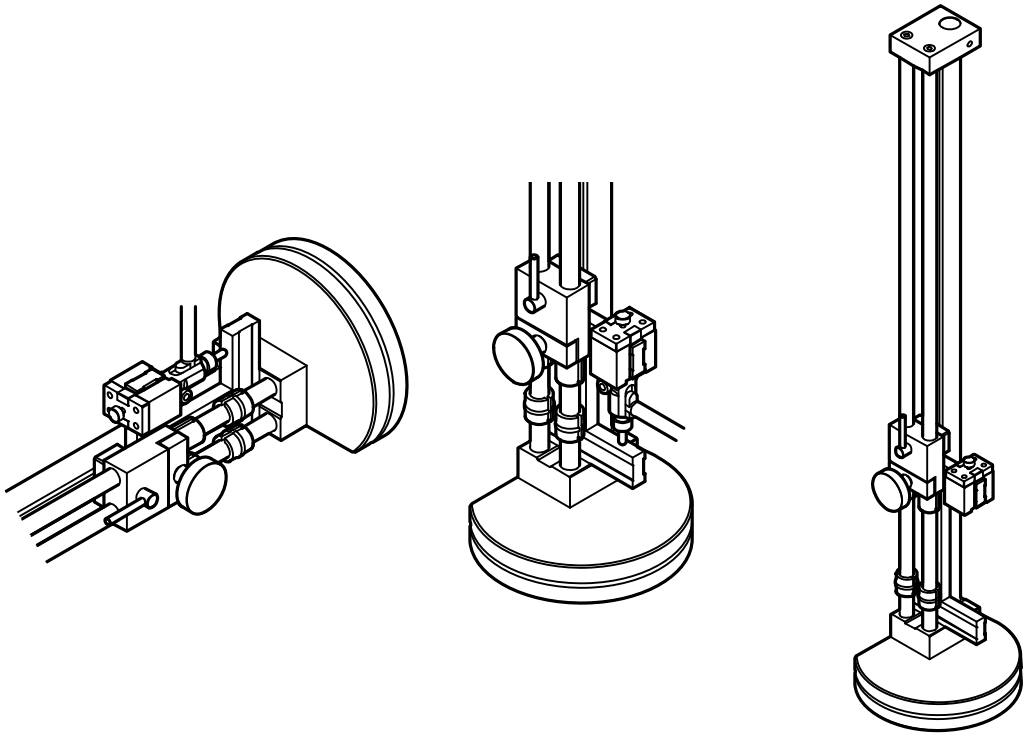
Mitutoyo

Bore Gage Accessory
Bore Gage Zero Checker

CCG-400



User's Manual

- Instructions for use -

Read this document thoroughly before operating the product.
After reading, retain it close at hand for future reference.
This English language version of the document contains
the original instructions.

No. 99MBF604B
Date of publication: April 1, 2023 (1)

■ Product names and model numbers covered in this document

Product name	Model number
Bore gage accessory Bore Gage Zero Checker	CCG-400

■ Notice regarding this document

- Mitutoyo Corporation assumes no responsibilities for any damage to the product, caused by its use not conforming to the procedure described in this document.
- Upon loan or transfer of this product, be sure to attach this document to the product.
- In the event of loss or damage to this document, immediately contact the agent where you purchased the product or a Mitutoyo sales office.
- Read this document thoroughly before operating the product. In particular, be sure to fully understand "Safety Precautions" on page 6 and "Precautions for Use" on page 6.
- The contents of this document are based on information current as of April 2023.
- No part or whole of this document may be transmitted or reproduced by any means without prior written permission of Mitutoyo Corporation.
- Some diagrams in this document may be highlighted, simplified, or partially omitted for convenience of explanation. In addition, some of them may differ from actual ones to the extent that no user will misunderstand the functions and operations.
- The corporation, organization and product names that appear in this document are their trademarks or registered trademarks.

Contents

About This Document

■ Positioning of this document, document map

This describes the positioning of this document and its relationship with other installments.

Bore Gage Accessory
Bore Gage Zero Checker
User's Manual (This document)

Describes the overview, usage method, and maintenance of this product.

● Measuring tools

Bore Gage User's Manual
- Standard type
- Short leg type
- Shallow hole type
- Micrometer head type (excluding models with a measuring range of 400 mm to 800 mm)
- Integrated display digital type

Dial Indicator User's Manual

Digimatic Indicator User's Manual

Describes how to handle target measuring tools for base point adjustment (zero point adjustment) using this product.

● Gauge blocks / CERA blocks

Gauge Blocks/CERA Blocks
User's Manual

Describes the operation method, maintenance, and periodic calibration/inspection of gauge blocks and CERA blocks.

■ Intended readers and purpose of this document

● Intended readers

This document is intended for those who have experience of using a bore gage.
Readers are also assumed to be able to understand how to perform zero setting for measuring tools.

● Purpose

The purpose of this document is to help you understand the overview of this product, the functions of each part, usages, and details of maintenance.

Conventions Used in This Document

■ Safety reminder conventions warning against potential hazards

	Indicates a hazard with a high level of risk which, if not avoided, **will result in death or serious injury.**
	Indicates a hazard with a low level of risk which, if not avoided, **could result in minor or moderate injury.**
	Indicates a situation which, if not avoided, **may result in property damage.**
	**Flammable material** Alerts the user to a specific hazardous situation that means "Caution, risk of igniting gas".

■ Conventions indicating prohibited and mandatory actions

	Indicates concrete information about prohibited actions.
	Indicates concrete information about mandatory actions.

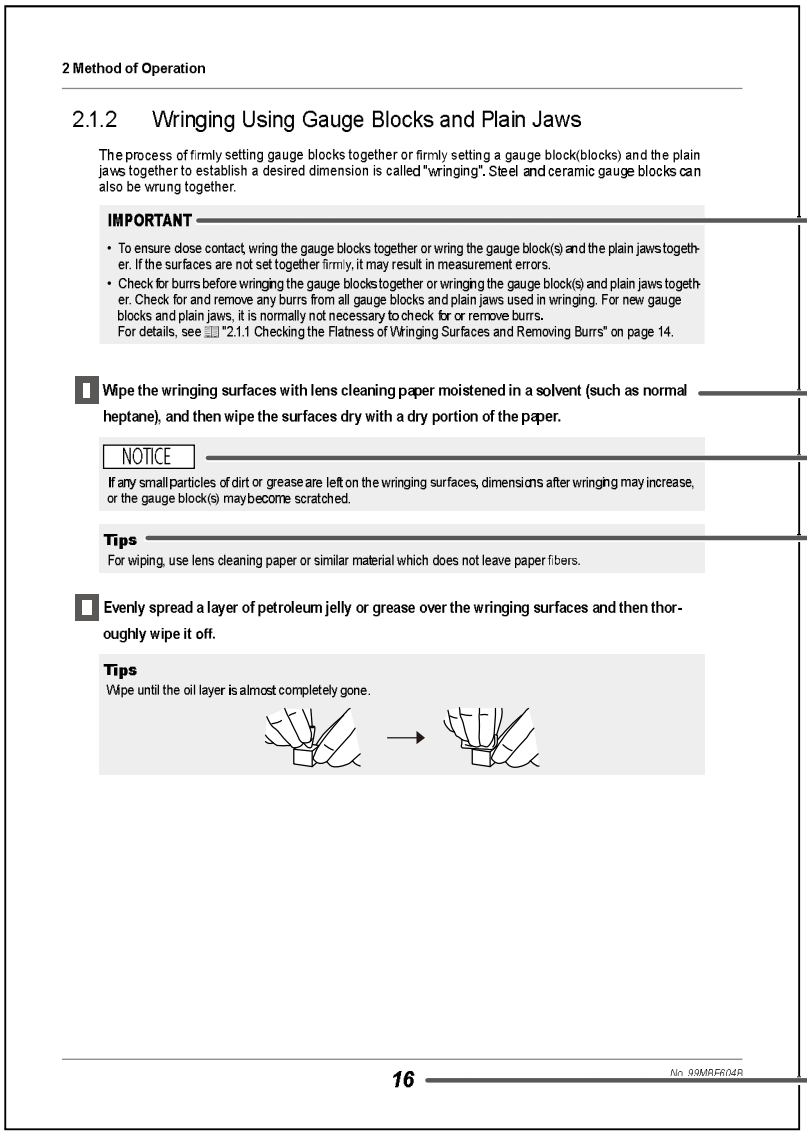
■ Conventions indicating referential information or reference location

IMPORTANT	Indicates information that must be known when using the product.
Tips	Indicates further information and details relevant for the operating methods and procedures that are explained in that section.
	Indicates reference location if there is information that should be referred to in this document or an extraneous User's Manual. Example: For details about XX, see "1.2 Part Names and Functions" on page 12.

■ Other conventions

( ): Round brackets	Represent a paraphrase of an immediately preceding phrase or a supplementary explanation.
" ": Double quotation marks	Represent a highlighted phrase. They also indicate an index where information to be referenced is described.
❶, ❷, ❸ ... 1, 2, 3, ...	Indicates the order and the contents of tasks. (❶: indicates main tasks, 1: indicates detailed tasks)
»	Indicates the action resulted from some operation(s).

■ Example of conventions use



2 Method of Operation

2.1.2 Wringing Using Gauge Blocks and Plain Jaws

The process of firmly setting gauge blocks together or firmly setting a gauge block(blocks) and the plain jaws together to establish a desired dimension is called "wringing". Steel and ceramic gauge blocks can also be wrung together.

IMPORTANT

- To ensure close contact, wring the gauge blocks together or wring the gauge block(s) and the plain jaws together. If the surfaces are not set together firmly, it may result in measurement errors.
- Check for burrs before wringing the gauge blocks together or wringing the gauge block(s) and plain jaws together. Check for and remove any burrs from all gauge blocks and plain jaws used in wringing. For new gauge blocks and plain jaws, it is normally not necessary to check for or remove burrs.
  For details, see "2.1.1 Checking the Flatness of Wringing Surfaces and Removing Burrs" on page 14.

Wipe the wringing surfaces with lens cleaning paper moistened in a solvent (such as normal heptane), and then wipe the surfaces dry with a dry portion of the paper.

NOTICE

If any small particles of dirt or grease are left on the wringing surfaces, dimensions after wringing may increase, or the gauge block(s) may become scratched.

Tips

For wiping, use lens cleaning paper or similar material which does not leave paper fibers.

Evenly spread a layer of petroleum jelly or grease over the wringing surfaces and then thoroughly wipe it off.

Tips

Wipe until the oil layer is almost completely gone.

16 No. 99MBF604B

Indicates important information.

Indicates an operating procedure to be performed or its outline.

Indicates safety information.

Indicates supplementary information.

Indicates the current page number.

Safety Precautions

Read these "Safety Precautions" thoroughly before operating the product to use it properly.
These safety precautions include such information as to prevent injury to the operator and other persons, damage to property and product defects. Be sure to observe these precautions carefully.

Organic solvents such as thinner and benzine have the risk of fire due to ignition or spontaneous combustion, and the risk of poisoning due to inhalation.

Do not use organic solvents such as thinner or benzine.

⚠CAUTION

When transporting this product or optional accessories, there is a risk of injury if handled improperly.

If this product is dropped or falls down, it may cause an injury. Please handle it with care.

Precautions for Use

■ Use and handling of the product

● This product is a device for performing base point adjustment (zero point adjustment) for a bore gage.

Do not use this product for any purpose other than base point adjustment (zero point adjustment).

● The product is a precision instrument.

Exert extra caution while handling it. Be careful not to apply impact or excessive force to any of the parts during unpacking, installation, use, and storage. If this product is subjected to impact, its accuracy may be impaired.

■ Operating environment

Use the product in the following areas.

- Areas with minimal dirt or dust
- Areas with minimal vibrations
- Areas at the recommended temperature of around 20 °C with minimal temperature fluctuation
- Areas with low humidity (not exceeding 70 %)

Do not use or store the product in the following kinds of areas where the temperature or humidity changes rapidly.
Doing so may adversely affect the functions and measurement results of this product and cause malfunction.

- Areas directly affected by cutting oil, water, etc.
- Areas directly exposed to sunlight or drafts of hot air or cool air (e.g., from air conditioning)

■ Transportation

When transporting this product, apply anti-rust oil, wrap it in anti-rust paper, cover it with a plastic bag, and pack it in the box used for shipping. To that end, please keep these packing materials in a safe place for reuse, or if there is a need to transport the product, please contact the agent where you purchased the product or a Mitutoyo sales representative ("SERVICE NETWORK" on page App-1).

■ Disassembly / modification

This product is precisely adjusted during assembly.

Do not perform any adjustments, disassembly, or modifications other than those described in this document, as doing so will affect the accuracy and functions of this product. If you do so, the product will no longer be covered by warranty.

■ Regarding maintenance

After using this product, use clean air to blow away any dust, etc., adhering to surfaces, wipe off any dirt with a soft, lint-free cloth moistened in a solvent, etc., and apply a thin layer of anti-rust oil (anti-rust treatment).
Do not use organic solvents such as thinner or benzine.

Recommended solvent: Normal heptane

Recommended anti-rust oil: MOLYKOTE SUPERGLISS

For details, see "4 Maintenance" on page 29.

Export Control Compliance

This product falls into the Catch-All-Controlled Goods and/or Catch-All-Controlled Technologies (including Programs) under Category 16 of Appended Table 1 of Export Trade Control Order or under Category 16 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Act of Japan.

If you intend re-export of the product from a country other than Japan, re-sale of the product in a country other than Japan, or re-providing of the technology (including Programs), you shall observe the regulations of your country.

Also, if an option is added or modified to add a function to this product, this product may fall under the category of List-Control Goods, List-Control Technology (including Programs) under Category 1 - 15 of Appended Table 1 of Export Trade Control Order or under Category 1 - 15 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Act of Japan. In that case, if you intend re-export of the product from a country other than Japan, re-sale of the product in a country other than Japan, or re-providing of the technology (including Programs), you shall observe the regulations of your country. Please contact Mitutoyo in advance.

Notes on Export to European Countries

When you intend exporting of this product to any of the European countries, it may be required to provide User's Manual(s) in English and Declaration of Conformity in English (in some cases, the official language of the country to be exported).

For detailed information, please contact Mitutoyo in advance.

Disposal of Products outside the European Countries

Please follow the official instruction in each community and country.

China RoHS Compliance Information

This product meets China RoHS requirements. See the table below.

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
本体	○	○	○	○	○	○
电气设备部分	×	○	○	○	○	○
配件	○	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

×：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

环保使用期限标识是根据《电器电子产品有害物质限制使用管理办法》以及《电子电气产品有害物质限制使用标识要求(SJ/T11364–2014)》制定的,适用于中国境内销售的电子电气产品的标识。

电器电子产品只要按照安全及使用说明内容在正常使用情况下,从生产日期算起,在此期限内产品中含有的有毒有害物质不致发生外泄或突变,不致对环境造成严重污染或对其人身、财产造成严重损害。

产品使用后,要废弃在环保使用年限内或者刚到年限的产品,请根据国家标准采取适当的方法进行处置。

另外,此期限不同于质量/功能的保证期限。

Warranty

This product has been manufactured under strict quality management, but should it develop problems within one year of the date of purchase in normal use, repair shall be performed free of charge. Please contact the agent where you purchased the product or a Mitutoyo sales representative ("SERVICE NETWORK" on page App-1).

If this product fails or is damaged for any of the following reasons, it will be subject to a repair charge, even if it is still under warranty.

- Failure or damage owing to fair wear and tear
- Failure or damage owing to inappropriate handling, maintenance or repair, or to unauthorized modification
- Failure or damage owing to transport, dropping, or relocation of the product after purchase
- Failure or damage owing to fire, salt, gas, abnormal voltage, lightning surge, or natural disaster
- Failure or damage owing to use in ultra-hazardous activities

This warranty is effective only where the product is properly installed and operated in conformance with the instructions in this document within the original country of the installation.

EXCEPT AS SPECIFIED IN THIS WARRANTY, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES OF ANY NATURE WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE, ARE HEREBY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW.

You assume responsibility for all results due to the selection of this product to achieve your intended results.

Disclaimer

IN NO EVENT WILL MITUTOYO, ITS AFFILIATED AND RELATED COMPANIES AND SUPPLIERS BE LIABLE FOR ANY LOST REVENUE, PROFIT, OR DATA, OR FOR SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY ARISING OUT OF THE USE OF OR INABILITY TO USE THIS PRODUCT EVEN IF MITUTOYO OR ITS AFFILIATED AND RELATED COMPANIES AND/OR SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

If, notwithstanding the foregoing, Mitutoyo is found to be liable to you for any damage or loss which arises out of or is in any way connected with use of this product by you, in no event shall Mitutoyo's and/or its affiliated and related companies' and suppliers' liability to you, whether in contract, tort (including negligence), or otherwise, exceed the price paid by you for the product only.

The foregoing limitations shall apply even if the above-stated warranty fails of its essential purpose.

BECAUSE SOME COUNTRIES, STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR THE LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, IN SUCH COUNTRIES, STATES OR JURISDICTIONS, MITUTOYO'S LIABILITY SHALL BE LIMITED TO THE EXTENT PERMITTED BY LAW.

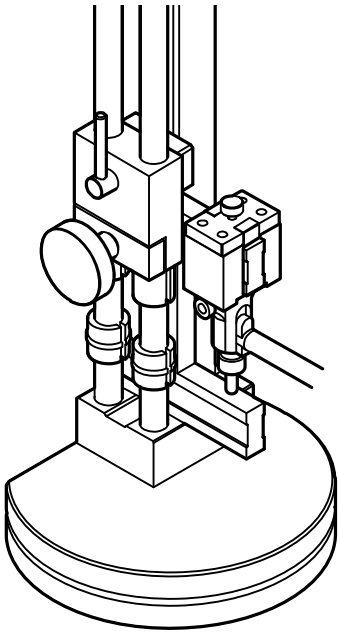
MEMO

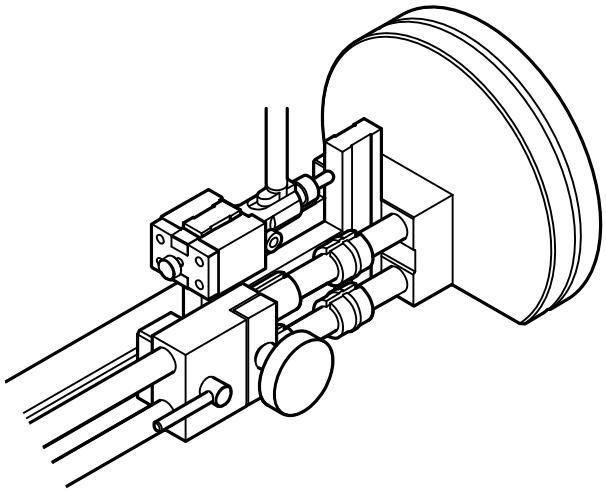
1 Overview

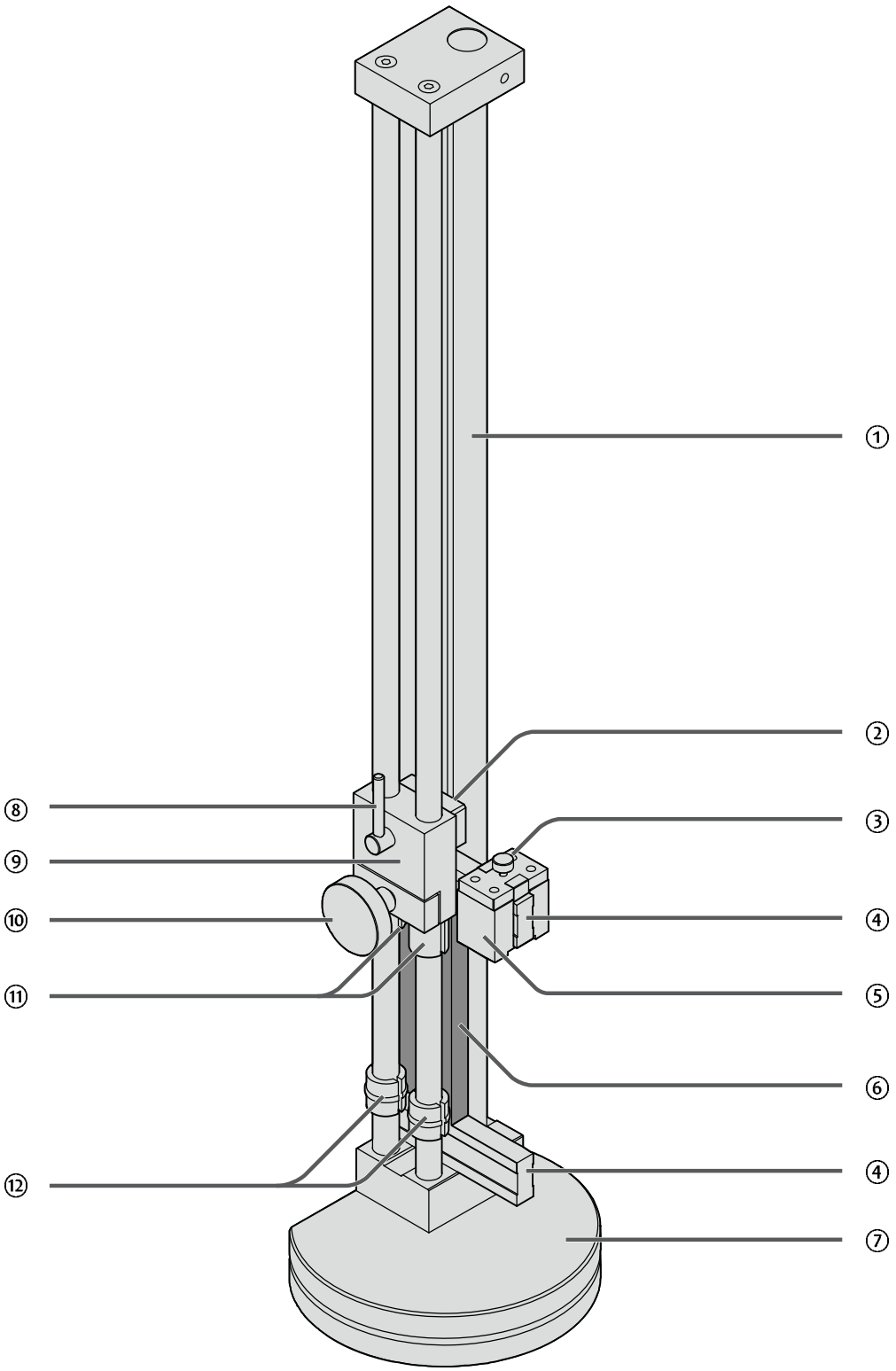
This product is a precision device that uses gauge blocks and plain jaws to perform base point adjustment (zero point adjustment) for a bore gage, previously performed using ring gages.

You can easily perform base point adjustment (zero point adjustment) for a bore gage with a measuring range of 18 mm to 400 mm (0.7 in to 16 in).

This product can be used in one of two orientations—vertical or horizontal—depending on the measuring orientation.

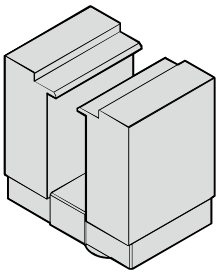
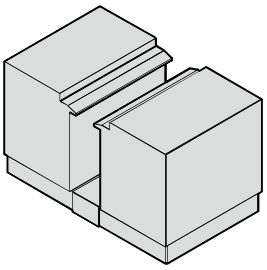
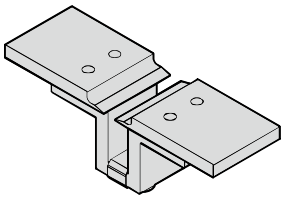




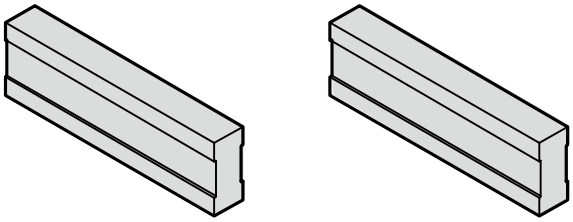

①
②
③
④
⑤
⑥
④
⑦
⑧
⑨
⑩
⑪
⑫

No.	Name	Function
①	Column	Supports the slider.
②	Holding block	Used to hold down the gauge block(s) and plain jaws.
③	Securing knob	A knob for securing the attachment to one of the plain jaws.
④	Plain jaws	Wring both end faces of the gauge block(s) together with the jaws to create a measurement surface for performing base point adjustment (zero point adjustment) for the bore gage. Both sides have been processed with high precision and given a lapped finish, so either side can be used as a measurement surface.
⑤	Attachment	Mounting an attachment to one of the plain jaws stabilizes the position of the bore gage during base point adjustment (zero point adjustment), improving workability and accuracy for base point adjustment (zero point adjustment). There are three types of attachments to select from depending on the measuring range. For details, see "■ Types of attachments" on page 14.
⑥	Gauge block(s) (optional accessory)	Gauge blocks serve as a reference for base point adjustment (zero point adjustment) of the bore gage. Wring the gauge block(s) used as the reference dimension together with the plain jaws and secure them to the stand.
⑦	Stand	A stand for mounting the gauge block(s) and plain jaws. It can be used in one of two orientations—vertical or horizontal—depending on the measuring orientation when measuring the bore gage.
⑧	Clamping lever	A lever for securing the gauge block(s) and plain jaws. The eccentric cam mechanism presses the holding block on the slider against the plain jaw to secure the gauge block(s) and plain jaws. Rotate the lever clockwise to secure them and counterclockwise to release them.
⑨	Slider	Lower the slider and press the holding block against the plain jaw to secure the plain jaws and gauge block(s) to the stand. It can move up and down along the column of the stand.
⑩	Clamping knob	A knob for securing the slider to the column of the stand. Tighten the knob to secure the slider to the column of the stand.
⑪	Collars B	The stoppers for the slider. They can move up and down along the column of the stand.
⑫	Collars A	The stoppers for positioning the gauge block(s). Press the gauge block(s) against the protrusions of Collars A to keep the orientation of the gauge block(s) vertical. They can move up and down along the column of the stand.

■ Types of attachments

Part name	Type A	Type B	Type C
Part No.	940088	940089	940090
Illustration			
Measuring range of target bore gage	18 mm to 35 mm, 35 mm to 60 mm	50 mm to 100 mm, 100 mm to 160 mm	160 mm to 250 mm, 250 mm to 400 mm
	0.7 in to 1.4 in, 1.4 in to 2.5 in	2 in to 6 in, 4 in to 6.5 in	6.5 in to 10 in, 10 in to 16 in

■ Plain jaws

Part name	Plain jaws
Part No.	630030
Illustration	
Flatness	0.5 µm
Parallelism	1 µm

2 Method of Operation

In preparation, mount the gauge block(s), plain jaws, and attachment to the Bore Gage Zero Checker stand.

NOTICE

When handling gauge blocks or attachments, wear gloves for precision work (such as smooth cotton gloves). If they are handled with bare hands, the resulting heat conduction can alter their dimensions. Moreover, if the gauge blocks are made of steel, oil and sweat from bare hands can cause rusting.

● Items needed for performing work

Please prepare the following.

- Plain jaws (x2)*
- A gauge block (or blocks) matching the dimension for base point adjustment (zero point adjustment)
  Combinations of multiple gauge blocks and combinations of steel and ceramic gauge blocks are also possible.
- An attachment that matches the dimensions of the bore gage to be used for base point adjustment (zero point adjustment)*
- Ceraston
- Optical flat
- Cleaning solvent (normal heptane, etc.)
- Petroleum jelly, grease
- Lens cleaning paper or similar material which does not leave paper fibers

* Standard accessories of this product

Check the flatness of the gauge block(s) and plain jaws and remove any burrs.

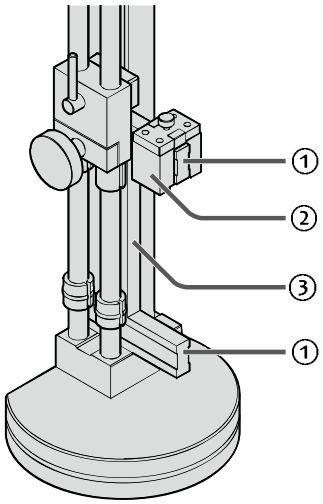
For details, see "2.1.1 Checking the Flatness of Wringing Surfaces and Removing Burrs" on page 16.

Wring the gauge block(s) together with the plain jaws.

For details, see "2.1.2 Wringing Using Gauge Blocks and Plain Jaws" on page 18.

Mount the gauge block(s) (3), plain jaws (1), and attachment (2) to the Bore Gage Zero Checker stand.

For details, see "2.1.3 Mounting the Gauge Block(s), Plain Jaws, and Attachment" on page 21.



2.1.1 Checking the Flatness of Wringing Surfaces and Removing Burrs

Check the flatness of the wringing surfaces of the gauge block(s) and plain jaws with an optical flat, and remove any burrs with a Ceraston.

Check for burrs on the wringing surfaces of the gauge block(s) and plain jaws with an optical flat (optional accessory).*

* Optical flat: Part No. 158-117

Tips

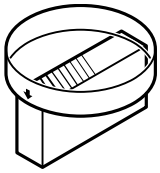
The optical flat is a product that enables easy checking of flatness with its high precision-processed plane.

1 Wipe the wringing surfaces of the gauge block(s) and plain jaws and both surfaces of the optical flat with lens cleaning paper moistened in a solvent (such as normal heptane), and then wipe the surfaces dry with a dry portion of the paper.

Tips

For wiping, use lens cleaning paper or similar material which does not leave paper fibers.

2 Gently place the optical flat on the wringing surface of the gauge block or plain jaw.



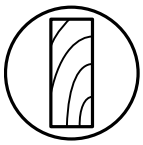
IMPORTANT

Place the optical flat on the wringing surface of the gauge block or plain jaw so that the arrow printed on the side of the optical flat points downward.

3 Lightly slide the optical flat.

» When interference fringes appear (There are no burrs. Proceed to step 4.)

» When no interference fringes appear (There is a burr. Proceed to step .)

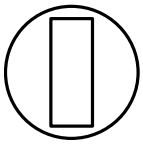


Tips

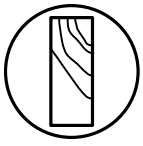
Interference fringes may not appear if the surfaces were not wiped sufficiently or if paper fibers are present on the surface. In this case, wipe the surfaces again and repeat from step 2.

4 Lightly hold down the optical flat.

» When no interference fringes appear (There are no burrs. Proceed to "2.1.2 Wringing Using Gauge Blocks and Plain Jaws" on page 18.)



» When interference fringes partially appear (There is a burr. Proceed to step .)



Tips

When interference fringes partially appear, slide the optical flat slightly. If the interference fringes move along with the optical flat, the burrs are on the optical flat. Use a new optical flat. After replacing the optical flat, wipe the surfaces again and repeat from step 2.

Remove burrs on the wringing surface with a Ceraston (optional accessory).*

* Ceraston: Part No. 601644 or No. 601645

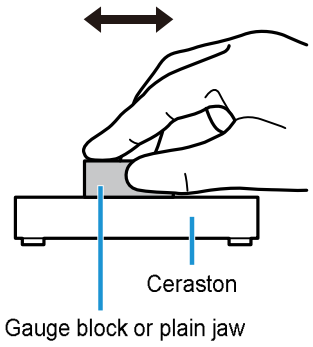
1 Wipe the wringing surfaces of the gauge block(s) and plain jaws and the surface of the Ceraston with lens cleaning paper moistened in a solvent (such as normal heptane), and then wipe the surfaces dry with a dry portion of the paper.

Tips

For wiping, use lens cleaning paper or similar material which does not leave paper fibers.

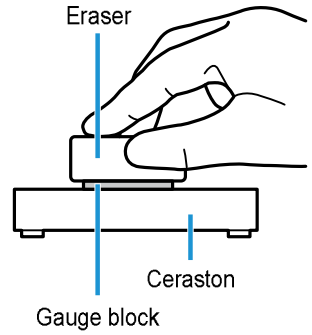
2 Place the surface of the gauge block or plain jaw that has burrs facing towards the Ceraston.

3 While holding the gauge block or plain jaw with your thumb and middle finger, lightly push down on it with your index finger and give it a back-and-forth motion over the Ceraston about 10 times.



Tips

- When the gauge block is too thin to hold (a nominal size of less than 3 mm, for example), using an eraser or other rubbery object to hold down the gauge block may help apply the force uniformly, as shown in the figure on the right.
- As long as there are burrs on the surface, the gauge block or plain jaw will slide smoothly on the Ceraston. When the burrs are removed, the gauge block or plain jaw will begin to stick to the Ceraston.



Repeat steps and to check for and remove burrs from all gauge blocks and plain jaws to be wrung together.

Tips

If burrs cannot be removed from the wringing surface of the gauge block or plain jaw even by repeating steps through , replace the gauge block or plain jaw with a new one because the gauge block cannot be used as a reference.

IMPORTANT

Place the optical flat on the wringing surface of the gauge block or plain jaw so that the arrow printed on the side of the optical flat points downward.

2.1.2 Wringing Using Gauge Blocks and Plain Jaws

The process of firmly setting gauge blocks together or firmly setting a gauge block(blocks) and the plain jaws together to establish a desired dimension is called "wringing". Steel and ceramic gauge blocks can also be wrung together.

IMPORTANT

- To ensure close contact, wring the gauge blocks together or wring the gauge block(s) and the plain jaws together. If the surfaces are not set together firmly, it may result in measurement errors.
- Check for burrs before wringing the gauge blocks together or wringing the gauge block(s) and plain jaws together. Check for and remove any burrs from all gauge blocks and plain jaws used in wringing. For new gauge blocks and plain jaws, it is normally not necessary to check for or remove burrs.
  For details, see "2.1.1 Checking the Flatness of Wringing Surfaces and Removing Burrs" on page 16.

Wipe the wringing surfaces with lens cleaning paper moistened in a solvent (such as normal heptane), and then wipe the surfaces dry with a dry portion of the paper.

NOTICE

If any small particles of dirt or grease are left on the wringing surfaces, dimensions after wringing may increase, or the gauge block(s) may become scratched.

Tips

For wiping, use lens cleaning paper or similar material which does not leave paper fibers.

Evenly spread a layer of petroleum jelly or grease over the wringing surfaces and then thoroughly wipe it off.

Tips

Wipe until the oil layer is almost completely gone.

■ Wring the gauge blocks together.

The following three usages are possible:

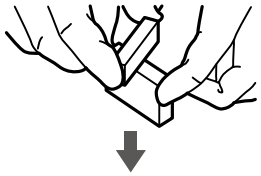
- For two thick gauge blocks
- For a thick gauge block and a thin gauge bock
- For two thin gauge blocks

Tips

A gauge block with a nominal size of less than 3 mm is considered a thin gauge block.

For two thick gauge blocks

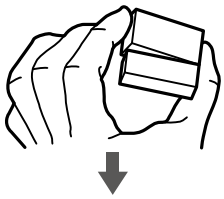
1 Cross the gauge blocks at 90° at the center of each measurement surface.



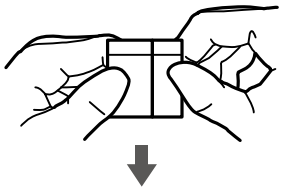
2 While applying a slight pressure, rotate one of the gauge blocks 90° until both measurement surfaces are aligned with each other.

Tips

It will feel like the blocks are sticking together while you are sliding the block.



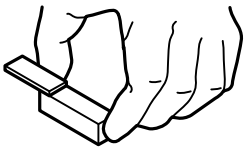
3 Align the measurement surfaces with each other.



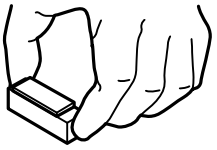
Proceed to step ■.

For a thick gauge block and a thin gauge bock

1 Place one end of the thin gauge block on top of one end of the thick gauge block (to prevent thin gauge blocks from bending).



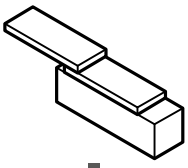
2 Slide the thin gauge block while pressing the entire overlapped area until both measurement surfaces are aligned with each other.



Proceed to step ■.

For two thin gauge blocks

3 Wring another thin gauge block together with the top of the thin gauge block wrung in steps 1 and 2.

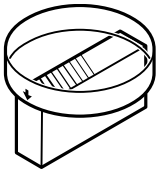


4 Remove the thick gauge block wrung in steps 1 and 2.
For details, see "■ Undoing wringing (removal)" on page 20.

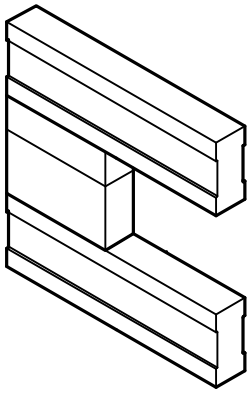
Proceed to step ■.

When a thin gauge block is wrung, the surfaces of the gauge block must be checked with the optical flat (flatness check).

» When no interference fringes appear (The wrung gauge block is not bent. → Proceed to step .)
» When irregular interference fringes appear (The wrung gauge block is bent. → Redo wringing from the beginning.)



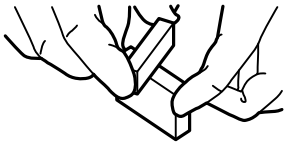
Wring the stack of gauge blocks together with the plain jaws in the same way as in step (for two thick gauge blocks).



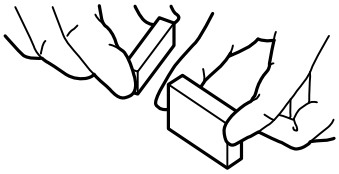
■ Undoing wringing (removal)

Disengage the wringing.

1 Rotate the gauge block and plain jaw wrung together and rotate the gauge blocks wrung together until they form a cross shape.



2 Disengage the wringing by sliding the gauge blocks and plain jaws to detach them.



Wipe any dirt off the gauge blocks and plain jaws.

Tips

For details about cleaning, see "■ Cleaning" on page 29.

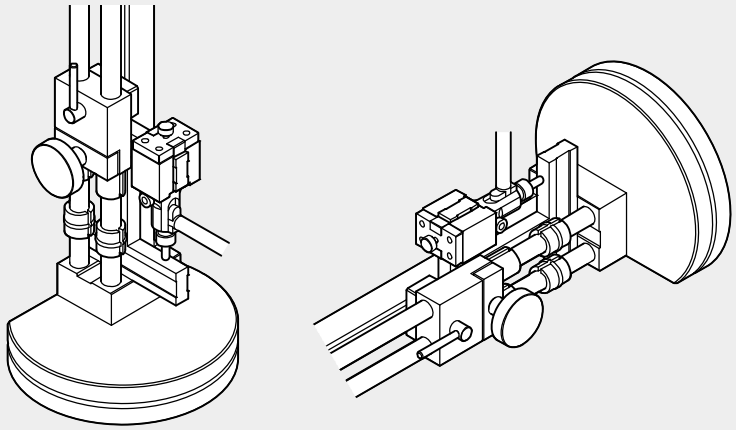
2.1.3 Mounting the Gauge Block(s), Plain Jaws, and Attachment

Mount the wrung gauge block(s) and plain jaws on the stand and then mount the attachment on one of the plain jaws.

Check the orientation of Bore Gage Zero Checker.

IMPORTANT

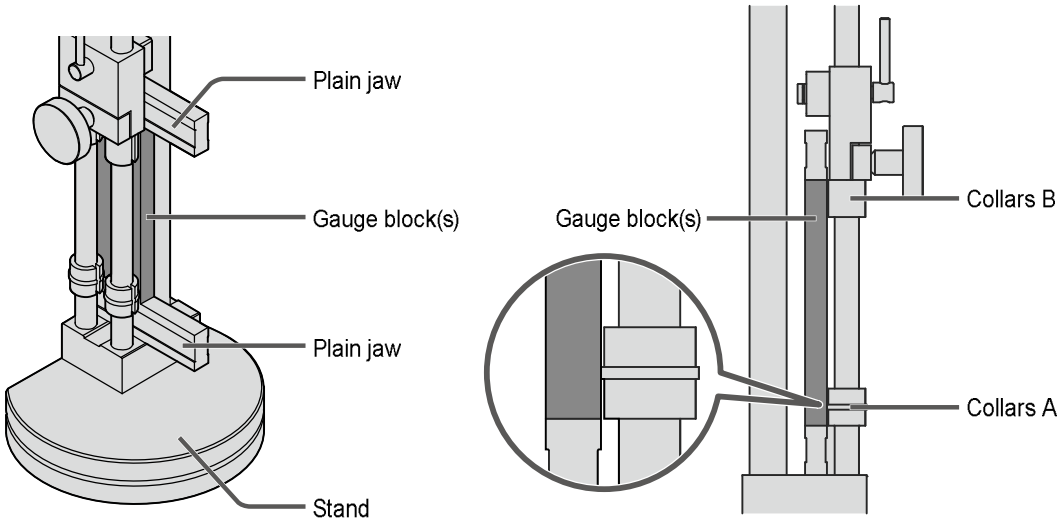
If the orientation of the bore gage during measurement and the orientation of the bore gage during base point adjustment (zero point adjustment) are different, it may result in measurement errors. Depending on the orientation at the time of measurement, use either a vertical or horizontal orientation when performing base point adjustment (zero point adjustment).



Set the wrung gauge block(s) and plain jaws on the stand (see the figure below).

Move Collars A and Collars B up and down and align them with the upper and lower ends of the gauge block(s).

Lightly press the lower end of the gauge block(s) against Collars A.



Tips

When the wrung gauge block(s) and plain jaws are vertical, they are set correctly.
At this time, there will be a gap between Collars B and the upper end of the gauge block(s).

Rotate the clamping lever on the slider counterclockwise.

» This unlocks the slider.

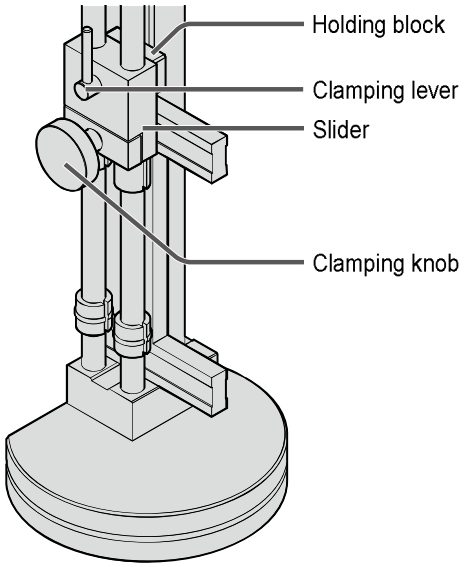
Slowly lower the slider until the holding block meets the plain jaw.

Tighten the clamping knob.

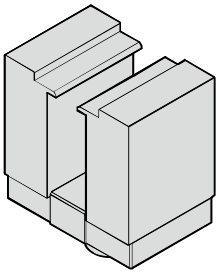
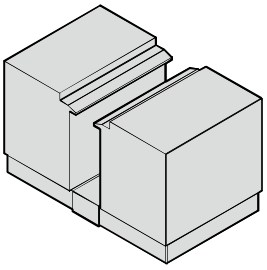
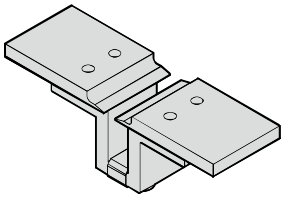
» This secures the slider to the column.

Rotate the clamping lever clockwise.

» This secures the gauge block(s) and plain jaws to the stand.



Mount an attachment matching the reference dimension to one of the plain jaws.

Part name	Type A	Type B	Type C
Illustration			
Measuring range of target bore gage	18 mm to 35 mm, 35 mm to 60 mm	50 mm to 100 mm, 100 mm to 160 mm	160 mm to 250 mm, 250 mm to 400 mm
	0.7 in to 1.4 in, 1.4 in to 2.5 in	2 in to 6 in, 4 in to 6.5 in	6.5 in to 10 in, 10 in to 16 in

IMPORTANT

When using a shallow hole bore gage, there is no need to mount an attachment.

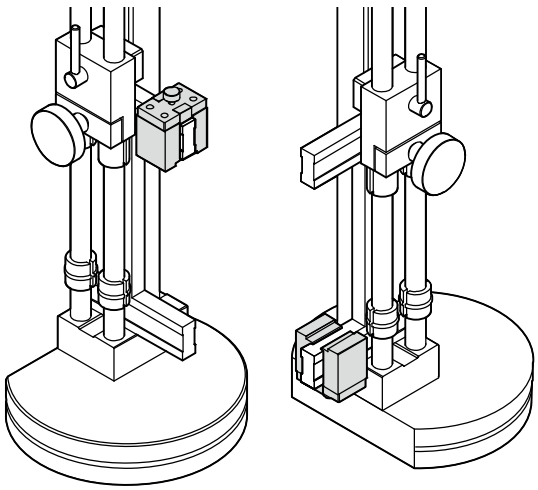
1 Set the attachment on either the upper or lower plain jaw.

Tips

The attachment can be mounted on either the upper or lower plain jaw, depending on the orientation when using the bore gage.

2 Tighten the securing knob for the attachment.

» This secures the attachment to the plain jaw.



Set the base point (zero point) of the bore gage.

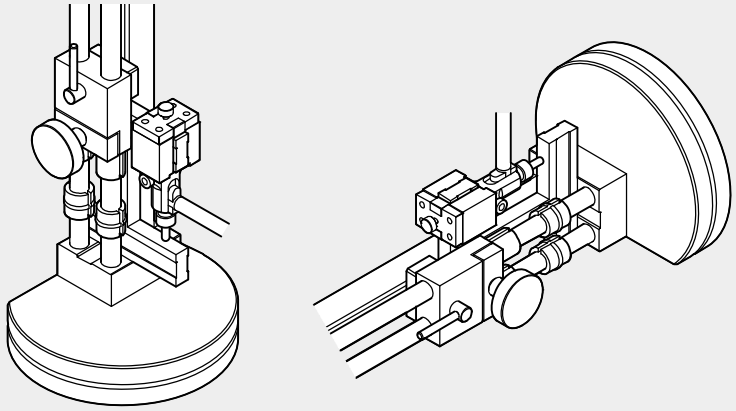
● Items needed for performing work

Please prepare the following.

- A bore gage used for measurement
- An indicator used with the bore gage (Dial Indicator/Digimatic Indicator)

IMPORTANT

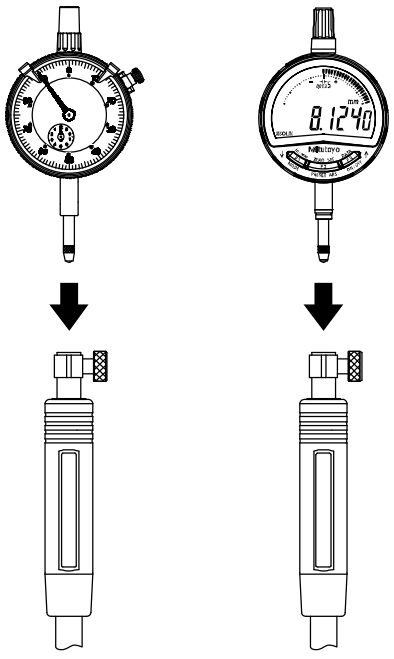
If the orientation of the bore gage during measurement and the orientation of the bore gage during base point adjustment (zero point adjustment) are different, it may result in measurement errors. Depending on the orientation at the time of measurement, use either a vertical or horizontal orientation when performing base point adjustment (zero point adjustment).



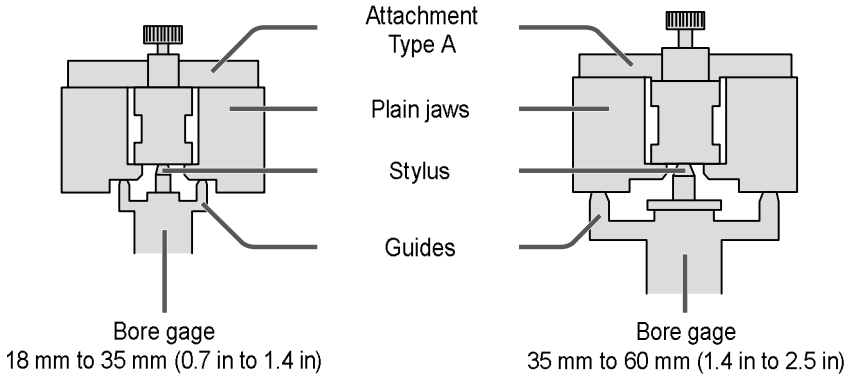
As an example, the following explanation describes the procedure for using this product in a vertical orientation with a Dial Indicator.

❶ Attach the indicator to be used to the bore gage.

For details, see the 📖 Bore Gage User's Manual.



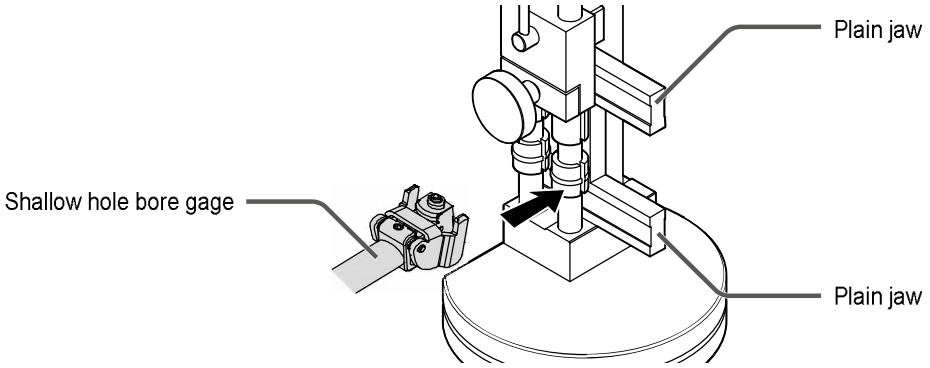
Except when using a shallow hole bore gage, insert the bore gage so that the guides touch the steps of the attachment.



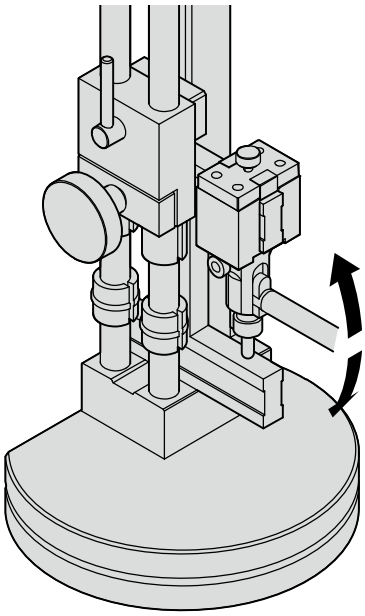
Tips

Except when using a shallow hole bore gage, inserting the bore gage while lifting the guides of the bore gage by hand will make it easier to insert.

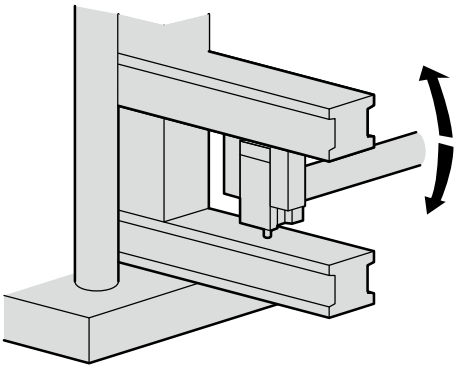
When using a shallow hole bore gage, insert the bore gage from the side of the plain jaws.



Swing the bore gage in the directions indicated by the arrows (up and down) and find the point where the indicator value is maximum (minimum dimension).

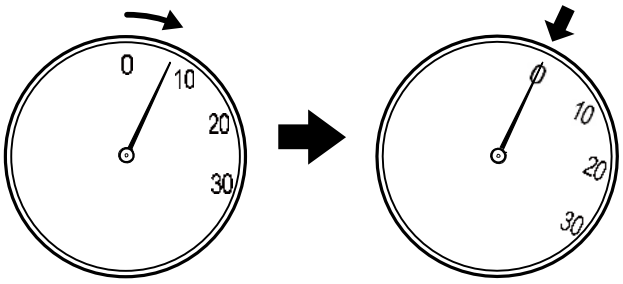


When using an attachment



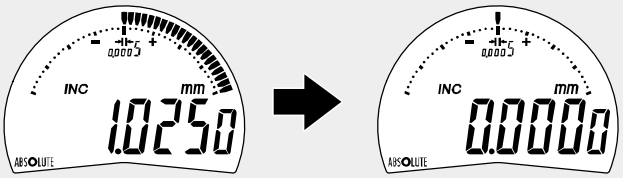
When not using an attachment

Rotate the dial of the Dial Indicator to set the pointer to "0".



Tips

When using a Digimatic Indicator, preset the display value (set it to an arbitrary number).
For details about presetting, see the 📖 Digimatic Indicator User's Manual.



MEMO

3 Troubleshooting

If base point adjustment (zero point adjustment) cannot be performed normally, refer to the following causes and countermeasures.

Problem	Cause	Countermeasures
Measured values vary when setting the base point.	The plain jaws and gauge block(s) are not properly wrung together.	Clean the measurement surfaces again, check for dust, etc., and then make sure to wring the gauge block(s) and plain jaws together properly. For details, see "2.1.1 Checking the Flatness of Wringing Surfaces and Removing Burrs" on page 16, "2.1.2 Wringing Using Gauge Blocks and Plain Jaws" on page 18.
	Dust is caught between the plain jaws and the gauge block(s).	
	The plain jaw(s) or gauge block(s) is worn or damaged (with scratches or dents).	If the measured valuesvary at multiple measurement locations, replace the plain jaws.
	The attachment is not mounted correctly.	Remove the attachment and re-mount it. For details, see "2.1.3 Mounting the Gauge Block(s), Plain Jaws, and Attachment" on page 21.
The object cannot be measured with the bore gage.	The dimension of the gauge block(s) prepared does not match the inner diameter to be measured.	Prepare a gauge block or stack of gauge blocks with the appropriate dimension.

MEMO

4 Maintenance

This chapter explains the regular inspection and storage of this product.

In order to achieve the best performance with this product and use it safely over a long period, follow the maintenance instructions below.

⚠CAUTION

When transporting this product or optional accessories, there is a risk of injury if handled improperly.

If this product is dropped or falls down, it may cause an injury. Please handle it with care.

■ Regular inspection

Check the underside of the stand, the plain jaws, the gauge blocks, and the optical flat for dirt and defects.

If any of these parts are dirty, clean them. Any defective parts will require repair. Please contact the agent where you purchased the product or a Mitutoyo sales representative ("SERVICE NETWORK" on page App-1).

■ Cleaning

After using this product, use clean air to blow away any dust, etc., adhering to surfaces, and wipe off any oil stains, etc., with a lint-free cloth moistened in a solvent such as absolute alcohol.
Do not use air guns installed in factories, as they may be contaminated with oil or other substances.

Organic solvents such as thinner and benzine have the risk of fire due to ignition or spontaneous combustion, and the risk of poisoning due to inhalation.

Do not use organic solvents such as thinner or benzine.

NOTICE

Do not use organic solvents such as detergents, thinner, or benzene, as they can degrade the product's quality or damage the product.

■ Storage

After cleaning, apply anti-rust oil to each part of this product (especially the underside of the stand), wrap it in anti-rust paper, cover it with a plastic bag, and store it in the box used for shipping. (The same applies for long-term storage.)

MEMO

5 Specifications

Model number		CCG-400
Code No.		515-590
Base point adjustment (zero point adjustment) range		18 mm to 400 mm (0.7 in to 16 in)
Precision of plain jaw (single piece)	Flatness	0.5 µm
	Parallelism	1 µm
Operating environment		Temperature: 0 °C to 40 °C, Humidity: 30 % to 70 %
Storage environment		Temperature: -10 °C to 50 °C, Humidity: 30 % to 70 %
External dimensions (W × D × H)		120 mm x 100 mm x 550 mm
Mass		4.5 kg

■ Bore gage for base point adjustment (zero point adjustment)

- 511 Series Standard Bore Gage
- 511 Series Short Leg Bore Gage
- 511 Series Micrometer Head Bore Gage
- 511 Series Shallow Hole Bore Gage
- 511 Series Integrated Display Digital Bore Gage

Part No.	Item name
–	Main unit
940088	Attachment Type A
940089	Attachment Type B
940090	Attachment Type C
630030	Plain jaw (×2)
99MBF604B	User's Manual (this document)
–	Warranty card
–	Inspection certificate

Part No.	Item name
158-117	Optical flat (outer diameter: 45 mm, thickness: 12 mm, flatness: 0.2 µm)
158-118	Optical flat (outer diameter: 45 mm, thickness: 12 mm, flatness: 0.1 µm)
158-119	Optical flat (outer diameter: 60 mm, thickness: 15 mm, flatness: 0.2 µm)
158-120	Optical flat (outer diameter: 60 mm, thickness: 15 mm, flatness: 0.1 µm)
158-122	Optical flat (outer diameter: 1.8 in, thickness: 0.5 in, flatness: 0.000004 in)
158-124	Optical flat (outer diameter: 2.4 in, thickness: 0.6 in, flatness: 0.000004 in)
601644	Ceraston [external dimensions (W × D × H): 150 mm × 50 mm × 20 mm]
601645	Ceraston [external dimensions (W × D × H): 100 mm × 25 mm × 12 mm]

SERVICE NETWORK

*As of December 2022

Europe

Mitutoyo Europe GmbH
Borsigstrasse 8-10, 41469 Neuss, GERMANY
TEL: 49 (0)2137 102-0 FAX: 49 (0)2137 102-351

Mitutoyo CTL Germany GmbH
Von-Gunzert-Strasse 17, 78727 Oberndorf, GERMANY
TEL: 49 (0)7423 8776-0 FAX: 49 (0)7423 8776-99

KOMEG Industrielle Messtechnik GmbH
Zum Wasserwerk 3, 66333 Völklingen, GERMANY
TEL: 49 (0)6898 91110 FAX: 49 (0)6898 9111100

Germany

Mitutoyo Deutschland GmbH
Borsigstrasse 8-10, 41469 Neuss, GERMANY
TEL: 49 (0)2137 102-0 FAX: 49 (0)2137 86 85

M³ Solution Center Hamburg
Tempowerkring 9·im HIT-Technologiepark 21079 Hamburg, GERMANY
TEL: 49 (0)40 791894-0 FAX: 49 (0)40 791894-50

M³ Solution Center Berlin
Ernst-Lau-Straße 6, 12489 Berlin, GERMANY
TEL:49(0)30 2611 267 FAX: 49 30 67988729

M³ Solution Center Eisenach
Neue Wiese 4, 99817 Eisenach,GERMANY
TEL: 49 (0)3691 88909-0 FAX: 49 (0)3691 88909-9

M³ Solution Center Ingolstadt
Marie-Curie-Strasse 1A, 85055 Ingolstadt, GERMANY
TEL: 49 (0)841 954920 FAX: 49 (0)841 9549250

M³ Solution Center Leonberg
Am Längenbühl 3, 71229 Leonberg, GERMANY
TEL: 49 (0)7152 6080-0 FAX: 49 (0)7152 608060

Mitutoyo-Messgeräte Leonberg GmbH
Heidenheimer Strasse 14, 71229 Leonberg, GERMANY
TEL: 49 (0)7152 9237-0 FAX: 49 (0)7152 9237-29

U.K.

Mitutoyo (UK) Ltd. HQ
Joule Road, West Point Business Park,
Andover, Hampshire SP10 3UX, UNITED KINGDOM
TEL: 44 (0)1264 353123 FAX: 44 (0)1264 354883

Coventry M³ Solution Centre
Unit6, Banner Park, Wickmans Drive, Coventry,
West Midlands CV4 9XA, UNITED KINGDOM
TEL: 44 (0)2476 426300

Halifax M³ Solution Centre
Lowfields Business Park, Navigation Close, Elland,
West Yorkshire HX5 9HB, UNITED KINGDOM
TEL: 44 (0)1422 375566

East Kilbride M³ Solution Centre
The Bairds Building, Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride G75 0QF, UNITED KINGDOM
TEL: 44 (0)1355 581170

France

Mitutoyo France
Paris Nord 2-123 rue de la Belle Etoile, BP 59267 ROISSY EN FRANCE 95957 ROISSY CDG CEDEX, FRANCE
TEL: 33 (0)149 38 35 00

M³ Solution Center LYON
Parc Mail 523, cours du 3ème millénaire, 69791 Saint-Priest, FRANCE
TEL: 33 (0)149 38 35 70

M³ Solution Center STRASBOURG
Parc de la porte Sud, Rue du pont du péage, 67118 Geispolsheim, FRANCE
TEL: 33 (0)149 38 35 80

M³ Solution Center CLUSES
290 Avenue des Lacs, 74950 Scionzier, FRANCE
TEL: 33 (0)1 49 38 35 90

M³ Solution Center TOULOUSE
Aeroparc Saint Martin Cellule B08 ZAC de Saint Martin du Touch 12 rue de Caulet 31300 Toulouse, FRANCE
TEL: 33 (0)1 49 38 42 90

M³ Solution Center RENNES
2, rue Claude Chappe, PA le Vallon - ZAC Mivoie, 35230 Noyal-Châtillon-sur-Seiche, FRANCE
TEL: 33 (0)1 49 38 42 10

Italy

Mitutoyo Italiana S.r.l.
Corso Europa, 7 - 20045 Lainate (MI), ITALY
TEL: 39 02 935781 FAX: 39 02 93578255

M³ Solution Center BOLOGNA
Via dei Carpini1/A - 40011 Anzola Emilia (BO), ITALY
TEL: 39 02 93578215 FAX: 39 02 93578255

M³ Solution Center CHIETI
Contrada Santa Calcagna - 66020 Rocca S. Giovanni (CH), ITALY
TEL: 39 02 93578280 FAX: 39 02 93578255

M³ Solution Center PADOVA
Via G. Galilei 21/F - 35035 Mestrino (PD), ITALY
TEL: 39 02 93578268 FAX: 39 02 93578255

Netherlands

Mitutoyo Nederland B.V.
Koningsschot 41, 3905 PR Veenendaal, THE NETHERLANDS
TEL: 31(0)318-534911

Mitutoyo Nederland B.V. / M³ Solution Center Enschede
Institutenweg 50, 7521 PK Enschede, THE NETHERLANDS
TEL: 31(0)318-534911

Mitutoyo Nederland B.V. / M³ Solution Center Eindhoven
De Run 1115, 5503 LB Veldhoven, THE NETHERLANDS
TEL: 31(0)318-534911

Mitutoyo Research Center Europe B.V.
De Rijn 18, 5684 PJ Best, THE NETHERLANDS
TEL:31(0)499-320200 FAX:31(0)499-320299

Belgium

Mitutoyo Belgium N.V. / M³ Solution Center Melsele
Schaarbeekstraat 20, B-9120 Melsele, BELGIUM
TEL: 32 (0)3-2540444

Sweden

Mitutoyo Scandinavia AB
Släntvägen 6, 194 61 Upplands Väsby, SWEDEN
TEL: 46 (0)8 594 109 50

Mitutoyo Scandinavia AB / M³ Solution Center Alingsås
Ängsvaktaregatan 3A, 441 38 Alingsås, SWEDEN
TEL: 46 (0)8 594 109 50

Mitutoyo Scandinavia AB / M³ Solution Center Värnamo
Kalkstensvägen 7, 331 44 Värnamo, SWEDEN
TEL: 46 (0)8 594 109 50

Switzerland

Mitutoyo (Schweiz) AG
Steinackerstrasse 35, 8902 Urdorf, SWITZERLAND
TEL: 41 (0)447361150

Mitutoyo (Suisse) SA
Rue Galilée 4, 1400 Yverdon-les Bains, SWITZERLAND
TEL: 41 (0)244259422

Poland

Mitutoyo Polska Sp.z o.o.
Ul.Graniczna 8A, 54-610 Wroclaw, POLAND
TEL: 48 (0)71354 83 50 FAX: 48 (0)71354 83 55

Czech Republic

Mitutoyo Česko s.r.o.
Dubská 1626, 415 01 Teplice, CZECH REPUBLIC
TEL: 420 417-514-011 Email: info@mitutoyo.cz

Mitutoyo Česko s.r.o. M³ Solution Center Ivančice
Ke Karlovu 62/10, 664 91 Ivančice, CZECH REPUBLIC
TEL: 420 417-514-011 Email: info@mitutoyo.cz

Mitutoyo Česko s.r.o. M³ Solution Center Ostrava Mošnov
Mošnov 314, 742 51 Mošnov, CZECH REPUBLIC
TEL: 420 417-514-050 Email: info@mitutoyo.cz

Mitutoyo Česko s.r.o. Slovakia Branch
Hviezdoslavova 124, 017 01 Považská Bystrica, SLOVAKIA
TEL: 421 948-595-590 Email: info@mitutoyo.sk

Hungary

Mitutoyo Hungária Kft.
Galamb József utca 9, 2000 Szentendre, HUNGARY
TEL: 36 (30) 6410210

Romania

Mitutoyo Romania SRL
1A Drumul Garii Odai Street, showroom, Ground Floor, 075100 OTOPENI-ILFOV, ROMANIA
TEL: 40 (0)311012088 FAX: +40 (0)311012089

Showroom in Brasov
Strada Ionescu Crum Nr.1, Brasov Business Park Turnul 1, Mezanin, 500446 Brasov-Judetul Brasov, ROMANIA
TEL/FAX: 40 (0)371020017

Finland

Mitutoyo Scandinavia AB Finnish Branch
Viherkiitäjä 2A, 33960, Pirkkala, FINLAND
TEL: 358 (0)40 355 8498

Austria

Mitutoyo Austria GmbH
Salzburger Straße 260 / 3 A-4600 Wels, AUSTRIA
TEL: 43 (0)7242 219 998

Mitutoyo Austria GmbH Goetzis Regional showroom
Lastenstrasse 48a, 6840 Götzis, AUSTRIA

Singapore

Mitutoyo Asia Pacific Pte. Ltd.
Head office / M³ Solution Center
24 Kallang Avenue, Mitutoyo Building, SINGAPORE 339415
TEL:(65)62942211 FAX:(65)62996666

Malaysia

Mitutoyo (Malaysia) Sdn. Bhd.
Kuala Lumpur Head Office / M³ Solution Center
Mah Sing Integrated Industrial Park, 4, Jalan Utarid U5/14, Section U5, 40150 Shah Alam, Selangor, MALAYSIA
TEL:(60)3-78459318 FAX:(60)3-78459346

Penang Branch office / M³ Solution Center
30, Persiaran Mahsuri 1/2, Sunway Tunas, 11900 Bayan Lepas, Penang, MALAYSIA
TEL:(60)4-6411998 FAX:(60)4-6412998

Johor Branch office / M³ Solution Center
70 (Ground Floor), Jalan Molek 1/28, Taman Molek, 81100 Johor Bahru, Johor, MALAYSIA
TEL:(60)7-3521626 FAX:(60)7-3521628

Thailand

Mitutoyo (Thailand) Co., Ltd.
Bangkok Head Office / M³ Solution Center
76/3-5, Chaengwattana Road, Kwaeng Anusaowaree, Khet Bangkaen, Bangkok 10220, THAILAND
TEL:(66)2080 3500 FAX:(66)2521 6136

Chonburi Branch / M³ Solution Center
7/1, Moo 3, Tambon Bowin, Amphur Sriracha, Chonburi 20230, THAILAND
TEL:(66)2080 3563 FAX:(66)3834 5788

ACC Branch / M³ Solution Center
122/8, 122/9, Moo 6, Tambon Donhuaroh, Amphur Muangchonburi, Chonburi 20000, THAILAND
TEL:(66)2080 3565

Indonesia

PT. Mitutoyo Indonesia
Head Office / M³ Solution Center
Jalan Sriwijaya No.26 Desa cibatu Kec. Cikarang Selatan Kab. Bekasi 17530, INDONESIA
TEL: (62)21-2962 8600 FAX: (62)21-2962 8604

Vietnam

Mitutoyo Vietnam Co., Ltd
Hanoi Head Office / M³ Solution Center
1st & 2nd floor, MHDI Building, No. 60 Hoang Quoc Viet Road, Nghia Do Ward, Cau Giay District, Hanoi, VIETNAM
TEL:(84)24-3768-8963 FAX:(84)24-3768-8960

Ho Chi Minh City Branch Office / M³ Solution Center
Unit No. B-00.07, Ground Floor, C1 Building, No. 6, Street D9, An Loi Dong Ward, Thu Duc City, Ho Chi Minh City, VIETNAM
TEL:(84)28-3840-3489 FAX:(84)28-3840-3498

Hai Phong City Branch Office
Room 511, 5th Floor, Thanh Dat 3 Building, No. 4 Le Thanh Tong Street, May To Ward, Ngo Quyen District, Hai Phong City, VIETNAM
TEL:(84)22-5398-9909

Philippines

Mitutoyo Philippines, Inc.
Head Office / M³ Solution Center
Unit 1B & 2B LTI, Administration Building 1, Annex 1, North Main Avenue, Laguna Technopark, Binan Laguna 4024, PHILIPPINES
TEL/FAX:(63) 49 544 0272

India

Mitutoyo South Asia Pvt. Ltd. Head Office
C-122, Okhla Industrial Area, Phase-I, New Delhi-110 020, INDIA
TEL: (91) 11-40578485/86

MSA Technical Center
Plot no. 65, Ground Floor, Udyog Vihar, Phase-4 Gurgaon, Haryana - 122016, INDIA
TEL : (91) 124–2340286/287

Mumbai Region Head office
303, Sentinel Hiranandani Business Park Powai, Mumbai-400 076, INDIA
TEL: (91) 22-25700684/685/837/839

Pune Office / M³ Solution Center
G4/G5, Pride Kumar Senate, Off. Senapati Bapat Road, Pune-411 016, INDIA
TEL:(91) 20-25660043/44/45

Ahmedabad Office / M³ Solution Center

A-104 & A-105, First Floor, Solitaire Corporate Park, Near Divya Bhaskar Press, S.G. Road, Ahmedabad - 380 015, INDIA

TEL: (91) 079 - 29704902/903

Bengaluru Region Head office / M³ Solution Center

116/117-2, Ground Floor, Sy. No. 93 & 94, 3rd Phase, Peenya Industrial Area, Bengaluru-560 058, INDIA

TEL: (91) 80-25630946/47/48/49

Coimbatore Office

Regus, Srivari Srimath, 3rd Floor, Door No:1045, Avinashi Road, Coimbatore - 641 018,INDIA

TEL: (91) 9345005663

Chennai Office / M³ Solution Center

No. 624, Anna Salai Teynampet, Chennai-600 018, INDIA

TEL: (91) 44-24328823/24/25

Kolkata Office

Unit No. 1208,Om Tower, 32,J.L..Nehru Road, Kolkata-700 071, INDIA

TEL: (91) 33-22267088/40060635/22266817

Taiwan

Mitutoyo Taiwan Co., Ltd. / M³ Solution Center Taipei

4F., No.71, Zhouzi St., Neihu Dist.,Taipei City 114, TAIWAN

TEL:886(2)5573-5900 FAX:886(2)8752-3267

Taichung Branch / M³ Solution Center Taichung

1F., No. 299, Gaotie 1st Rd., Wuri Dist., Taichung City 414, TAIWAN

TEL:886(4)2338-6822 FAX:886(4)2338-6722

Kaohsiung Branch / M³ Solution Center Kaohsiung

1F., No.31-1, Haibian Rd., Lingya Dist., Kaohsiung City 802, TAIWAN

TEL:886(7)334-6168 FAX:886(7)334-6160

South Korea

Mitutoyo Korea Corporation

Head Office / M³ Solution Center

(Sanbon-Dong, Geumjeong High View Build.), 6F, 153-8, Ls-Ro, Gunpo-Si, Gyeonggi-Do, 15808 KOREA

TEL:82(31)361-4200 FAX:82(31)361-4201

Busan Office / M³ Solution Center

(3150-3, Daejeo 2-dong) 8,Yutongdanji 1-ro 49beon-gil, Gangseo-gu, Busan, 46721 KOREA

TEL:82(51)324-0103 FAX:82(51)324-0104

Daegu Office / M³ Solution Center

(Galsan-dong, Daegu Business Center), 301-Ho, 217, Seongseogongdan-ro, Dalseo-gu, Daegu 42704 KOREA

TEL:82(53)593-5602 FAX:82(53)593-5603

China

Mitutoyo Measuring Instruments (Shanghai) Co., Ltd.

8th Floor, Tower 1 Lujiazui Jinkong Square No.1788/1800 Century Ave., Pudong New District, Shanghai 200122, CHINA

TEL:86(21)5836-0718 FAX:86(21)5836-0717

Suzhou Office / M³ Solution Center China (Suzhou)

1/2 Floor, Building 4, No.175 Songbei Road, Suzhou Free Trade Zone, Suzhou City, Jiangsu 215000, CHINA

TEL:86(512)6522-1790 FAX:86(512)6251-3420

Wuhan Office / M³ Solution Corner

Room 1701, Wuhan Wanda Center, No. 96, Linjiang Road, Wuchang District, Wuhan Hubei 430060, CHINA

TEL:86(27)8544-8631 FAX:86(27)8544-6227

Chengdu Office

Room 1-102, 1st Floor, Unit 1, Building 1, No. 24, Wannian Road (Wanniancang Cool), Chenghua District, Chengdu City, Sichuan 610056, CHINA

TEL:86(28)8671-8936 FAX:86(28)8671-9086

Hangzhou Office

Room 804, Eastern International Business Center Building 1, No.600 Jinsha Road of

Hangzhou Economic and Technological Development Zone, 310018, CHINA

TEL: 86(571)8288-0319 FAX: 86(571)8288-0320

Tianjin Office / M³ Solution Center China (Tianjin)

Room D 12/F, TEDA Building, No.256 Jie-fang Nan Road Hexi District,Tianjin 300042, CHINA

TEL:86(22)5888-1700 FAX:86(22)5888-1701

Changchun Office

Room 815, 8F, Building A1, Upper East International No.3000 Dongsheng Street, Erdao District, Changchun, Jilin, 130031, CHINA

TEL:86(431)8192-6998 FAX:86(431)8192-6998

Chongqing Office

Room 1312, Building 3, Zhongyu Plaza, No.86, Hongjin Avenue,Longxi Street, Yubei District, Chongqing, 400000, CHINA

TEL:86(23)6595-9950 FAX:86(23)6595-9950

Qingdao Office

Room 638, 6F, No.192 Zhengyang Road, Chengyang District, Qingdao, Shandong, 266109, CHINA

TEL:86(532)8096-1936 FAX:86(532)8096-1937

Xi'an Office

Room 805, Xi'an International Trade Center, No. 196 Xiaozhai East Road, Xi'an, 710061, CHINA

TEL:86(29)8538-1380 FAX:86(29)8538-1381

Dalian Office / M³ Solution Center China (Dalian)

Room A-106 Shuijing SOHO, No.16 Harbin Road,Economic Development Zone,Dalian, 116600 CHINA

TEL:86(411)8718 1212 FAX:86(411)8754-7587

Zhengzhou Office

Room1801,18/F,Unit1,Building No.23, Shangwu Inner Ring Road, Zhengdong New District,Zhengzhou City, Henan 450018, CHINA

TEL:86(371)6097-6436 FAX:86(371)6097-6981

Dongguan Office / M³ Solution Center China (Dongguan)

Room 801, No 65, Chang'an Section Guanchang Road, Chang'an Town, Dongguan City, Guangdong 523841, CHINA

TEL:86(769)8541 7715 FAX:86(769)-8541 7745

Fuzhou Office

Unit 03, 7th floor of East Tower, Sansheng International Center, No.118 Wusi Road, Gulou Distrit, Fuzhou City, Fujian 350001, CHINA

TEL: 86 (591) 8761 8095
FAX: 86 (591) 8761 8096

Changsha Office

Room 2207, Building 1, Shiner International Plaza, No. 88, Kaiyuan Middle Road, Changsha City, Hunan 410100, CHINA

TEL: 86 (731) 8401 9276
FAX: 86 (731) 8401 9376

Changzhou Office

Room 1502, Joint Financial Tower, No.255, Tongjiang North Road, Tianning District, Changzhou City, Jiangsu 2130002, CHINA

TEL:86(519)8815 8319 FAX:86(519)8815 8319

Wenzhou Office

Room 512, Building 4, Xinjingdujiayuan, Sanyang Street, Ouhai District, Wenzhou City, Zhejiang 325014, CHINA

TEL:86(577)8641 5280

Shunde Office

Room 1603, Buliding 26, Vanke Golden Riverside Plaza Phase II, No.13 Mid DeSheng Road, ShunDe District, Foshan City, Guangdong 528300, CHINA

TEL/FAX: 86(757)2228 8621

Mitutoyo Measuring Technology (Suzhou) Co., Ltd.

1/2 Floor, Building 4, No.175 Songbei Road, Suzhou Free Trade Zone, Suzhou City, Jiangsu 215000, CHINA

TEL:86(512)6252-2660 FAX:86(512)6252-2580

USA

Mitutoyo America Corporation

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

TEL:1-(630)820-9666 Toll Free No. 1-888-648-8869

FAX:1-(630)978-3501

Headquarters (Aurora) / M³ Solution Center

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

Seattle (Renton) Office / M³ Solution Center

1000 SW 34th St. Suite G, Renton, WA 98057 U.S.A.

TEL:1-(888)-648-8869

Houston Office / M³ Solution Center

4560 Kendrick Plaza Drive Suite 120 Houston, TX 77032, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(281)227-0937

Cincinnati (Mason) Office / M³ Solution Center

6220 Hi-Tek Ct., Mason, OH 45040, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(513)754-0718

Detroit (Novi) Office / M³ Solution Center

46850 Magellan Drive, Suite 100 Novi, MI 48377, U.S.A.

TEL:1-(888)-648-8869 FAX: 1-(248)-926-0928

Los Angeles (City of Industry) Office / M³ Solution Center

16925 E. Gale Ave., City of Industry, CA 91745, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(626)369-3352

Charlotte (Huntersville) Office / M³ Solution Center

11515 Vanstory Dr., Suite 140, Huntersville, NC 28078, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(704)875-9273

Boston (Marlborough) Office / M³ Solution Center

753 Forest Street, Suite 110, Marlborough, MA 01752, U.S.A.

TEL:1-(888)648-8869 FAX:1-(508)485-0782

Mitutoyo America Corporation Calibration Lab

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(630)978-6477

Mituotyo America Corporation CT-Lab Chicago

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

TEL: 1-(888)-648-8869 FAX: 1-(630)-820-3418

Mitutoyo Research & Development America, Inc.

11533 NE 118th St., Kirkland, WA 98034-7111, U.S.A.

TEL:1-(425)821-3906 FAX:1-(425)821-32280

Mitutoyo Research & Development America, Inc. - California Office

16925 Gale Ave. City of Industry,
CA 91745-1806 U.S.A.

TEL: 1-(425)821-3906 FAX: 1-(425)821-3228

Canada

Mitutoyo Canada Inc.

2121 Meadowvale Blvd., Mississauga,
Ont. L5N 5N1., CANADA

TEL:1-(905)821-1261 FAX:1-(905)821-4968

Montreal Office

7075 Place Robert-Joncas Suite 129, Montreal,
Quebec H4M 2Z2, CANADA

TEL:1-(514)337-5994 FAX:1-(514)337-4498

Brazil

Mitutoyo Sul Americana Ltda.

Head office / M³ Solution Center

Rodovia Índio Tibiriçá 1555, CEP 08655-000 -
Vila Sol Nascente - Suzano - SP - BRASIL

TEL: 55 (11) 5643-0004/0041

Filial Campinas / M³ Solution Center

Avenida Francisco Alfredo Junior, nº 307, Sala
01 e 02, Bairro Swiss Park – Campinas – São
Paulo – BRASIL CEP 13049255

TEL: 55 (19) 3397-3412

Filial Curitiba / M³ Solution Center

Rua Sergipe, nº 101, Sala A, Bairro Boneca do
Iguaçu, São José dos Pinhais – Paraná – BRA-
SIL CEP 83040120

TEL: 55 (41) 3534-1728

Argentina

Mitutoyo Sul Americana Ltda.

Argentina Branch / M³ Solution Center

Av. B. Mitre 891/899 – C.P. (B1603CQI)
Vicente López –Pcia. Buenos Aires – ARGENTINA

TEL:54 (11) 4730-1433 FAX:54 (11) 4730-1411

Sucursal Cordoba / M³ Solution Center

Av. Ricchieri 2872 L.4 – Bº Jardin – CP X5014O-
PJ Cordoba, ARGENTINA

TEL:54 (351) 464-4125

Mexico

Mitutoyo Mexicana, S.A. de C.V.

Industria Elēctrica No.15, Parque Industrial, Nau-
calpan de Juārez, Estado de Mēxico C.P.53370,
MÉXICO

TEL: 52 (01-55) 5312-5612
FAX: 52 (01-55) 5312-3380

Monterrey Office / M³ Solution Center

Blv. Interamericana No. 103, Parque Industrial
FINSA, C.P. 66636 Apodaca, N.L., MÉXICO

TEL: 52(01-81) 8398-8227/8228/8242/8244

FAX: 52(01-81) 8398-8226

Tijuana Office / M³ Solution Center

Calle José María Velazco 10501-C, Col. Cd. Industrial
Nueva Tijuana, C.P. 22500 Tijuana, B.C., MÉXICO

TEL: 52 (01-664) 647-5024

Querétaro Office / M³ Solution Center

Av. Cerro Blanco No.500-1, Colonia Centro Sur,
Querétaro, Querétaro, C.P. 76090, MÉXICO

TEL: 52 (01-442) 340-8018, 340-8019 and 340-8020
FAX: 52 (01-442) 340-8017

Mitutoyo Mexicana, S.A. de C.V. Querétaro Calibration Laboratory

Av. Cerro Blanco 500 30 Centro Sur,
Querétaro, Querétaro, C.P. 76090, MÉXICO

TEL: 52 (01-442) 340-8018, 340-8019 and 340-8020
FAX: 52 (01-442) 340-8017

Aguascalientes Office / M³ Solution Center

Av. Aguascalientes No. 622, Local 15 Centro Comer-
cial El Cilindro Fracc. Pulgas Pandas Norte, C.P.
20138, Aguascalientes, Ags. MÉXICO

TEL: 52 (01-449) 174-4140 and 174-4143

Irapuato Office / M³ Solution Center

Boulevard a Villas de Irapuato No. 1460 L.1 Col. Ejido
Irapuato C.P. 36643

Irapuato, Gto., MÉXICO

TEL: 52 (01-462) 144-1200 and 144-1400

Revision Record

Date of publication	Revision status	Details of revision
April 1, 2023	First edition	Publication

Mitutoyo Corporation

20-1, Sakado 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa 213-8533, Japan
Tel: +81 (0)44 813-8230 Fax: +81 (0)44 813-8231
Home page: https://www.mitutoyo.co.jp/global.html

For the EU Directive, Authorized representative and importer in the EU:
Mitutoyo Europe GmbH
Borsigstrasse 8-10, 41469 Neuss, Germany

For the UK Regulation, Authorized representative and importer in the UK:
Mitutoyo (UK) Ltd.
Joule Road, West Point Business Park, Andover, Hampshire SP10 3UX, UNITED KINGDOM

Printed in Japan

No. 99MBF604B