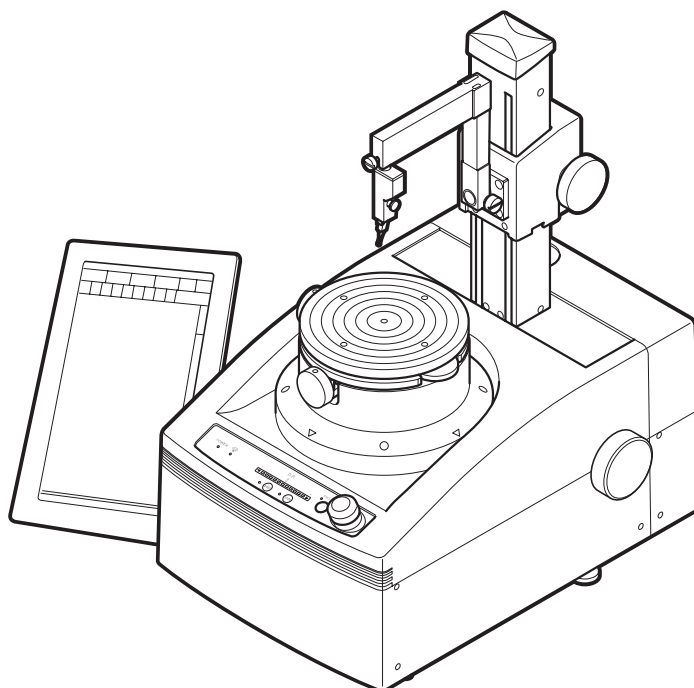






Small Size Light Weight Roundness Measuring Machine

RONDCOM TOUCH

Start Guide



Brief Content

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- 
**Data management
(document file)..... 15**
- 
Measurement 16
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Analysis.....37



Please refer to the Help function in the software as for the function of the “ACCTee” software and detail of its usage.

Original Instructions

TOKYO SEIMITSU CO., LTD.

Explanation of trademarks

Windows is a registered trademark or trademark in the United State and other countries for the U.S. Microsoft Corporation.

Bluetooth is a registered trademark or trademark for the Bluetooth SIG Inc.

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Introduction

Thank you very much for purchasing our RONDCOM TOUCH.

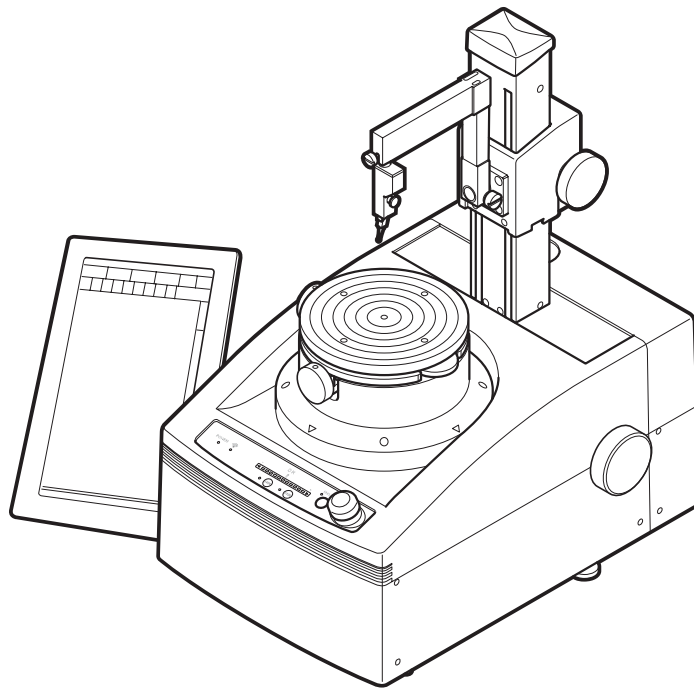
RONDCOM TOUCH (hereinafter referred to as machine) has been developed by gathering all the efforts of our technical staff determined to seek preciseness, and diligently produced by our skilled technicians at the modern production facilities. Since the product demonstrates excellent performance as a result of passing various strict tests, a user can use the product safely.

This guide intelligibly explains how to handle and maintain the machine safely for the user. Please read and understand carefully before using the machine.

About RONDCOM TOUCH

This machine is a table-rotating type, small size roundness measuring machine. The machine contains "Measurement Unit" for performing measurement and a Tablet PC (OS: Windows) installed with an Integrated Measurement Analysis software "ACCTee." The measuring machine is connected to the Tablet PC through a cable or a Bluetooth.



"ACCTee" is an integrated measurement and analysis software by which a user can intuitively perform a series of operation including measurement, analysis, and printout of the result on a document, and can connectedly store and manage all the data and information.



* Drawing(s) on this document might differ from the actual due to improvement of the product.

For correct and safety use

- In order to use the machine correctly and safely, don't forget to read this guide before using the machine.
- Please keep this guide handy so as to clarify any uncertainty with the machine at anytime.
- In this guide, the following signs are used for notifying risky operation and handling, in order to prevent harms on customers and others, and damages to the properties beforehand.

 Warning	If you ignore this sign and handle it incorrectly, there is a possibility of human death, serious injury, or wound.
 Notes	If you ignore this sign and handle it incorrectly, there is a possibility of property damages.

Warning

- **Plug in the AC adaptor to a socket of the electric voltage indicated.**
If you plug it in an incorrect socket, there is a possibility of electric shock or fire.
- **Absolutely never use a damaged AC adaptor.**
Since a dangerous electric current is flowing in the AC adaptor, there is a possibility of electric shock and fire.
- **Do not let the AC adaptor be exposed to water, oil, and chemicals.**
There is a possibility of electric shock or fire. Do not let the machine be exposed to water, oil, and chemicals. There is a possibility of electric shock or fire.
- **Absolutely never insert a foreign object (especially electro conductive material such as metal pieces) from a gap in the machine.**
There is a possibility of electric shock or fire.
- **Absolutely use the AC adaptor included.**
If you use the other product, there is a possibility of electric shock or fire.
- **Do not disassemble the machine.**
There is a possibility of electric shock.
- **Avoid moisture, droplet, dust, greasy fume, direct sunlight, impact, vibration, and the like.**
There is a possibility of malfunction and may lead to electric shock or fire in some cases.
- **Before plugging in or out the AC adaptor, never fail to check that the power of the machine is turned off.**
There is a possibility of electric shock.

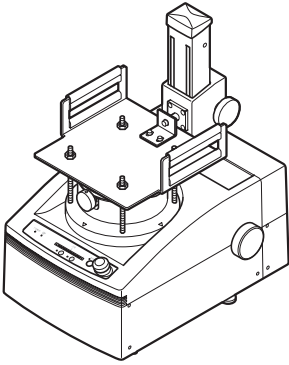
Notes

- The operating temperature of this machine: 10-30°. Use this machine within this temperature zone.
- Do not give excessive force or shock on the probe.
- Do not let the probe be exposed to garbage or dust.
- For removing dirt on the machine, use a soft cloth soaked in mild detergent, squeeze the cloth well, and lightly wipe off the dirt. Do not use organic solvent or alcohol.
- Use a dry and soft cloth for wiping the screen.
- Before working with the machine, keep a sufficient working space.
- As there is a possibility of danger, do not leave anything on the machine or do not yourself get on the machine.
- Adequately take care that a part of your body or your cloth may not be caught by the movable parts to get injured.
- Check that all the cables are correctly connected and free from damages.
- Do not pull the cable forcibly.
- Provide all the cables so as not to let anyone be tripped over the cable by the leg.
- Before removing a cable, hold it correctly.
- Do not push the screen strongly nor use a sharp object such as ballpoint pen for operating the machine.
- Do not touch the screen by wet hand.

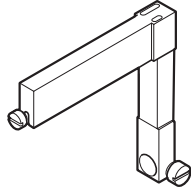
Content of the instruction manual

- **Start Guide (this manual):** For the first time user of this machine, read this manual. Through this manual, a user can understand the following matters: how to setup; how to use each part; calibration; alignment (centering, leveling, and tilting), and basic operation for measurement.
- **Instruction manual (hardware):** Contains information about installation requirements for this equipment, usage of each part, calibration, alignment, technical information, etc.
- **Instruction manual (software):** Contains information about operating system settings, procedures for setting up the "ACCTee" software, etc.
- **Help:** Described here are detailed explanation on all of the functions of the "ACCTee" software and operation procedures. For further utilizing the machine, read the HELP.

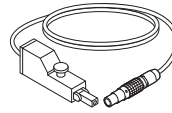
Confirmation of included articles



Measuring machine



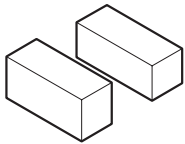
Detector holder



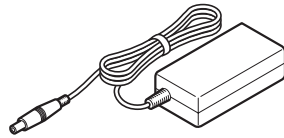
Detector



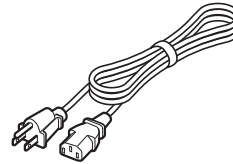
Probe



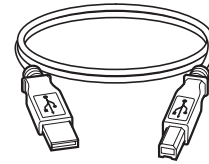
Block gauge



AC adaptor
(for measuring machine)



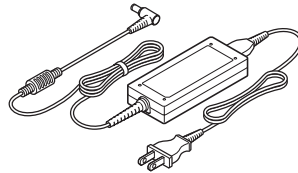
Power cable
(for measuring machine)



USB cable
* This product may not be included depending on the condition at the purchase.



Tablet PC



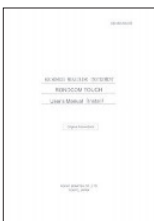
AC adaptor
(for Tablet PC)



Start Guide
(this manual)



RONDCOM TOUCH Instruction Manual (Hardware)



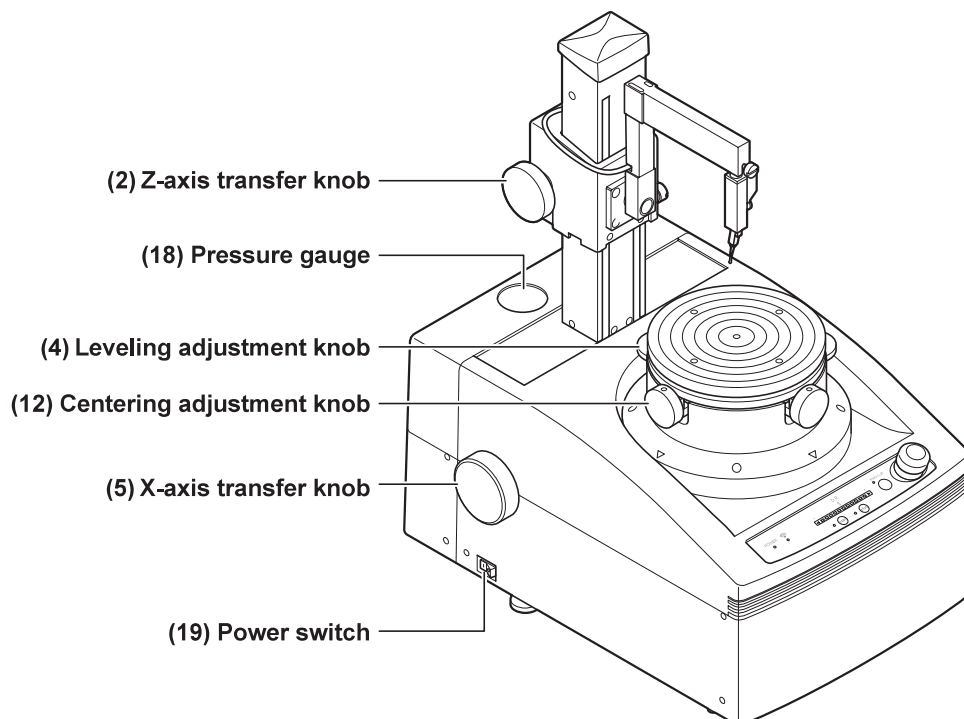
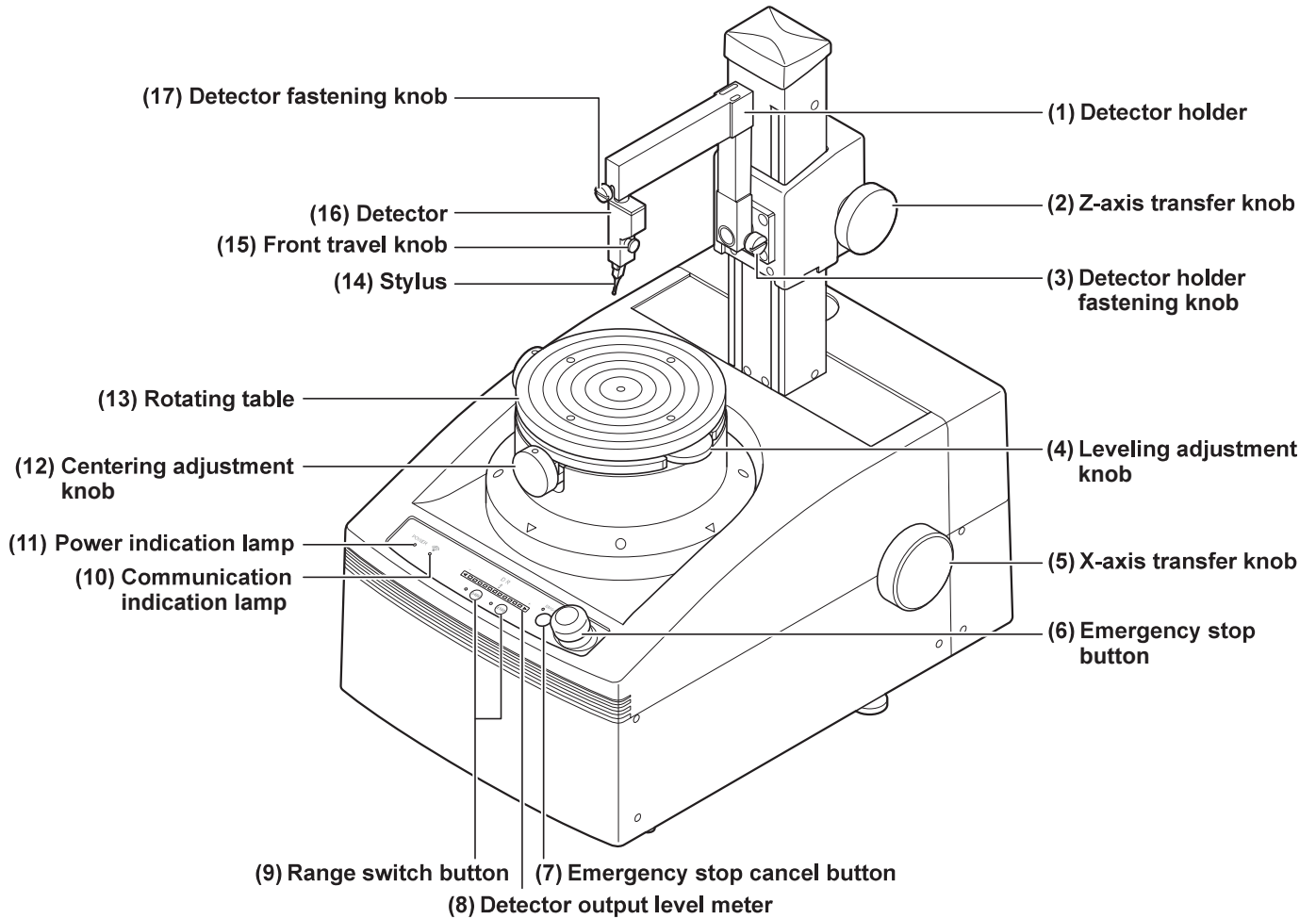
RONDCOM TOUCH Instruction Manual (Installation)

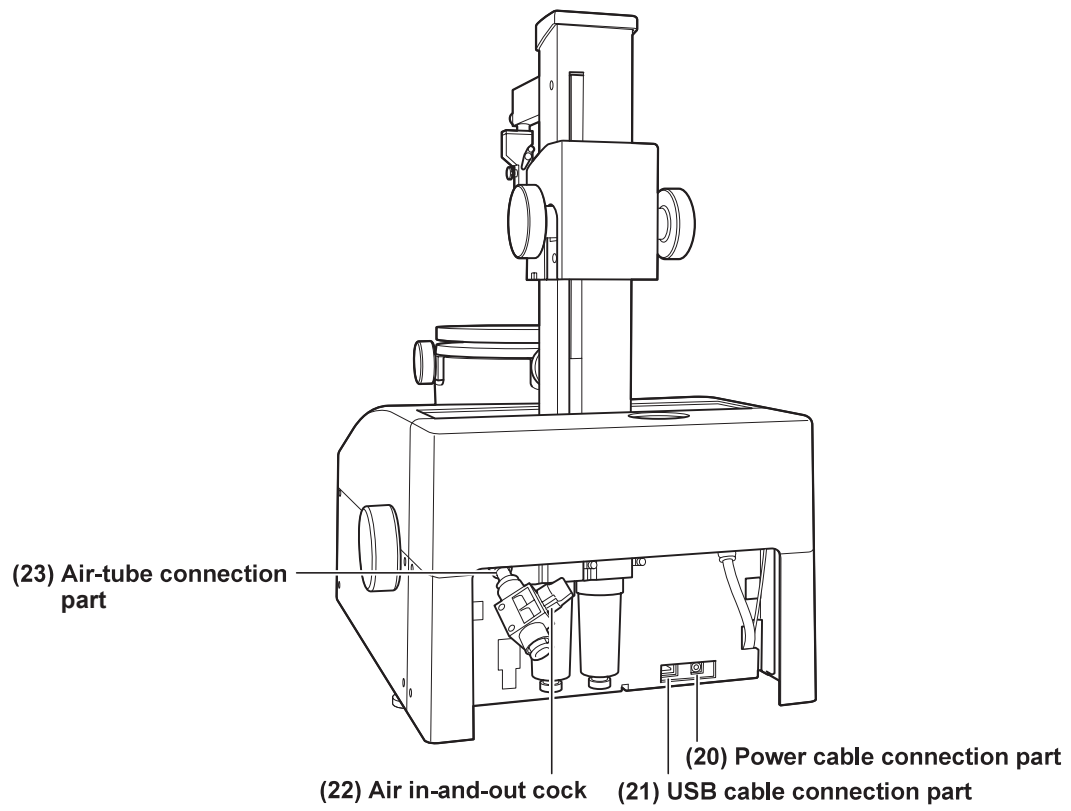


Inspection report
(Certificate of conformance)

Names and functions of each part

Measuring machine





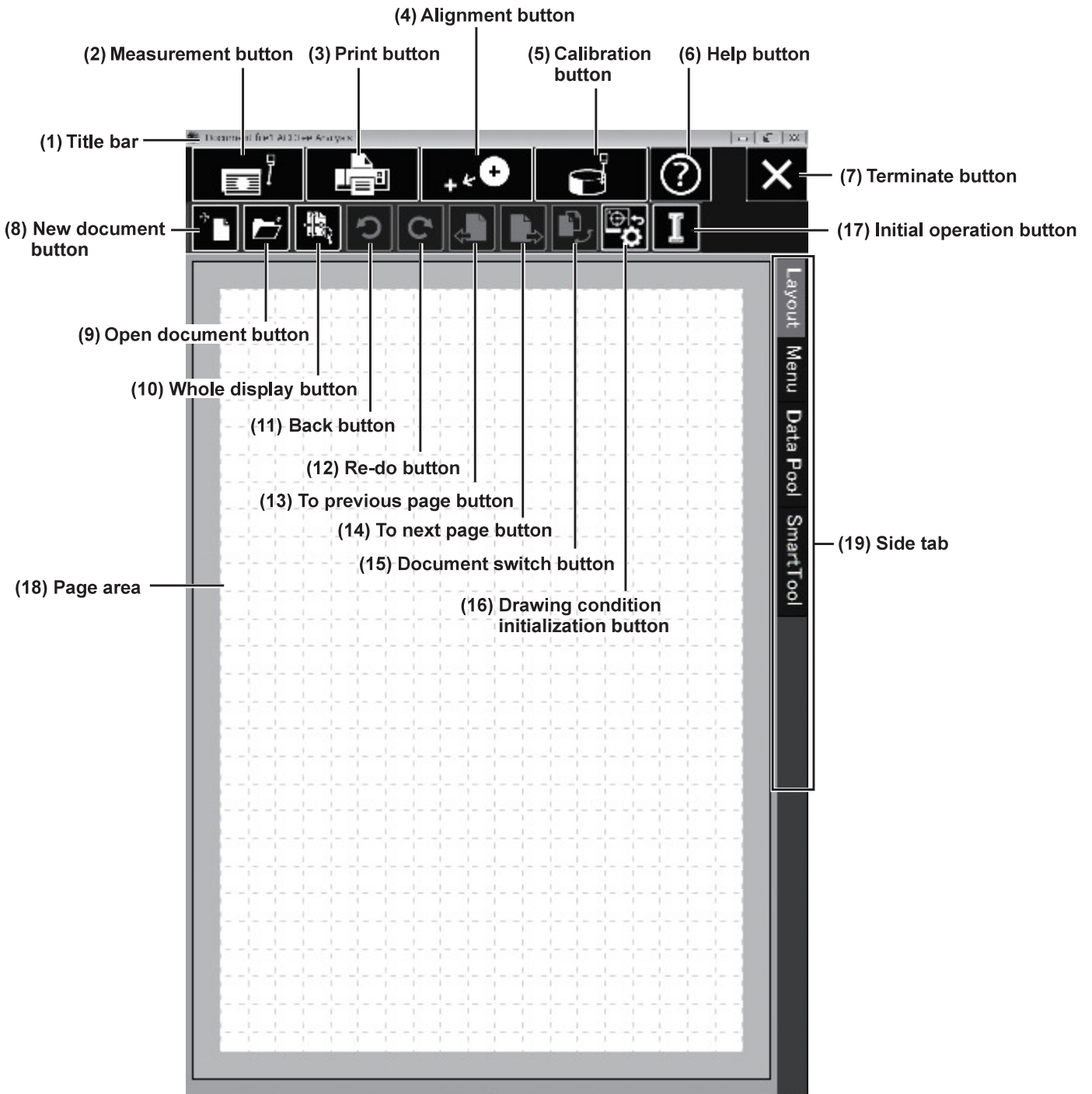
Number	Name	Explanation
(1)	Detector holder	A holder for attaching the detector.
(2)	Z-axis transfer knob	A knob for moving the detector in the Z-axis direction.
(3)	Detector holder fastening knob	A knob for fastening the detector after changing the posture of the detector (side face/flat face).
(4)	Leveling adjustment knob	A knob for tilting (adjusting tilt) and leveling for an object to be measured placed on the rotating table.
(5)	X-axis transfer knob	A knob for moving the detector in the X-axis direction.
(6)	Emergency stop button	A button for stopping the operation of the measuring machine. The button is pressed when the user senses a danger or an occurrence of abnormality on the machine.
(7)	Emergency stop cancel button	This button is pressed for cancelling the emergency stop state.
(8)	Detector output level meter	A meter for indicating the output level of the detector.
(9)	Range switch button	A button for switching the output level of the detector.
(10)	Communication indication lamp	The lamp turns in blue when the communication is available.
(11)	Power indication lamp	The lamp turns in green when the power is on.
(12)	Centering adjustment knob	A knob for performing a centering for an object to be measured placed on the rotating table.
(13)	Rotating table	A rotating table on which an object to be measured is placed.
(14)	Probe	The probe is attached to the detector.
(15)	Front travel knob	A knob for adjusting the amount of protrusion of the detector.
(16)	Detector	A detector for detecting a displacement of an object to be measured.
(17)	Detector fastening knob	A knob fastened on the detector holder.
(18)	Pressure gauge	A gauge for indicating the pressure of the supplied air.
(19)	Power switch	The switch turns on or off the power of the measuring machine.
(20)	Power cable connection part	A part for connecting a power cable.
(21)	USB cable connection part	A part for connecting a USB cable.
(22)	Air in-and-out cock	The cock turns on or off the air flowing into the measuring machine.
(23)	Air-tube connection part	A part for connecting the air-tube.

















●Specification of measuring machine

Item	Contents
Maximum measurable diameter	φ150 mm
Maximum diameter of load to be measured	φ240 mm
Rotation speed	6/min
Centering adjustment range	±2 mm (Range of adjustment for X and Y axis directions)
Tilting adjustment range	±1° (Range of adjustment for X and Y axis directions)
Payload	15 kg
Vertical stroke on Z axis	160 mm
Horizontal stroke on X axis	±80 mm
Wireless communication	
Standards	Bluetooth Ver. 2.1 + EDR compliant, class 2
Communications range	Line-of-sight difference approx. 10 m
Wired communication	
Standards	USB 2.0

Tablet PC

Main items displayed on the screen



Number	Name	Explanation	Related page
(1)	Title bar	The name of the document file currently opened is displayed. When the document is edited, "*" is added to the head of the title. When the document is saved, "*" disappears.	–
(2)	 "Measurement" button	A measurement is started.	31
(3)	 "Print" button	A document is printed.	36
(4)	 "Alignment" button	This is used for setting an object to be measured (centering/leveling/tilting).	20. 23. 26
(5)	 "Calibration" button	The detector is calibrated.	17
(6)	 "Help" button	It displays the function and detailed usage of the [ACCTee] software.	–
(7)	 "Terminate" button	"ACCTee" is terminated.	–
(8)	 "New document" button	A new document is created.	15
(9)	 "Open document" button	A document is opened.	15
(10)	 "Whole display" button	Whole page is displayed.	–
(11)	 "Back" button	An operation on the analysis screen performed immediately before is cancelled.	–
(12)	 "Re-do" button	The operation on the analysis screen cancelled immediately before by the "Back" function is re-done.	–
(13)	 "To previous page" button	The previous page is displayed.	–
(14)	 "To next page" button	The next page is displayed.	–
(15)	 "Switch document" button	Two or more documents are switched and displayed. The name of the document currently displayed is displayed in the title bar.	15
(16)	 "Drawing condition initialization" button	The drawing condition set with this machine is returned to the initialization state.	–
(17)	 "Initial operation" button	The initial operation is started. The starting point of the rotating table is specified.	14
(18)	Page area	An area for displaying a "frame" of analysis results and elements such as shape, curve, graph, parameter, and so on.	–
(19)	Side tab	The side tab includes: "Layout" tab; "Menu" tab; "Data Pool" tab; and "Smart Tool" tab. Various functions can be called up from the side tab.	40

Touch panel operation

The Tablet PC screen is constructed as a touch panel. Use your finger to touch the screen.

●Touching the screen for a short time

Touch the screen for a short time.

Use this for the following operations.

- Selecting a button, item, frame, and so on

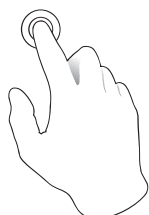


●Touching the screen for a long time

Touch the screen for a few seconds, and leave away from the screen.

Use this for the following operations.

- Opening an edit menu for a frame or a page

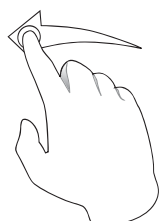


●Dragging on the screen

Keep touching the screen, move the finger, and leave the finger off the screen.

Use this for the following operations.

- Moving a display area
- Moving a frame

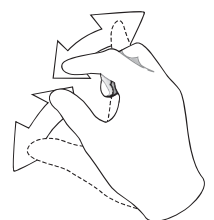


●Pinching in and pinching out

Use two fingers to keep touching the screen and open or close the fingers.

Use this for the following operations.

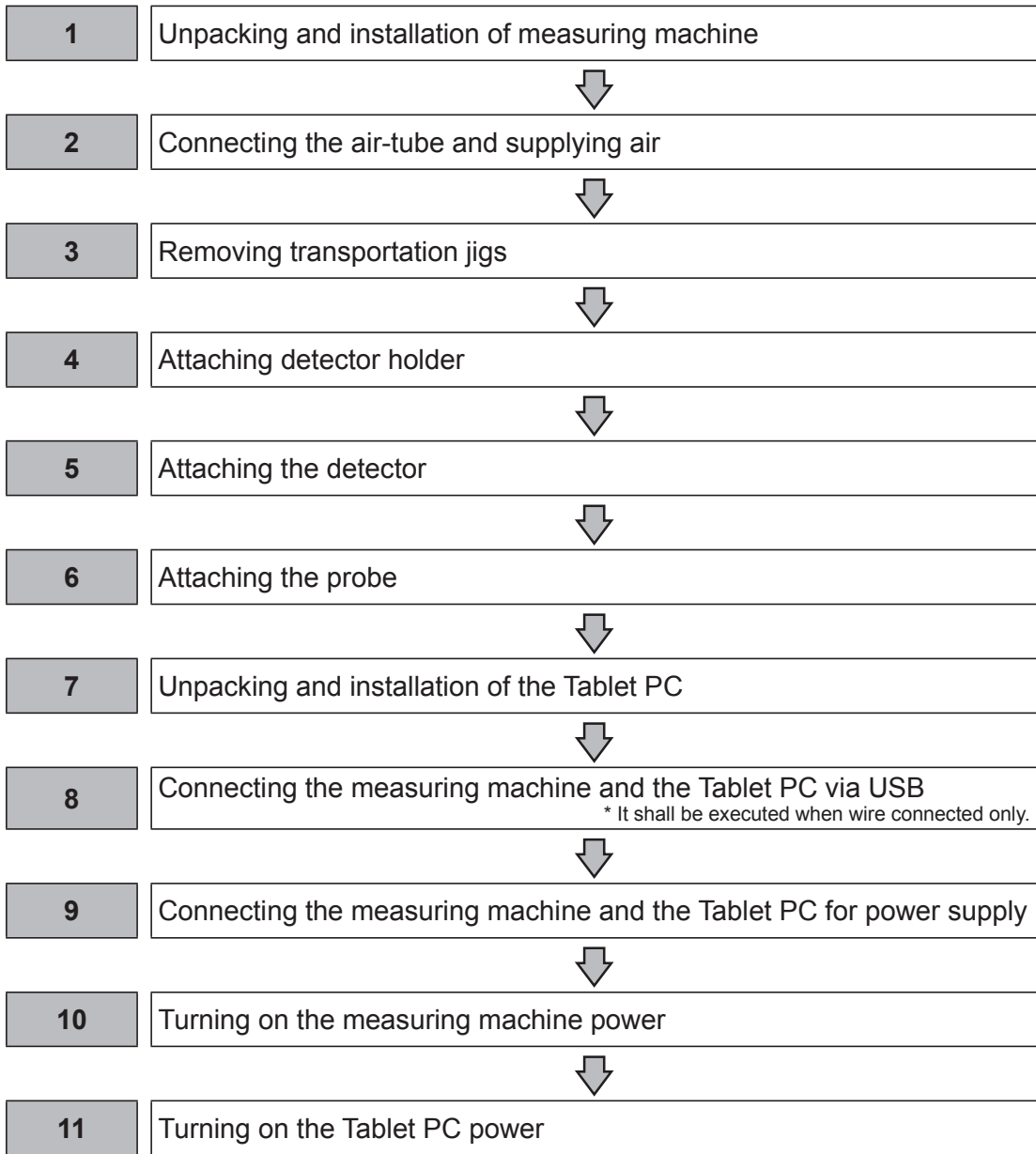
- Zooming in and out of display



Installation

Installation flow

The installation flow of this machine is shown as follows.



Installation

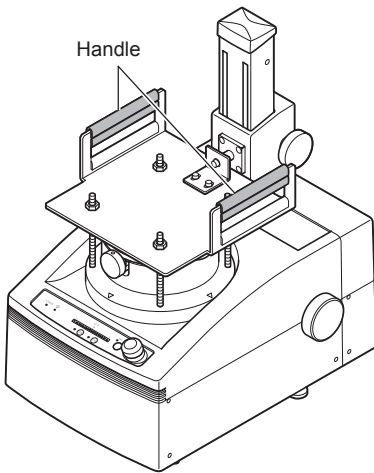
The installation procedure of this machine is shown as follows.

⚠ Important:

- Do not rotate the rotary table until you supply the air to the Measuring system. Rotating it without supplying the air would break micro parts inside the system.
- Note also to install the Measuring system on a leveled place.
 - Install on a place with a levelness of 0.05 mm/m or less.

Unpacking and installation of measuring machine

- 1 Unpack the measuring machine from the package, and install the machine.

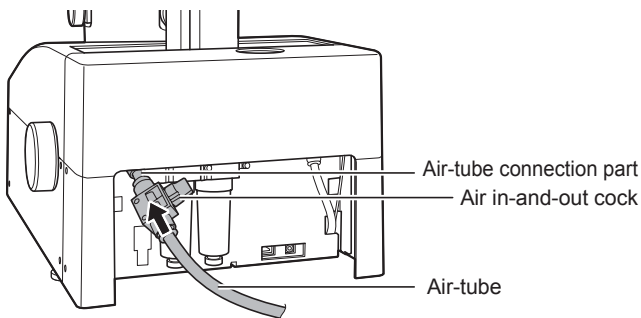


⚠ Important:

- Hold the handle of the transportation jig and unpack the machine.

Connecting the air-tube and supplying air

- 1 Connect the air-tube to the air-tube connection part.

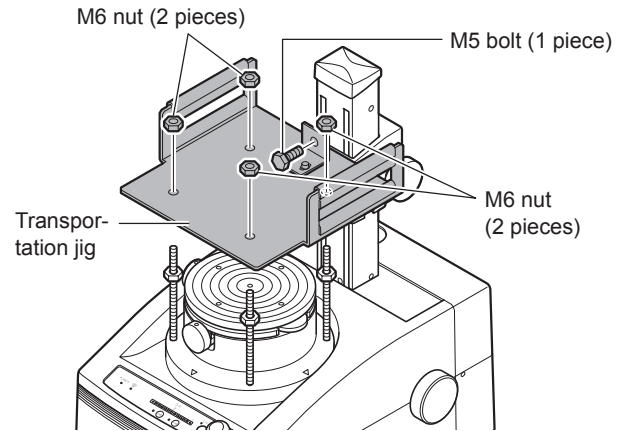


⚠ Important:

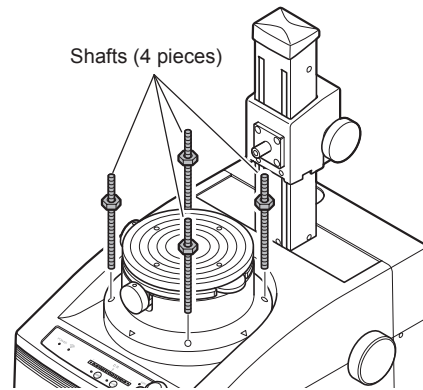
- Cut off the Air source supply to connect the Air tube.

Removing transportation jigs

- 1 Use a spanner and a wrench to remove the M6 nut (4 pieces) and M5 bolt (1 piece), and remove the transportation jig.

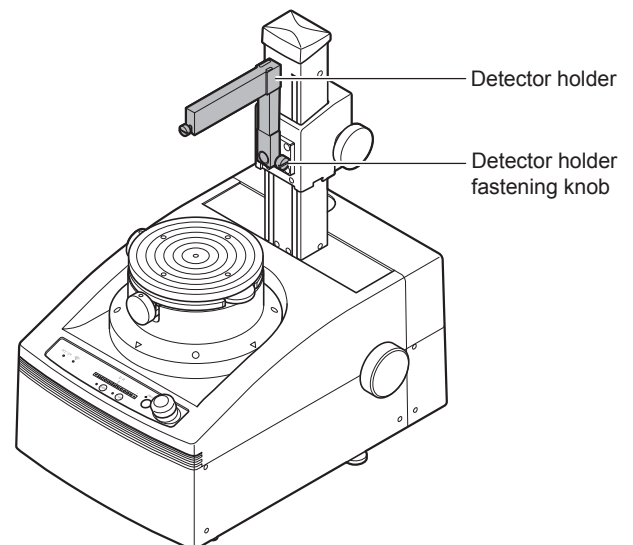


- 2 Remove the shafts (4 pieces).



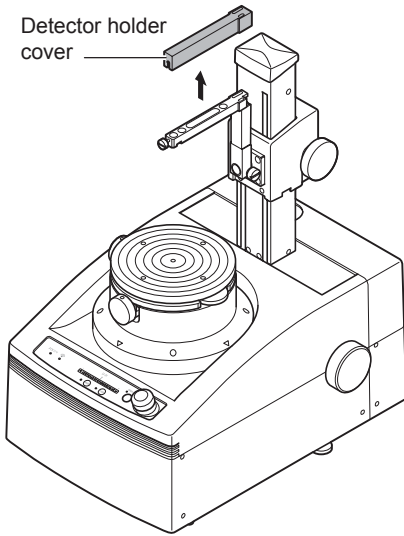
Attaching detector holder

- 1 Connect the Air tube with the Air tube connection and open the Air ON/OFF cock.



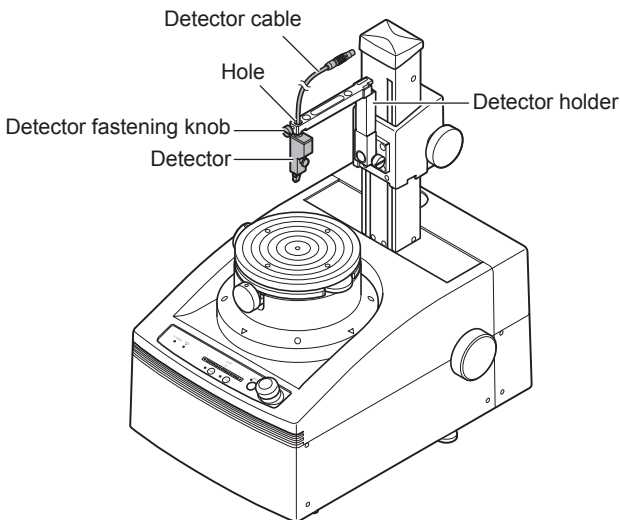
Attaching the detector

1 Removing the detector hold cover.

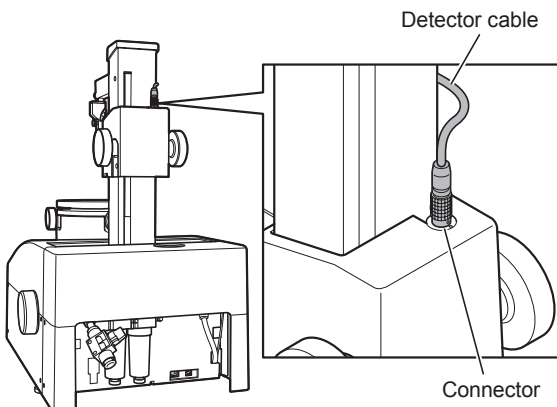


2 Attach the detector to the detector holder, and tighten the detector fastening knob into place.

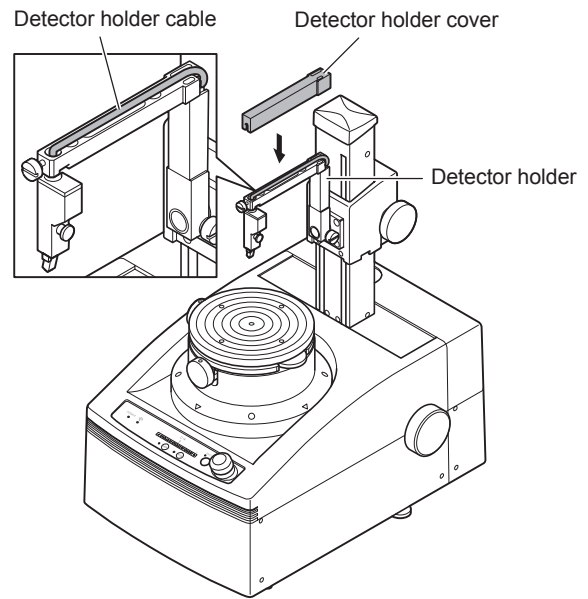
- Pass the detector cable through the hole in the detector holder.



3 Connect the detector cable to the connector behind the fastened part of the detector holder.



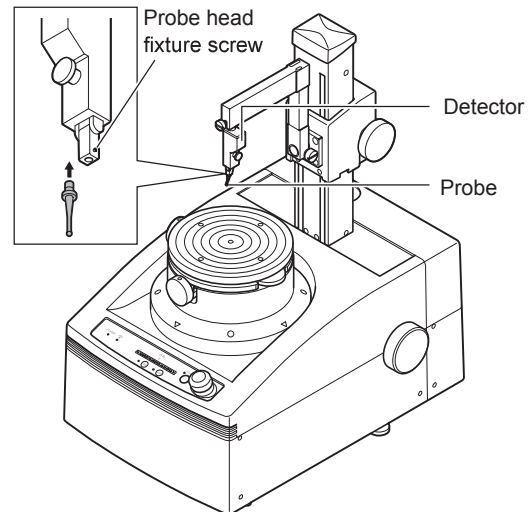
4 Align the detector cable along the top of the detector holder, and attach the detector holder cover.



Attaching the probe

1 Attach the probe to the detector.

- Use the Hexagonal wrench to adjust the probe head fixture screw.



Unpacking and installation of the Tablet PC

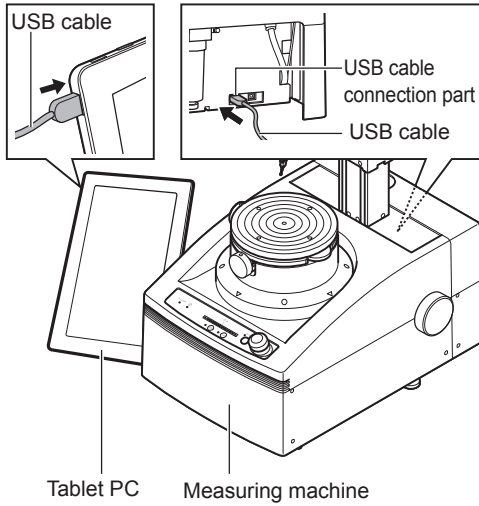
1 Unpack the Tablet PC from the package, and install the PC.

Connecting the measuring machine and the Tablet PC via USB

⚠ Important

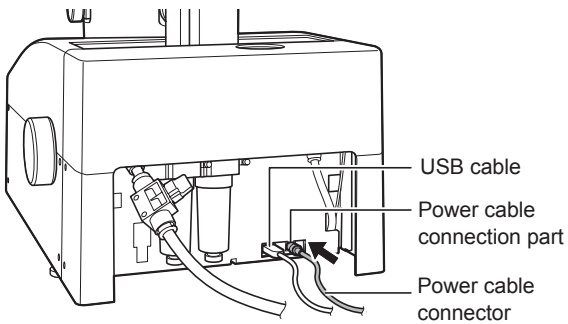
- This procedure is not necessary to wireless connect the Measuring system and Tablet PC.

1 Connect the measuring machine and the Tablet PC via USB cable.

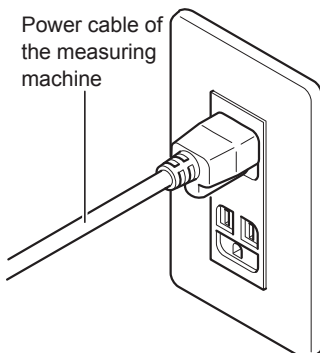


Connecting the measuring machine and the Tablet PC for power supply

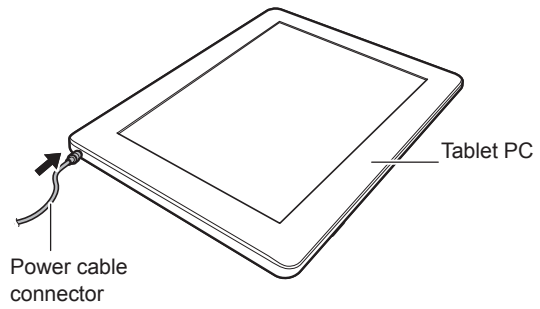
1 Connect the power cable connector of the measuring machine to the power cable connection part.



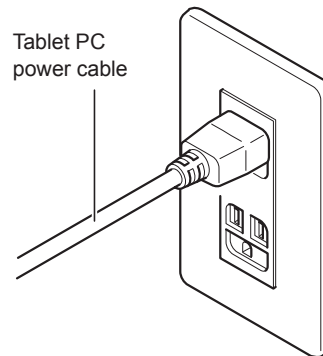
2 Connect the power cable of the measuring machine to a socket.



3 Connect the Tablet PC power cable connector to the Tablet PC.



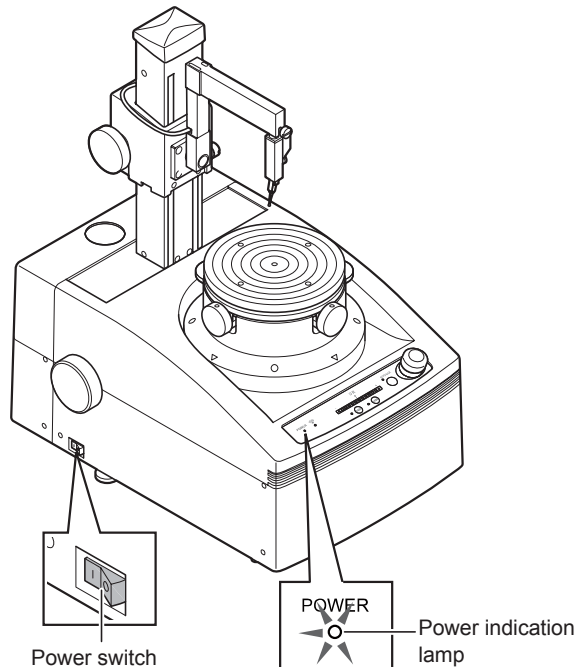
4 Connect the power cable of the Tablet PC to a socket.



Turning on the measuring machine power

1 Turn on the power switch of the measuring machine.

- Check that the power indication lamp turns in green.



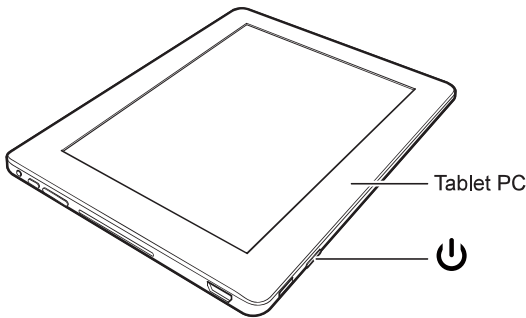
⚠ Important

- If the Power lamp did not light up, turn the Power Supply switch Off and check the connection of the cable and Power Supply itself.

Turning on the Tablet PC power

1 Turn on the power supply of the Tablet PC.

- Upon started the OS (Operating system), the [ACCTee] shall start up.



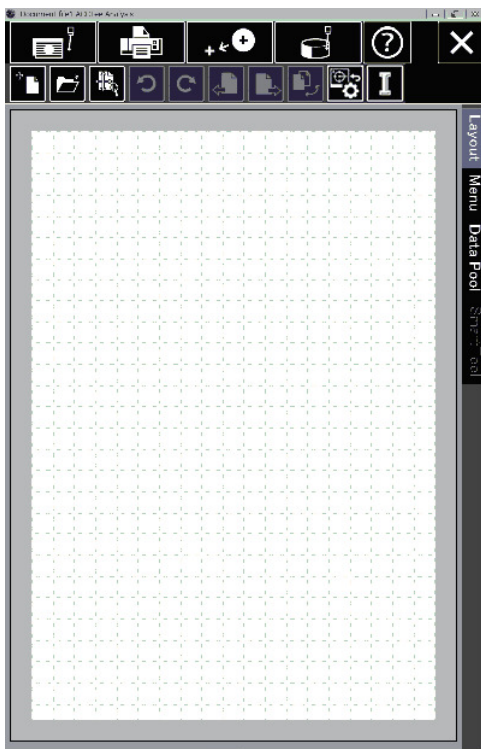
⚠ Important

- If the "ACCTee" does not startup automatically, double-touch the "ACCTee icon" on the desktop of the Tablet PC to start it up.



"ACCTee" icon

Upon started up the "ACCTee"



•About charging

The Tablet PC battery operating time and the charging time (length of time for reaching the full from the empty) depend on the Tablet PC used. When you use the Tablet PC continuously without connecting a power supply cable, use the PC up to 2 or 3 hours as a rough standard.

For more details, refer to the instruction manual included in the Tablet PC.

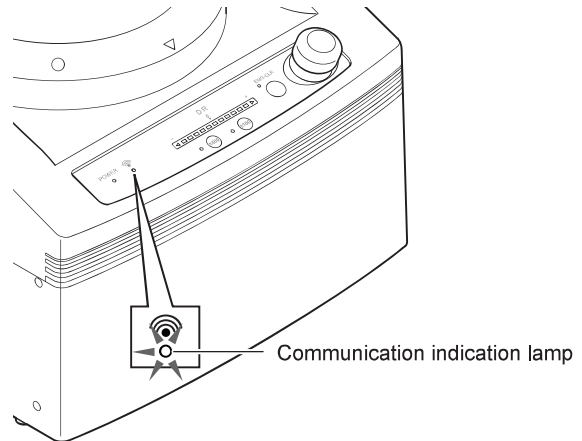
Preparation

Before using the machine, check the following matters for preparation.

Checking communication

1 Check the communication between the measuring machine and the Tablet PC.

- Check that the communication indication lamp turns in blue.



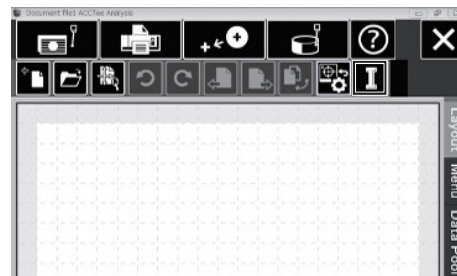
⚠ Important

- For a wireless connection, it may take long for turning on the communication indication lamp.
- If the communication indication lamp does not turn on, check the connection of the USB cables, and the condition of the wireless communication.

Do the initial operation

1 Touch the **I** "Initial Operation" button on the screen.

- On the initial operation screen displayed, touch the "Execution."
- The rotating table starts rotation automatically and performs an initial operation.



⚠ Important

- Touch the **I** "Initial Operation" button in the following cases.
 - After turning on the measuring machine power
 - When the communication with the Tablet PC is disconnected

Data management (document file)

Here explains how to manage the data using the integrated measurement analysis software "ACCTee."

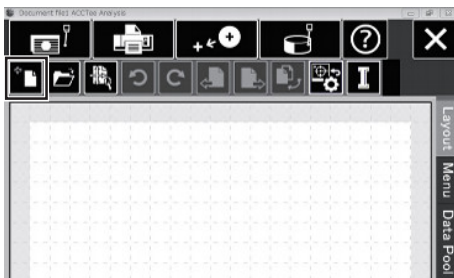
About document file

In the "ACCTee", analysis operation can be performed on a "document file." A document file includes all the information necessary for measurement such as measurement and analysis conditions, analysis result, and layout information in addition to measurement data. The document file operation includes the following items.

●Creating new document

A new document file is created.

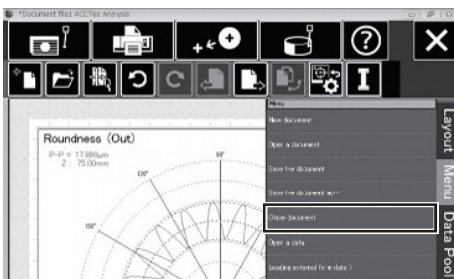
Operation method: Touch  "New Document" button



●Close

The document displayed is closed.

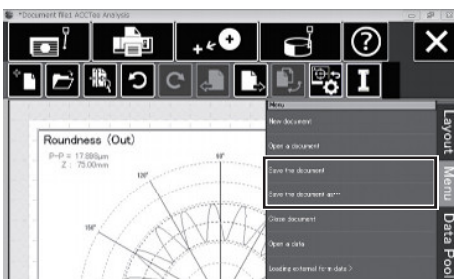
Operation method: Touch "Menu"(side tab) → "File" → "Close Document."



●Save

The document file edited is saved. The document can be overwritten or saved with a new name. It is recommended to save a document file edited.

Operation method: Touch "Menu"(side tab) → "File" → "Save" or "Save As."

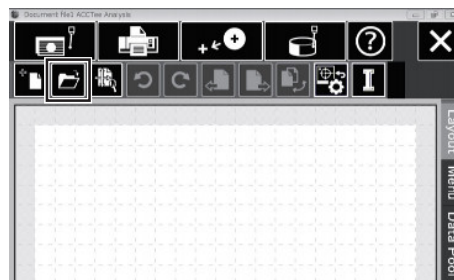


●Open

The document file save is opened.

Since the document file contains the measurement condition, you can perform re-measurement with that condition. It is convenient for arranging works in a fixed form.

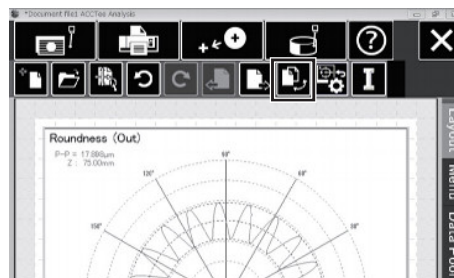
Operation method: Touch the  "Open Document" button



●Switching document

The document file currently opened can be switched.

Operation method: Touch the  "Switch Document" button



Measurement

Here explains the flow of measurement and how to make a measurement.

Flow of measurement

A series of the measurement operation is described as follows.

Calibration (17 page)

The process evaluates whether it is possible to make a measurement to obtain correct values, and perform calibration.

The process uses the calibrator and performs calibration for the values output from the detector. In the calibration, the block gauge (included in the package) and the magnification calibrator (option) are used.

Alignment (20,23,26 page)

Set the measurement object.

Set the measurement object aligning the rotary axis center of the Measuring system.

- Centering
Adjustment of center alignment between the rotation axis center of the measuring machine and the center of the object to be measured
- Leveling
Adjustment of tilt between the rotation axis center of the measuring machine and the object to be measured
- Tilting
Adjustment of center alignment and tilt between the rotation axis center of the measuring machine and the center of the object to be measured

Important

- If you measured the object without aligning it to the Measuring system rotary axis, an error might be included in the measurement result data. Larger misalignment causes worse error.

Measurement (31 page)

The object to be measured is measured.

In this procedure, the measurement condition, number of cross sections, and analysis condition can be specified.

Upon completion of the measurement, the measurement data and analysis data are registered in the slit.

Display change

The display method of documents can be changed.

If necessary, the display magnification can be changed and a page can be moved.

Print (36 page)

A document is printed.

Documents can be printed on demand.

Save (15 page)

A document file can be saved.

By saving a document file, you can read the file at a later time or make a measurement with the same condition. A document file includes all the information related to measurement such as measurement data, analysis result data, and conditions.

Calibrating

The process uses the calibrator and performs calibration for the values output from the detector.

⚠ Important

- Perform a calibration at least once a month. However, it is ideal to perform a calibration once in a day before making a measurement.
- Never fail to perform calibration when you have changed the angle of the probe, or replaced the stylus or detector.

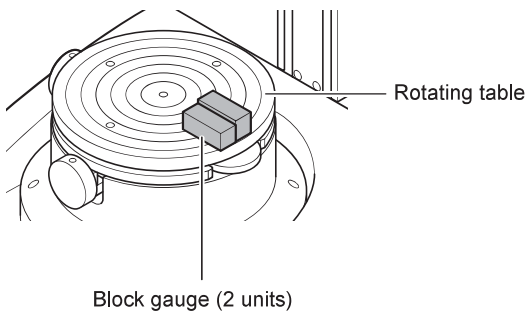
Performing calibration using a block gauge (standard)

The calibration method using a block gauge is described as follows.

⚠ Important

- Do leveling of the Rotary table before calibration. Please refer to "Leveling" (Page 23) as for how to implement the leveling.

1 Set two high and low block gauges to do ringing them with the Rotary table.



⚠ Important

- Wringing is an operation in which the block gauges are fastened to the rotating table by pressing and sliding them against the rotating table.

2 Touch the "Calibration" button on the screen.

- The calibration range is displayed.



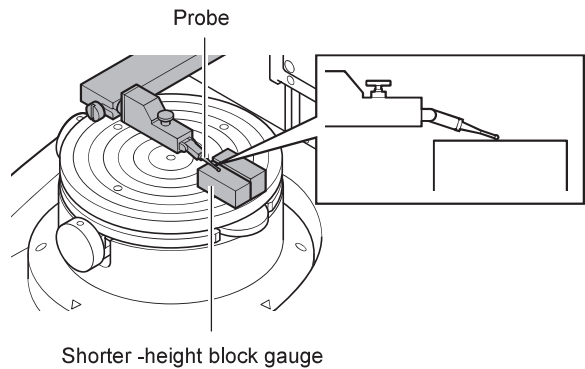
3 The registration destination of the calibration value is specified.



💡 Hint

- Up to 10 destinations can be registered for the calibration value. For more details, refer to "Registration and call of the calibration value"(18 page).

4 Let probe come in contact with the shorter block gauge.



⚠ Important

- Use the Z-axis transfer knob to adjust the "DR" value on the screen so as to indicate the value becoming "0" as much as possible. The DR value can be checked with the detector output level meter on the measuring machine.
- When "*" is displayed with the "DR" value, the detector is not in a range possible to perform measurement.



5 Touch the "ZERO" button on the screen.

- Clear the "DR" value to reset it to "0."



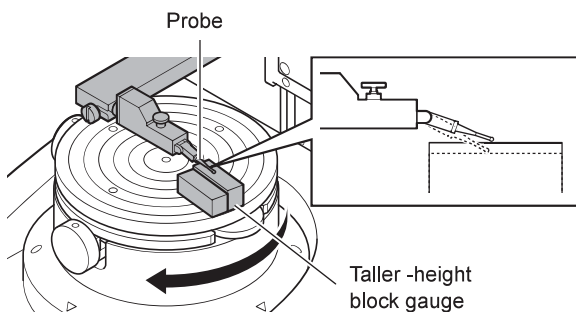
6 Input the difference amount between the two block gauges in the "Calibration Reference Value."



- Hint**
- Touching the "Calibration Reference Value" displays a calculator. Touch the figure(s) and symbol (s) on the Desktop calculator and touch the [OK] button to complete input.

7 Turn the rotating table to slide the probe to the taller -height block gauge.

- The difference amount measured is reflected in the "DR" value on the screen.



8 Touch the "SET" button on the screen.

- The "Calibration Value" is calculated.



9 Touch the "Apply" button.

- The calibration value is registered.



Registration and call of the calibration value

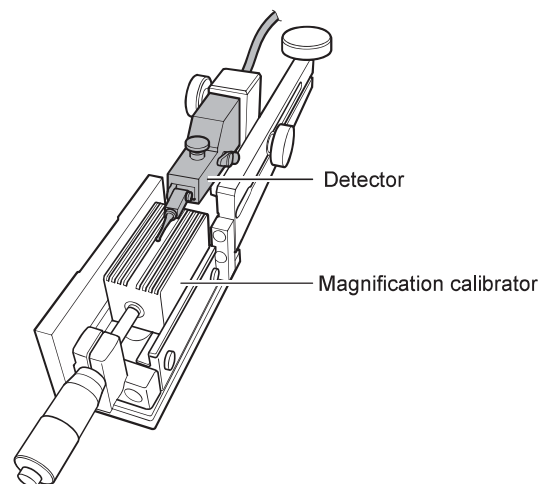
A calibration value is registered with a name selected in the detector list by touching "Apply" button (overwritten). Up to 10 values can be registered which can be called from the list. To edit the registration name, touch "Edit" button.



Performing calibration using a magnification calibrator (option)

The calibration method using a magnification calibrator is described as follows.

1 Attach the detector to the magnification calibrator.

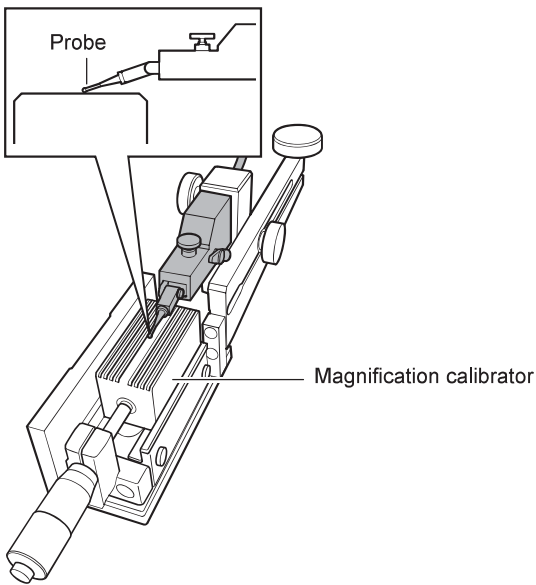


2 Touch the "Calibration" button on the screen.

- The calibration range is displayed.



3 Let the probe come in contact with the magnification calibrator.



⚠ Magnification calibrator

- Adjust the "DR" value on the screen so that it becomes "0" as much as possible. The DR value can be checked with the detector output level meter on the measuring machine.
- When "*" is displayed with the "DR" value, the detector is not in a range possible to perform measurement.



4 Touch the "ZERO" button on the screen.

- Set the "DR" value as "0."



5 Input the calibration reference value in the "Calibration Reference Value."

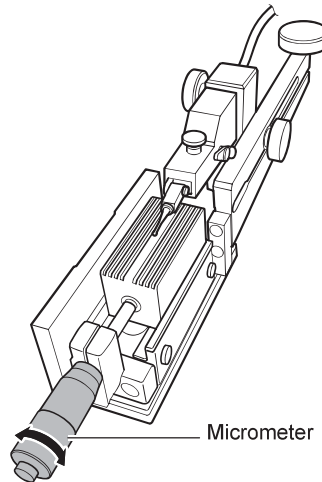


☀ Hint

- Touching the "Calibration Reference Value" displays a calculator. Touch the figure(s) and symbol (s) on the Desktop calculator and touch the [OK] button to complete input

6 Turn the micro meter of the magnification calibrator.

- Turn the micrometer for the amount of value set with the "Calibration Reference Value."



7 Touch the "SET" button on the screen.

- The "Calibration Value" is calculated.



8 Touch the "Apply" button.

- The calibration value is registered.

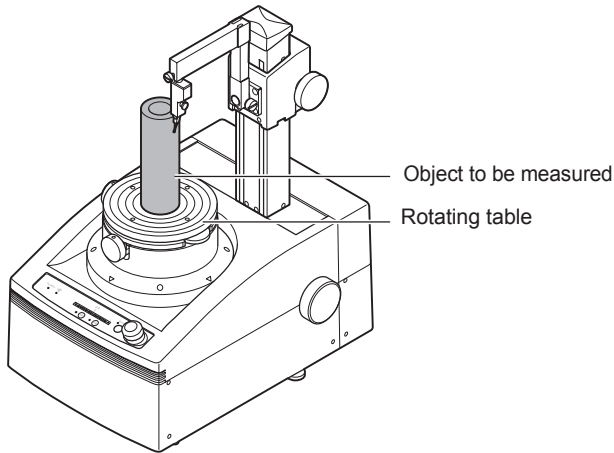


Setting an object to be measured (Alignment)

Centering

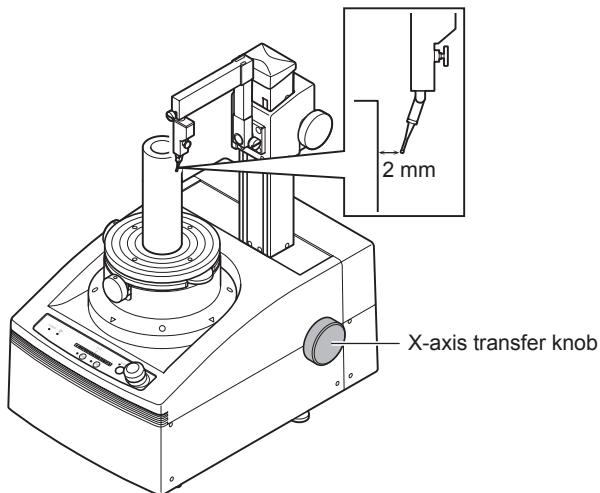
Align the rotary axis center of the Measuring system with the center of the measurement object. Implement before measurement.

- 1 Place the object to be measured so that the center of the object to be measured comes to the center of the rotating table.

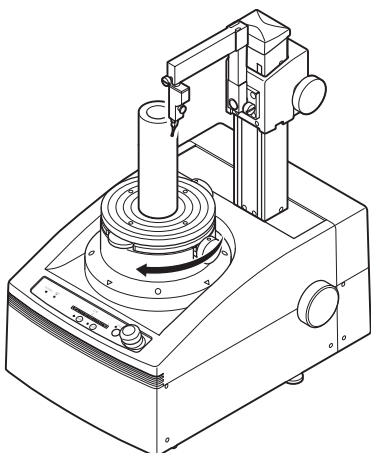


- 2 Turn the X-axis transfer knob to let the probe come close to the object to be measured.

- Make an adjustment so that the gap between the object to be measured and the probe becomes approximately 2 mm.

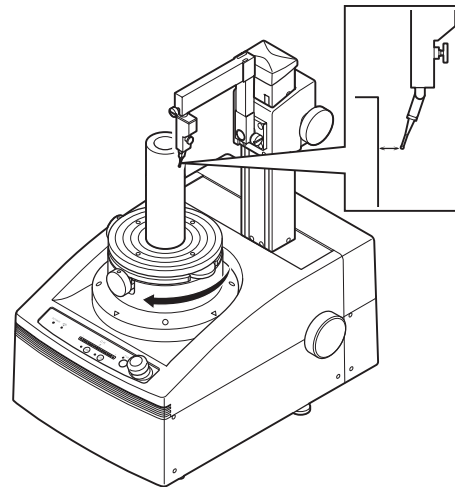


- 3 Turn the rotating table to the position of 0°, and visually check the gap between the object to be measured and the probe.

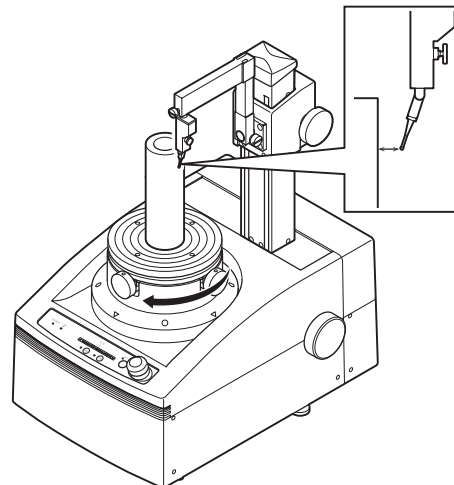


- 4 Turn the rotating table to the position of 180°, and visually check the gap between the object to be measured and the probe.

- Move the object to be measured to where the gap becomes equal to that with the case of 0°.

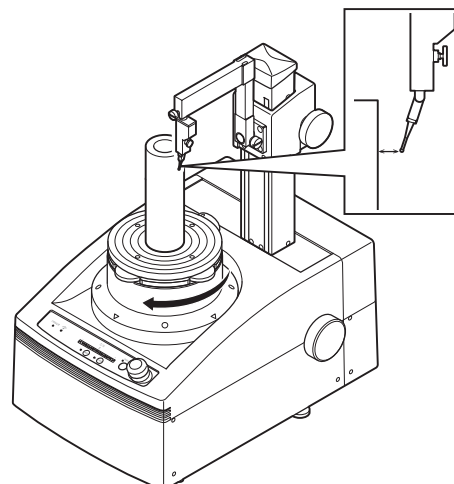


- 5 Turn the rotating table to the position of 90°, and visually check the gap between the object to be measured and the probe.

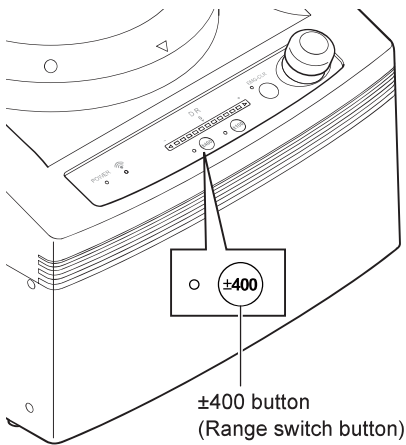


- 6 Turn the rotating table to the position of 270°, and visually check the gap between the object to be measured and the probe.

- Move the object to be measured to where the gap becomes equal in the case of 90°.

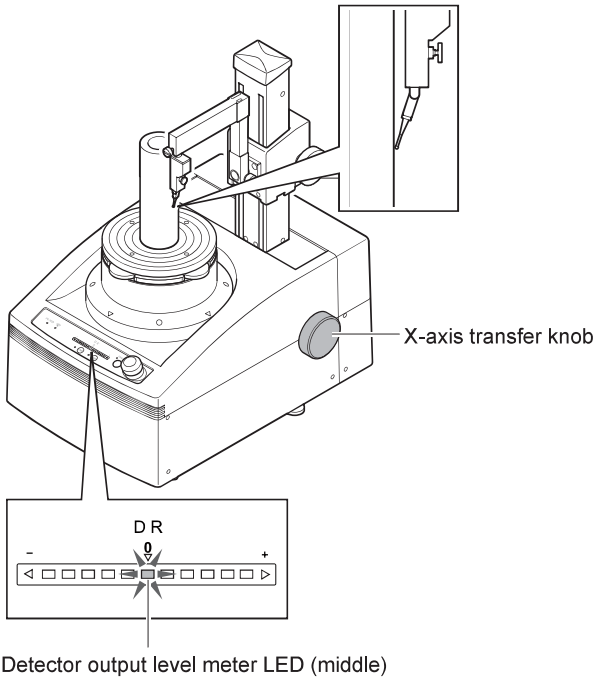


7 Press "±400" button on the measuring machine operation panel (range switch button).

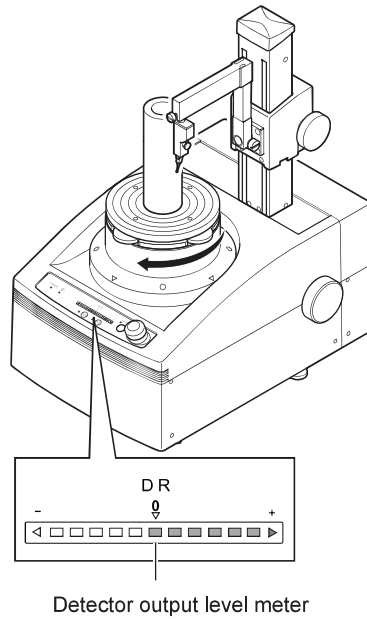


8 Turn the X-axis transfer knob to let the probe come in contact with the object to be measured.

- Move the probe so as to let the detector output level meter LED (middle) on the measuring machine operation panel turn on.



9 Turn the rotating table for a round, and check that the detector output level meter does not go off.



⚠ Important

- If the detector output level meter goes off, perform the steps 2 to 6 again to make an adjustment.

10 Touch the **+<+** (Alignment) button on the Display.

- Alignment area appears.

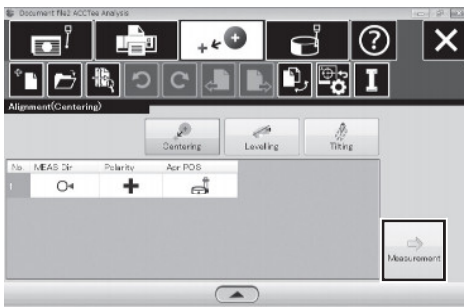


11 Touch the [Centering] button.

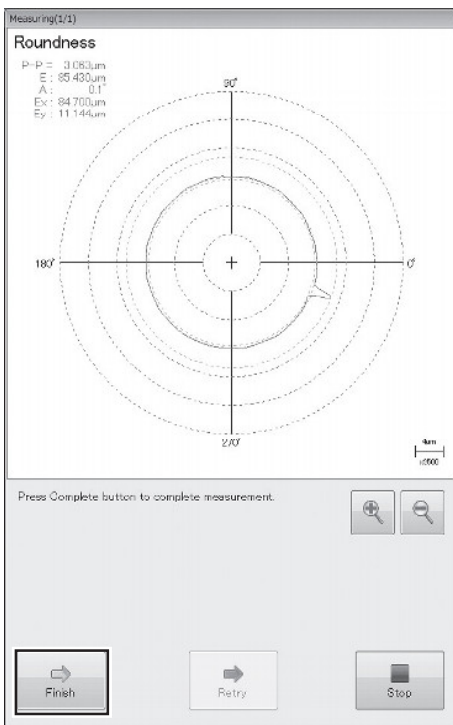


12 Touch the "Measurement" button.

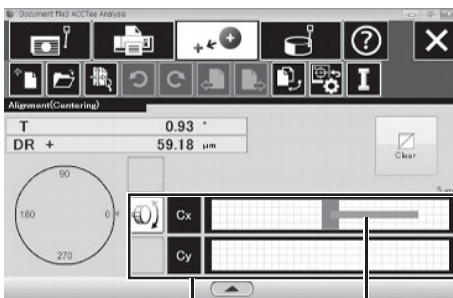
- A measurement is started.



13 Check the analysis results and touch the "Apply" button.



- Upon completion of the measurement, an adjustment bar graph is displayed on the screen.

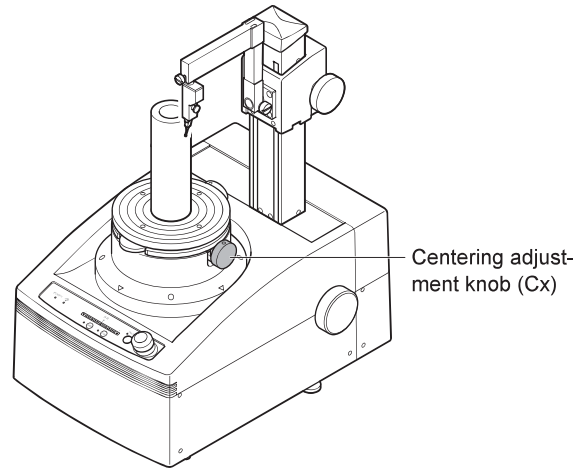


Adjustment bar graph

Red bar

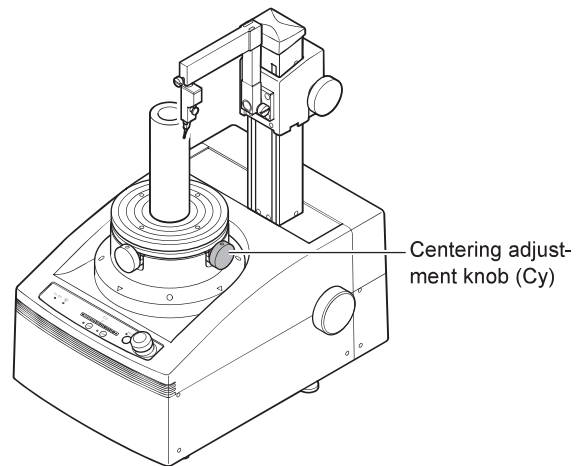
14 Turn the rotating table to the position of 0° or 180°, and turn the centering adjustment knob (Cx) until the red bar on the adjustment bar graph disappears.

- The following figure shows an example of turning it to the position of 0°.



15 Turn the rotating table to the position of 90° or 270°, and turn the centering adjustment knob (Cy) until the red bar on the adjustment bar graph disappears.

- The following figure shows an example of turning it to the position of 90°.

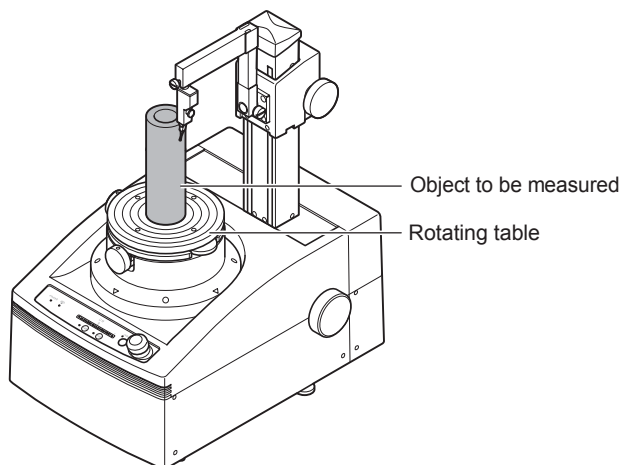


- Upon completion of the adjustment, "OK" is displayed on the screen.

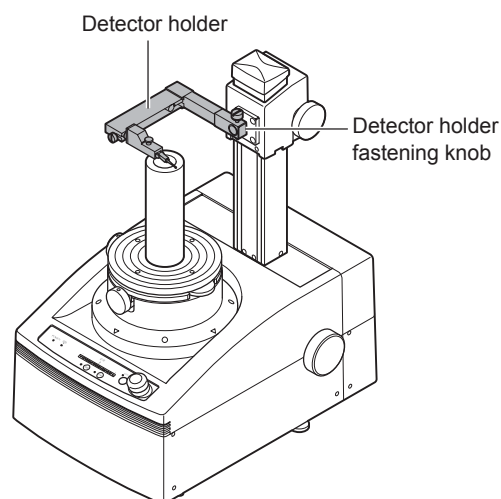
Leveling

Align the tilt of the Measuring system rotary axis center with that of the measurement object axis center. Perform this step prior to the calibration or measurement.

- 1 Place the object to be measured so that the center of the object to be measured comes to the center of the rotating table.

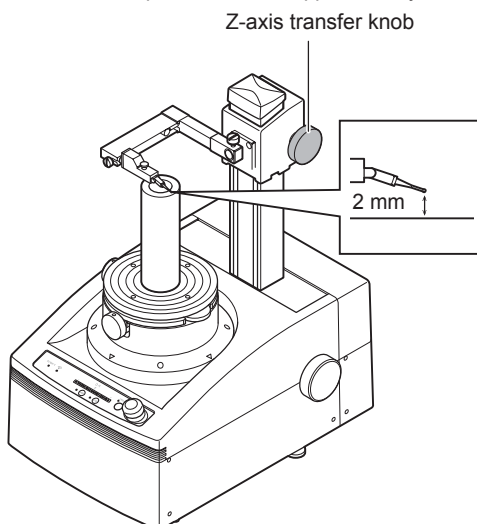


- 2 Loosen the detector holder fastening knob to lay down the detector holder and fasten the knob.

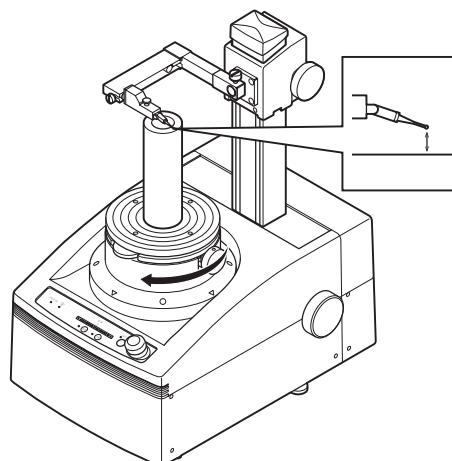


- 3 Turn the Z-axis transfer knob to let the probe come close to the object to be measured.

- Make an adjustment so that the gap between the object to be measured and the probe becomes approximately 2 mm.

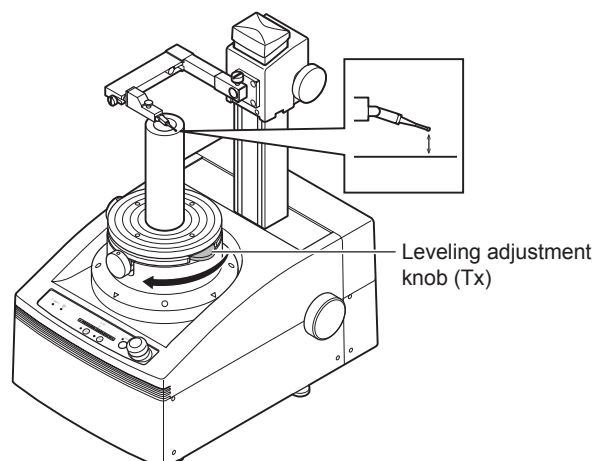


- 4 Turn the rotating table to the position of 0° , and visually check the gap between the object to be measured and the probe.

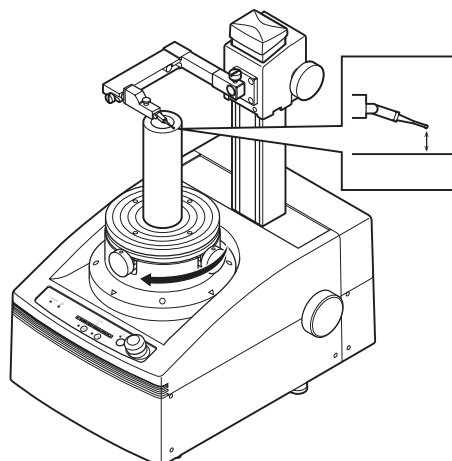


- 5 Turn the rotating table to the position of 180° , and visually check the gap between the object to be measured and the probe.

- Turn the leveling adjustment knob (Tx) so that the gap becomes equal to that with the case of 0° .

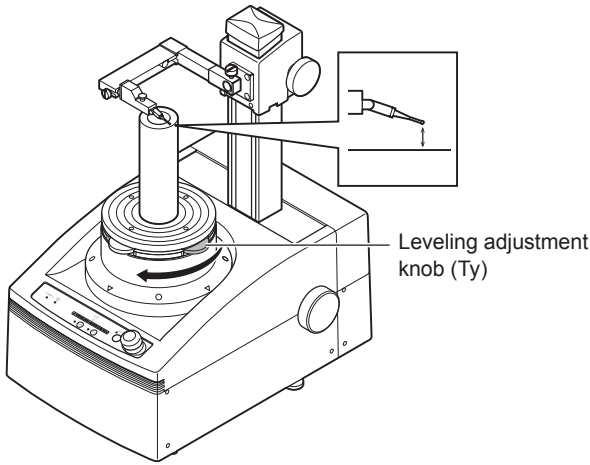


- 6 Turn the rotating table to the position of 90° , and visually check the gap between the object to be measured and the probe.

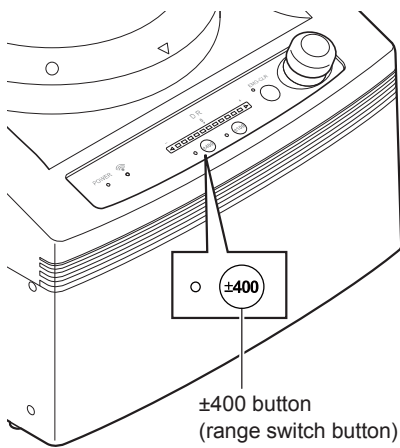


7 Turn the rotating table to the position of 270°, and visually check the gap between the object to be measured and the probe.

- Turn the leveling adjustment knob (Ty) so that the gap becomes equal to that with the case of 90°.

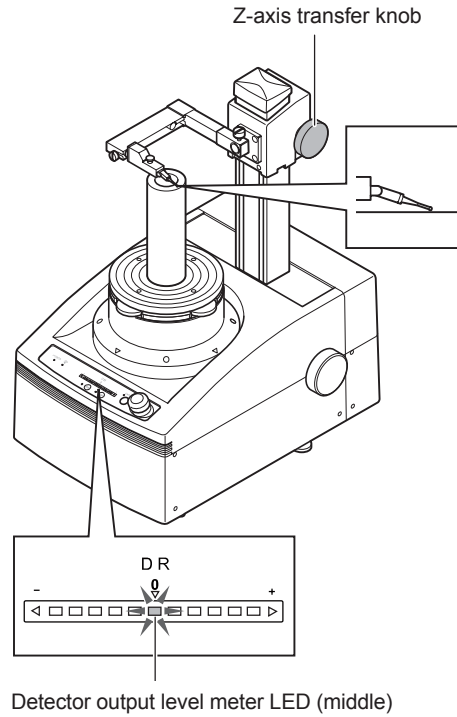


8 Press "±400" button on the measuring machine operation panel (range switch button).

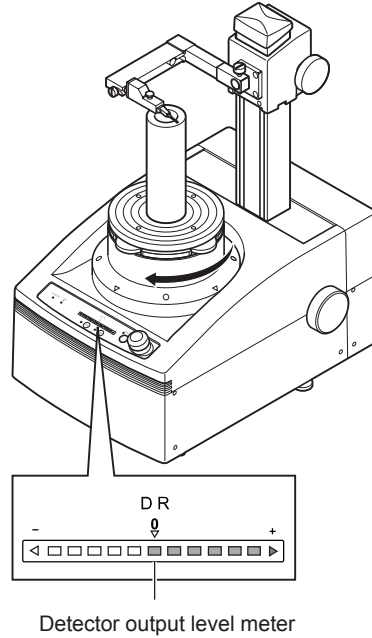


9 Turn the Z-axis transfer knob to let the probe come in contact with the object to be measured.

- Move the object to be measured so as to let the detector output level meter LED (middle) turn on.




10 Turn the rotating table for a round, and check that the detector output level meter does not go off.



⚠ Important

- If the detector output level meter goes off, perform the steps 3 to 7 again to make an adjustment.

- 11** Touch the  (Alignment) button on the Display.
 • Alignment area appears.



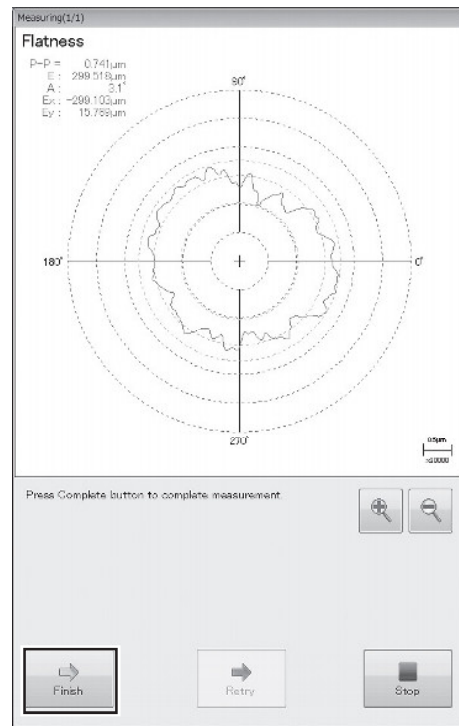
- 12** Touch the [Leveling] button.



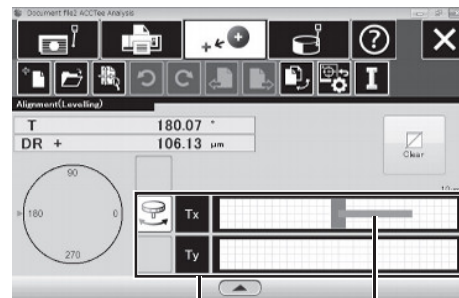
- 13** Touch the "Measurement" button.
 • A measurement is started.



- 14** Check the analysis results and touch the "Apply" button.



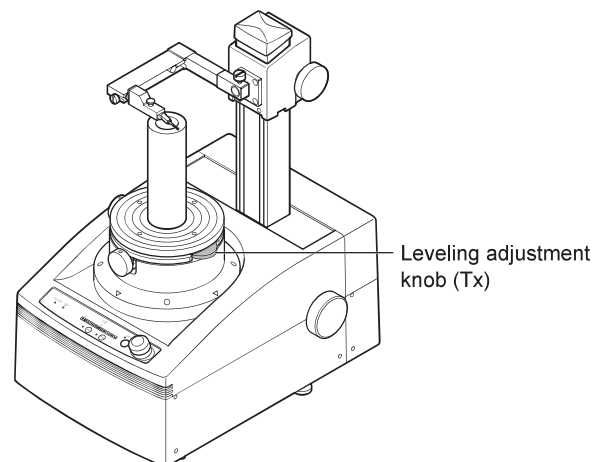
- Upon completion of the measurement, an adjustment bar graph is displayed on the screen.



Adjustment bar graph Red bar

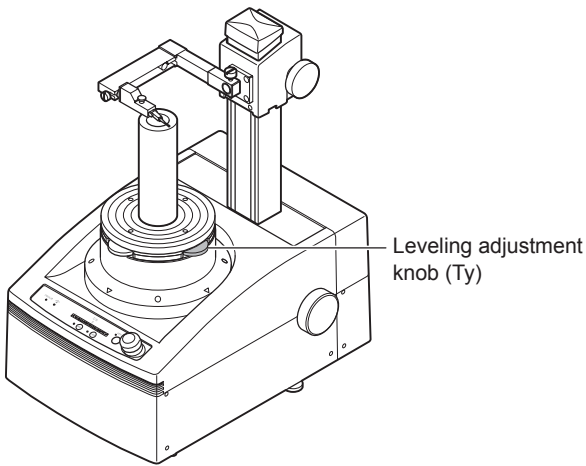
- 15** Turn the rotating table to the position of 0° or 180°, and turn the leveling adjustment knob (Tx) until the red bar on the adjustment bar graph disappears.

- The following figure shows an example of turning it to the position of 180°.



16 Turn the rotating table to the position of 90° or 270°, and turn the leveling adjustment knob (Ty) until the red bar on the adjustment bar graph disappears.

- The following figure shows an example of turning it to the position of 270°.

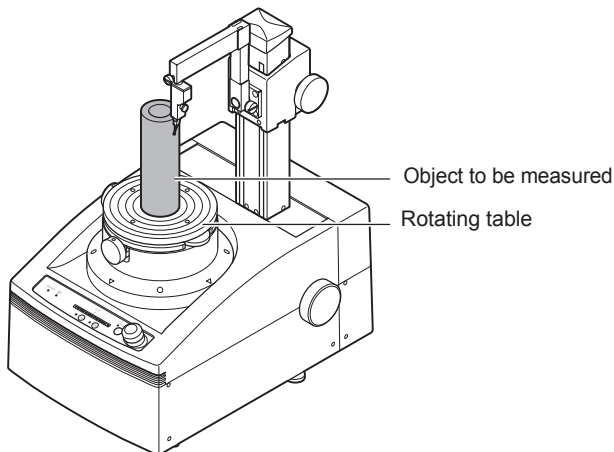


- Upon completion of the adjustment, "OK" is displayed on the screen.

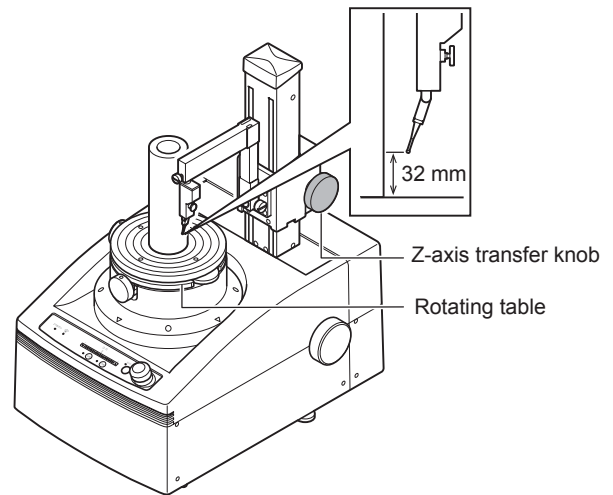
Tilting

Align the center and tilt of the Measuring system rotary axis center with the center and axis center of the measurement object.

1 Place the object to be measured so that the center of the object to be measured comes to the center of the rotating table.



2 Turn the Z-axis transfer knob to let the tip of the probe move to a position 32 mm above the rotating table upper surface.

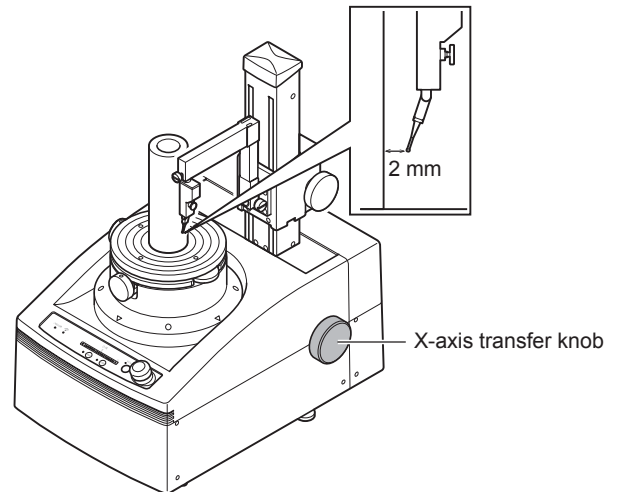


⚠ Important

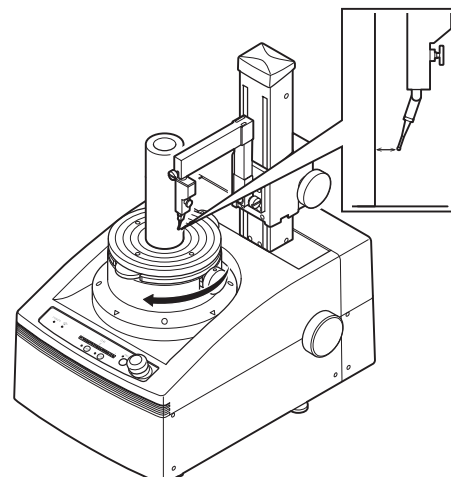
- If the dimension of the object to be measured is 32 mm or less, move the tip of the probe to the position in the center of the two cross sections to which the tilting is performed.

3 Turn the X-axis transfer knob to let the probe come close to the object to be measured.

- Make an adjustment so that the gap between the object to be measured and the probe becomes approximately 2 mm.

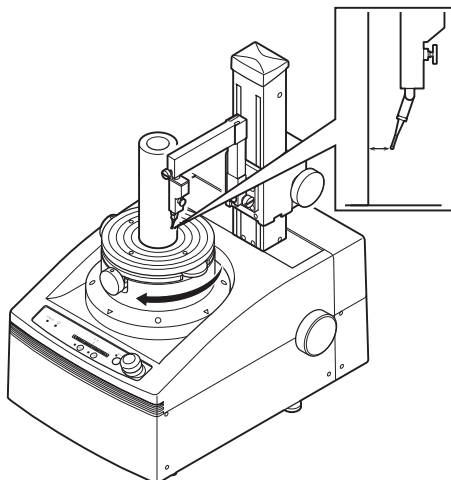


4 Turn the rotating table to the position of 0°, and visually check the gap between the object to be measured and the probe.

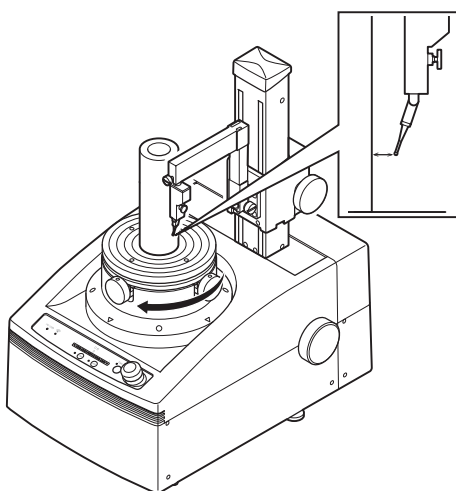


5 Turn the rotating table to the position of 180°, and visually check the gap between the object to be measured and the probe.

- Move the object to be measured to where the gap becomes equal to that in the case of 0°.

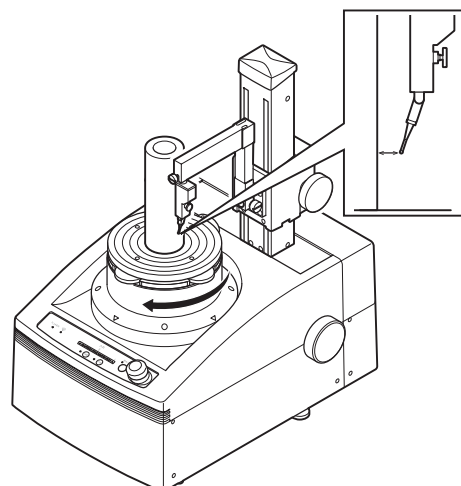


6 Turn the rotating table to the position of 90°, and visually check the gap between the object to be measured and the probe.

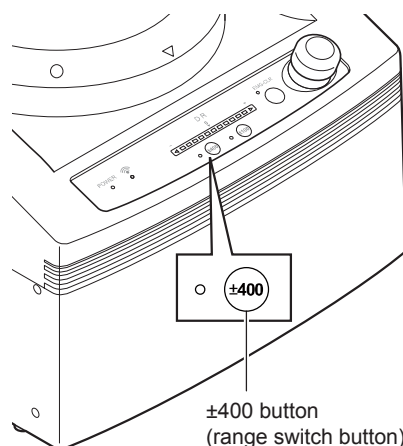


7 Turn the rotating table to the position of 270°, and visually check the gap between the object to be measured and the probe.

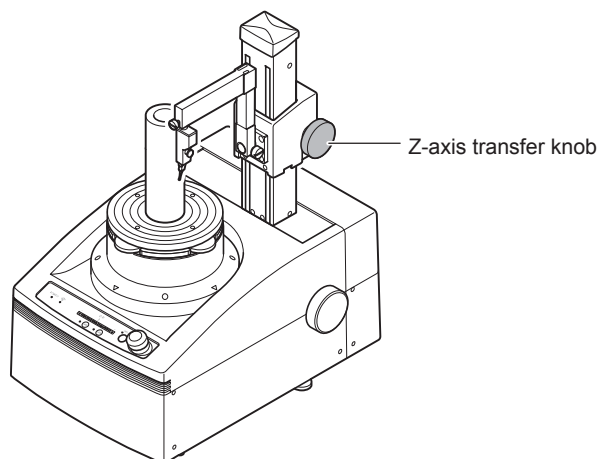
- Move the object to be measured to where the gap becomes equal to that in the case of 90°.



8 Press the "±400" button on the measuring machine operation panel (range switch button).

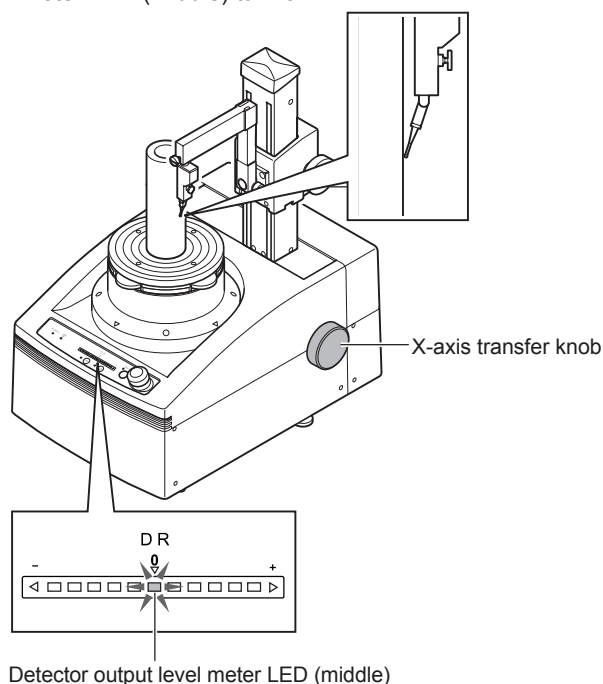


9 Turn the Z-axis transfer knob to let the tip of the probe move to the measurement position for the first cross section.

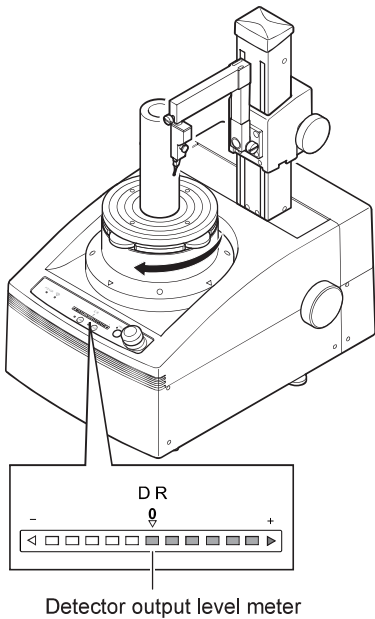


10 Turn the X-axis transfer knob to let the probe come in contact with the object to be measured.

- Move the probe so as to let the detector output level meter LED (middle) turn on.



11 Turn the rotating table for a round, and check that the detector output level meter does not go off.



! Important
 • If the detector output level meter goes off, perform the steps 3 to 7 again to make an adjustment.

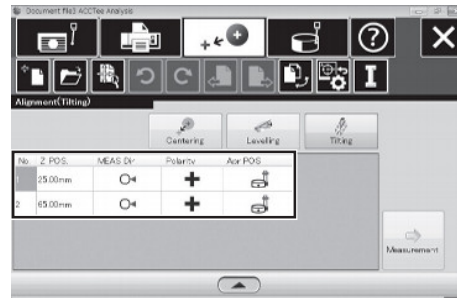
12 Touch the **+<+>** (Alignment) button on the Display.
 • Alignment area appears.



13 Touch the [Tilting] button.

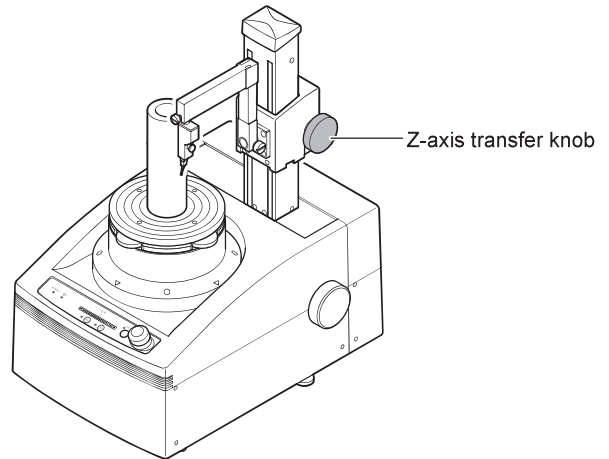


14 Set a measurement position for the two cross sections to which tilting is performed.

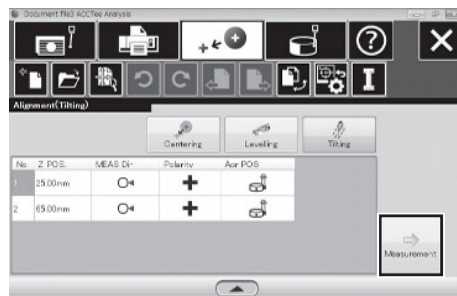


! Important
 • Set the measurement position under the following conditions.
 - Z position of the first cross section < Z position of the second cross section
 - Z position of the second cross section ≠ 32 mm

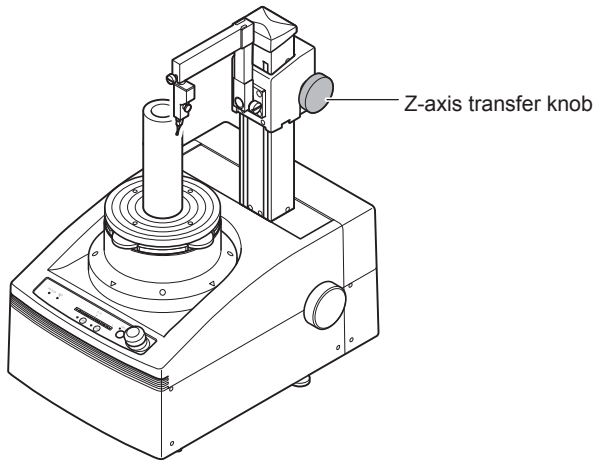
15 Turn the Z-axis transfer knob to let the tip of the probe move to the Z position specified on the first cross section from the rotating table upper surface.



16 Touch the [Measure] button on the Display.
 • A measurement is started.

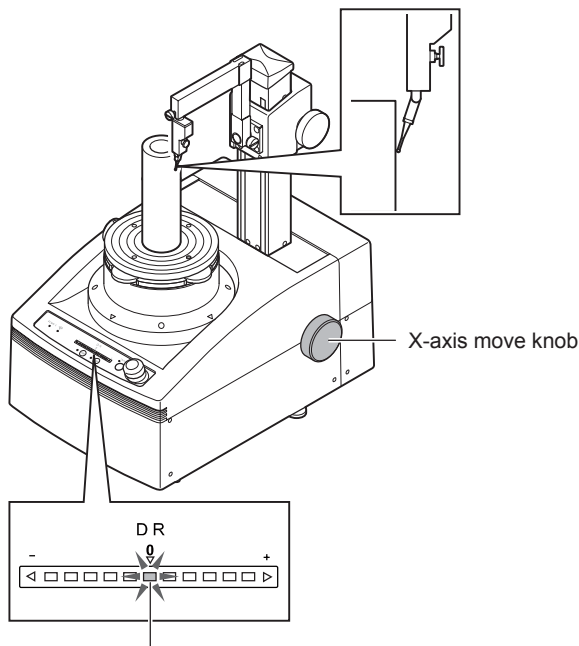


17 When the measurement is completed, turn the Z-axis transfer knob to let the tip of the probe move to the Z position specified on the second cross section from the rotating table upper surface.



18 Turn the X-axis move knob to touch the probe head with the measurement object.

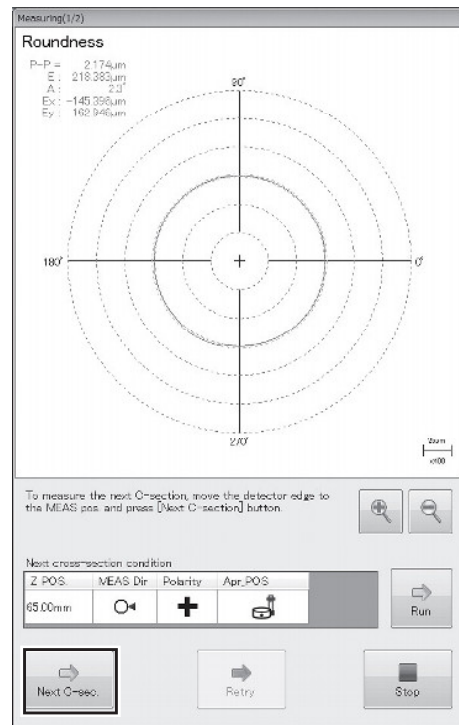
- Move it so that the LED (Center) on the Detector output level meter lights up.



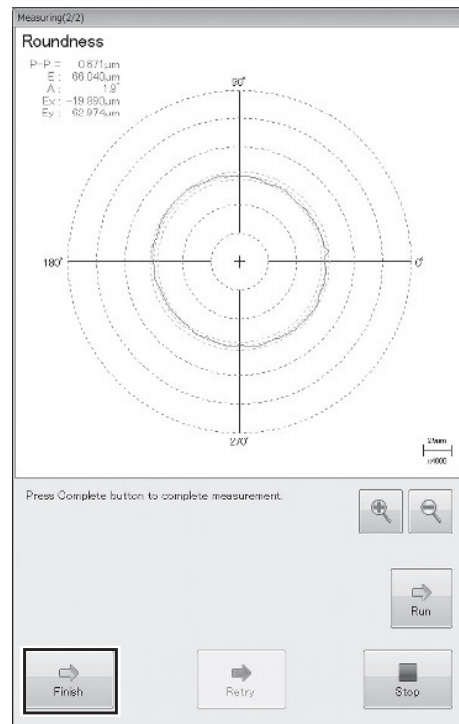
Detector output level meter LED (middle)

19 Touch the [Next cross-section] button on the screen.

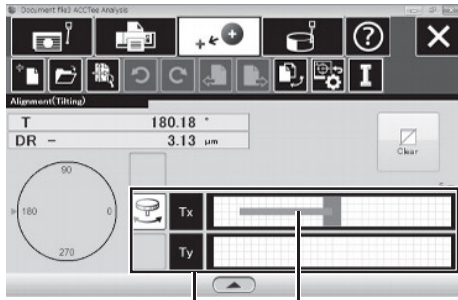
- A measurement is started.



20 Check the analysis results and touch the "Apply" button.



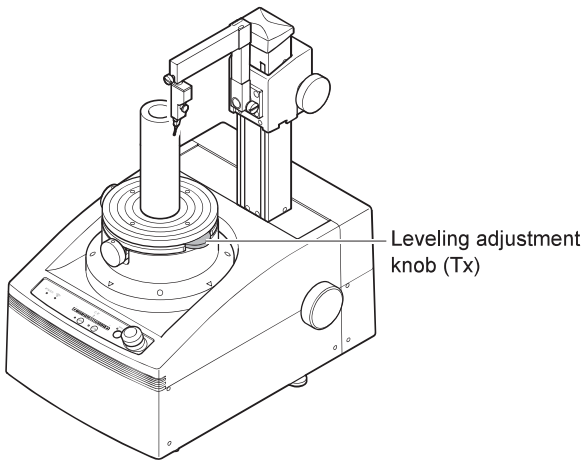
- Upon completion of the measurement, an adjustment bar graph is displayed on the screen.



Adjustment bar graph Red bar

21 Turn the rotating table to the position of 0° or 180°, and turn the leveling adjustment knob (Tx) until the red bar on the adjustment bar graph disappears.

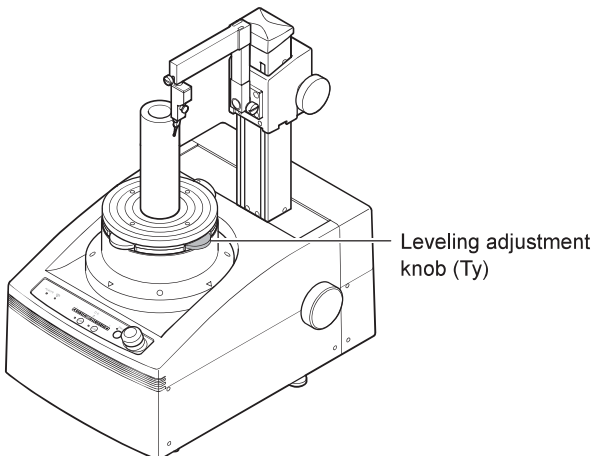
- The following figure shows an example of turning it to the position of 180°.



Leveling adjustment knob (Tx)

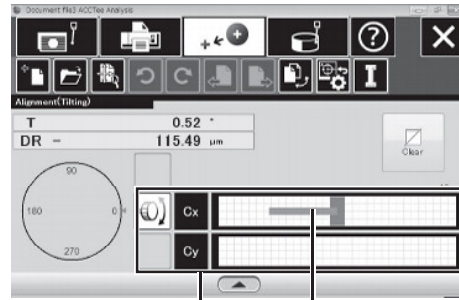
22 Turn the rotating table to the position of 90° or 270°, and turn the leveling adjustment knob (Ty) until the red bar on the adjustment bar graph disappears.

- The following figure shows an example of turning it to the position of 270°.



Leveling adjustment knob (Ty)

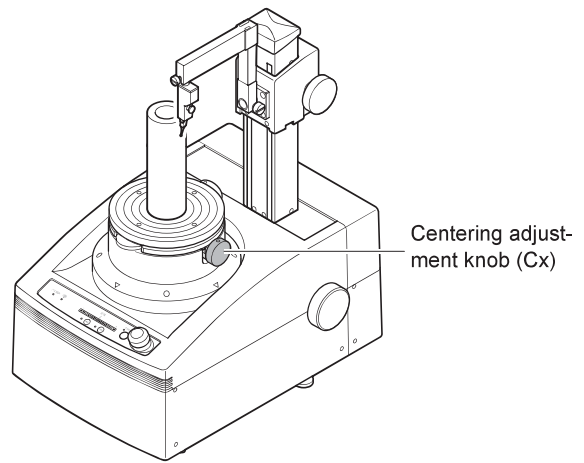
- After the adjustment of Tx and Ty, the screen changes to the adjustment screen of Cx and Cy.



Adjustment bar graph Red bar

23 Turn the rotating table to the position of 0° or 180°, and turn the centering adjustment knob (Cx) until the red bar on the adjustment bar graph disappears.

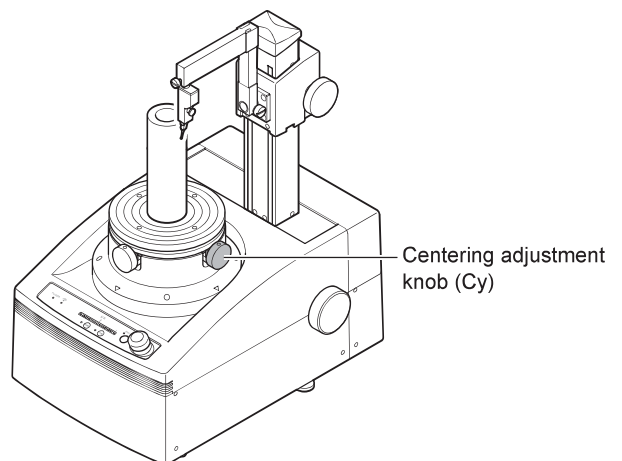
- The following figure shows an example of turning it to the position of 0°.



Centering adjustment knob (Cx)

24 Turn the rotating table to the position of 90° or 270°, and turn the centering adjustment knob (Cy) until the red bar on the adjustment bar graph disappears.

- The following figure shows an example of turning it to the position of 90°.



Centering adjustment knob (Cy)



- Upon completion of the adjustment, "OK" is displayed on the screen.

Measurement

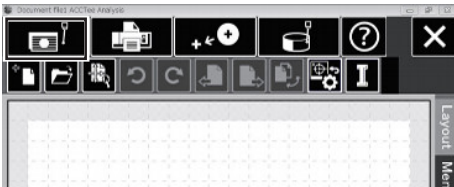
The procedure for measurement is described below.

Reference

- For re-measurement, refer to "Re-measurement"(35 page).

1 Touch the "Measurement" button on the screen.

- The measurement area is displayed.



2 Check the measurement condition and the analysis condition.



Hint

- For changing the measurement condition and the analysis condition, touch ▼ button to edit the measurement condition, comment, and analysis condition. For more details, refer to "Edit of Measurement Condition, Comment, and Analysis Condition" (33 page). Touching the ▲ button closes the condition edit field.



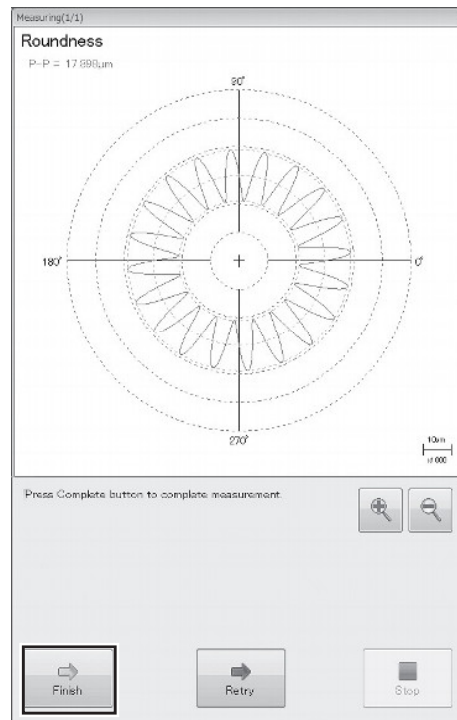
3 Touch the "Measurement" button.

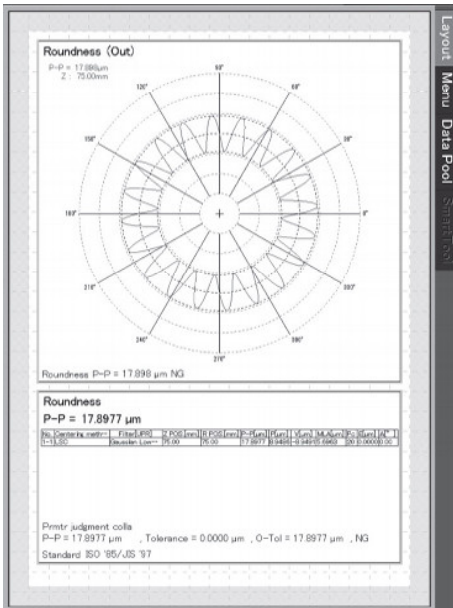
- The rotating table starts rotation automatically and starts a measurement.



4 Check the analysis result and touch the "Apply" button.

- The analysis result is registered in the slit.





⚠ Important

- To re-do the measurement performed immediately before, touch the "Retry" button.

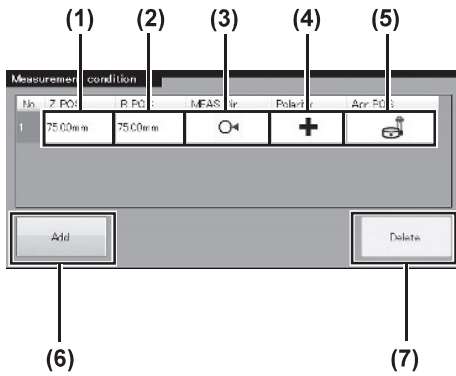
💡 Hint

- Use "+"/="-" buttons to zoom in and out the preview.
- If two cross-sections or more were set as the measurement number, [Next cross-section] button is displayed in place of the [Complete] button.

● Edit of measurement condition, comment, and analysis condition

Measurement condition:

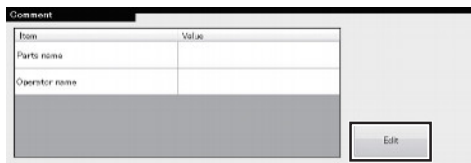
Setting items of the measurement condition are shown as below.



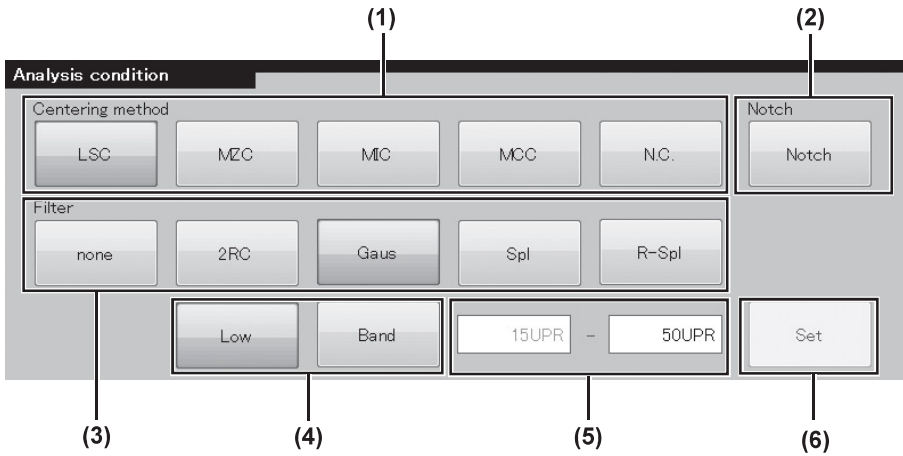
Number	Item	Content
(1)	Z position	The value of the measurement starting Z position is input. The value is input from the calculator by touching the numbers.
(2)	R position	The value of the measurement starting R position is input. The value is input from the calculator by touching the numbers.
(3)	Measurement direction	The measurement direction is selected among following options: (outer diameter); (inner diameter); (upper surface); and (lower surface).
(4)	Polarity	The polarity is selected. Touching the sign toggles between "+" and "-."
(5)	Approach position	The approach position toward the object to be measured is selected between (right side) and (left side).
(6)	Add button	The condition in the bottom line is copied to add the cross section condition. Up to 10 cross sections can be added.
(7)	Delete button	The condition of the cross section touched last is deleted.

Comment:

In the comment field, the comment about the measurement can be edited by touching the "Edit" button.




Analysis condition:
Setting items of the analysis condition are shown as below.



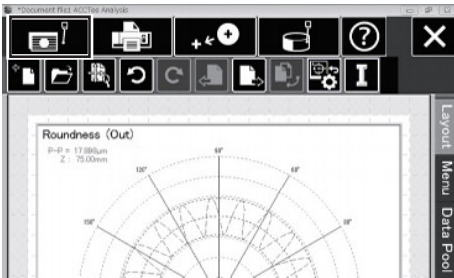
Number	Item	Content	
(1)	Center method	LSC	Least square center method It is a method of determining the roundness of the profile obtained from the measurement by calculating the radius difference of concentric circles one of which circumscribes and the other inscribes on a circle whose sum of squares of the deviation becomes the minimum with regard to the profile.
		MZC	Minimum zone circle method It is a method of determining the roundness of the profile obtained from the measurement by calculating the radius difference of the gap between two concentric circles for sandwiching the profile becomes the minimum.
		MIC	Maximum inscribed circle method It is a method of determining the roundness of the profile obtained from the measurement by calculating the radius difference between the maximum inscribed circle and a circumscribed circle sharing the same center point.
		MCC	Minimum circumscribed circle method It is a method of determining the roundness of the profile obtained from the measurement by calculating the radius difference between the minimum circumscribed circle and a inscribed circle sharing the same center point.
		N.C.	It is a method for evaluating raw data.
(2)	Notch	It is a function to delete data from the evaluated object according to set conditions	
(3)	Filter	none	Filter processing is not performed for analysis.
		2RC	It is a filter that compensates the phase shift of 2RC filter defined in JIS-'82.
		Gaus	Gaussian It is a filter defined in JIS-'01 and JIS-'94.
		Spl	Spline It is a filter defined in ISO/TS16610-22. The "Setting" button becomes available, by which elastic coefficient and robustness coefficient can be set.
		R-Spl	Robustness (spline) It is a filter defined in ISO/TS213N511. The "Setting" button becomes available, by which elastic coefficient and robustness coefficient can be set.
(4)	Low	A low-pass filter process is performed.	
	Band	A band-pass filter process is performed.	
(5)	Cut-off value text box	The cut-off value of the filter is specified.	
(6)	Setting	The button becomes available by selecting the spline and the robust (spline).The elastic coefficient and robust coefficient can be set by touching it. <ul style="list-style-type: none"> • The robustness coefficient can be set only when the cut-off type is robustness (spline). • In the elastic coefficient and robust coefficient, the last set data in the analysis data becomes effective. 	

Re-measurement

A measurement can be performed in the same condition as the measurement data saved in the document currently opened.

1 Touch the  "Measurement" button on the screen.

- The measurement area is displayed.



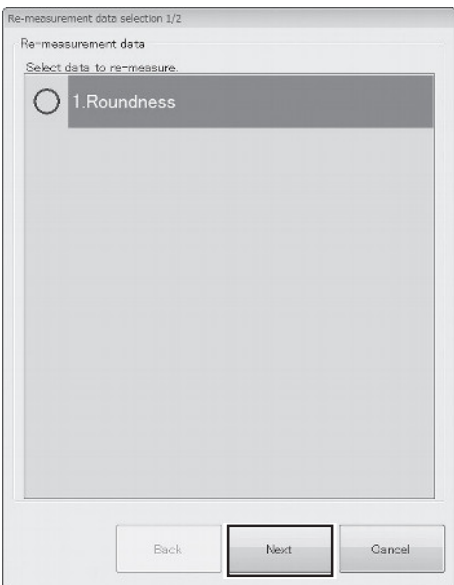
2 Touch the "Re-measurement" button.

- The re-measurement data selection 1/2 screen is displayed.



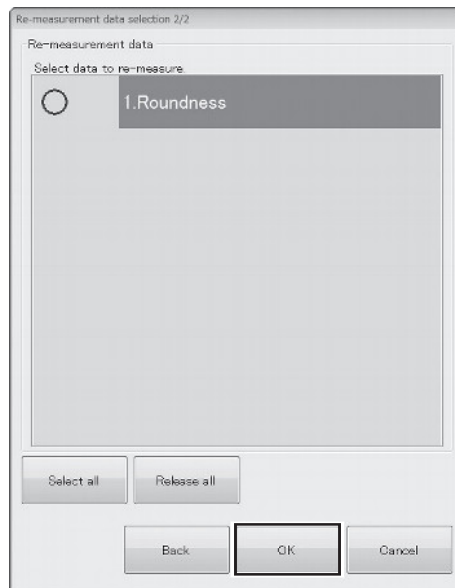
3 Select target data to be re-measured and touch "Next" button.

- The re-measurement data selection 2/2 screen is displayed.



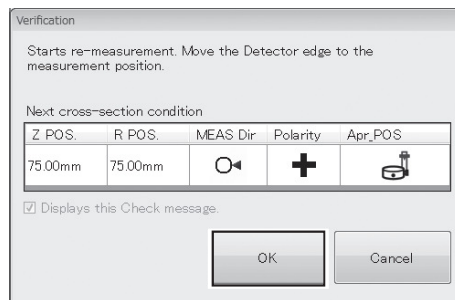
4 Select target data to be re-measured and touch "OK" button.

- A confirmation screen for the measurement condition is displayed.



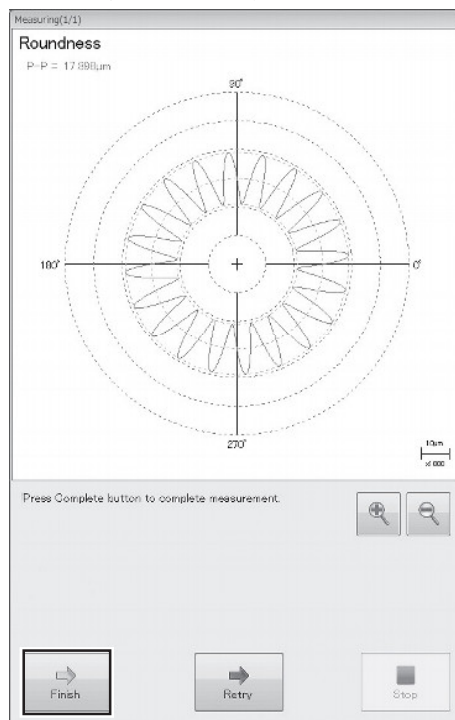
5 Check the re-measurement condition and touch "OK" button.

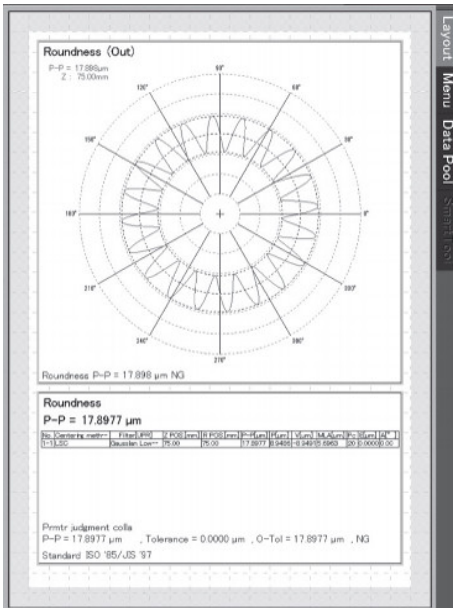
- The rotating table starts rotation automatically and starts a measurement.



6 Check the analysis result and touch the "Complete" button.

- The analysis result is registered in the slit.





⚠ Important

- To re-do the measurement performed immediately before, touch the "Retry" button.

🔍 Reference

- Use "+"/ "-" buttons to zoom in and out the preview.
- If two cross-sections or more were set as the measurement number, [Next cross-section] button is displayed in place of the [Complete] button.

Printing

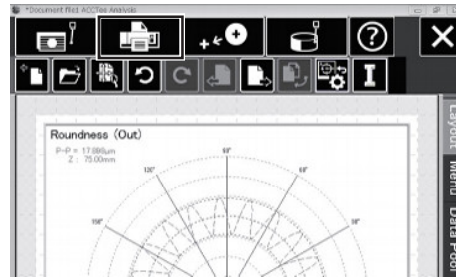
The procedure for printing document file is described below.

⚠ Important

- According to the instruction manual included in the printer, perform the connection and setting in advance.

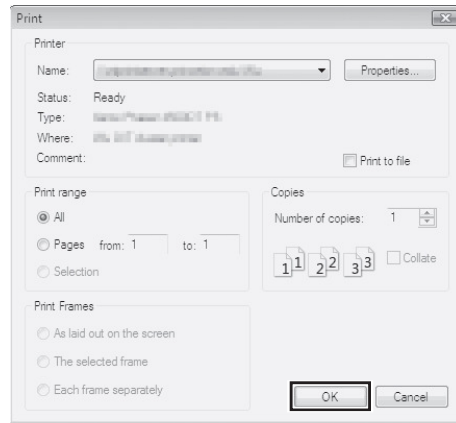
1 Touch the "Print" button.

- The print dialog box is displayed.



2 Touch "OK" button.

- The print is started.



Analysis

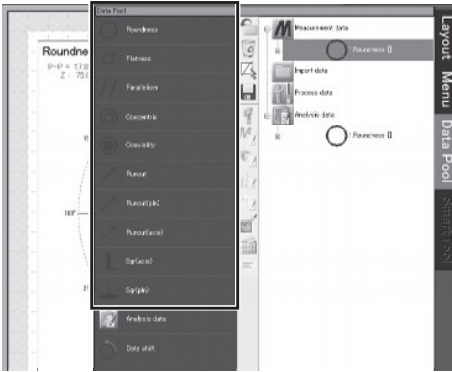
Various analyses can be executed for the measured data.

Analysis item list

The following analyses can be performed by touching the "Data Pool" and selecting measurement data.

⚠ Important

- Perform measurement before analysis.
- The items for analysis vary depending on the measurement data selected.

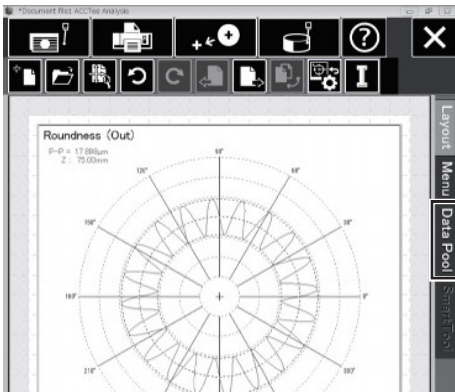


Item	Content
[Roundness]	The roundness of an object is calculated by measuring one round of the object. The roundness is determined on the basis of the degree of deviation from a geometrically correct circle.
[Flatness]	The object is rotated on a flat surface and measured, and the flatness is determined on the measurement radius. The flatness is determined on the basis of the degree of deviation from a geometrically correct flat surface.
[Parallelism]	Two or more parallel flat surfaces are rotated and measured, and the flatness of one surface is determined by setting the inclination of the other surface as datum surface. The parallelism is defined as the degree of deviation from a geometric straight line or a geometric flat surface parallel to a datum straight line or a datum flat surface, to a straight line body or a flat surface body which should be parallel to the geometric straight line or the geometric flat surface.
[Concentricity]	Two or more circumferences sharing the same center point are rotated and measured, and the deviation amount and the thickness deviation from the center point are determined. As the figure, a reference circumference is determined, and the axis parallel to the rotation center and passing through the center is specified as a datum axis. The concentricity is determined on the basis of the degree of deviation of the center position of the other circle body with respect to the center of the datum circle.
[Coaxiality]	The coaxiality analysis includes two methods for determining the datum axis. 1. Creating datum axis on the basis of the reference circle Three or more circumferences sharing the same center point are rotated to determine the coaxiality. The coaxiality is determined on the basis of the degree of deviation from the datum axis straight line to the datum axis straight line that should be on the same straight line as the datum axis straight line. 2. Creating datum axis by the least squares method from all the center coordinates of the cross section to be measured Three or more circumferences sharing the same center point are rotated to determine the coaxiality. The least square straight line is determined from the center of each measurement cross section, and the coaxiality is determined by setting the straight line as the reference.
[Run out]	Two or more circumferences are rotated and measured, and the run out of the measured circle against the datum axis is determined. By definition, the run out can be divided into circumferential run out and overall run out.
[Run out (surface reference)]	The measurement circle is determined for the datum axis of the same inclination as the reference surface and passing through the center of the reference surface. By definition, the run out can be divided into circumferential run out and overall run out.
[Run out (axial direction)]	The axis connecting the center of two reference circumferences is assumed as datum axis, and the run out (axial direction) of the flat surface perpendicular to the axis is determined. The run out (axial direction) is defined by the difference between the maximum value and the minimum value of the distance from a geometrical flat surface perpendicular to the datum axis straight line to the target surface in the direction parallel to the datum axis straight line.
[Squareness (axis reference)]	The axis connecting the center of two reference circumferences is assumed as datum axis, and the squareness of the flat surface vertical to the axis is determined. The squareness (axial direction) is defined by the gap between two flat surfaces when the geometrically parallel two flat surfaces vertical to the datum straight line sandwich the flat surface body.
[Squareness (surface reference)]	The squareness of the medial axis in the vertical direction is determined by setting the geometrically flat surface of the same inclination as the reference surface, as the datum flat surface.

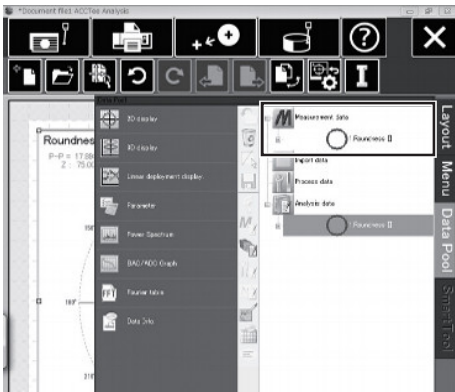
Analysis

Here explains how to make an analysis by exemplifying "Coaxiality."

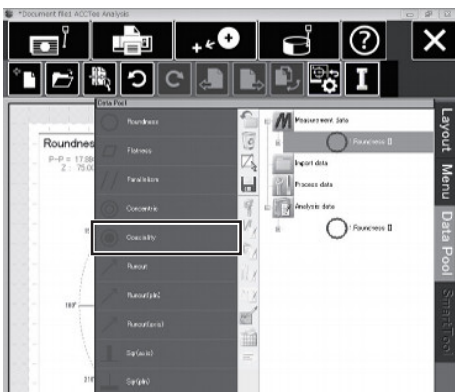
1 Touch the "Data Pool" tab.



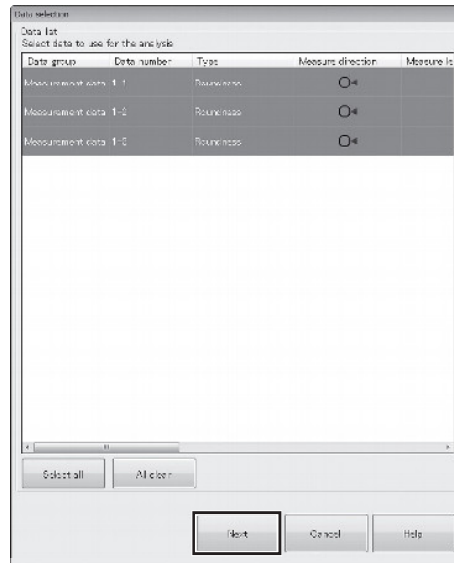
2 From the "Measurement Data", touch the measurement data.



3 Touch the "Coaxiality".



4 On the "Data Selection" screen, select measurement data to be used for analysis, and touch the "Next" button.

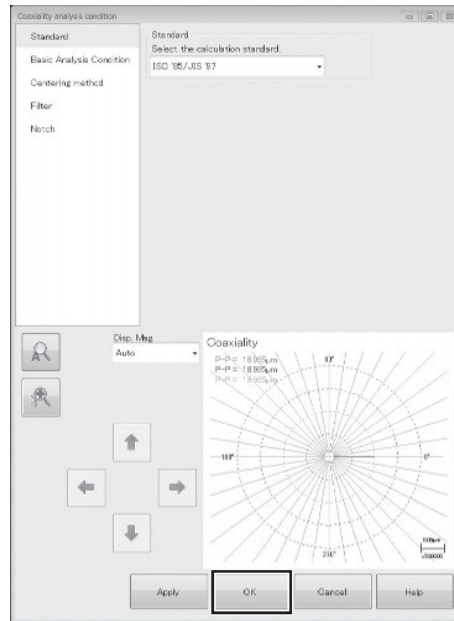


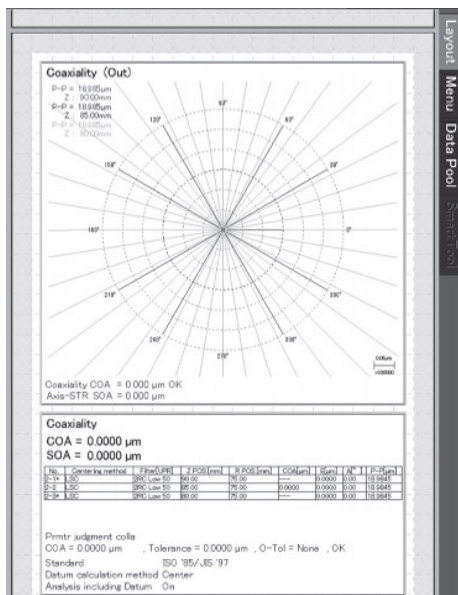
Hint •••••

- For the coaxiality analysis, select three or more units of measurement data.

5 On the "Coaxiality Analysis Condition" screen, check or change the analysis condition, and touch the "OK" button.

- The analysis result data and the like are registered in the slit.



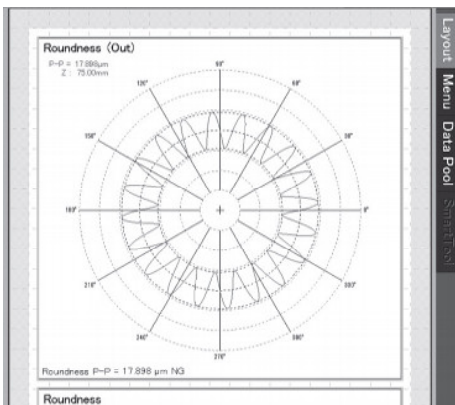
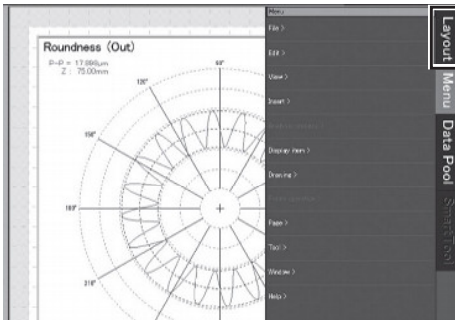


Using side-tab function

Here explains the function and how to use the side tab (layout/menu/data pool/smart tool) at the right end of the screen.

Layout tab function

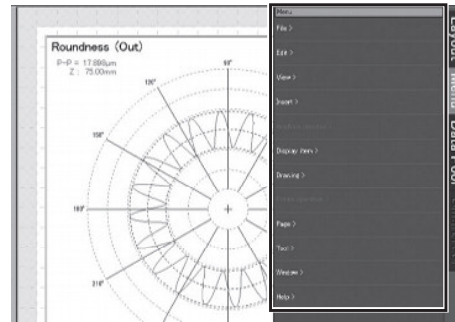
Touching the "Layout" tab displays a page area.



Menu tab function

Outline

The "Menu" tab includes the following functions.

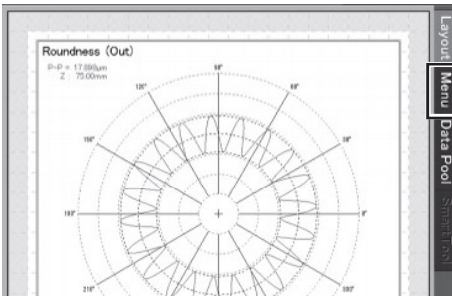


Item	Content
File	File related operations such as creating new document and page setting are performed.
Edit	Edit related operations such as copying and pasting are performed.
Display	Display related operations such as changing display magnification and page relocation are performed.
Insertion	A document file is inserted.
Analysis process	Analysis related operations are performed.
Display item	The result frame such as 3D display and power spectrum is registered in the slit.
Drawing element	Such elements as line drawing and final update date are displayed.
Frame operation	Operations such as frame display order and frame layout are performed.
Page	The insertion of a vacant page and the edit of master page are performed.
Tool	The general setting and the system setting are performed.
Window	The measurement and calibration for roundness are performed.
Help	"ACCTee" help is displayed.

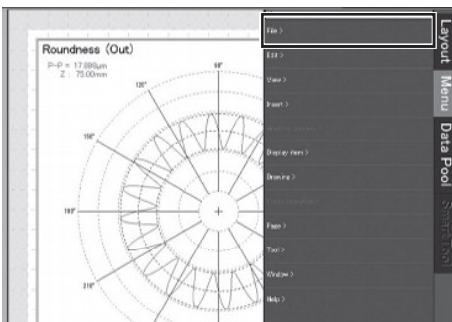
How to use

Here explains how to use the menu tab by exemplifying the "Saving Document File."

1 Touch the "Menu" tab.

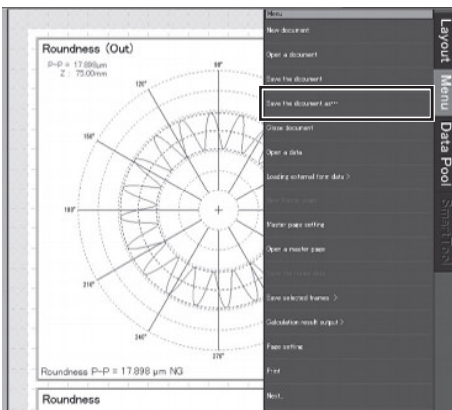


2 Touch the "File"



3 Touch the "Save As."

- The document file is saved by specifying a document name and a saving destination in the dialogue box displayed and touching the "Save."



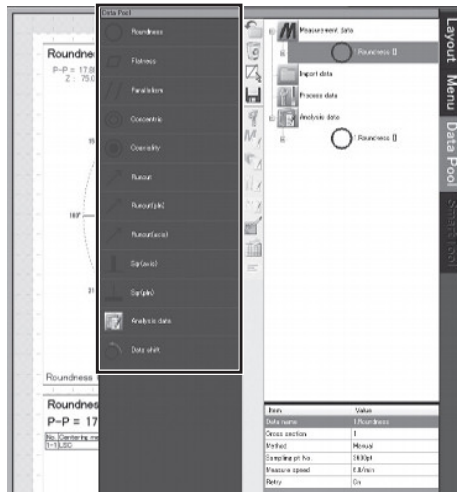
Hint

- The following item is displayed by touching the "Next."
- The previous level is returned by touching the "Return."

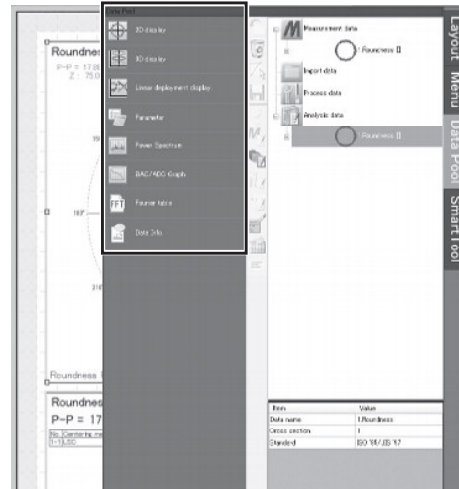
Data pool tab function

Outline

On the [Data table] tab, it is applicable to implement settings such as the reanalysis of measured data and recording of various evaluations of analysis data on a file.



Selecting the measurement data/
import data/processed data



Selecting the analysis data

Selecting the measurement data/import data/processed data:

Item	Content
[Roundness]	Refer to the "Analysis Item List"(37 page).
[Flatness]	
[Parallelism]	
[Concentricity]	
[Coaxiality]	
[Run out]	
[Run out (surface reference)]	
[Run out (axial direction)]	
[Squareness (axis reference)]	
[Squareness (surface reference)]	
[Analysis data]	Analysis data can be prepared by setting analysis data as analysis condition.
[Data shift]	The measurement position and the phase of the measurement data can be shifted.

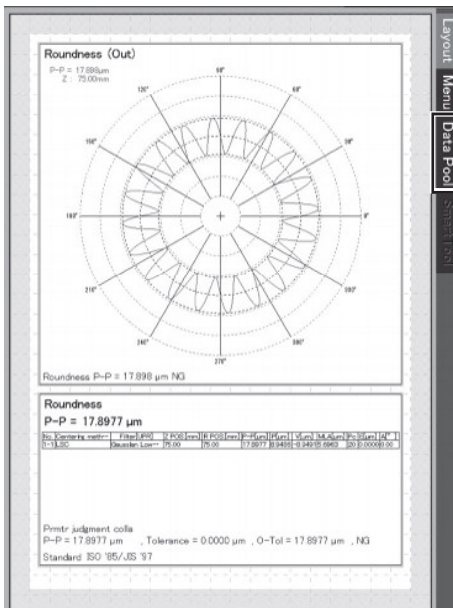
Selecting the analysis data:

Item	Content
[2D display]	The analysis data is registered in 2D display.
[3D display]	The analysis data is registered in 3D display.
[Linear deployment display.]	Linear deployment display is registered.
[Parameter]	Parameter is registered.
[Power spectrum]	Power Spectrum is registered.
[BAC/ADC Graph]	BAC/ADC Graph is registered
[Fourier table]	Fourier table is registered.
[Data information]	Data information is registered.

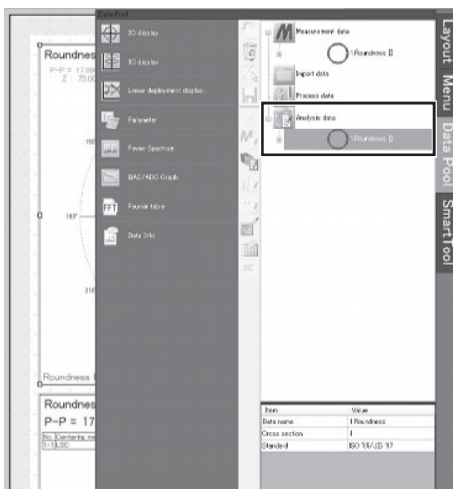
How to use

For the analysis method, refer to "Analysis"(38 page). Here explains how to use the data pool tab by exemplifying the registration of "Power Spectrum" frame.

1 Touch the "Data Pool" tab.

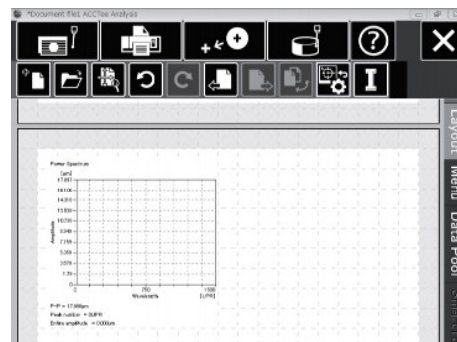
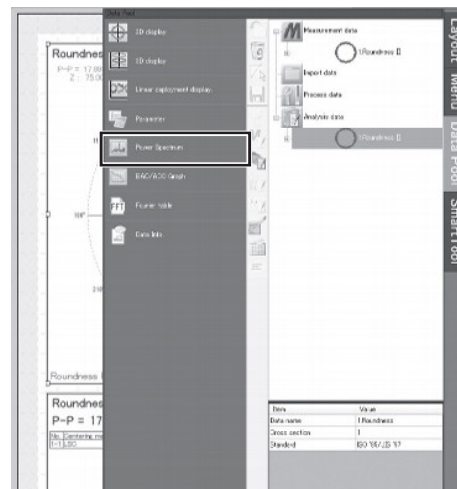


2 From the "Analysis Data", touch the analysis data.



3 Touch the "Power Spectrum."

- The power spectrum information is registered in the slit.



⚠ Important

- The information that can be registered differs according to the analysis data selected.

Smart-tool tab function

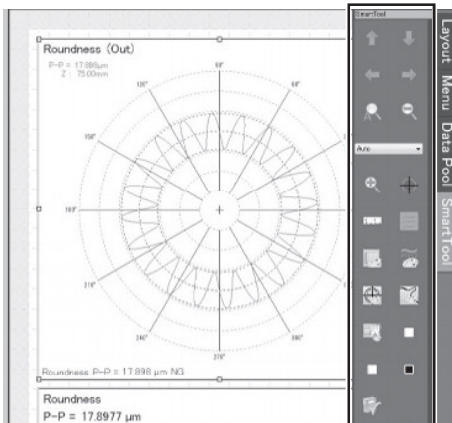
Outline

In the "Smart-Tool" tab, the style and line of the graph, and the display style of the characters such as color and thickness can be changed.












- The Smart-tool tab becomes effective by selecting the frame.
- The display style changed with the smart-tool tab is saved, and is applied to the subsequent display style.






Important

- The items that can be changed vary depending on the frame selected.
- For more details, refer to the Help.



The available functions when selecting the 2D display frame of the roundness analysis are shown as follows. For the functions available with the other frames, refer to the Help.

Item	Content
 (Scroll up)	The data in the graph area is scrolled in the upper direction.
 (Scroll down)	The data in the graph area is scrolled in the lower direction.
 (left scroll)	The data in the graph area is scrolled in the left direction.
 (right scroll)	The data in the graph area is scrolled in the right direction.
 (automatic magnification)	The display magnification of the graph area is set to the optimum magnification so that the entire curve can be displayed.
 (display magnification reduction)	The display magnification of the graph area is reduced.
Magnification combo box	The display magnification of the graph area is set. Selecting "Automatic" sets the optimum magnification for displaying the entire curve.
 (display magnification expansion)	The display magnification of the graph area is expanded.
 (shift display)	If it is turned on, the display areas are shifted. If it is turned off, all the data are overlapped.
 (scale indication)	The display/non-display of the scale is specified. If it is turned on, the scale is displayed while turned off, the scale is not displayed.
 (data selection)	When analyzing two or more units of data, the data to be displayed in the display item is selected.
 (axis style)	The style of the axis in the display item is specified. The following styles can be specified. Axis style (radiation angle axis) color, angle intervals, number of auxiliary scales, concentric circle display, display/non-display, line type, and line color

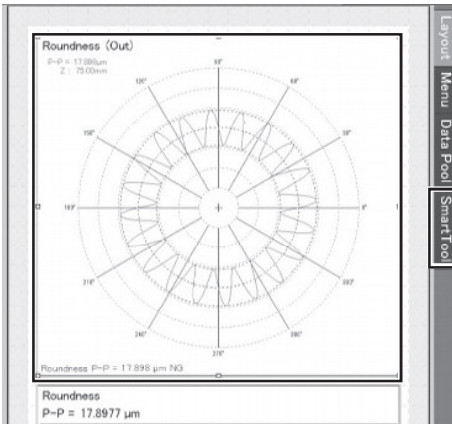
Item	Content
 (curve style)	The line type and the color for a curve drawn are specified.
 (reference circle style)	The display/non-display, line type, and color of the reference circle drawn are specified. The following style of the reference circle can be specified. Circumscribed circle, inscribed circle, and datum circle
 (notch style)	The display/non-display, line type, and color of the notch line drawn are specified.
 (parameter style)	Display/non-display, font, and color of the parameter possible to display in the display item are specified. The following styles can be specified. Title, parameter, cross section calculation result value, expansion magnification, cursor, and measurement direction
<input type="checkbox"/> (background color)	The background color of the display item is specified.
<input type="checkbox"/> (graph background color)	The background color of the graph area is specified.
<input checked="" type="checkbox"/> (scale color)	The color for the scale numerical value and the unit is specified.
 (parameter judgment condition)	The pass or fail of the parameter is determined.

How to use

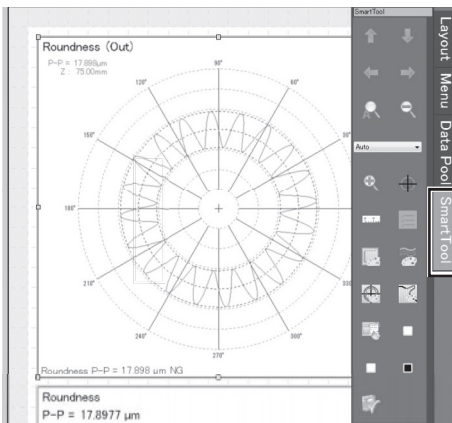
Here explains how to use the smart-tool tab by exemplifying the change of "Curve Style."

1 Touch the target frame for changing the display style.

- The "Smart-Tool" tab becomes available.

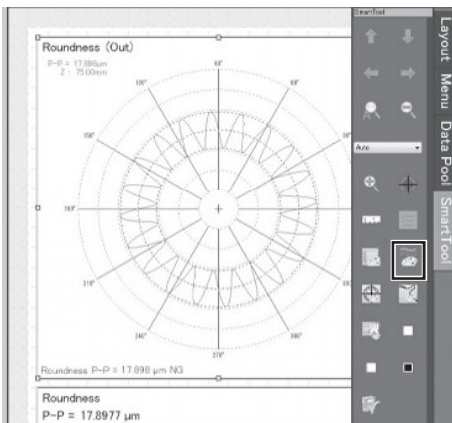


2 Touch the "Smart Tool" tab.



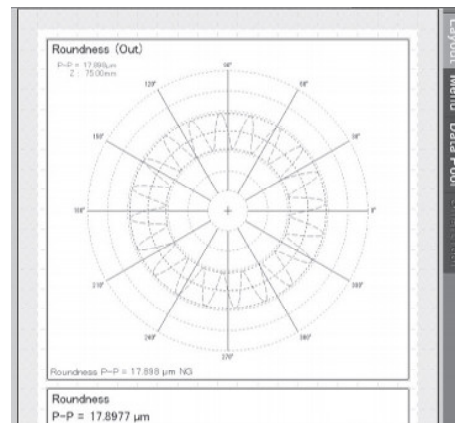
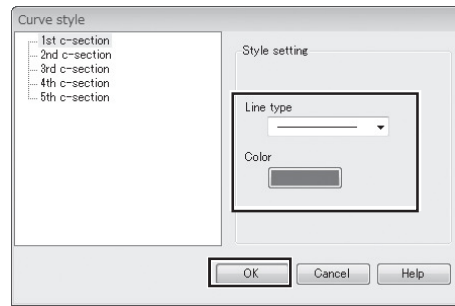
3 Touch the "Curve Style."

- The curve style dialog box is displayed.



4 Select a line type and line color, and touch the "OK" button.

- The curve style is changed.



Appendix

Error list

Display message	Handling method
The Detector touches the object too much.	Eliminate the collision and press the emergency stop release button on the measuring machine. This phenomenon occurs only when the rotation operation is in process.
Air pressure drop occurred.	Check that the air pressure is not reduced, and if there is no problem, press the emergency stop release button on the measuring machine.
Motor overcurrent	Press the emergency stop release button on the measuring machine.
Communication was cut off.	If the communication does not recover automatically, turn off the measuring machine power, turn it on again, and check the communication lamp (blue) turning on. If the communication lamp (blue) turns on, touch the initial operation button on the screen. If the communication lamp (blue) does not turn on, turn off the measuring machine, terminate the "ACCT-ee", and turn the measuring machine power on again.
Time-out	Even if the communication lamp (blue) is turned on, this phenomenon occurs when the command retry cannot be completed because of unstable communication condition. Check the communication condition.
EMO button was pressed.	Turn the EMO button to cancel and press the EMO cancel button of the Measuring system.
Servo is not recovered state.	Press the EMO cancel button of the Measuring system.

If malfunction is suspected

Contact a nearby office of TOSEI ENGINEERING CORP. when the measurement machine or the detector may malfunction.

<TOSEI ENGINEERING CORP.>

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8. Nagoya Establishment (Nagoya)

Address: 96, Shinikeura, Uchikoshi, Miyoshi-cho, NishiKamo-gun, Aichi, 470-0213, Japan
TEL: +81-561-32-3601 FAX: +81-561-34-2744

9. Hokuriku Branch (Hokuriku)

Address: 6-5-8, Shimizumachi, Toyama-shi, Toyama, 930-0036, Japan
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10. Keiji Branch (Moriyama)

Address: 321-16, Fuke-cho, Moriyama-shi, Shiga, 524-0033, Japan
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11. Osaka Sales Office (Suita)

Address: 1-18-27, Esaka-cho, Suita-shi, Osaka, 564-0063, Japan
TEL: +81-6-6821-0231 FAX: +81-6-6821-0230

12. Hiroshima Sales Office (Hiroshima)

Address: 1-6-3, Nakahiromachi, Nishi-ku, Hiroshima-shi, Hiroshima, 733-0012, Japan
TEL: +81-82-291-8501 FAX: +81-82-292-2218

13. Fukuoka Resident Office (Fukuoka)

Address: 1-13-8, Yakuin, Chuo-ku, Fukuoka-shi, Fukuoka, 810-0022, Japan
TEL: +81-92-713-2155 FAX: +81-92-713-2156

14. Kyushu Branch (Kumamoto)

Address: 3-3-25, Suizenji, Kumamoto-shi, Kumamoto, 862-0950, Japan
TEL: +81-96-383-2788 FAX: +81-96-383-2786

Customer Support

When you cannot understand how to use RONDCOM, you want to know more advanced features, etc:

Contact a nearby showroom of TOKYO SEIMITSU CO., LTD.

<Showroom of TOKYO SEIMITSU CO., LTD>

1. Tsuchiura Showroom (in Tsuchiura Factory)

Address: 4, Higashi-Nakanukimachi, Tsuchiura-shi, Ibaraki, 300-0006, Japan

TEL: +81-29-831-6899 (Only for inquiry)

TEL: +81-29-831-1234 (Main)

FAX: +81-29-831-6623

Our receptionist answers the phone. Tell the receptionist that you are calling to know how to use RONDCOM.

2. Nagoya Showroom (Nagoya Sales Office)

Address: 96, Shinikeura, Uchikoshi, Miyoshi-cho, NishiKamo-gun, Aichi, 470-2123, Japan

TEL: +81-561-32-8501

FAX: +81-561-32-8618

3. Osaka Showroom (Osaka Sales Office)

Address: 1-18-27, Esaka-cho, Suita-shi, Osaka, 564-0063, Japan

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FAX: +81-6-6821-0210

The customer's individual information provided for our customer support are aimed at handling, repair, and confirmation of the inquiries extended to us, which are appropriately managed and controlled, and will never be provided nor disclosed to any third party without consent of the customers.

TOKYO SEIMITSU CO., LTD.

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