3-axis)
Digital step	0,1 µm

Accuracy is specified for the following environmental conditions for the CMM

Temperature range		5°C - 40°C
Temperature change	per hour	2°C
	per 24 hours	10°C
Temperature gradient	Vertical	1°C/m
	Horizontal	1°C/m

Safety System
For this type series, Mitutoyo offers a customized safety system. Depending on the local situation in your facility, Mitutoyo will propose a tailor-made solution meeting the requirements of the Machinery Directive.

Refer to the INLINE Measuring systems brochure

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MACH-V9106

MACH-V 9106 Series

High Speed In-Line CMM

The MACH-V 9106 is a vertical spindle type coordinate measuring machine and is designed for fast and precise inline measurement. It grants outstanding throughput will allow you to boost up your measuring process.
His design is so chosen that work pieces can be conveyed through the CMM either in front/back or left/right. This makes it a very flexible system to integrate. Also it can provide pre/post machining feedback to your machine tools for process tuning.

Main benefits:

- Higher speed and accuracy with barycentric drive
- Improved dust resistance by installing all drive system and scale units in the dust-tight enclosure on the machine top
- Control unit and PC are installed in the dust-tight rack
- Space-saving design helps installation in a production line
- Flexible loading options due open access to the measuring area
- Ease-of-maintenance construction and air-free operation using high accuracy linear ball bearing
- Temperature compensation from 5° to 35°C
- Glass scale with high resolution 0,1 µm
- Safety joystick box with deadman switch and speed adjustment
- UC400K controller supporting SMS functionality (Smart Measuring System)

MACH-V9106

No.	Model	Range [mm]
360-228	MACH-V9106	900 x 1000 x 600

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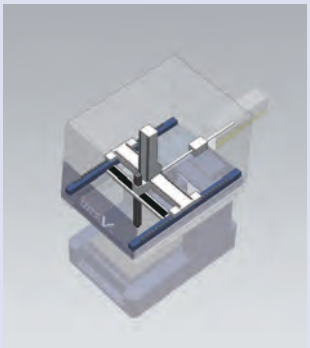
Specifications

Accuracy	E0, MPE from: (2,5+3,5L/1000) µm
Max. drive speed	866 mm/s (3-axis)
Digital step	0,1 µm

Accuracy is specified for the following environmental conditions for the CMM

Temperature range		5°C - 35°C
Temperature change	per hour	2°C
	per 24 hours	10°C
Temperature gradient	Vertical	1°C/m
	Horizontal	1°C/m



Safety System
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Mitutoyo

High-accuracy Separate Guide Type MICROCORD STRATO-Apex Series

- The STRATO-Apex Series are CNC CMMs that use Mitutoyo's standard structure for large machines which are designed to be used for measuring large and heavx workpieces with high accuracy. The picture below gives a good idea of how large the machine is. The measuring accuracy and drive speed are the world's highest in the X-axis measuring range of 2000mm and 3000mm.
- High-accuracy linear encoders (manufactured in-house) are built into the length measuring units used for position detection. Their excellent position detection capability is what makes the control of the high-accuracy devices possible. The series also applies a multitude of technologies regarding structure, control, component processing, assembly, and other aspects that enable large CMMs to deliver high-accuracy measurements.
- These series are equipped with a system to automatically restore accuracy deterioration (MOVAC) caused by foundation deformation as a standard feature.
- Equipped with a temperature compensation system that guarantees the specified accuracy within the wide range of 18 to 22°C under certain environmental conditions, although high-accuracy CMMs should ideally be installed in a temperature controlled room.
- Safety devices such as a Z-axis beam sensor, tape switch, and area sensor are available as options.

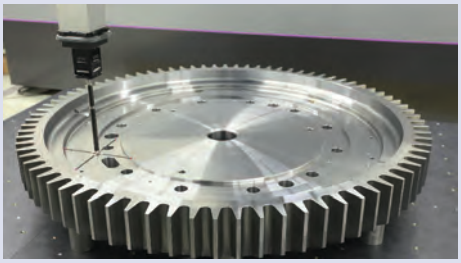
STRATO-Apex 3000G Series

Specifications

Accuracy	E0, MPE from: (3,5+4,5L/1000) µm
Max. drive speed	520 mm/s (3-axis)
Digital step	0,1 µm

Accuracy is specified for the following environmental conditions for the CMM:

Temperature range		18°C - 22°C
Temperature change	Per hour	1°C
	Per 24 hours	2°C
Temperature gradient	Vertical	1°C/m
	Horizontal	1°C/m



Scanning with probe SP80 and 100 mm styli.

Safety System
For this type series, Mitutoyo offers a customized safety system. Depending on the local situation in your facility, Mitutoyo will propose a tailor-made solution meeting the requirements of the Machinery Directive.

Foundation
This type series always requires a special foundation. Please contact your local Mitutoyo partner for further details.

StyliCleaner always Reliable and Clean Stylus

Joystick-box V2 with speed adjustment knob, standard accessory.

All products to be sold to commercial customers.
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CARBstrato Series

Specifications

Range X-axis	4000-8000 mm
Scale	High accuracy linear encoder
Guide system	X-axis : linear guide ; YZ-axis : air bearing
Max. drive speed	866 mm/s (CARBstrato)
3D Acceleration	0,2G (CARBstrato)
Digital step	0,1 µm

CARBstrato brochure on request

Safety System
For this type series, Mitutoyo offers a customized safety system. Depending on the local situation in your facility, Mitutoyo will propose a tailor-made solution meeting the requirements of the Machinery Directive.

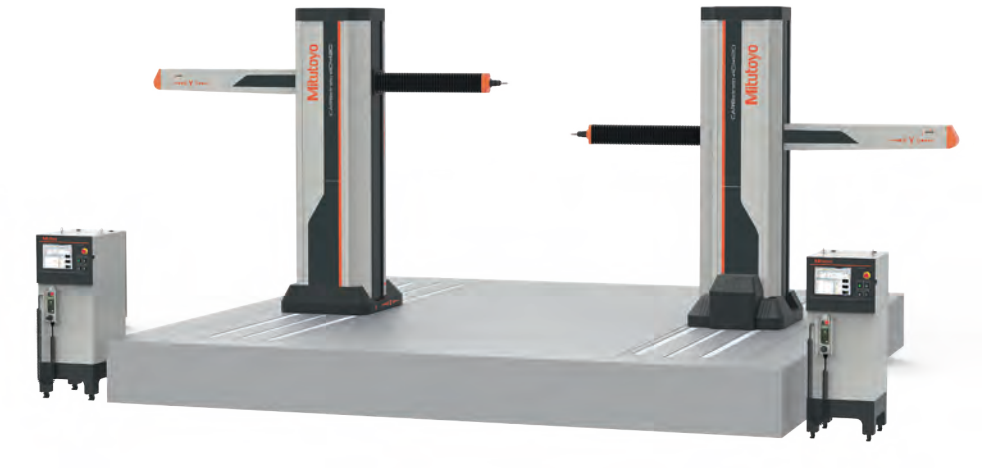
Foundation
This type series always requires a special foundation. Please contact your local Mitutoyo partner for further details.

Mitutoyo offers you over 1000 styli products plus highly specialised equipment for your measuring task.

CARBstrato Series

A large, horizontal-type arm CNC CMM for measuring car bodies or similar components. Single/dual-head types are available ; the dual-head type measures by controlling two heads simultaneously, one from each side.

MAIN FEATURES CARBstrato : large, high precision, dual-head type.



CARBstrato (Dual-arm type)

No.	Accuracy[(1)] $E_{0,MPE}$
CARBstrato	(18+20L/1000) µm

[(1)] According to ISO 10360-2:2010 when using probe SP25M, module SM25-1, stylus ø 4x50 mm. L= measured length (mm).

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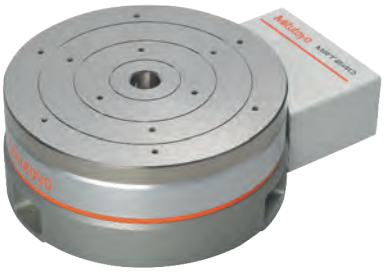
CMM Rotary Tables

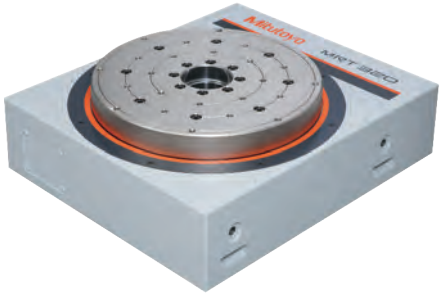
Rotary Tables

Rotary tables expand the scope of applications, simplify the measurement procedure, and reduce measurement time via the scanning mode.

This additional axis allows the use of simple stylus combinations and extends the available measurement range. The programming of the parts to be measured is simplified since the paths of the CMM are shorter. Rotary tables are used for the measurement of various parts but their main use is to considerably simplify the measurement of parts of revolution presenting periodically repeating geometries, such as gears, rotors, turbines, etc.
All angles are immediately available and allow easy access to the measurement of elements inaccessible by an adjustable head or a fixed measuring head. The flexibility doesn't stop there. Mitutoyo measuring machines also allow an indexed swivel head to be coupled to Mitutoyo MRT240 / MRT320 rotary tables.



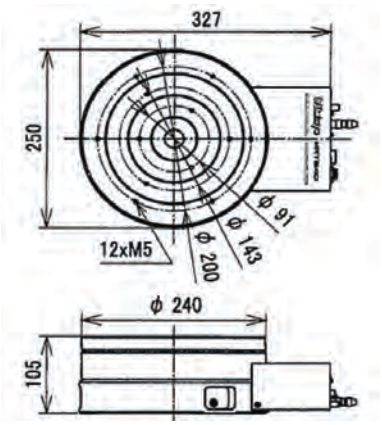
MRT240



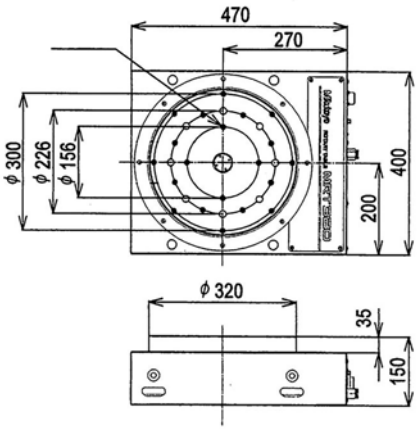
MRT320

Air bearing

No.	Model	Diameter	Range [mm]	Rotational speed [rpm]	Max. Load	Mass
06AGW305	MRT240	240 mm	327 x 250 x 105	6	40 Kg	20 Kg
06AGX660	MRT320	320 mm	470 x 400 x 150	9	100 Kg	120 Kg



MRT240



MRT320

Application of MRT240.

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CMM Probes

SurfaceMeasure

Measurement of color sample plate

Measurement of glossy parts

The flying spot type is capable of scanning difficult parts, such as this impeller, precisely and achieves highest scanning accuracy in the class.

Ultra-high speed data collection

SurfaceMeasure is a laser probe that collects coordinate values of the surface of the workpiece by moving and irradiating laser light over the workpiece.

Advantages of non-contact type

Non-contact measurement enables measurement of materials that can be easily-deformed by contact measurement, including resin or thin, elastic parts.

Powder-less measurement

Automatic configuration of the camera sensitivity and the laser intensity settings according to the environment and materials enable establishing a simple and comfortable laser-scanning environment since measurement is now powder and spray free.

Evaluation cases

The collected point cloud data can be used by various optional software in a wide range of applications, such as editing, plane creation, comparison using CAD data and

SM 403

SM 1110

SM 201FS

No.	Model	Laser irradiation method	Max. scan width	Max. scan depth	Working distance [mm]	Scanning error (*1)	Max. Acquisition rate	Laser Class EN/IEC
02AQJ900	SM 201FS	Flying spot	23 mm	15 mm	57.5	1,8 µm	25000 points/sec	Class2 [EN/IEC 60825-1: 2014]
02AQK010	SM 1110	Line Laser	110 mm	100 mm	156.5	9 µm	300000 points/sec	Class2 [EN/IEC 60825-1: 2014]
02AQH290	SM 403	Line Laser	40 mm	30 mm	66	8 µm	60000 points/sec	Class2 [EN/IEC 60825-1: 2014]

(*1): Accuracy according to Mitutoyo Standard (1σ)

No.	Laser Class JIS	Laser Type	Line Laser Wavelength	Line Laser Output	Mass
02AQJ900	Class2 [JIS C 6802 : 2014]	Flying Spot method	670 nm	1 mW	500 g
02AQK010	Class2 [JIS C 6802 : 2014]	Red semiconductor	660 nm	2,5 mW	440 g
02AQH290	Class2 [JIS C 6802 : 2014]	Red semiconductor	660 nm	4 mW	430 g

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CMM Probes

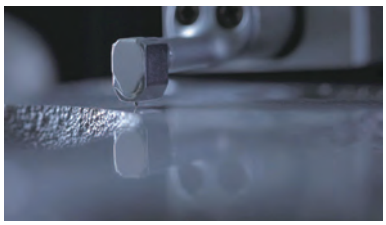
SURFTEST Probe

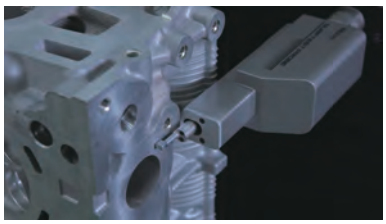
Surface Roughness Measurement directly on the CMM!

This Mitutoyo sensor head closes the gap between typical dimensional CMM measurements and surface roughness inspection. Instead of having to take the workpiece to another measuring instrument or using additional portable systems, the SURFTEST Probe adds roughness measurement capability to your CMM and so avoids all the cost and inconvenience of additional systems. It brings the proven technology of the SJ-310 series to the CMM with all its highly capable range of detectors developed for handling specialist applications such as roughness measurement on gears, inside small holes or deep grooves, in addition to simple flat surface measuring tasks.

Main benefits:

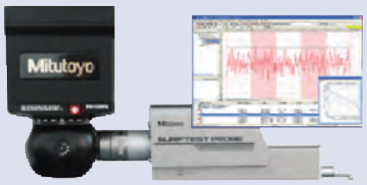
- Proven technology from Mitutoyo's SJ-310 Surftest
- Chose from five types of detector for variant applications
- High accuracy – no CMM movement during measurement
- One CNC measurement cycle produces all results
- Graphical and numerical output
- One Measurement report for all GD&T requirements



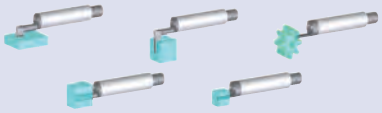


No.	Model	Comments
06AEN891	SURFTEST Probe kit	For PH10M/MQ mount
06AFE255	SURFPAK-SP software	Necessary option
178-270	Detector 0,75mN, 60° R2µm	Optional accessory*
178-280	Detector 4mN, 90° R5µm	Optional accessory*

* Chose at least one of these options



SURFTEST Probe



Optional detectors

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CMM Probes

QVP Quick Vision Probe

Mitutoyo's Vision Probe System for CMMs

The Quick Vision Probe will make from your CMM an VMM (VisionMM). Put in an probe change rack you can use it together with other probes. Were traditional probes can not be used, very small holes and flexible parts, the QVP can do this Job.

- Fast optical measurements – the perfect choice for small features and soft materials
- Ideal in combination with tactile probes
- Prepared for automatic probe change
- Four objective lenses offer different optical magnification
- From 0,375 x to 3,75 x
- White LED ring light
- White LED coaxial light

QVP (Quick Vision Probe)

ML objective lenses

Calibration gauge

Pixel calibration chart

No.	Functions		
QVP-System	**No.**	**Model**	**Comments**
	359-051-8	Vision probe incl. ML 3X objective lens	
	375-036-2	ML 1X objective lens	Optional accessory
	375-034-1	ML 5X objective lens	Optional accessory
	375-039	ML 10X objective lens	Optional accessory
	02AQC310	Calibration gauge	Necessary accessory
	02AKN020	Pixel calibration chart	Necessary accessory
	02NBA813-DEE	Visionpak-Pro software	Necessary option

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Mitutoyo

CMM Probes

MPP-310Q

Ultra-High accuracy and low measuring force Scanning Probe

This ultra-high precision scanning probe incorporates built-in XYZ scales for highest accuracy performance.
The compact size of this probe is ideal for low measuring force and high speed scanning.
Data collection can be performed by scanning measurement, ultrahigh precision point measurement and center alignment measurement.
Special developed for our Ultra-High accuracy CMM

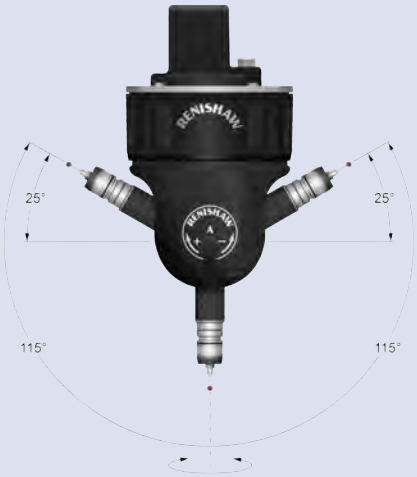
- High resolution of 0,01 µm
- Measuring range ±1 mm
- Extremely low measuring forces of 0,03 N
- Styli length up to 200 mm
- Air bearing for smooth measurements
- Axis clamping for scanning on slanted or arched surfaces

MPP-310Q

PH20

Rapid tactile measurements at any probe angle

- Head touch for improved repeatability
- Feature-based calibration for improved accuracy
- Automatic stylus change with TP20 modules and optional TCR20 change rack
- Allowing subsequent measurement at any head angle
- Full support in MCOSMOS and MiCAT Planner
- 5-axis control on CMM's with UC400 / 480 controller and PHC20 interface



Infinite B-axis rotation

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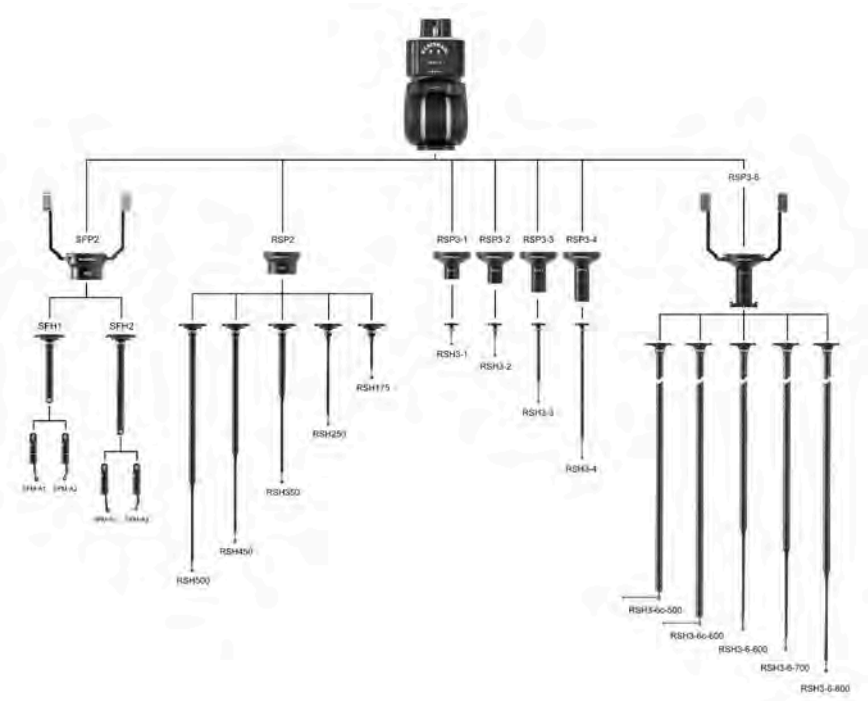
CMM Probes

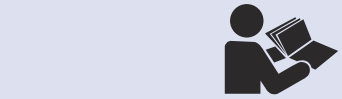
Revo

Revo

5-axis measurement technology

- Rapid scanning at any angle
- Dynamic 2-axis head provides most of the stylus motion
- High accuracy and repeatability
- Scanning with 5-axes of simultaneous motion allows unparalleled measurement flexibility
- 'Head-touches' take measurement points faster, with improved accuracy and repeatability
- 5-axis motion eliminates time spent indexing the head
- Supports stylus lengths up to 500 mm





Refer to the Measuring Heads brochure

Scan QR Code with your mobile device and watch our product videos on YouTube

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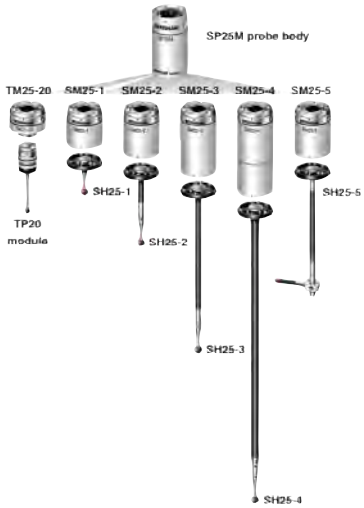
Mitutoyo

CMM Probes

Scanning probe systems

Scanning probes can acquire several hundred surface points each second, enabling measurement of form as well as size and position.
Scanning probes can also be used to acquire discrete points in a similar way to touch-trigger probes.
A range of solutions is available, suitable for all sizes and configurations of CMM.

SP80
is a quill-mounted scanning probe that uses digital scale and readhead technology, to provide exceptional scanning performance, even with long styli.



SP25M
At just 25 mm in diameter, the SP25M is small and light, making it ideally suited to mounting on articulating heads. It is also sufficiently compact to suit small CMM's

SP600
Renishaw's SP600 analogue scanning probe offers high-performance inspection, digitizing and profile scanning capability for a wide range of CMM's.

Touch-trigger probe systems

TP7M
High accuracy type

TP200
Compact and high accuracy (stylus change type)

TP20
Compact type

Probe heads with integrated Probe system.

MH20i
Manual Probe

Probe heads

PH10MQ
Motor drive index type

MIH
Manual index type

PH1
Simple manual type

CMM Probes brochure on demand

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CMM Probes

Change Racks

MCR20 rack for use with TP20 probe

SCR200 rack for use with TP200 probe

TCR20 rack for use with PH20 probe

SCR600 rack for use with SP600 probe

FCR25 rack for use with SP25M probe

Modular Rack Systems

MRS system with optional ACR3-4 and FCR stylus modules

MRS2 single system and with additional front and back Rail

Modules for Modular Rack System

ACR3-4 passive 4 port probe changer

FCR25 for SP25M

SCP600 for SP600

RCP2 for REVO

RCP TC2 for REVO

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Styli

CMM Styli

As the interface between measurement system and workpiece, the stylus is a keyplayer in coordinate measurement.
It has to fulfil the highest quality requirements to suit its task.

- By contact of the stylus tip with the workpiece, a probing sensor determines the geometrical position of the contactpoint in the X, Y and Z axes and feeds it back to the controller unit and CMM software.
- Touch point and scanning probe systems define the specification of the stylus.
- To build perfect styli that suit this specification, properties like stiffness (modulus of elasticity), thermal expansion, weight and sphericity of the ball have to be taken in consideration.

Mitutoyo styli are made to the highest standards to ensure maximum quality and performance. Precision machined components made from the finest quality materials and Grade 5 (DIN 5401:2002) styli balls set the base for high accuracy CMM measurement.

Longstanding experiece and expertise are used to craft our styli product range with a passion right in the heart of Germany.

Ball material properties:

Ruby
Ruby, as the hardest of all stylus tip materials, is the perfect choice for most applications.. Because of the adhesive material build up, the scanning of aluminium surfaces with ruby tips is not recommended.

Silicon nitride
Silicon nitride is extremely hard and superbly wear resistant, with the least surface roughness of all ball materials, which makes it highly applicable for most scan applications.
Silicon nitride does not attract aluminium particles when scanning aluminium workpiece surfaces.

Zirconium oxide
Because of the specific surface properties of contact points made of zirconium oxide - a ceramic compound with high wear resistance – they are acknowledged as the best choice for the scanning of abrasive surfaces, such as workpieces made of cast iron. Zirconium oxide provides a smooth and frictionless sliding performance on rough surfaces.

Diamond coating
Diamond coated silicon nitride balls are true allrounders, made to suit all applications and to last long.
Due to their durability, they posses an excellent price performance ratio.

Custom styli
We are waiting to receive your custom stylus request if you cannot find what you are looking for. Please contact your local Mitutoyo sales team. And benefit from our long standing experience.

Styli catalogue PRE 983017.

Mitutoyo Styli for measurably better results.

Discover the Mitutoyo online Styli catalogue or download the PDF.

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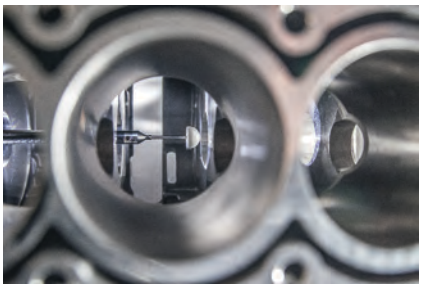
Styli Kits

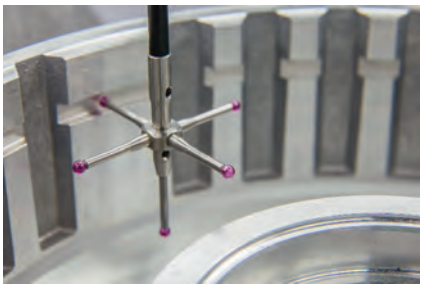
Styli Kits

Preconfigured styli kits are available for the initial equipment or to suit different application or probe requirements.

Please refer to our webshop and styli brochure for the best overview of available kits, single styli and accessories.

Our steadily increasing product range will provide the best styli for your application.





Mitutoyo Styli online catalogue

Scan QR-Code to see all Styli Kits.

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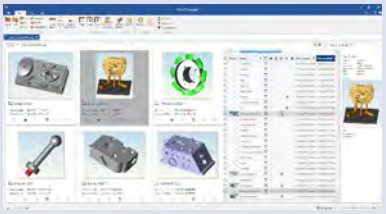
CMM Software

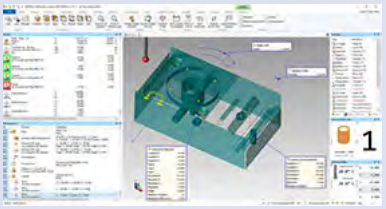
MCOSMOS - The Modular Software for all Kinds of Measurement

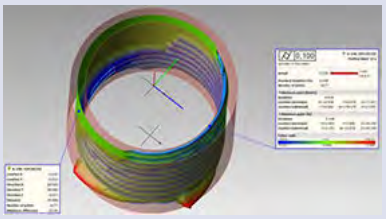
The heart of your CMM: to organize, execute, calculate and report.

- Organize your measurement programs on the network
- Add commands and instructions to guide the operator
- Create individual reports meeting your customer's needs
- Archive your results in formats like PDF, XLS, HTML and many other
- SPC with MeasurLink or export data to CAQ systems
- Export detected geometrical elements to CAD systems
- Revision Management for authorized usage of validated part programs as standard
- Meet the requirements of **FDA Title 21 CFR Part 11** without extra costs

The following packages are also available for Offline programming.
The so called "**Offline MCOSMOS**" packages allow you to create part programs whilst the CMM is proofing your product quality.







For details, please ask for the MCOSMOS brochure.

Software package	MCOSMOS-3 CNC V5	MCOSMOS-1 Basic package	MCOSMOS-2 CAD package
Part Manager			
• System configuration	●	●	●
• Part program handling			
• Data management			
• Create report templates			
GEOPAK			
• On/Off-line	●	●	●
• For prismatic elements			
• Operator guidance			
• Parametric programs			
CAT1000P			
• CAD programming	●		●
• For prismatic elements			
• Collision control			
• Incl. simulation			
CAT1000S			
• CAD programming	●		●
• Free-form inspection			
• Surface + edge points			
• Grahical Reports			
SCANPAK			
• For 2D contours	●		
• Evaluate + manipulate			
• Graphical Reports			
• Data exchange to CAD + NC			

Additional software packages meeting your needs:

MeasurLink:
SPC software with certified AQDEF interface. Allows you to collect data from different vendors and devices. Its database offers collecting and analyzing data from all over the world, analyse your process and create individual reports.

GEARPAK Bevel/Hypoid:
GEARPAK Bevel is currently supporting the measurement and evaluation of the following gears:

- Straight-Bevel Gear manufactured by Gleason Works Co.(Ring Gear/Pinion)
- Spiral-Bevel Gear manufactured by Gleason Works Co.(Ring Gear/Pinion)

GEARPAK Hypoid is currently supporting the measurement and evaluation of the following gear:

- Hypoid Gear generated by Gleason Works Co.(Ring Gear [Formate, Helixform]/Pinion)

By inputting the gear parameters the measurement program is generated automatically.

GEARPAK Worm:
Cylindrical worms with the following flank types can be measured with GEARPAK-Worm ZI, ZA, ZN, ZK. By inputting the gear parameters the measurement program is generated automatically.

ROUNDPAK-CMM
Special evaluation tool for scanning measurements typically known from form measurement instruments. Topographic views and evaluation of form and position deviations.

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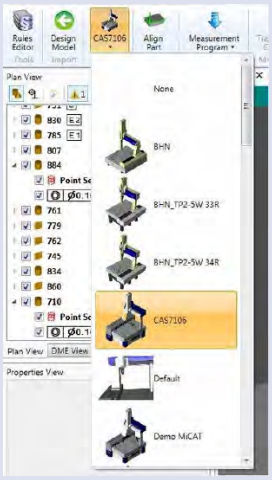
CMM Software

MiCAT Planner -The CMM Part Program Generator

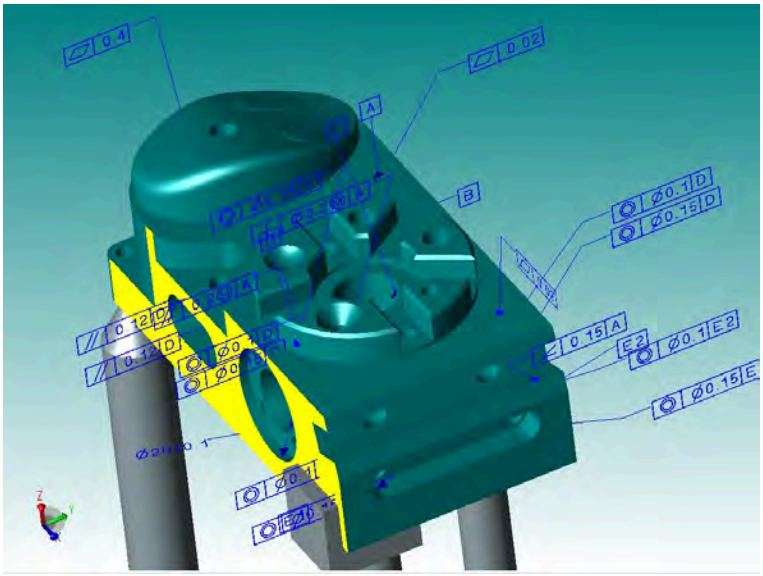
The new CMM software generation for an efficient, safe and automatic CMM programming. MiCAT Planner drastically reduces the programming time and thus will make your work much more efficient! Programs will now be made within minutes where it took hours or even days before. MiCAT planner is using PMI (Product Manufacturing Information) tolerance information inside the CAD file and creates the complete part program by considering your individual measurement strategy and your specific CMM. This guarantees a collision-free program in the shortest possible time.

- Reduces programming time significantly
- Collision-free and optimized programs
- Increased availability of the measuring machine
- Flexibility in choosing the measuring machine
- Unified measurement strategies increase data quality
- Speeds up instruction of staff

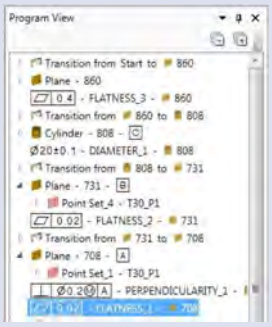


Step 2: Select the CMM

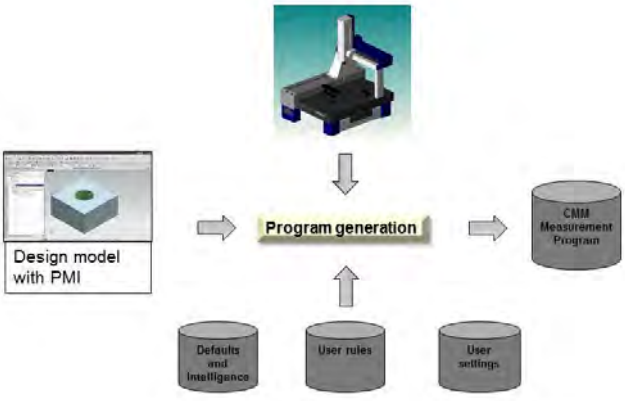
Step 3: Align CAD model



Step 1: Load the CAD model.
- Various CAD transaltors available: ACIS, STEP, CATIA V5, Pro-Engineer/CREO, Siemens NX, SolidWorks
- Add missing tolerance information



Step 4: Create the part program



Workflow by MiCAT Planner

Step 5: Transfer to MCOSMOS

Scan the QR Code with your mobile device and watch our product videos on YouTube

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Mitutoyo

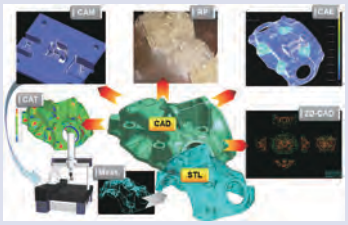
CMM Software

MSURF - Point Cloud Processing Software for Coordinate Measuring Machines

MSURF-S

Calculates point cloud data measured by CNC CMM with SurfaceMeasure. It generates scanning paths by defining the scanning start position, length, and width.

- Scanning paths can be created by simply defining three items : the scanning starting point, the scanning length, and the scanning width
- Scanning paths can be stored as measurement macros
- Point cloud data obtained from scanning can be exported in text or STL format
- MSURF-S can be started from MCOSMOS

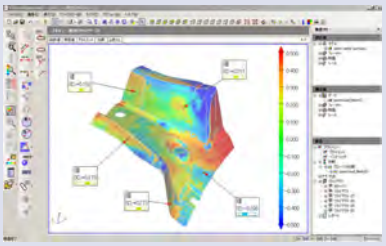


Screen sample from MSURF-S/I

MSURF-I

Conducts analysis or comparison verification of measured point cloud data in reference to nominal data (supporting CAD data import).

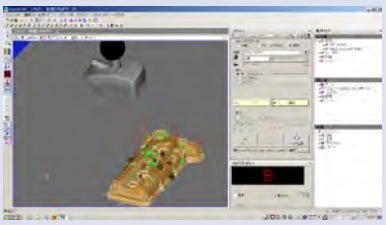
- Importing CAD data
- Feature-by-feature comparison
- Comparison of cross-sectional shapes

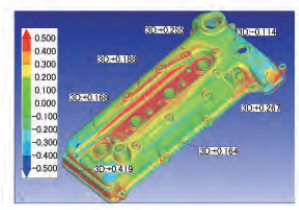


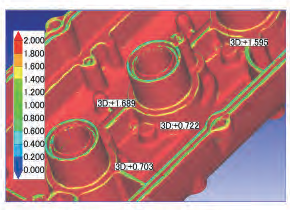
MSURF Planner

is software to automatically create measurement macros (surface form, feature form) for the line laser probe from 3D CAD data.
Optimized data (travel path, number of probe head revolutions, etc.) of a measurement path will contribute to improvements in productivity.

- Automatic scanning path programming.
- Automatic path generation for surface or feature extraction
- Mirroring function



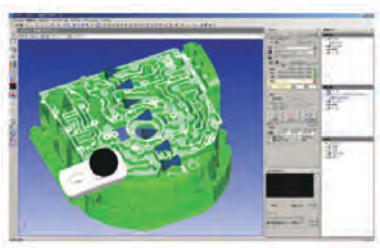

Error color-coded map


Surface curvature evaluation

MSURF-G

Off-line version for part program generation

- Semi-automatic function for creating measurement paths with optimum probe orientation
- Detection of collision between the probe and the workpiece model
- Generation of simulated data for the point cloud expected to be obtained through scanning
- Displaying measurement movements (scanner movements) in animation


Screen sample from MSURF-G

Screen sample from MSURF-G

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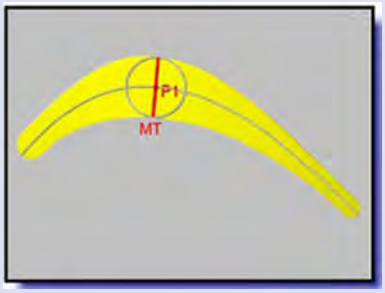
CMM Software

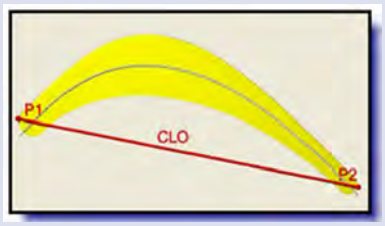
MAFIS Express - Rapid Air Foil Inspection Software

Mitutoyo introduces the fastest way for inspecting blades and blisks: MAFIS Express.

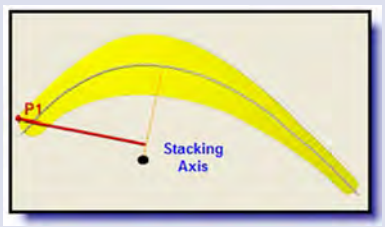
- Increases your throughput by time savings up to 90%
- Intuitive programming and easy handling
- For many kinds of airfoils like blades, blisks, gas turbines
- Easy Off-line programming on the CAD model
- Individual setting of the inspection routine: measure all or just some dedicated intersections
- Support of standards set by Rolls-Royce®, P&W, Siemens®, GE®, Honeywell®, SNECMA, Turbomeca® and others
- Ideal with the Revo® or SP25M probe heads



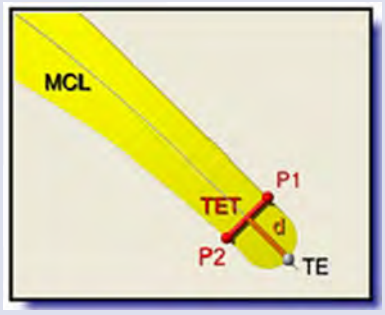
Maximum thickness



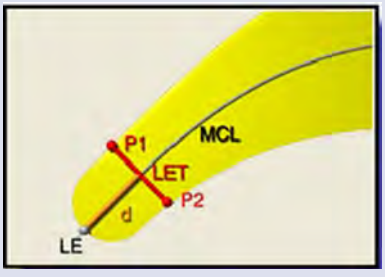
Overall Chord Length



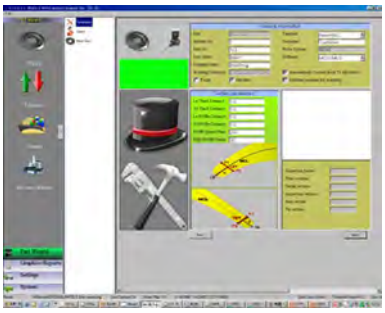
Stacking Axis

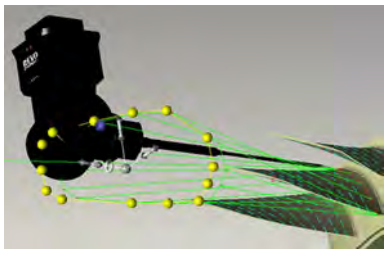


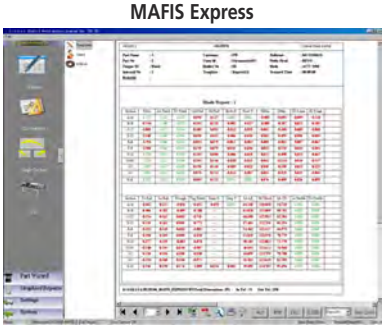
Trailing Edge – thickness on specific distance

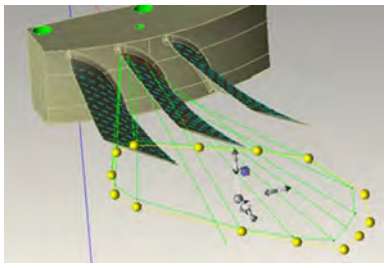


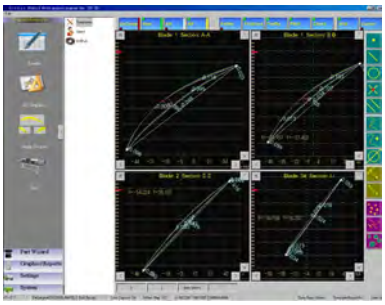
Leading Edge – thickness on specific distance


MAFIS Express


Setting intersections on the CAD model


Numerical evaluation


Optimizing the probe path


Graphical evaluation

Take a look how quick air foils are inspected by MAFIS Express

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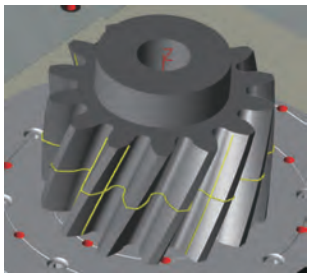
CMM Software

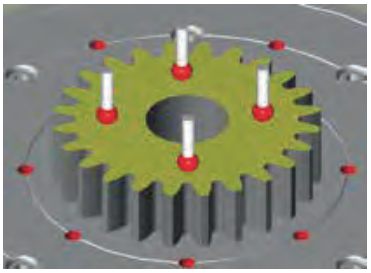
GEARPAK-Express

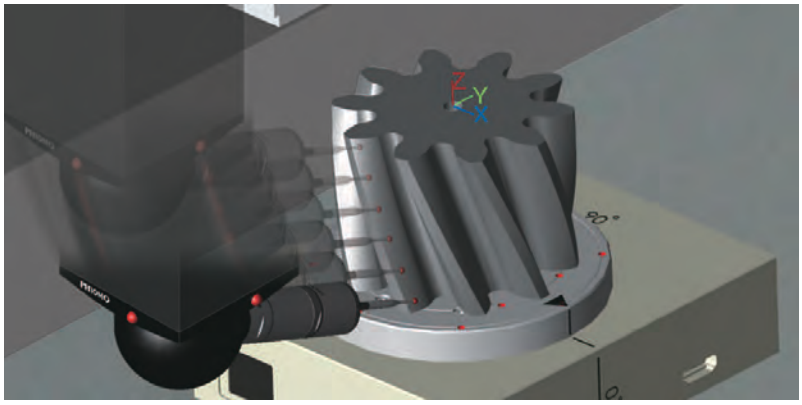
Gear Measurement and Evaluation software for cylindrical gears

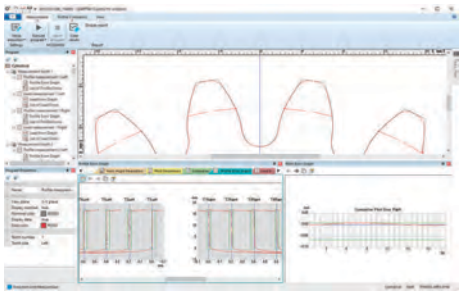
Main features:

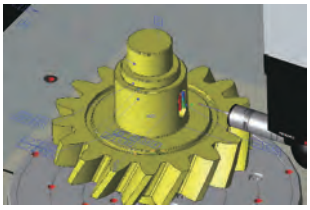
- A 3D model created from the provided gear specifications enables an easy visual check of the measurement strategy.
- Automatic program creation and on-screen measurement guidance help quick and easy setting of the coordinate system.
- "4-Axis nominal scanning" using an optional rotary table, makes scanning even faster. Depending on the size and accuracy class of the gear, the measurement time can be reduced up to 50% compared to conventional methods.
- The real-time display of the measurement result and tolerance judgment result enables early detection of non-conforming product.
- Performs dimensional measurement and geometrical tolerance evaluation without changing the setup during gear evaluation.











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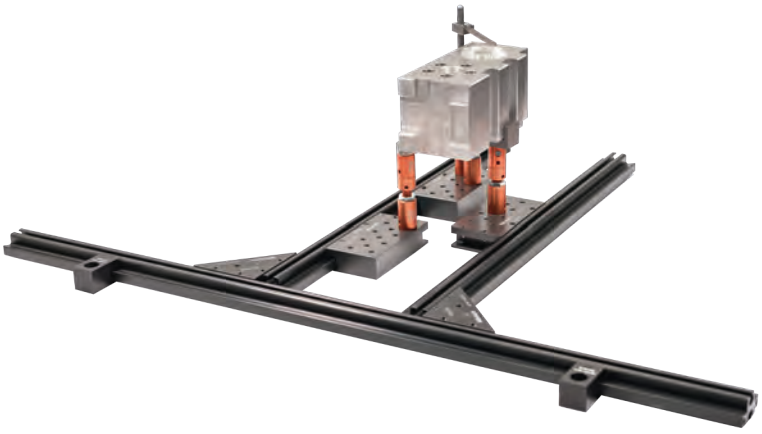
Fixtures

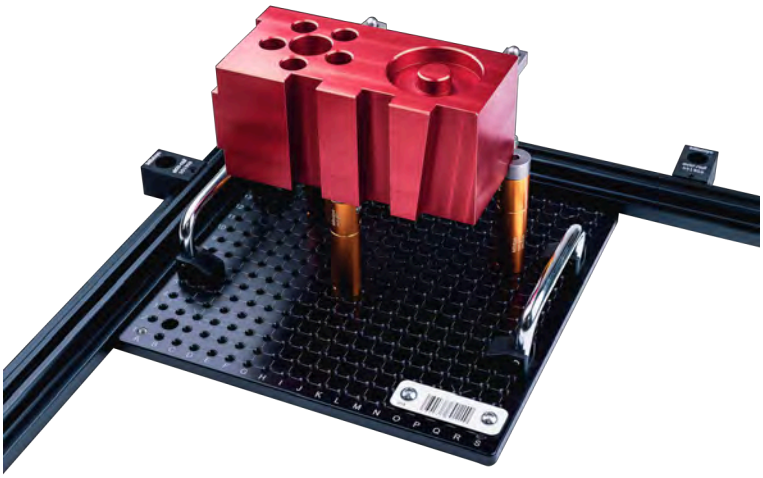
eco-rail CMM fixtures Series

The Mitutoyo eco-fix rail system defines flexibility in modular CMM fixturing. Guide rails can be mounted on the CMM in next to no time. By sliding the base elements with the integrated build-up components already attached, the stepless on-rail positioning assures an ultra-fast setup of fixturing positions. The basic kit K551279 features all required components for a three-point setup with secure positioning via spring clamping.
Footprint: 800 mm x 500 mm

The full compatibility of the eco-fix and eco-fix plus product ranges enable the extension of the fixturing setup at any time and additionally increases performance and flexibility. Mitutoyo fixture equipment has been designed and manufactured in Germany for over 35 years with uncompromising precision in mind.

Choosing Mitutoyo is clear when it comes to fixture systems thanks to their essential aspects of universality, flexibility, and efficiency.





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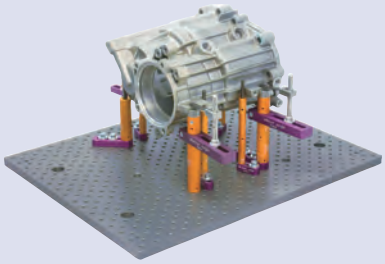
CMM Fixtures

Fixturing kits

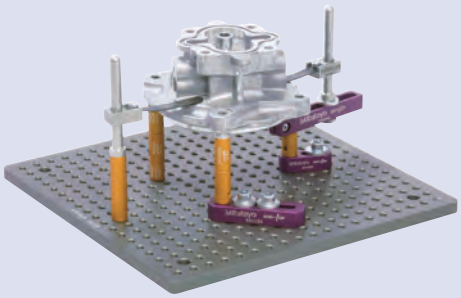
Mitutoyo eco-fix CMM fixtures Series – Experience in Accuracy

Mitutoyo fixture kits series "eco-fix" is a very fast and affordable solution to get workpieces clamped on the measuring machine. In just a few minutes, your fixture is ready for measurement. Therefore, eco-fix is a very attractive alternative to customised jigs.
The modular clamping system for CMM and form measuring machines, eco-fix, allows relaxed working in many ways. For the first time, functions and colours are conjoint in a practice-oriented concept for time-saving economical working and confusion- proof handling.

Clear optical differentiation of elements by colour
- Black: base plate
- Violet: brackets
- Orange: build up components
- Silver: Top pieces for workpiece support



Workpiece set up on eco-fix base plate



Fixtures catalogue PRE 1403

Mitutoyo Fixtures for measurably better results.

Discover the Mitutoyo online fixtures catalogue or download the PDF.

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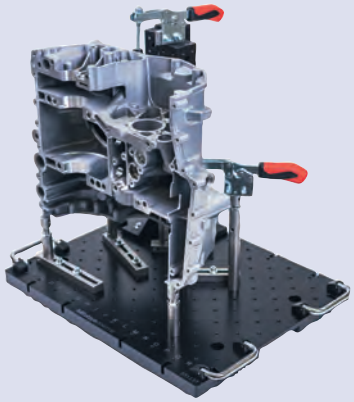
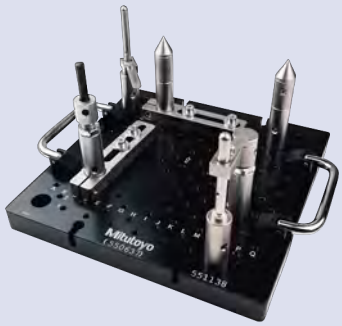
CMM Fixtures

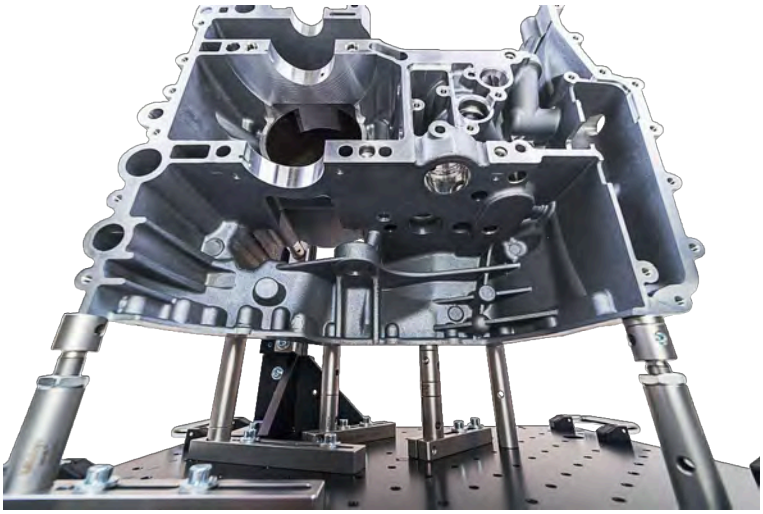


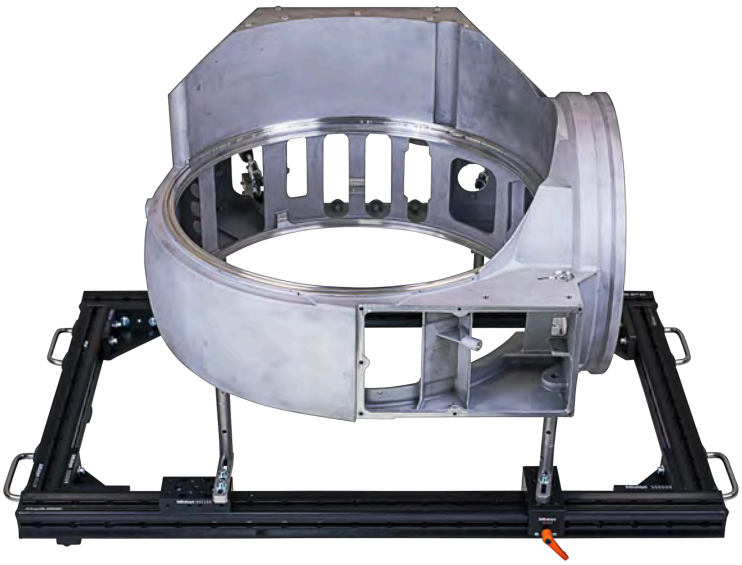


eco-fix^{plus} CMM fixtures Series

A new contestant has entered the modular fixturing world: **eco-fix^{plus}**

- The new fixturing system, made of solid and rigid steel components, is made for heavy and big workpieces.
- It significantly reduces the requirement for custom made solutions due to weight and dimension.
- Repeatable set-up configuration and high durability are only some of the product ranges advantages.
- M6 threading ensures full compatibility with eco-fix components and our **multiflex^{profile}** series.
- The combination with our profile frame series adds utmost flexibility for the fixturing of even bigger components.





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CMM Fixtures

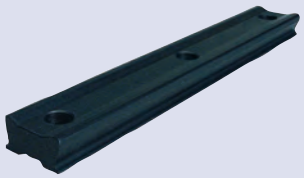
multiflex^{profile} CMM fixtures Series

The multiflexprofile series provides base and build-up components for parts that are too big for the eco-fix base plates.

The profile line-up comprises of 3 different variants:

- multiflex^{profile} rails are half dovetail profiles for direct mounting of basic frames on the CMM granite.
- The economic multiflex^{profile} frames is used for generating the basic frame. It features dovetail and T-nut profiles.
- The actual mutiflex^{profiles} feature an additional grid system, that together with positioning pins provide secure fixation of build up plates and slider components.

Apart from our off the peg profiles, custom lengths are available by inquiry.



multiflex^{profile} rail

multiflex^{profile} frame

multiflex^{profile}

Slider elements, including the height adjustable vari-fix columns, can be positioned freely on the frame structure. In combination with eco-fix and eco-fixplus fixturing components, the highest fixturing flexibility and capability for any modular fixturing range is achieved.

Advantages of vari-fix columns:

- fully height-adjustable
- rotative parts allow 360° positioning
- combinable with all eco-fix parts

Slider element

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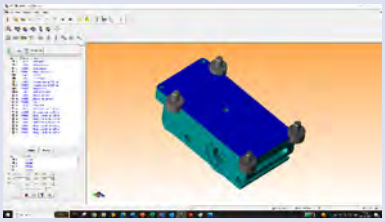
CMM Fixtures

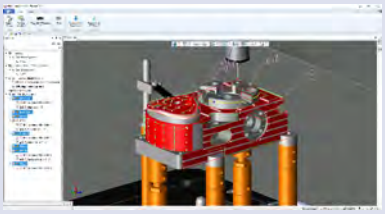
Imported CAD file and choosen base plate



Application of support points

Applied support points and clamps

Automatically processed fixture



Imported Fixture project in MiCAT PLanner part programming software

FixtureBuilder Software

Fixturing kits

The free of charge software **FixtureBuilder** enables the user to easily plan and set up his CMM fixture in just a few minutes. Repeatable fixturing has never been easier and at a better price performance ratio. FixtureBuilder is a software tool that allows users to create virtual clamping fixtures quickly and easily. Users can choose whether to set the virtual fixture up manually or to allow the software's "AutoMode" to perform the task.
The interactive "AutoMode" operating mode guides the user step by to step to a finalized clamping fixture. Only very few data need to be input, for example the choice of component to be clamped or the position and type of contact and tensioning points. This data is sufficient to enable **FixtureBuilder** to independently create a complete clamping fixture.

FixtureBuilder advantages

- Fixture building by mouse click
- Ideal for online programming with e.g., MiCAT Planner
- Parts list with material overview
- Documented structure
- Assembly instruction for each column
- Alpha numeric column positioning coordinates according to base plate markings
- Automatic weight determination
- Multiple data formats for file data import and export

FixtureBuilder software allows data to be imported in Acis (*.sat), Iges (*.igs) and Step (*.stp) formats. The export functions it offers include Hoops file (*.hsf), A, 3d PDF (*.pdf) and Acis Files (*.sat).
Available integrated in Mitutoyo's **MCOSMOS** CMM software, or as a free standalone version, FixtureBuilder allows data to be processed in all **MCOSMOS** import formats. The fixture design can be imported into the measuring software, either on its own or complete with component, and thus be used for offline programming of the coordinate measuring machine. The import works too with any compatible 3rd party CMM software.
Online part programming, for e.g., with part program generating software **MiCAT Planner**, is even easier by importing the fixture and part data directly into the software.
A parts list report with assembly instructions is available in various output formats for the assembly of the real fixture created in FixtureBuilder. The 3D function in PDF format is especially practical as it allows limitless variations on the view of the fixture model in the PDF document. The virtual design can therefore be examined from all possible views and positions.

Import data in

- Acis (*.sat) file format
- Iges (*.igs) file format
- Step (*.stp) file format

Save fixture report in

- PDF file format (3D option)
- HTML file format
- CSV file format

Save fixture data in

- HOOPS (.hsf) file format
- 3D PDF (.pdf) file format
- ACIS (.sat) file format

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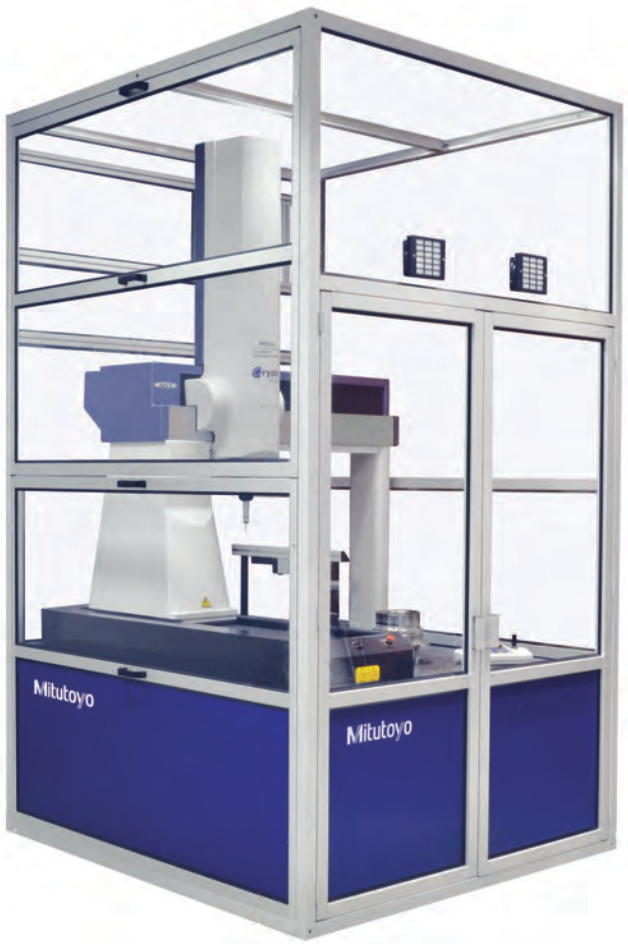
CMM Enclosures

Protect your investment for contamination, improve reliability of measurements and reduce maintenance costs. Mitutoyo's Inspection Enclosures are designed to help keep your CMMs and instruments free of airborne contamination.

Features and benefits:
- Standard fans create positive pressure inside the enclosure to exclude airborne contaminants, increase reliability of measurements and reduce CMM maintenance costs.
- Air-conditioning option is available to add temperature control to the clean air environment.
- Enclosed volume provides greatly improved working conditions for intricate inspection operations.
- Double doors fold back enabling easy access for part loading.
- Modular Design with removable panels enables easy construction around existing machines, straightforward relocation (if required) and assists in annual CMM servicing.
- Enclosures are robustly built to whitstand the demands of a busy shopfloor manufacturing facility.
- Transparent, polycarbonate, easy-clean panels pass sufficient light for normal use and are shatterproof, tough and durable.
- Clean, functional design enhances the appearance of your CMMs.

Technical details:
- Framework fabricated from extruded aluminium.
- Lower panels made from PVC - available in a variety of colours
- Upper panels in clear polycarbonate.



All products to be sold to commercial customers.
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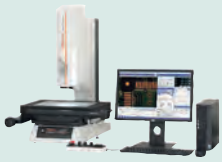
Vision Measuring Systems

Manual 2D Vision Measuring Machines Quick Image
Page 572



Manual 2.5D Vision Measuring Machines Quick Scope
Page 574

3D CNC Vision Measuring Machines Quick Vision
Page 576

3D CNC Multisensor Measuring Machines Quick Vision
Page 582

3D CNC Multisensor Measuring Machines MiSCAN
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3D CNC Measuring Machines for Micro Geometries
Page 585

Software for Quick Vision Machines
Page 587

Accessories for Vision Machines
Page 588

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Quick Image

Quick Image

The ultimate in simple operation with **one click measurement.**
This non-contact 2D vision measuring system brings you a new concept in 2D vision measuring instruments. It offers several unique features to improve the efficiency of your measurements, including:

- Large depth of field and wide field of view.
- Double telecentric optical system.
- 3 megapixels colour camera.
- 4-quadrant LED ring light.
- Motorized stage models provide highest measurement efficiency.

QI-A/B

QI-C

QI-A models, 0.2x Magnification, Manual stage

No.	Model	Travelling range X-, Y-axis [mm]	Travelling range Z-axis [mm]
361-850A	QI-A1010D	100 x 100	100
361-851A	QI-A2010D	200 x 100	100
361-852A	QI-A2017D	200 x 170	100
361-853A	QI-A3017D	300 x 170	100
361-854A	QI-A4020D	400 x 200	100

QI-B models, 0,5x Magnification, Manual stage

No.	Model	Travelling range X-, Y-axis [mm]	Travelling range Z-axis [mm]
361-855A	QI-B1010D	100 x 100	100
361-856A	QI-B2010D	200 x 100	100
361-857A	QI-B2017D	200 x 170	100
361-858A	QI-B3017D	300 x 170	100
361-859A	QI-B4020D	400 x 200	100

QI-C models, 0.2x Magnification, Motorized stage

No.	Model	Travelling range X-, Y-axis [mm]	Travelling range Z-axis [mm]
361-860-11	QI-C2010D	200 x 100	100
361-861-11	QI-C2017D	200 x 170	100
361-862-11	QI-C3017D	300 x 170	100

Specifications

Measuring Mode	High-resolution mode and Normal mode
Optical system working distance	90 mm
Optical system depth of focus	**High-resolution mode** : ±0,6 mm (QI-A, QI-B and QI-C) **Normal mode** : ±11 mm (QI-A and QI-C) ±1,8 mm (QI-B)
Accuracy (1)	$E_{1(x,y)}$ = ±(3,5+0,02L) µm **L** = measured length (mm) (1)According to Mitutoyo inspection method
Optical system magnification	**QI-A and QI-C models** : 0,2X **QI-B models** : 0,5X
CCD camera	3 megapixels colour CCD camera
Illumination	- Contour: White LED - Coaxial: White LED - 4-quadrant white LED ring light

Optional accessories

No.	Description
12AAJ088.	Reinforced footswitch

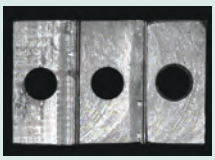

Image of a stepped block using the double telecentric objective showing the orthographic view produced.

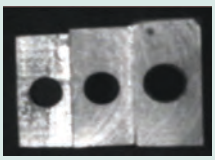

Image of the same object using a standard objective

Refer to the Quick Image brochure

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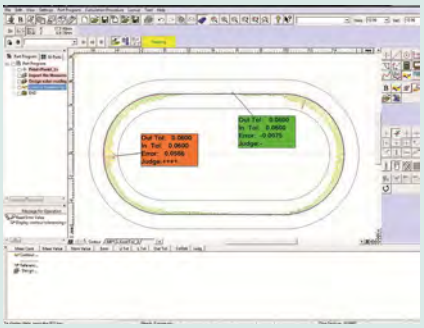
Software for Quick Image Systems

Specifications

QIPAK Additional software (optional)	MEASURLINK (refer to the Measurlink page) QS CAD-IMPORT/EXPORT FORMTRACEPAK-AP[1]



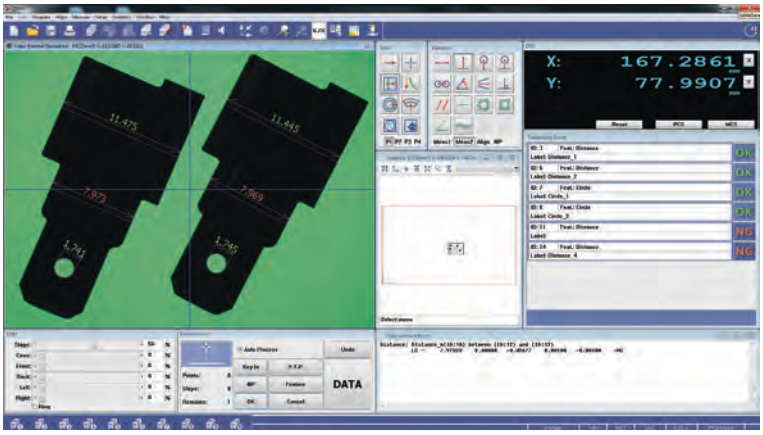
[1] FORMTRACEPAK-AP

**Simple and easy-to-use 2D contour analysis.
Graphic reports (geometry or scanning) edition.
Allows measurement by comparison.
For more information refer to FORMTRACEPAK-AP.**

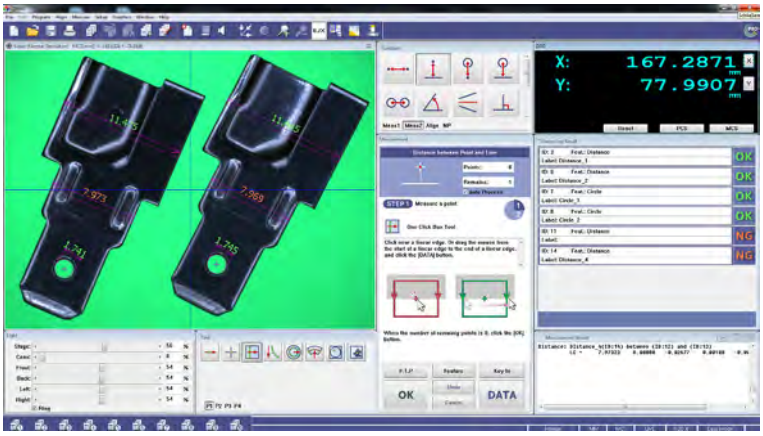
QIPAK

- One click measurement with QUICK GO / NG decision
- Single mouse-click edge-detection tools; very easy to use.
- Template tools for comparative analysis.
- Video image capture.
- Stage navigation function gives improved measurement cycles.
- Image stitching provides wide area measurement.

No.	Type
QIPAK	Software for Quick Image Systems



QIPAK screen layout in pro mode



QIPAK screen layout in easy mode

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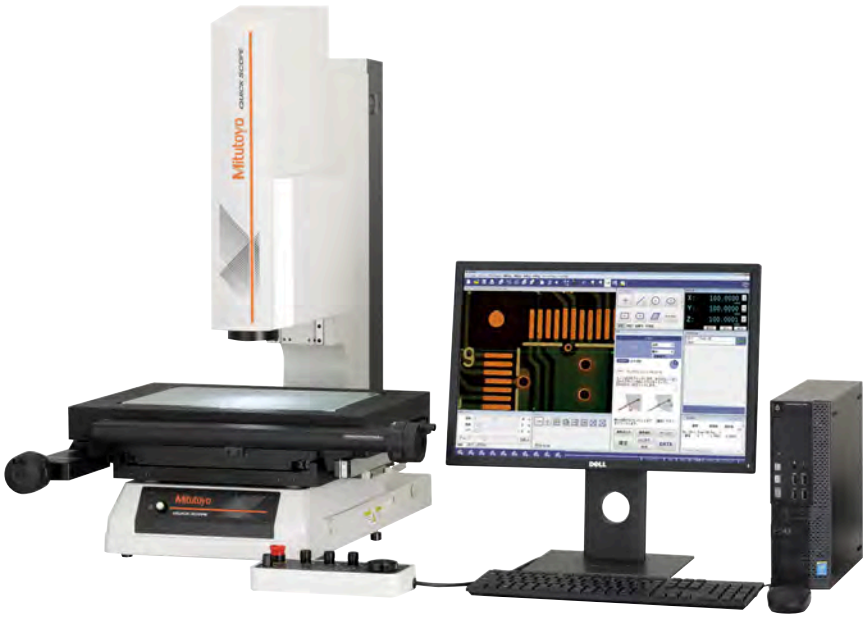
Mitutoyo

Manual Quick Scope QS-L

Quick Scope

This manual vision measuring system is an excellent surface observation system which you can use on a wide variety of workpieces.
The Quick Scope offers you the following benefits:

- 0,1 µm resolution and 150 mm Z-axis range.
- Power zoom enabling you to change magnification change quickly and easily.
- Fine illumination capability enabling you to change lighting to match your workpiece requirements.
- A quick release system on the stage, so you can switch instantly between coarse and fine movement.
- Quick navigation function allowing you to repeat measurements quickly.
- Motorized Z-axis enables fast and accurate Auto Focus.



QS-L Z/AFC models

No.	Model	Travelling range X-, Y-axis [mm]	Travelling range Z-axis [mm]	Magnification (optical system)	Z-axis measurement	Max. stage loading
359-713-10	QS-L2010Z/AFC	200 x 100	150	0,75X -> 5,25X with 1,5X objective	Motorized with AF	10 kg
359-714-10	QS-L3017Z/AFC	300 x 170	150	0,75X -> 5,25X with 1,5X objective	Motorized with AF	20 kg
359-715-10	QS-L4020Z/AFC	400 x 200	150	0,75X -> 5,25X with 1,5X objective	Motorized with AF	15 kg

Specifications

Accuracy[1]	$E_{1(x,y)}$ =(2,2 + 0,02**L**) µm $E_{1(z)}$ =(4,5 + 6**L**/**1000**) µm **L** =measured length (mm) [1]According to Mitutoyo inspection method
Illumination	- Contour: White LED - Coaxial: White LED - Ring Light: 4-quadrant White LED

Optional accessories

No.	Description
937179T	Footswitch for SPC
12AAJ088	Footswitch

Refer to the Optical Accessories page for Quick Scope / Quick Vision for more information on calibration charts.

1X, 1.5X and 2X interchangeable lens

Quick Scope brochure on request

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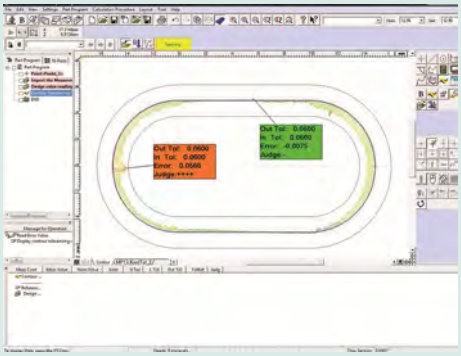
Software for Quick Scope Systems

Specifications

QIPAK Additional software (optional)	MEASURLINK (refer to the Measurlink page) QS CAD-IMPORT/EXPORT FORMTRACEPAK-AP(1)



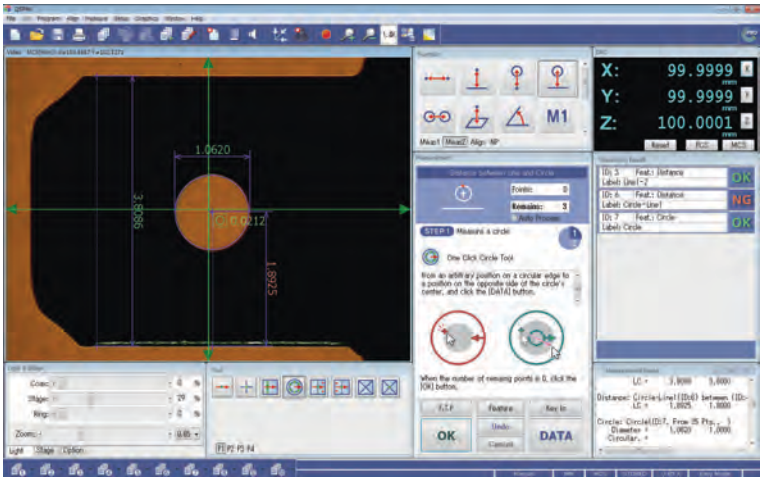
(1) FORMTRACEPAK-AP

Simple and easy-to-use 2D contour analysis.
Graphic reports (geometry or scanning) edition.
Allows measurement by comparison.
For more information refer to FORMTRACEPAK-AP

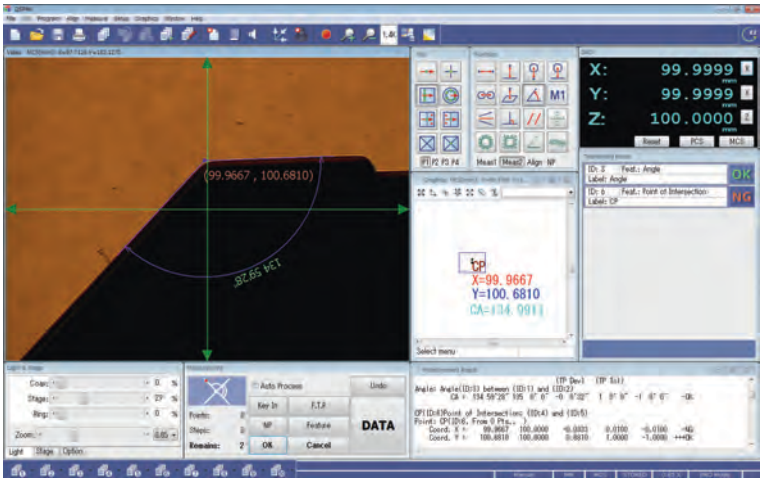
QSPAK

- Easy to use, single mouse-click edge-detection tools.
- Template tools for comparative analysis.
- Video image capture.
- Stage navigation function for CNC machines giving you improved measurement cycles.

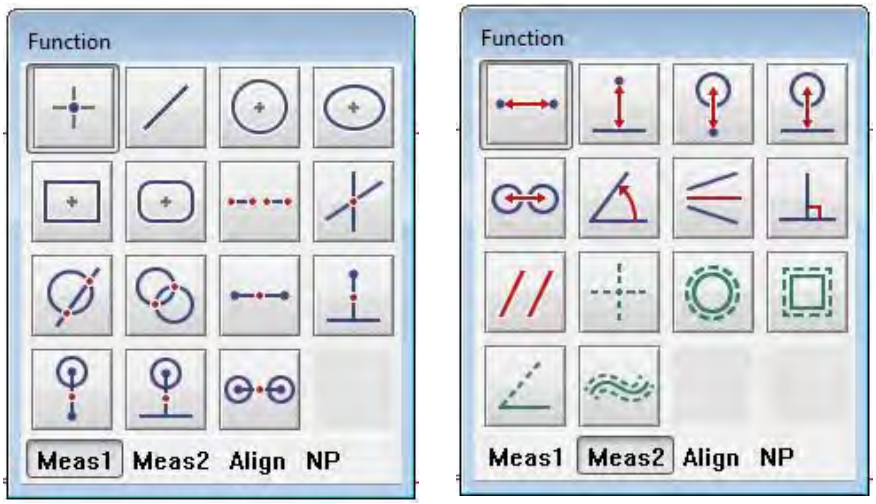
No.	Type
QSPAK	Software for Quick Scope systems



QSPAK Layout: Easy mode



QSPAK Layout: Pro mode



Measurement item commands

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Mitutoyo

Quick Vision ACTIVE

Quick Vision ACTIVE

This CNC Vision Measuring System combines the flexibility of a high quality zoom lens with the speed of a state-of-the-art digital colour camera and offers the following benefits:

- Programmable LED stage- and coaxial-light.
- Programmable 4-quadrant LED ring light.
- High-resolution and high-speed CMOS colour camera.
- High-quality 7-step zoom optics with interchangeable lenses.
- Compact design.
- Powerful, user-friendly QVPAK software.
- Touch probe option.

QV ACTIVE 202

QV ACTIVE 404

No.	Model	Range (X, Y, Z-axis) with Vision Head	Measuring range (X×Y×Z)	Max. stage loading
363-109-30	QV-L202Z1L-D	250x200x150 mm	250x200x150 mm	10 kg
363-110-30	QV-L404Z1L-D	400x400x200 mm	400x400x200 mm	20 kg

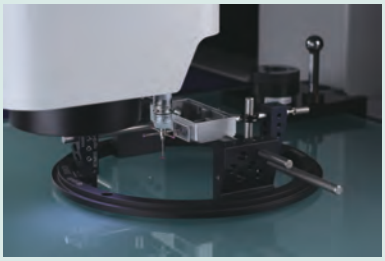
Specifications

Resolution	0,1 µm
Illumination	(White LED) • Contour • Coaxial • 4-quadrant ring light
Magnification change system	Zoom optical system with 8 positions Standard 1,5X magnification lens
Sensor type	High resolution CMOS colour camera
Additional objective lenses	1X and 2X magnification

Optional accessories

No.	Description
02ATN695.	Calibration chart with holder

1X, 1,5X and 2X interchangeable lens



TP20 with opti-fix

MCR20 option

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Quick Vision APEX / HYPER

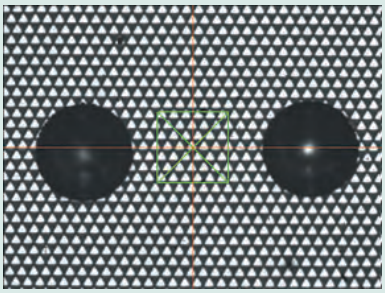
Specifications

Illumination	(White LED) • Contour • Coaxial • 4 quadrant PRL
Magnification change system	Programmable Power Turret (PPT) 1X ; 2X ; 6X
Sensor Type	**QV PRO Models:** High sensitivity CCD B&W camera
Factory option	**For QV APEX and QV HYPER:** **- TAF** Tracking Auto Focus Refer to the Quick Vision Accessories page for details
Additional objective lenses	Refer to the Optical Accessories page for Quick Scope / Quick Vision

Optional accessories

No.	Description
Calibration charts	
02ATN695.	Calibration chart with holder

Refer to the Optical Accessories page for Quick Scope / Quick Vision for more information on calibration charts.



Auto Focus Tool : type Pattern Focus (tool for focusing on difficult surfaces such as mirrors, polished surface clear glass).

Refer to the Quick Vision brochure

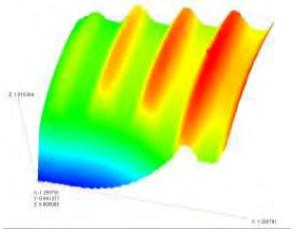
This CNC Vision Measuring System is a floor-standing vision measuring machine which offers you the following benefits:

- Programmable LED stage- and coaxial-lighting.
- Programmable 4-quadrant LED ring light.
- Pattern focus function.
- Accuracy specifications conforming to ISO 10360-7 standard (on request).
- Temperature compensation as standard feature.
- Touch probe option.

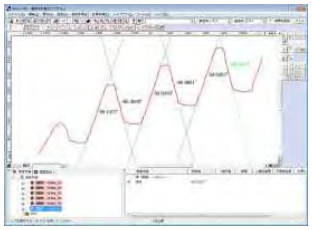
Optional PFF Function (Points From Focus)

- PFF enhances the functionality of standard QV models with 3D topography measurements.
- No additional sensor necessary.
- Large scanning range in Z axis from 2,7 mm up to 40,6 mm in wide range mode depending on the objective used.

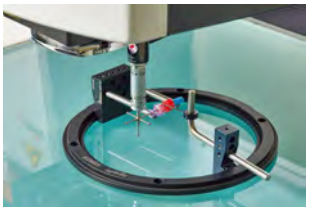
Workpiece to be measured with PFF



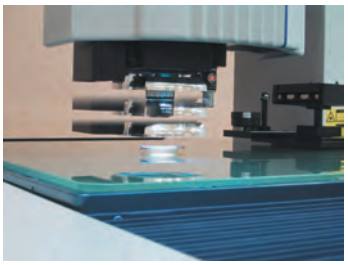
3D Analysis of PFF measurement



2D Analysis of PFF measurement



Touch Probe option



PRL = Programmable Ring Light
Fine control of angle and direction provides illumination for optimal measurement. You can set the angle in the range from 30° to 80°. This type of illumination is effective for enhancing the edge of inclined surfaces or very small steps. Illumination can be controlled independently from back or front, right or left. Measurement with edge enhancement is possible if you form a shadow by illuminating from only one direction.

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Quick Vision APEX / HYPER

QV APEX Pro

QV **APEX Pro**
CNC Vision Measuring System

All the **QUICK VISION Pro** models are equipped with a strobe light, and the newly developed vision measuring function "StrobeSnap" delivers measurements with both high throughput and high accuracy. Regardless of the continuity of measuring positions, measuring time can be shortened by about 35 to 45% for most measurement samples when compared with our former system.

The STREAM function provides an amazingly high throughput, due to the non-stop measurement where the camera motion and the strobe light are synchronized. It can shorten measuring time more than StrobeSnap due to the continuous element measurement as shown in the following conceptual image of measurement.

- This is a superior model of QUICK VISION, which is equipped with the StrobeSnap function as standard, enabling high-speed measurement.
- We offer a model with Tracking Auto Focus (TAF) that quickly focuses on the object improving throughput significantly.
- The camera motion and the strobe light are synchronized to make non-stop vision measurements without stopping the stage. This makes it possible to use STREAM to shorten measuring time dramatically.

QV Apex 302 Pro

QV Apex 404 Pro

QV Apex 606 Pro

Touch Trigger Probe

CNC Vision Measuring System equipped with optional touch trigger probe.

- Non-contact measurement and contact measurement can be done solely by one unit. QVTP Pro can perform contact measurement by using the vision measuring function and the touch-trigger probe.
- Three-dimensional workpiece measurements can be performed. Enables 3D measurement of workpieces such as press-molded products, plastic-molded products, and cut products, which until now could not be measured with image processing alone.
- Using the probe module change rack allows switching between vision measurement and touch-trigger probe measurement during an automatic measuring sequence.

No.	Model	Measuring range (X×Y×Z)	Max. stage loading
363-601-10	QV Apex 302 Pro - White LED	300 x 200 x 200 mm	20 kg
363-602-10	QV Apex 302 Pro - Colour LED	300 x 200 x 200 mm	20 kg
363-603-10	QV Apex 302 Pro - White LED - TAF	300 x 200 x 200 mm	20 kg
363-604-10	QV Apex 302 Pro - Colour LED - TAF	300 x 200 x 200 mm	20 kg
363-611-10	QV Apex 404 Pro - White LED	400 x 400 x 250 mm	40 kg
363-612-10	QV Apex 404 Pro - Colour LED	400 x 400 x 250 mm	40 kg
363-613-10	QV Apex 404 Pro - White LED - TAF	400 x 400 x 250 mm	40 kg
363-614-10	QV Apex 404 Pro - Colour LED - TAF	400 x 400 x 250 mm	40 kg
363-621-10	QV Apex 606 Pro - White LED	600 x 650 x 250 mm	50 kg
363-622-10	QV Apex 606 Pro - Colour LED	600 x 650 x 250 mm	50 kg
363-623-10	QV Apex 606 Pro - White LED - TAF	600 x 650 x 250 mm	50 kg
363-624-10	QV Apex 606 Pro - Colour LED - TAF	600 x 650 x 250 mm	50 kg

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Quick Vision APEX / HYPER

QV HYPER Pro

High-accuracy CNC Vision Measuring System

- The QV HYPER Pro is a highly accurate model that is equipped with a high-resolution/accuracy scale.
- We offer a model with Tracking Auto Focus (TAF) that quickly focuses on the object improving throughput significantly.
- The camera motion and the strobe light are synchronized to make non-stop vision measurements without stopping the stage. This makes it possible to use STREAM to shorten measuring time dramatically.
- There is a general-purpose model with white LED light and an enhanced edge detection model with RGB color LEDs.
- This model is standard-equipped with automatic temperature compensation that uses a temperature sensor on the main unit of the measuring machine and a temperature sensor for the workpiece.

Touch Trigger Probe

CNC Vision Measuring System equipped with optional touch trigger probe.

- Non-contact measurement and contact measurement can be done solely by one unit. QVTP Pro can perform contact measurement by using the vision measuring function and the touch-trigger probe.
- Three-dimensional workpiece measurements can be performed. Enables 3D measurement of workpieces such as press-molded products, plastic-molded products, and cut products, which until now could not be measured with image processing alone.
- Using the probe module change rack allows switching between vision measurement and touch-trigger probe measurement during an automatic measuring sequence.

QV Hyper 302 Pro

QV Hyper 404 Pro

QV Hyper 606 Pro

No.	Model	Measuring range (X×Y×Z)	Max. stage loading
363-605-10	QV Hyper 302 Pro - White LED	300 x 200 x 200 mm	15 kg
363-606-10	QV Hyper 302 Pro - Colour LED	300 x 200 x 200 mm	15 kg
363-607-10	QV Hyper 302 Pro - White LED - TAF	300 x 200 x 200 mm	15 kg
363-608-10	QV Hyper 302 Pro - Colour LED - TAF	300 x 200 x 200 mm	15 kg
363-615-10	QV Hyper 404 Pro - White LED	400 x 400 x 250 mm	30 kg
363-616-10	QV Hyper 404 Pro - Colour LED	400 x 400 x 250 mm	30 kg
363-617-10	QV Hyper 404 Pro - White LED - TAF	400 x 400 x 250 mm	30 kg
363-618-10	QV Hyper 404 Pro - Colour LED - TAF	400 x 400 x 250 mm	30 kg
363-625-10	QV Hyper 606 Pro - White LED	600 x 650 x 250 mm	40 kg
363-626-10	QV Hyper 606 Pro - Colour LED	600 x 650 x 250 mm	40 kg
363-627-10	QV Hyper 606 Pro - White LED - TAF	600 x 650 x 250 mm	40 kg
363-628-10	QV Hyper 606 Pro - Colour LED - TAF	600 x 650 x 250 mm	40 kg

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Quick Vision ACCEL

Quick Vision Accel - 3D CNC Vision Measuring System for large work pieces

These CNC camera measuring systems are characterized by a movable bridge structure.

Quick Vision ACCEL instruments offer the following advantages:

- The movable bridge design reduces the need for table movement. This allows for a simpler workpiece clamping design that results in a significant reduction in man-hours required for clamping and inspection of workpieces.
- The system is supplied complete with a stand under the machine.
- 3D topography measurements are possible with the PFF function
- Travel Automatic Focusing (TAF) as a factory supplied option.

No.	Model	Range (X, Y, Z-axis) with Vision Head	Max. drive speed X, Y-axis [mm/s]	Accuracy E1
363-315-20	QV ACCEL 808 PRO	800 x 800 x 150 mm	400	(1,5+3L/1000) µm
363-335-20	QV ACCEL 1010 PRO	1000 x 1000 x 150 mm	400	(1,5+3L/1000) µm

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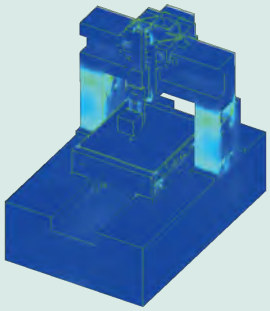
Quick Vision ULTRA

Additional objective lenses	Refer to Objective page for Quick Scope / Quick Vision



By using FEM (Finite Element Method) analysis of the base design, the placement of stiffening ribs and beams has been determined for the Quick Vision Ultra to provide optimal structural rigidity.

Ultra-precision scale manufacturing facility 11 metres underground

Ultra-high accuracy crystallized glass scale with virtually zero thermal expansion.
The Quick Vision Ultra is equipped with a crystallized glass scale having a resolution of 0.01 µm and linear expansion coefficient of 0.08 x 10^{-6}/K. This virtually zero thermal expansion means the Quick Vision Ultra can minimise accuracy fluctuation due to thermal changes.

Quick Vision brochure on request

Quick Vision ULTRA

This CNC vision measuring system gives you ultra-high accuracy.
The Quick Vision ULTRA offers you the following benefits:

- Axial translation straightness is maximised through the use of a precision air-bearing linear guide system.
- High resolution (0,01 µm) scales, manufactured at an ultra-precision facility located 11 m underground, are used on all axes.
- The scales are made from glass that has a virtually zero thermal expansion coefficient, so your measuring accuracy has minimal variation in changing temperatures.
- The base structure was designed using Finite Element Method analysis; this gives you the optimal stiffness/weight ratio combined with excellent geometrical stability, in terms of axial straightness / perpendicularity, with changing temperatures.
- Accuracy specification conforming to ISO 10360-7 are available (on request).
- 3D topography measurements are possible with the optional PFF functionality.

Quick Vision ULTRA 404 PRO

No.	Model	Factory option	Measuring range (X×Y×Z)
363-520-10	QV-U404P1L-E	Refer to Quick Vision Accessories page	400 x 400 x 200 mm
363-521-10	QV-U404T1L-E	**- Tracking Auto Focus (TAF)** Refer to Quick Vision Accessories page	400 x 400 x 200 mm

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Mitutoyo

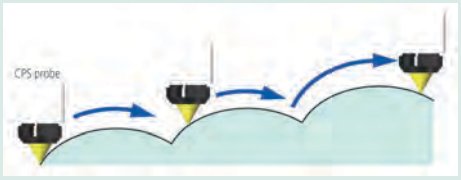
Quick Vision HYBRID Type 4 Series

Quick Vision HYBRID

- This dual system with a non-contact displacement sensor has a scanning function that enables measurement of minute height differences and 3D shapes.
- The non-contact displacement sensor (CPS probe) uses the wavelength confocal method.
- The LED used as the light source of the displacement sensor has an auto-brightness control function that enables seamless measurement of materials with different reflectivity.

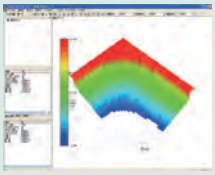
No.	Model	Measuring range (X×Y×Z)	Non-contact displacement sensor measuring range (X×Y×Z) [mm]	Non-contact displacement sensor measuring accuracy [µm]
365-601-10	QVH4A-X302P1L-E	300 x 200 x 200 mm	176 x 200 x 200	E1Z (1,5 + 4L/1000)
365-605-10	QVH4A-H302P1L-E	300 x 200 x 200 mm	176 x 200 x 200	(1,5 + 2L/1000)
365-611-10	QVH4A-X404P1L-E	400 x 400 x 250 mm	276 x 400 x 250	E1Z (1,5 + 4L/1000)
365-615-10	QVH4A-H404P1L-E	400 x 400 x 250 mm	276 x 400 x 250	(1,5 + 2L/1000)
365-621-10	QVH4A-X606P1L-E	600 x 650 x 250 mm	476 x 650 x 250	E1Z (1,5 + 4L/1000)
365-625-10	QVH4A-H606P1L-E	600 x 650 x 250 mm	476 x 650 x 250	(1,5 + 2L/1000)

Hybrid Type 4 system
The Quick Vision Hybrid Type 4 is a machine which allows vision measurement with a CCD camera and high-speed scanning with a non-contact displacement sensor.
The Hybrid Type 4 CPS sensor is available for Quick Vision Apex/Hyper models.

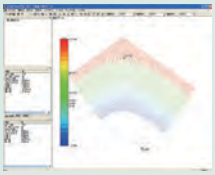


Scanning measurement with automatic movement of the Z-axis

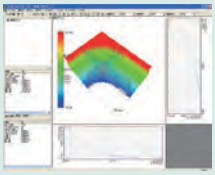
Form analysis of plastic molded parts having a slope.



Solid colour display



Shaped display



Extraction of arbitrary section

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Quick Vision White Light Interferometer

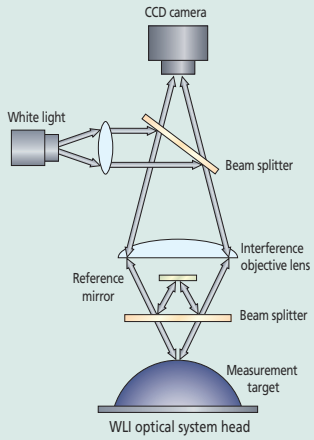
Quick Vision WLI

- Combines non contact measurements with vision system and White Light Interferometer (WLI).
- Easy alignment and positioning with vision sensor.
- Full QVPAK functionality with vision system.
- Enhanced functionality with WLI-system for high resolution topography evaluation such as surface roughness analysis.

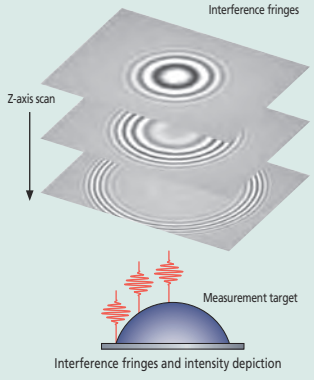
Optional accessories

No.	Description
02ALY400	Quick Vision WLI Objective, A-5X
02ALT630	Quick Vision WLI Objective, A-10X
02ALT670	Quick Vision WLI Objective, A-25X
02AWB150	Quick Vision WLI Objective, A-50X

QV WLI Objective lenses
Magnification 5X: Field of View 0,64 x 0,48 mm
Magnification 10X: Field of View 0,32 x 0,24 mm
Magnification 25X: Field of View 0,128 x 0,096 mm



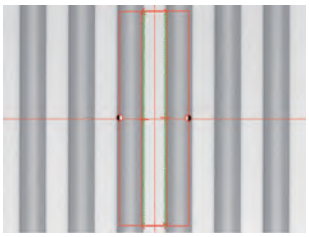
WLI optical system head



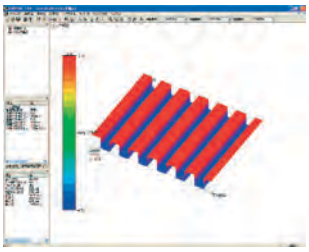
Interference fringes and intensity depiction

Scan QR Code with your mobile device and watch our product videos on YouTube

Quick Vision WLI 404 PRO



Video image of part



3D Analysis of measured part

2D Analysis of measured part

Specifications when using vision sensor are same as Quick Vision HYPER

Model	QVW-H404P1L-D	QVW-H606P1L-D
No.	**363-716-10**	**363-717-10**
Model	Hyper Quick Vision WLI 404	Hyper Quick Vision WLI 606
Range (X, Y, Z-axis) with Vision Head	400 x 400 x 240 mm	600 x 650 x 220 mm
Range with WLI Head	315 x 400 x 240 mm	515 x 650 x 220 mm
Repeatability WLI Head	$2\sigma \leq 0{,}08\mu m$	$2\sigma \leq 0{,}08\mu m$
Tube Lens WLI Head	2x	2x
Z-axis measuring range WLI Head	170 µm	170 µm
Max. stage loading	25 kg	35 kg

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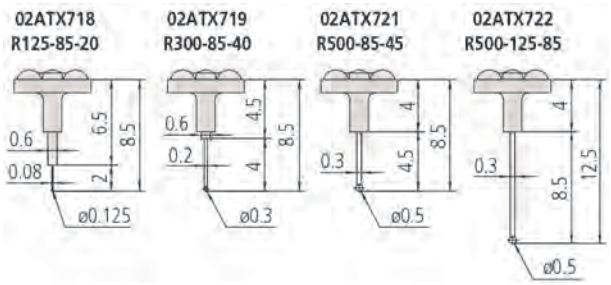
3D CNC Multisensor Measuring Machines MiSCAN

MiSCAN

The MiSCAN MVS-HYPER and MVS-APEX vision systems combine advanced image processing with tactile scanning measurements.

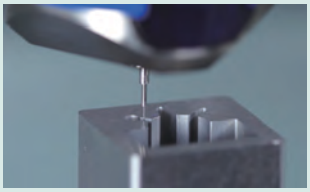
- The MVS-HYPER 302 can be equiped with either the MPP-Nano probe or SP25M scanning probe.
- MPP-Nano is a high accuracy scanning probe for measurement of minute parts and uses stylus modules with tip diameters varying from 125 up to 500 µm.
- MVS-HYPER 404 and MVS APEX 404 models are equipped with the SP25M scanning probe for standard scanning jobs with medium size measuring range.
- The MiSCAN Vision Systems are driven by the powerful combination of MCOSMOS and VISION-PAK-PRO software to guarantee maximum functionality for both non-contact and tactile measurements.
- All the benefits of the standard QUICK VISION HYPER/APEX systems are also incorporated in the MiSCAN Vision systems.



MPP-Nano touch probes

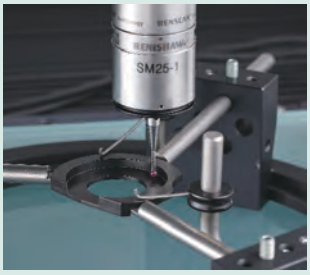
Type	MiSCAN HYPER 302	MiSCAN APEX 404	MiSCAN HYPER 404
No.	**364-502-10S**	**364-511-10S**	**364-512-10S**
Model	MVS-H302P1L-D	MVS-X404P1L-D	MVS-H404P1L-D
Resolution µm	0,02	0,1	0,02
Measuring range using vision sensor	300 x 200 x 200 mm	400 x 400 x 250 mm	400 x 400 x 250 mm
Measuring range using scanning probe	175 x 200 x 200 mm	275 x 400 x 250 mm	275 x 400 x 250 mm
Measurement accuracy with vision sensor [µm]	E_{1x}, $E_{1y=}$ (0,8+2L/1000) E_{1z}= (1,5+2L/1000) E_{2xy}= (1,4+3L/1000)	E_{1x}, $E_{1y=}$ (1,5+3L/1000) E_{1z}= (1,5+4L/1000) E_{2xy}= (2,0+4L/1000)	E_{1x}, $E_{1y=}$ (0,8+2L/1000) E_{1z}= (1,5+2L/1000) E_{2xy}= (1,4+3L/1000)
Measurement accuracy with scanning probe [µm]	$E_{0,MPE}$= (1,9+4L/1000)	$E_{0,MPE}$= (2,5+6L/1000)	$E_{0,MPE}$= (1,9+4L/1000)
Mass kg	360	579	579
Max. stage loading	15 kg	40 kg	30 kg

MPP-NANO Module 0.8 master gear measurement



MPP-NANO mold scanning

SP25M



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UMAP Vision System Series

UMAP: Ultrasonic Micro and Accurate Probe

The UMAP (Ultrasonic Micro and Accurate Probe) is a micro-form measuring system
The UMAP offers you the following benefits:

- Dual functions of high-accuracy contact and non-contact measurement in one machine.
- Contact (micro-stylus UMAP probe) and non-contact (vision probe) measuring probes are installed.
- You can measure micro-features of parts previously impossible to reach.
- Several diameters of micro-stylus are available from 15 µm to 300 µm.

UMAP Probe Unit

UMAP Probes
(ultrasonic micro stylus probes)
Stylus ultrasonic micro-vibration and its amplitude-sensing enable UMAP probe to perform contact measurement of micro-features of parts.
5 choices of stylus tip diameter are available from 15 µm to 300 µm.

UMAP 101
ø15 µm
L = 0,2 mm

UMAP 103
ø30 µm
L = 2 mm

UMAP 107
ø70 µm
L = 5 mm

UMAP 110
ø100 µm
L = 10 mm

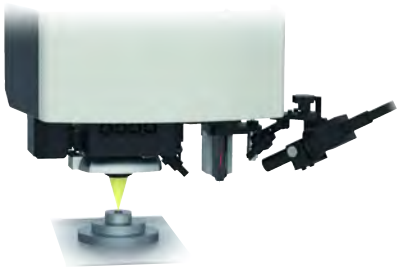
UMAP 130
ø300 µm
L = 16 mm

Refer to the UMAP Vision system brochure

UMAP Hyper 302

UMAP Ultra 404

Type	UMAP HYPER 302	UMAP ULTRA 404
No.	**364-714-10**	**364-718-10**
Measuring range using vision sensor	300 x 200 x 200 mm	400 x 400 x 200 mm
Measuring range using scanning probe	185 x 200 x 175 mm	285 x 400 x 175 mm
Measurement accuracy with vision sensor [µm]	$E_{UX,MPE}$/ $E_{UY,MPE}$= (0,8+2L/1000) $E_{UZ,MPE}$= (1,5+2L/1000) $E_{UXY,MPE}$= (1,4+3L/1000)	$E_{UX,MPE}$/ $E_{UY,MPE}$= (0,35+1,3L/1000) $E_{UZ,MPE}$= (1,5+2L/1000) $E_{UXY,MPE}$= (0,5+2L/1000)
Measurement accuracy with scanning probe [µm]	$E_{0,MPE}$= (2,2+4L/1000)	$E_{0,MPE}$= (2,0+4L/1000)
Resolution [µm]	0,02	0,01
Max. stage loading	15 kg	40 kg
Mass	280 kg	2160 kg



UMAP System

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Software for Quick Vision Machines

QVPAK

- QVPAK controls multiple sensors: Vision sensor, Touch Probe, continuous scanning devices, special UMAP or LNP probes.
- Powerful mathematical algorithms are provided that help you to detect difficult edges via noise filters (similar to morphological filters) and advanced detection tools that take into account the texture of the target surface.
- Partprogramming and editing is made easy with the user friendly Easy Editor.
- 3D graphic display or measuring planes display with the QVClient QVGraphic.
- QVPAK also offers you various QVClients (standard), assistants for users (programming mode) or operators (production mode) such as QVSmartEditor and QVNavigator.

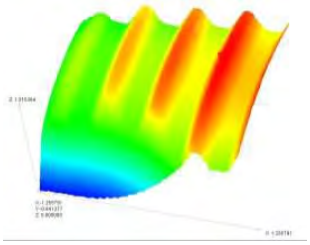
Optional software modules for Quick Vision System

- Formtracepak-AP-QV for 2D contour analysis.
- Formtracepak-Pro for 3D surface analysis.
- QV Part Manager for managing the execution of parts programs of multiple parts.
- Easypag-Pro for offline generation of part programs from 2D CAD data.
- QV3DCAD for online generation of part programs from 3D CAD files.
- MeasurLink for statistical process control (SPC).
- QV3DPAK for 3D topography measurements (see explanation below).
- For more information refer to the Vision Measuring Machines brochures.

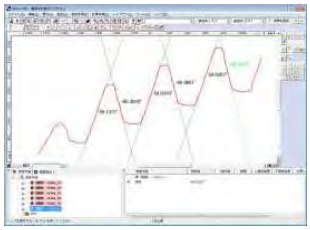
Optional PFF Function (Points From Focus)

- PFF enhances the functionality of standard QV models with 3D topography measurements.
- No additional sensor necessary.
- High scanning range in Z axis from 2,7 mm upto 40,6 mm depending on the objective lens in use and in wide range mode.
- PFF is a retro fittable option for Quick Vision APEX/HYPER and Quick Vision ULTRA. Please contact your local Mitutoyo office for more detailed information.

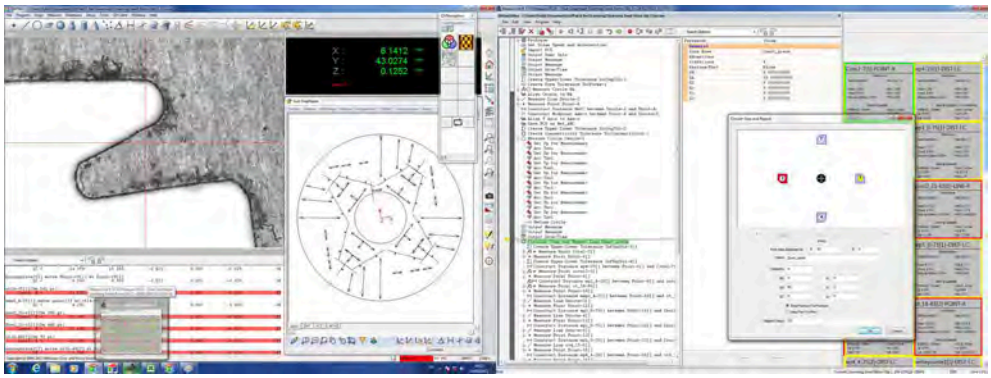
Workpiece to be measured with PFF



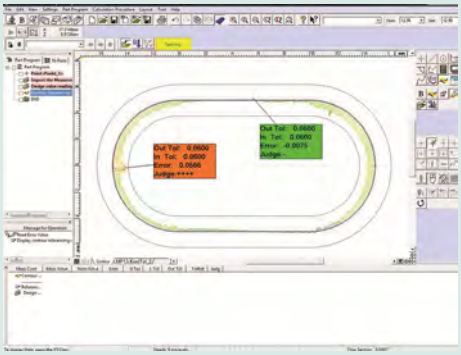
3D Analysis of PFF measurement



2D Analysis of PFF measurement

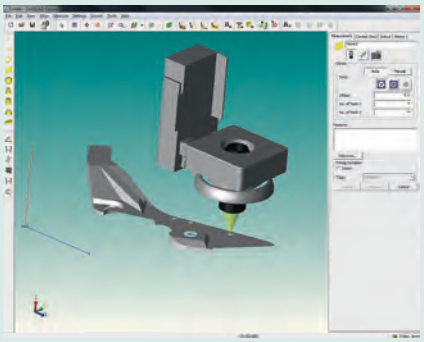


Example of the QVPAK screen layout.



FORMPAK-AP

- Simple and easy-to-use 2D contour analysis.
- Graphic reports (geometry or scanning) edition.
- Allows measurement by comparison. For more information refer to FORMTRACEPAK-AP.



QV 3D CAD-Online

- Automatic program generation from 3D CAD files issued from a CAD system (must be associated with a converter).

Vision Measuring Machines brochures on request

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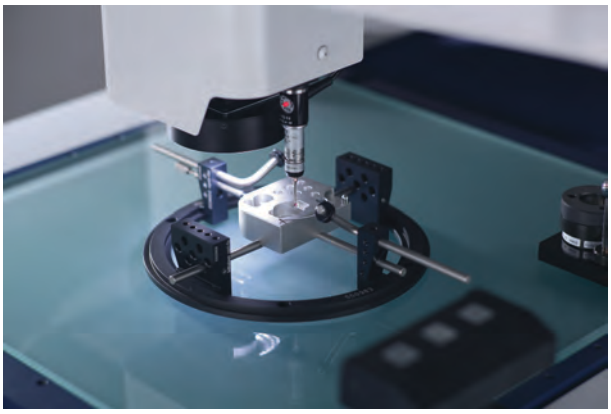
Accessories for Quick Vision Machines

Touch Probe Option

An optional touch probe (TP) is available for following QV models:
Quick Vision ACTIVE; Quick Vision APEX ; Quick Vision HYPER ; Quick Vision ACCEL.

- The Quick Vision-TP system allows you to carry out both non-contact and contact measurements.
- Compatible with Renishaw Touch Probe TP 20 or TP 200.
- An optional MCR20 rack for storing probe modules enhances functionality even more.

Styli kit M2
Starter



Quick Vision ACTIVE with Touch Probe option

Master ball/ring

CNC Vision Measuring System Equipped with a Touch-Trigger Probe

Refer to the Quick Vision brochure

TP20
Compact stylus change type

TP200
Compact and high accuracy stylus change type

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Objective Lenses and Calibration Charts

Quick Vision WLI Objective

No.	Model	Magnification 1*	Total magnification *2	Focal length [mm]	Working distance [mm]	Depth of focus [µm]	Field of View *2 [mm]
02ALY400	QV WLI A-5X	5x	10x	20	13,2	3,5	0,64 x 0,48
02ALT630	QV WLI A-10X	10x	20x	10	12,6	3,5	0,32 x 0,24
02ALT670	QV WLI A-25X	25x	50x	4	4,7	1,1	0,13 x 0,1
02AWB150	QV WLI A-50X	50x	100x	2	2,4	0,6	0,064 x 0,048

*1: Value when the focal length of the tube lens (1x) is 100 mm
*2: Value when the product is mounted to the WLI optical head (when the 2x tube lens and 1/2-inch CCD camera are used)

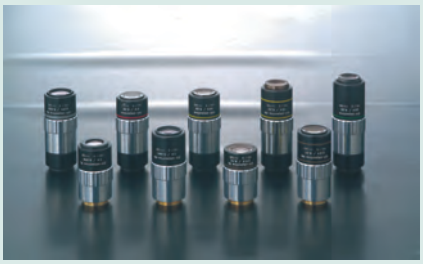
Objective Lenses and Calibration Charts

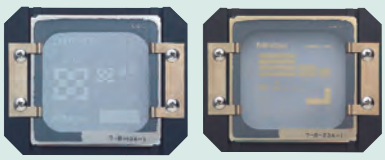
1. QV-Objective lens - HR (High Resolution) and SL (Long Working Distance) models

No.	Magnification	Model	Turret lens Mag. QV	Monitor Mag. QV	Working distance [mm]
02AKT199	0,5X	QV-SL0,5X	1X 2X 6X	16X 32X 96X	30,5
02ALA150	1X	QV-SL1X	1X 2X 6X	32X 64X 192X	52,5
02ALA170	2,5X	QV-SL2,5X	1X 2X 6X	80X 160X 480X	60
02ALA420	5X	QV-5X	1X 2X 6X	160x 320X 960X	33,5
02ALG010	10X	QV-SL10X	1X 2X 6X	320X 640X 1920X	30,5
02ALG020	25X	QV-25X	1X 2X 6X	800X 1600X 4800X	13
02AKT250	1X	QV-HR1X	1X 2X 6X	32X 64X 192X	40,6
02AKT300	2,5X	QV-HR2,5X	1X 2X 6X	80X 160X 480X	40,6
02AKT650	10X	QV-HR10X	1X 2X 6X	320X 640X 1920X	20

Remarks

- The monitor magnifications are approximate values.
- QV-10X, QV-25X: Depending on the workpiece the illumination may be insufficient at a turret lens magnification of 2X and 6X for QV models.
- QV-25X: The PRL illumination is restricted in its usable position.





Calibration glass chart & Compensation glass chart with holder
A calibration or compensation chart is used to calibrate or compensate for the pixel size of the CCD and CMOS sensors, autofocus accuracy and the optical axis offset at each magnification of the Programmable Power Turret (PPT) or of the zoom.

QV Index

Rotary Head

Using the QV Index to rotate the workpiece makes it possible to automatically measure multiple surfaces without having to dismount/remount the workpiece.

optional on special request

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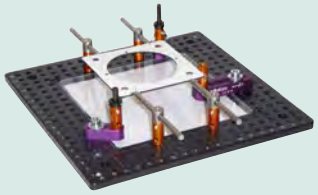
Modular Clamping System opti-fix

opti-fix Clamping System



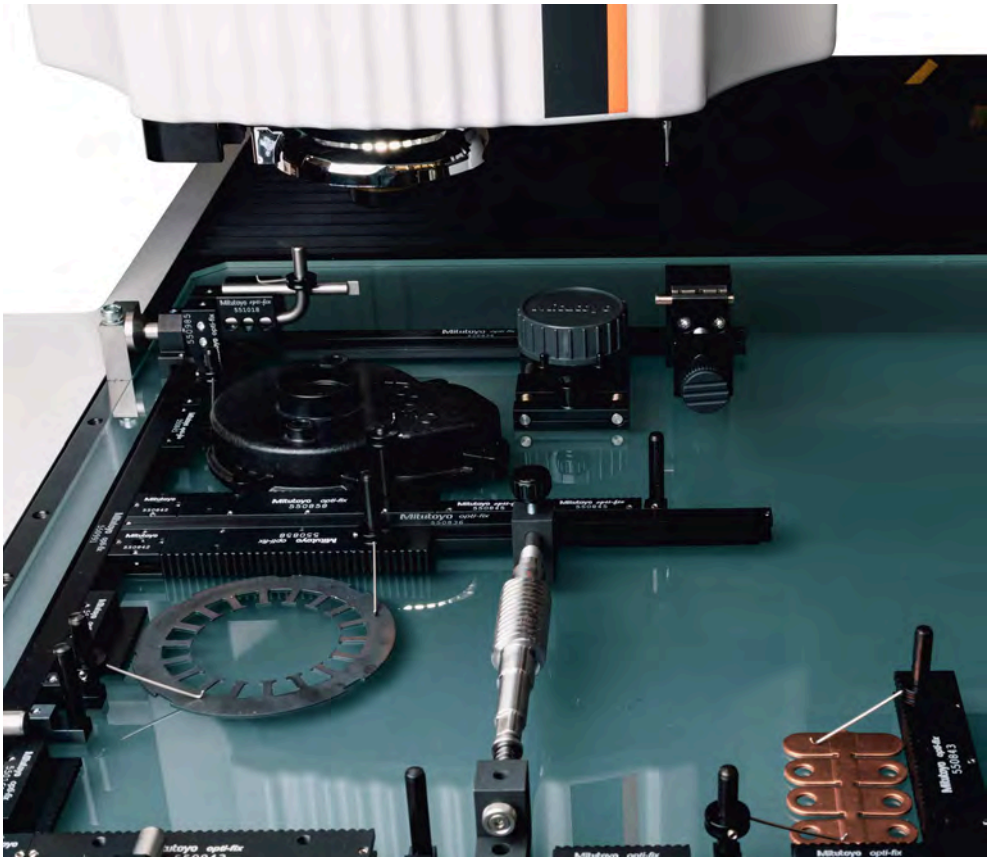
Transmitted light plate

opti-fix frame & mini-vise

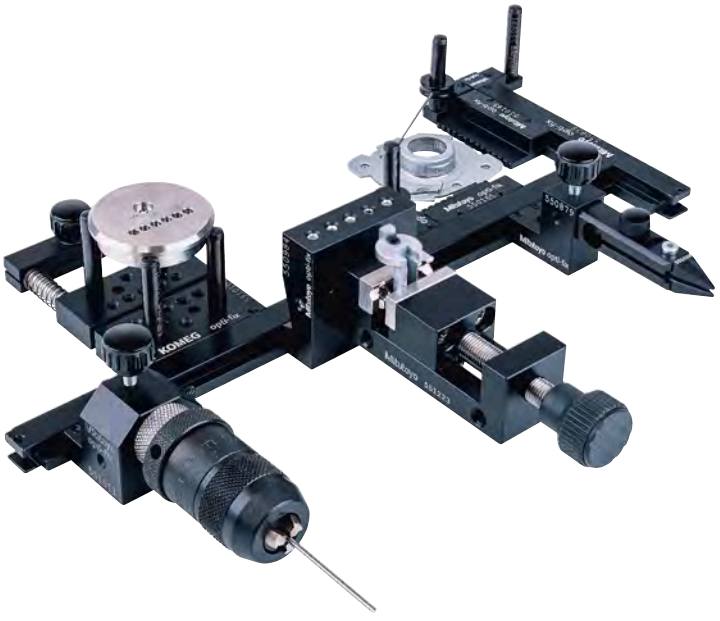
opti-fix set-up for rotationally symmetric parts

Discover the Mitutoyo online fixture system catalogue or download the PDF

Mitutoyo fixtures:
For measurably better results.



Magnetic clamps fixing the opti-fix frame to the machine table to secure repeatable positioning



Different options for part clamping by vise, chuck tweezers or springs

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Mitutoyo in Europe

As Europe has become more integrated, a huge and vital market is being created. Mitutoyo is well placed for the integrated expansion of the European market. Under the strategic direction of Mitutoyo Europe GmbH there is a large production, sales and service network at your disposal, with (at present) more than 85 offices in 33 European countries.

Our leading market representation ensures that Mitutoyo's customers can take full advantage of the potential of the opportunities in this growing market - several integrated supply chain service functions supporting our dealer partners and commercial customers. We provide our clients on-site service in the areas of demand planning, integrated supply systems, distribution management, warehousing and fleet management.

Mitutoyo guarantees its service for installation, calibration, inspection and repair. From the smallest caliper towards the largest measuring device, just rely on our service. Moreover we support international customers with multilingual staff. A Japanese company opening a facility in Europe? Mitutoyo trains your staff in the Japanese language. A German company relocates capital equipment to a new plant in Russia? Mitutoyo supports your staff in Russia in the German language. Mitutoyo is where you are!

Research and development

Research and development is the cornerstone of our growth strategy and we are always seeking to provide innovative solutions by continually investing in our research and development capabilities. In recent times, the company has established itself as one of the world's most innovative providers of measuring technologies.

With substantial financial, technological and human investment Mitutoyo continues to develop advanced measurement solutions for quality assurance. New concepts, principles and technologies are constantly under development. Innovations are leading to continual improvement of our current products and may also form the basis of entirely new product lines.

Specialised products

If you want to accurately measure down to the micron under challenging conditions, you cannot afford mistakes in the choice of instruments and you do not want to deal with compatibility issues. Mitutoyo users have no interface problems and know they can rely on measurement systems from a supplier with one of the widest product ranges in the world.

Our current product portfolio includes more than 5000 specialised measuring instruments, from the traditional analogue micrometer to the highly accurate 3D coordinate measuring machines. The product range and Mitutoyo system solutions are optimally matched and work closely together. Mitutoyo complies with the requirements of international quality systems, including ISO 9001 and ISO / TS 16949 (automotive) and AS9100 (aerospace), as well as MSA R & R studies. This will not change in the future.

Proven quality

When it comes to quality assurance, only what is proven or what is provable matters. Your work demands guarantees regarding quality assurance.

Mitutoyo provides certificates and quality guarantees. These include a TÜV quality seal, an internationally recognised calibration certificate, guarantee card confirming IP protection, CE, etc.. With equipment that is, amongst other things, of proven high quality, you can concentrate fully on your own quality assurance.

Customised solutions

Mitutoyo stands for technological competence and ensures, in addition to sound advice, outstanding performance in project management and engineering. A good example is the M^3 Solutions concept. M^3 stands for Mitutoyo Measurement Metrology and is a service aimed at providing individual measurement solutions. This ensures we can meet the very specific needs of customers in the field related to production and integrated quality assurance.

M^3 Solutions include measurement task definition, environmental analysis and solution development including costs, project management and delivery of the plan. Additionally, you can rely on the vast experience of the largest single provider of length measurement technology to ensure your own specific requirements are met.

Training and knowledge

Do you want to know more? Then Mitutoyo is the right place. In our education and training center MIM (Mitutoyo Institute of Metrology) we offer software courses and seminars concerning the basics of 3D coordinate measuring technology, imaging metrology, surface roughness measurements and the subjects of hardness, roundness and using basic hand-held measuring tools.

All products to be sold to commercial customers.
Product illustrations are without obligation. Product descriptions, in particular any and all technical specifications, are only binding when explicitly agreed upon.

Apart from knowledge, MIM is also focused on the dialogue between specialists. Therefore, it is not only intended for customers of Mitutoyo, but also for all other experts in the field of manufacturing, service, education, science and research.

Technical support

Mitutoyo provides full support, especially in the area of technical customer service. We cover your needs from A to Z. Client services are extensive and range from regular maintenance of your equipment to repairing in our specialised workshops. From your first call, you benefit from the expertise of our technical customer service, even before the purchase of a measuring system. We advise you regarding the equipment specification that represents the best solution for your measurement needs. We can also show you how to get the best out of your existing equipment. We provide training in the use of our products to ensure optimal usage of software. All Mitutoyo hand-held measuring instruments sent in for repair are returned in a timely fashion after attention from our team of experienced and skilled technicians.

With this expertise and many years of experience we can advise customers with respect to maintenance, repair and calibration requirements for any other Mitutoyo measuring instrument.

Calibration by Mitutoyo
The standard for many of our clients

Through a unique international network of accredited Mitutoyo calibration laboratories we provide you with the security of metrological cross-checking between laboratories in fifteen countries, giving Mitutoyo a unique position in global metrological expertise. All fifteen calibration laboratories meet the high demands of ISO 17025.

The ISO / EC 17025 describes the general requirements for the competence of calibration laboratories. Mitutoyo performs all calibrations in accordance with this directive.

Each calibration and repair division contains a calibration laboratory enabling us to provide an optimal service in the area of calibration. To get an overview of what Mitutoyo calibration can do for you, please visit our website.

Optimisation by Mitutoyo

Part programming by Mitutoyo is a service that many of our clients benefit from. You can use our team of support specialists to help automate your measurement procedures.

Mitutoyo also offers a measurement service that may be a good solution for you if you are unable to carry it out due to lack of time, manpower or capacity. Our 3D coordinate measuring machines provide very accurate measurements and, if you wish, our specialists can write individual measurement programs for your Mitutoyo CMM.

We can provide part programming on site, thus ensuring our specialists can directly support you or your staff when writing or designing measurement programs.

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European Network

Since opening up the European market in the early sixties Mitutoyo has been continuously consolidating its presence in this economically important region.

We have been preparing for the expansion of the European market well in advance before it became reality to this extent. As a result, a close net of production, sales and service facilities in more than 85 establishments with different focal points is available to the customers in 33 European countries.

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In January 2010 Mitutoyo synchronised and strengthened the concerted pan-European activities by the establishment of an European headquarters. The location of Mitutoyo Europe GmbH is Neuss in the vicinity of Dusseldorf, Germany.

Mitutoyo Europe GmbH oversees all the activities of Mitutoyo's sales, service and production facilities throughout Europe and adjacent markets, including those of business strategies of such European operations. A Mitutoyo Europe GmbH key objective is to promote coordination amongst its European Group Companies in order to optimise its sales and technical support services in the best interests of customer satisfaction. A strong community for Europe's future.

- **Headquarter**
- **Sales Company**
- **M³ Solution Center**
- **Research and Development Facility**

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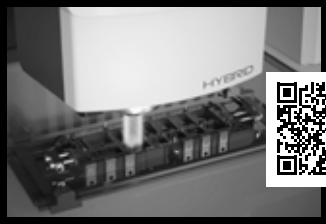
Gears, Car Body, Gaskets, Wire

Energy

Wind Turbines, Rotor Hubs, Blades, Towers, Solar Cells, Interconnectors,
Solar Glass, Dams, Inverters, Generators, Batteries, Penstocks

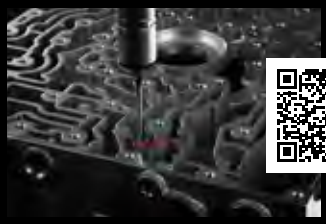
Medical

Orthopedic Implants, Dental Implants,
Syringe Needles, Surgical blades



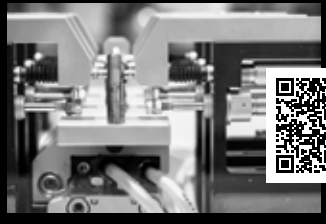
Electronics

Semiconductors / Wafers, Cables / Connectors,
PCB / Soldering Pins / Wire Bonding



General Manufacturing

Cast Molding, Injection Molding, Milling, Turning, Grinding,
3D Printing, EDM, PCB Manufacturing



Original Equipment Manufacturers (OEM)

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Non-Contact Measurement, Non-Contact Line-Laser Sensors, Linear Gauges,
Ultra-High-SpeedVarifocal Lens, High-Precision Measuring, Feeding & Positioning Devices

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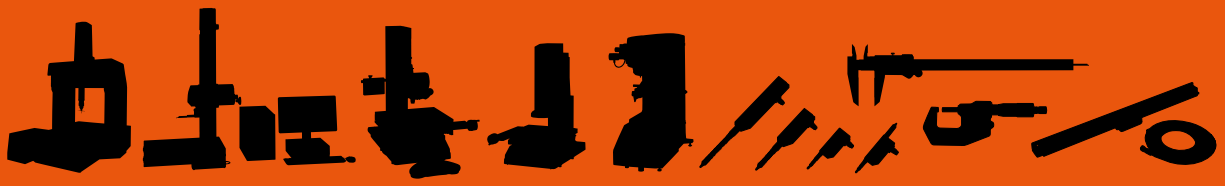

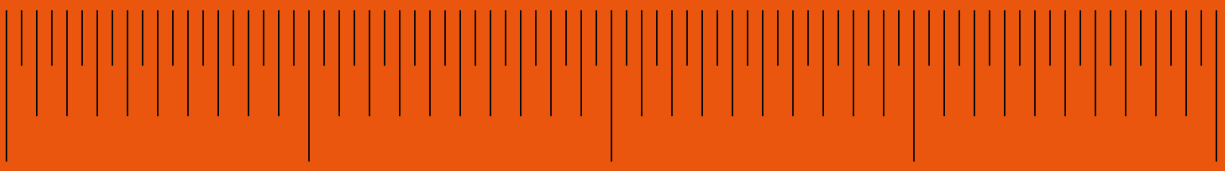

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