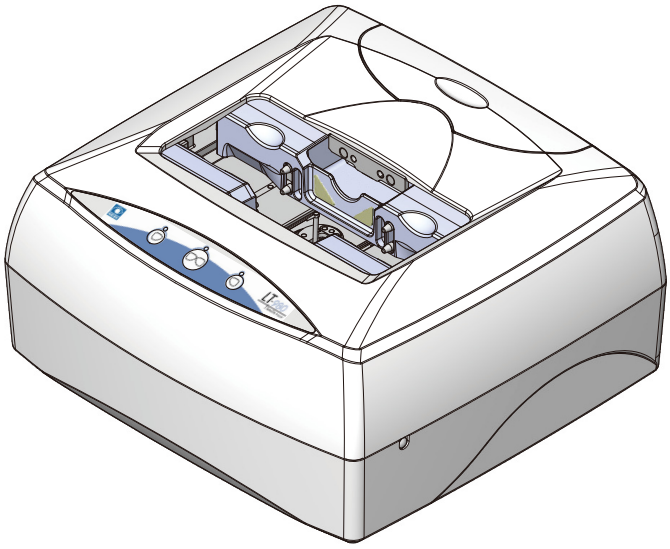
NIDEK

Satellite Tracer
LT-980

OPERATOR'S MANUAL



Be sure to read the SOFTWARE LICENSE AGREEMENT (page II) before using this product.

Original instructions

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Before Use

This OPERATOR'S MANUAL contains information necessary for the operation of the NIDEK Satellite Tracer Model LT-980.

This manual includes operating procedures, safety precautions, specifications, and information about accessories and maintenance. This manual is necessary for proper use. Especially, the safety precautions and operating procedures must be thoroughly understood prior to the operation of the instrument.

Keep this manual handy for reference.

If you encounter any problems or have questions about the instrument, please contact NIDEK or your authorized distributor.

IMPORTANT - READ CAREFULLY

THIS AGREEMENT APPLIES TO THE NIDEK SOFTWARE AND ACCOMPANYING DOCUMENTS. PLEASE READ THIS AGREEMENT CAREFULLY AND THOROUGHLY BEFORE USING SOFTWARE.

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By using or installing the Software, you agree to be bound to the terms and conditions of this Agreement. If you do not agree with this Agreement, please do not use or install the Software and return the Software to the company from which you obtained the Software.

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5.1. If you export or re-export, directly or indirectly, the Software, you must comply with applicable export laws and regulations of Japan and other countries, and obtain any licenses or approvals required by governmental authorities.

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a) such Amendments are appropriate in terms of interests for customers of this Software; or

b) such Amendments are commercially reasonable and not contrary to the objective of this Agreement, even if such Amendments are disadvantageous to you.

Prior to the amendments, NIDEK will notify you of the terms and the effective date of such Amendments on the website or by any other means.

6.3. If you use the Software after the effective date of such Amendments, you shall be deemed to have agreed to such Amendments.

7. TERMINATION

7.1. This Agreement is effective until terminated. If you breach any term or condition of this Agreement, NIDEK may, without giving any prior notice to you, terminate this Agreement with immediate effect. Upon termination of this Agreement due to the breach of this Agreement, NIDEK reserves all the rights to claim damages resulting from such breach.

7.2. If this Agreement is terminated in accordance with the provision of 7.1., you must immediately cease the use of the Software, and delete, destroy and erase all the Software. Any fees paid by you for the license of the Software will not be refund for any reasons.

8. NO WARRANTIES

8.1. NIDEK MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE SOFTWARE AND THE THIRD-PARTY-SOFTWARE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS, INCLUDING, WITHOUT LIMITATION, THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, ACCURACY, RELIABILITY OR AVAILABILITY, ABSENCE OF OR RECOVERY FROM ANY INTERRUPTION, ERROR-FREE OPERATION OR CORRECTION OF DEFECTS OR MALFUNCTIONS.

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9.1. EXCEPT OTHERWISE EXPRESSLY STIPULATED IN THIS AGREEMENT, IN NO EVENT WILL NIDEK BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, LOSS, CLAIMS OR COSTS WHATSOEVER, INCLUDING, WITHOUT LIMITATION, ANY LOST DATA, PROFITS, REVENUES, BUSINESS OPPORTUNITIES OR INFORMATION, LOSS OF USE OF ANY PRODUCT, PROPERTY OR EQUIPMENT, DOWNTIME COST , COST OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR ANY CLAIMS BY A THIRD PARTY, ARISING OUT OF OR RELATED TO THE USE OR INABILITY TO USE THE SOFTWWARE AND/OR THE THIRD-PARTY-SOFTWARE, CHANGES, UPDATES OR MODIFICATIONS OF THE SOFTWARE AND/OR THE THIRD-PARTY-SOFTWARE, OR MAINTENANCE OR REPAIR SERVICE OF THE SOFTWARE IF ANY (collectively, the "DAMAGES"). THE ABOVE LIMITATIONS WILL APPLY REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT, STRICT PRODUCT LIABILITY, OR OTHERWISE, EVEN IF NIDEK IS NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES.

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10. GOVERNING LAW AND ARBITRATION

10.1. This Agreement will be governed by and construed in accordance with the laws of Japan.

10.2. All disputes arising between you and NIDEK relating to this Agreement or the interpretation or performance thereof will be finally settled by binding arbitration in Tokyo in accordance with the Commercial Arbitration Rules of The Japan Commercial Arbitration Association. Judgment upon the award rendered by arbitration will be final and may be entered in any court having jurisdiction thereof.

11. SEVERABILITY

11.1. If any provision or any portion of any provision of this Agreement will be held to be invalid or unenforceable, that provision will be severed from this Agreement and such invalidity or unenforceability will not affect the remaining provisions of this Agreement. The remaining provisions of this Agreement will continue in full force and effect.

12. SURVIVAL

12.1. The provisions of 2, 3, 5, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19 and this provision will survive the termination of this Agreement and will be binding after the termination of the Agreement.

13. ASSIGNMENT

13.1. This Agreement or any part of this Agreement may not be assigned or transferred without prior written consent of NIDEK. The permitted assignee or transferee must agree to all the terms and conditions of this Agreement prior to the assignment or transfer.

13.2. This Agreement will be binding upon the permitted assignee or transferee and be enforceable by NIDEK.

14. ENTIRE AGREEMENT

14.1. This Agreement constitutes the entire agreement between you and NIDEK concerning the Software, and supersedes any prior written or oral agreement between you and NIDEK. No modification of this Agreement will be binding unless otherwise agreed in writing.

15. NO WAIVER

15.1. The failure of NIDEK to enforce at any time or for any period the provisions hereof in accordance with its terms will not be construed to be a waiver of such provisions or of the rights thereafter to enforce each and every provision.

16. NO THIRD PARTY RIGHTS

16.1. This Agreement is intended to be solely for the benefit of you and NIDEK and is not intended to confer any benefits upon or create any rights in favor of any person other than you and NIDEK.

17. HEADINGS

17.1. All headings are for convenience only and will not affect the meaning of any provision of this Agreement.

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18.1. The license agreement for the Software may be provided in multiple languages. In such event, unless otherwise agreed in writing, the following shall apply:

a) If you use the Software in any countries outside Japan, the license agreement for the Software shall be executed and delivered in a text using the English language. The text using the English language shall prevail and control; and

b) If you use the Software in Japan, the license agreement for the Software shall be executed and delivered in a text using Japanese language. The text using the Japanese language shall prevail and control.

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19.1. If the terms and conditions of the "Software License Agreement" included in operations manuals for NIDEK product are inconsistent with the terms and conditions of the "Software License Agreement" displayed on NIDEK product, the terms and conditions of the "Software License Agreement" included in operations manuals for NIDEK product prevail.

Table of Contents

1 CAUTIONS

1.1 For Safe Use

⚠ **BEFORE USE, READ THIS MANUAL.**
The cautions for safety and operating procedures must be thoroughly understood before using the instrument. Keep this manual handy for reference.

1.2 Safety Precautions

In this manual, a signal word is used to designate the degree or level of safety alerting. The definition is as follows.
⚠ **CAUTION** Indicates a potentially hazardous situation which, if not avoided, might result in minor or moderate injury or property damage accident.
Even situations that are labeled ⚠ **CAUTION** might result in serious injury under certain conditions. Safety precautions must be followed strictly at all times.

1.3 Usage Precautions

Before use

⚠ CAUTION

- Do not use the instrument for any purposes other than the intended purpose.
  NIDEK is not responsible for accidents or malfunctions caused by misuse.
  For the intended purpose of the instrument, see *"2.1 Outline of the Instrument" (page 9)*.
- Only personnel authorized by NIDEK or a NIDEK distributor are allowed to install the instrument.
- Install the instrument in an environment that meets the following conditions. The following conditions must be maintained during use.
  - Use conditions

    " Environmental conditions during use" (page 54)
- Be sure to wear protective gloves when using a utility knife during unpacking.
  Contact by bare hands with a utility knife or sharp edge of cardboard may result in injury.
- Install the instrument on a table with a height and depth that allows comfortable operation.
  Continued use in an awkward posture may result in backache.
- Avoid storing the instrument where it is exposed to rain or water, or toxic gas or liquid is present.
  Corrosion or malfunction may occur.
- Hold the unit by the base with both hands when moving the instrument.
  Failure to do so may cause the instrument to drop resulting in injury or malfunction.
- Before connecting the cable, turn off the power switch and disconnect the power cord from the wall outlet.
  Electric shock or malfunction may result.
- Do not use the power cord other than those supplied. Also do not connect the supplied cord to any other instrument.
  Malfunction or fire may result.
- Do not overload the electrical outlet.
  A multi-outlet supplying power to too many instruments may become overheated and cause fire.
- Install the instrument in area where the outlet that the power plug is inserted into is easily accessible during use. In addition, ensure that the power cord can be disconnected without the use of any tool.
  Otherwise, it may interfere with disconnecting of the power from the input power source in case of abnormality.
- Be sure to use a wall outlet which meets the power specification requirements.
  If the line voltage is too high or too low, the instrument may not perform properly. Malfunction or fire may result.
- Completely insert the power plug into a grounded outlet as far as the prongs will go.
  Electric shock or fire may result in the event of malfunction or power leakage.
- Do not place heavy objects on the power cord.
  The damaged power cord may cause fire or electric shock.

During use

⚠ CAUTION

- Only personnel authorized by NIDEK or a NIDEK distributor are allowed to disassemble or touch the interior of the instrument.
  Electric shock or malfunction may result.
- In the event of smoke or strange odors, immediately turn off the instrument and disconnect the power plug from the wall outlet. Once it is confirmed that the smoke has stopped, contact NIDEK or your authorized distributor.
  Usage of the instrument under such abnormal conditions may cause fire or electric shock. In case of fire, use a dry chemical (ABC) extinguisher to extinguish the fire.
- Immediately replace the power cord if the internal wires are exposed, power is intermittent when the power cord is moved, or the cord and/or plug are hot to the touch.
  Electric shock or fire may result.

After use

⚠ CAUTION

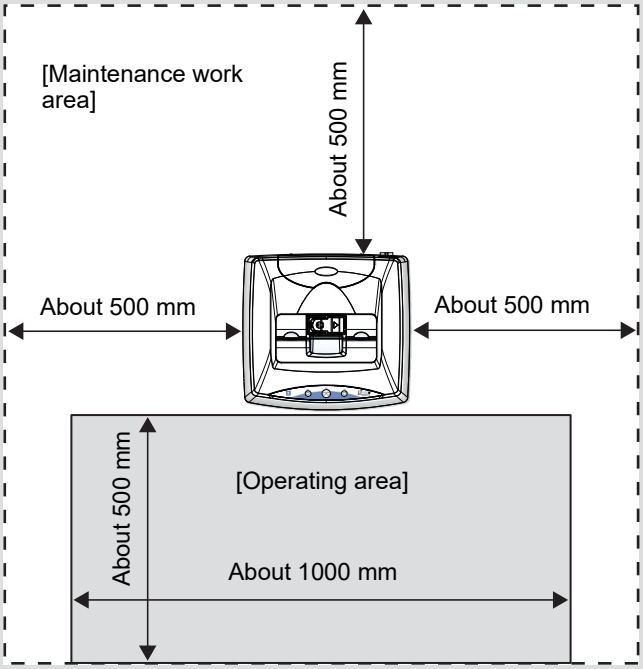
- Do not pull the power cord to disconnect it from the wall outlet. Always hold it by the plug.
  This can damage the metal core of the cord and may result in fire, short circuit or electric shock.
- Occasionally clean the prongs of the power plug with a dry cloth.
  If dust settles between the prongs, the dust will collect moisture, and short circuit or fire may occur.
- If the instrument is not to be used for a long time, disconnect the power cord from the wall outlet.
  Fire may result.
- Maintain the surrounding temperature and humidity at the following ranges during transport and storage of the instrument.
  Environmental conditions
  “ Environmental conditions during transport and storage (packed condition)” (page 54)
- When transporting the instrument, use the special packing materials to protect the instrument from shock or impact. Excessive vibration or impact to the instrument may cause malfunction.

Maintenance

⚠ CAUTION

- Be sure to check before use and after use. It is recommended to have regular maintenance checks every two years.
  Regular checks must be performed by qualified personnel. Ask NIDEK or your authorized distributor for details.
- When performing maintenance work, secure a sufficient maintenance space.
  Maintenance work in an insufficient space may result in injury.

Operating area and maintenance work area



- Use the specified fuses to replace the old ones.
  Use of any fuses other than those specified may result in fire.
- Before fuse replacement, turn off the instrument and disconnect the power cord from the wall outlet.
  Electric shock may result.

Disposal

⚠ CAUTION

- Follow the local ordinances and recycling regulations regarding disposal or recycling of the components.

  It is recommended to commission the disposal to a designated industrial waste disposal contractor. Inappropriate disposal may contaminate the environment.
- When disposing of packing materials, sort them by material and follow local ordinances and recycling regulations.

  Inappropriate disposal may contaminate the environment.

Other cautions

- Connect the cable to the RS-232C connector or USB connector securely, maintaining the correct orientation of the cable connector. Data transmission is not performed properly.
- Be sure not to apply excessive pressure to the stylus of the tracer. The stylus is easy to bend or break.
- When the instrument is not in use, turn off the power switch and put the dust cover on.

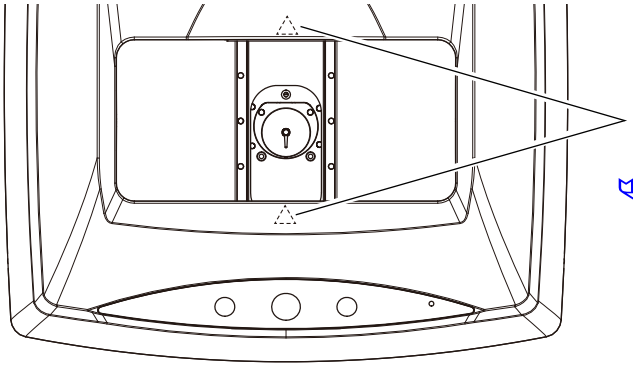
  If dust accumulates, it may affect the measurement accuracy or result malfunction.
- Never use organic solvents such as a paint thinner to clean the exterior of the instrument. It may ruin the surface of the instrument.

1.4 Labels and Symbols

■ Cautionary labels are provided on the LT-980. If labels are curling up or characters fading and becoming barely legible, contact NIDEK or your authorized distributor.

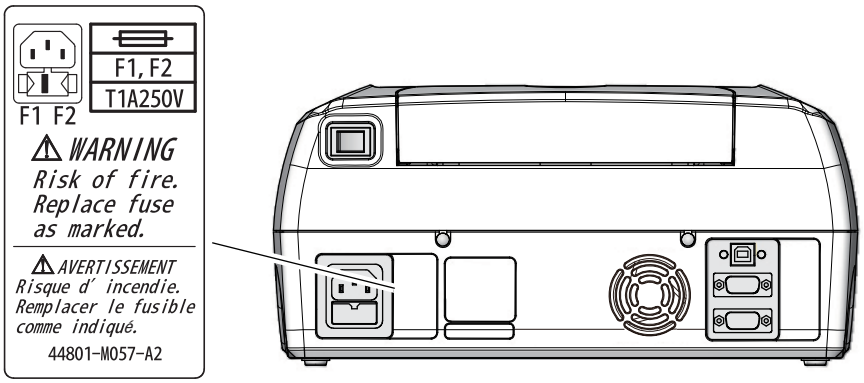
	Indicates that caution must be taken. Refer to the operator's manual before use.
	Indicates where hand or fingers may be caught.
	Indicates the state of the power switch. If this symbol of the switch is pressed down, power is not supplied to the instrument.
	Indicates the state of the power switch. If this symbol of the switch is pressed down, power is supplied to the instrument.
	Indicates that the instrument must be supplied only with alternating current.
	Indicates the fuse.
	Indicates the manufacturer.
	Indicates the date of manufacture.
	Indicates that this product is to be disposed of in separate collection of electrical and electronic equipment in EU.

[Top view]



"3.3 Tracing" (page 37).

[Rear view]



" Maintenance" (page 4)
"4.2 Replacing Fuses" (page 50).

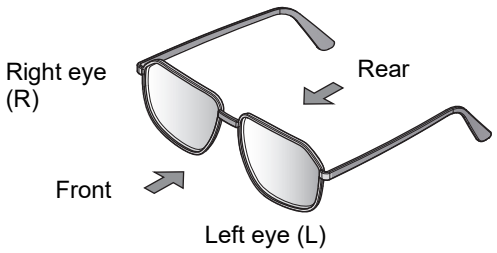
2 INTRODUCTION

2.1 Outline of the Instrument

- The NIDEK Satellite Tracer Model LT-980 is a frame tracer which measures the shape[*1] of spectacle frames (hereafter referred to as frames).
- It traces the shape of frames in three dimensions to measure the three-dimensional lens circumference[*2]. In addition, measurement of patterns or demo lenses is available.
- The instrument is very easy to use simply by setting frames or such and pressing a button.
- This instrument can be connected to various kinds of lens edging equipment to comprise a lens processing system.[*3]

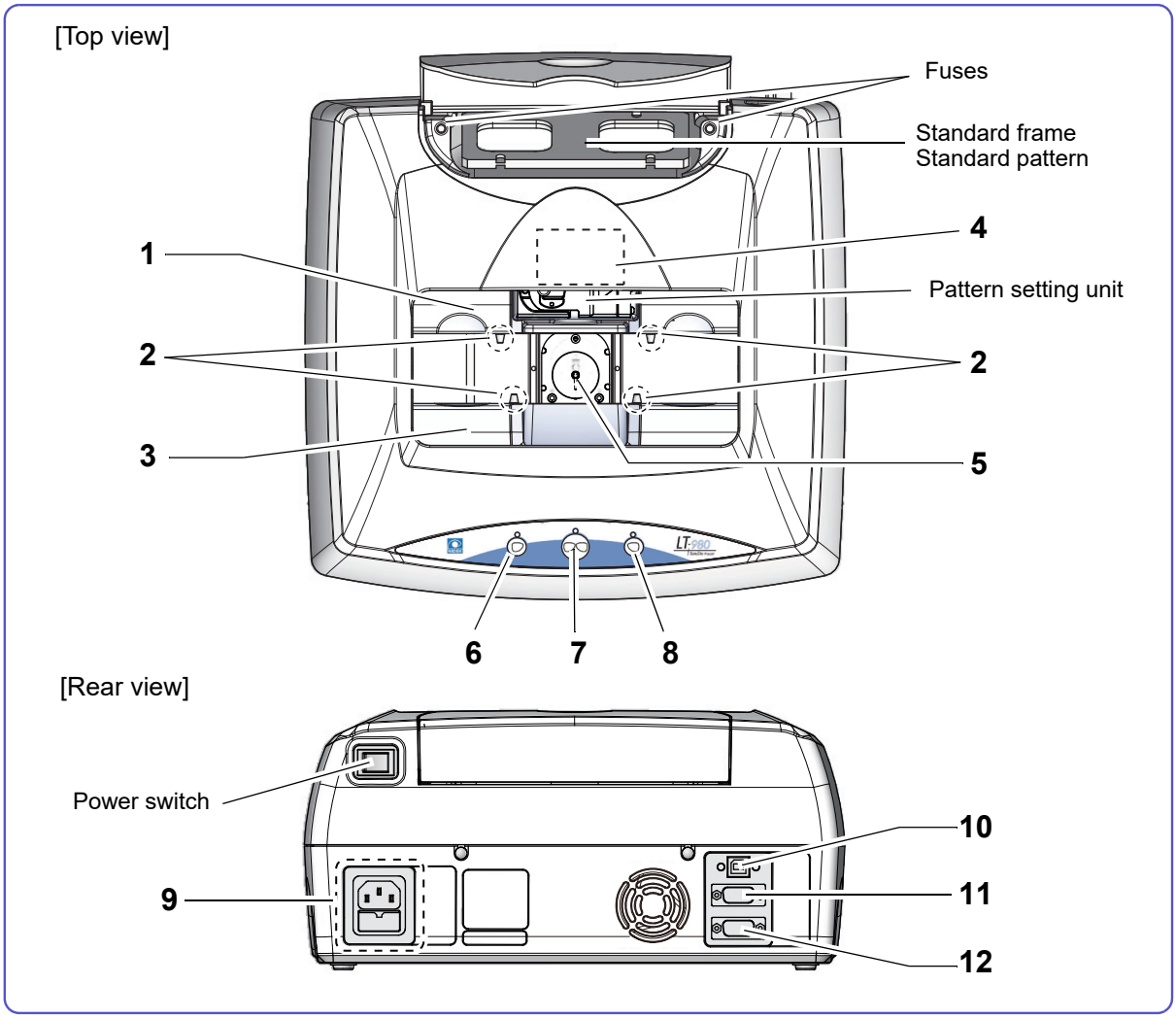
Note

- The references to right and left in this operator's manual are those viewed from the rear as shown in the figure to the right.
- When viewed from the rear, the right eye (R) and left eye (L) are oriented as shown in the figure to the right.



*1. Shape refers to the outer circumference of spectacle lenses or the inner circumference of spectacle frame rims.
*2. Frame groove is taken to be the length of a single straight line.
*3. The LT-980 interface specifications must be compatible with the connecting systems.
- Standard specifications → Connecting to a personal computer or NIDEK's grinding system
- LAB specifications → Connecting to a LAB system

2.2 Configuration



1 Upper slider

Frames are fastened between the upper and lower sliders.

2 Rim clips

Hold the rims of frames. Two rim clips are provided for each upper and lower slider.

3 Lower slider

Frames are fastened between the upper and lower sliders.

4 Pattern setting unit support

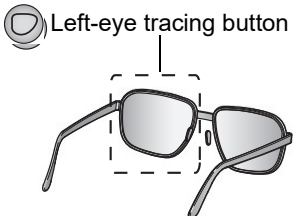
Mounts the pattern setting unit set with a pattern or demo lens.

5 Stylus

Traces a frame groove to measure the shape of frames or pattern.

6 **Left-eye tracing button**

Starts left-eye tracing.

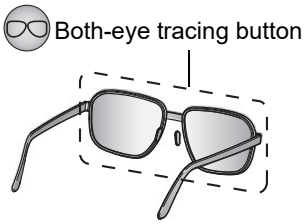


7 **Both-eye tracing button**

Starts both-eye tracing.

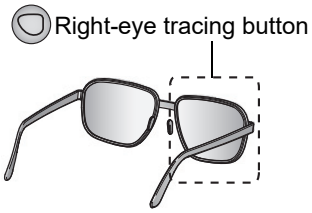
Pressing this button during tracing stops tracing.

"3.3.6 Stopping tracing" (page 46).



8 **Right-eye tracing button**

Starts right-eye tracing.



9 **Power inlet (fuse holder)**

This is where the power cord is connected. A fuse holder is integrated here.

10 **USB connector**

This is where the USB cable is connected.

11 **RS-232C connector**

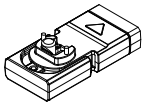
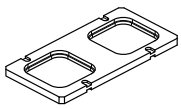
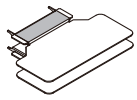
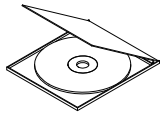
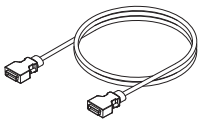
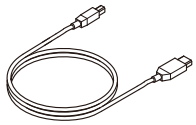
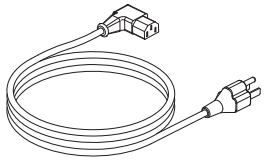
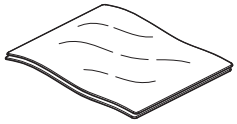
This is where the RS-232C cable is connected.

12 **Barcode connector**

This is where the barcode scanner (optional) is connected.

2.3 Packed Contents

Unpack the contents from the shipping carton and check them.

Part name	Quantity	Appearance
Fuse	2 units	
Hexagonal wrench	1 unit	
Stylus cover	1 unit	
Standard pattern	1 unit	
Pattern setting unit	1 unit	
Standard frame	1 unit	
Frame support attachment	2 units	
USB driver CD for Windows	1 unit	
RS-232C cable	1 unit	
USB cable	1 unit	
Power cord*1	1 set	
Dust cover	1 unit	
Operator’s manual	1 volume	

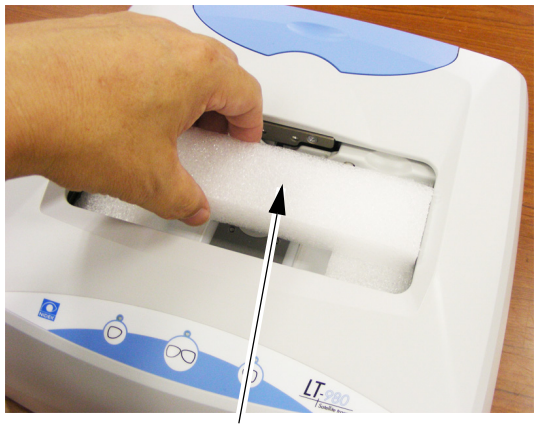
*1 For Canada, a 200 V power cord is not provided. If a 200 V power cord is required, it must be purchased separately.

2.4 Before First Use

■ Perform the following in preparation for first use of the LT-980.

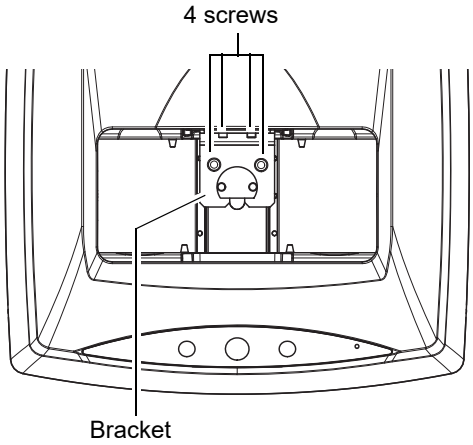
1 Place the instrument on a stable table.

2 Remove the cushion fastening the upper and lower sliders.



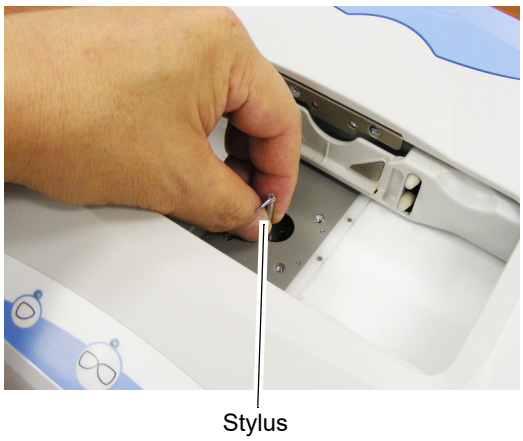
3 Remove the bracket that fastens the upper and lower sliders.

Unscrew the four fastening screws using the provided hexagonal wrench to remove the bracket.

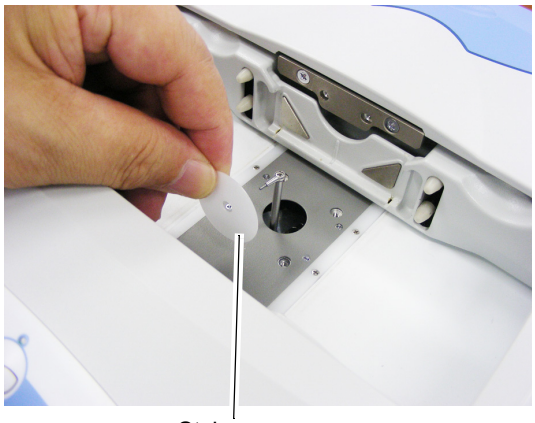


4 Attach the stylus cover.

1) Gently pull out the stylus by hand.

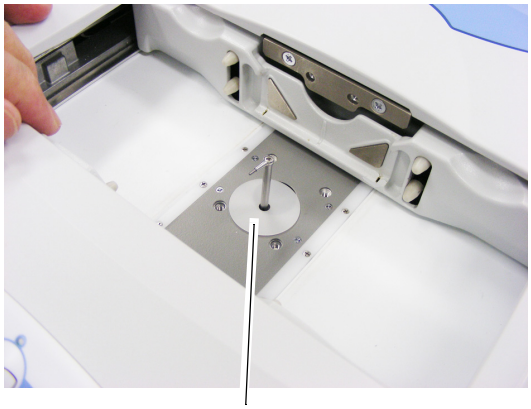


2) Attach the stylus cover by putting the tip of the stylus pin through the hole in its center.



3) The picture to the right shows the stylus cover attached with the stylus pin through its center hole.

4) Push down the stylus as far as it goes.



⚠ CAUTION

- Before connecting instruments, be sure that all instruments are turned off.

- Before connecting the USB cable, be sure to install the USB driver.

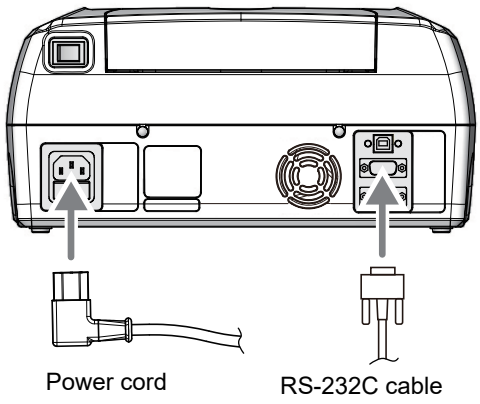
"2.10 Installing the USB Driver" (page 27).

5 Connect the power cord and RS-232C cable or USB cable to the rear of the instrument.

Attach the RS-232C cable and tighten the fastening knobs on the connector.

6 Connect the other end of the RS-232C cable or USB cable to the instrument to be connected.

For connection of the USB cable, see *"2.10 Installing the USB Driver" (page 27)*.



7 After confirming that the power switch is turned off (○), plug the power cord in the wall outlet.

⚠ CAUTION

- The electrical outlet must have a grounding terminal.
  Electric shock or fire may occur in the event of malfunction or power leakage

8 Perform check before use.

"O Checklist before use" (page 48).

9 Turn on (|) the power switch.

The instrument is initialized.

10 Calibrate the tracer.

"2.9 Tracer Calibration" (page 24).

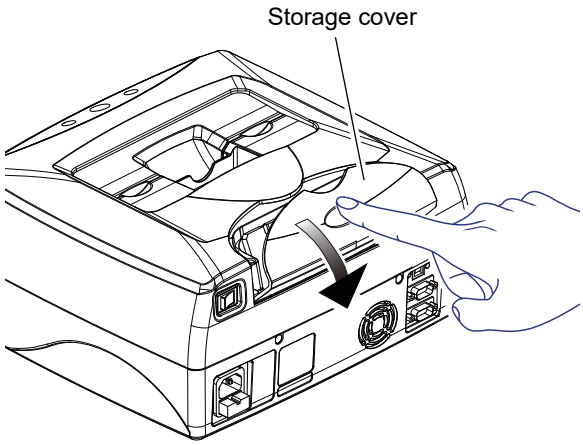
*** The instrument is now ready for use.**

2.5 Removing and Storing Accessories

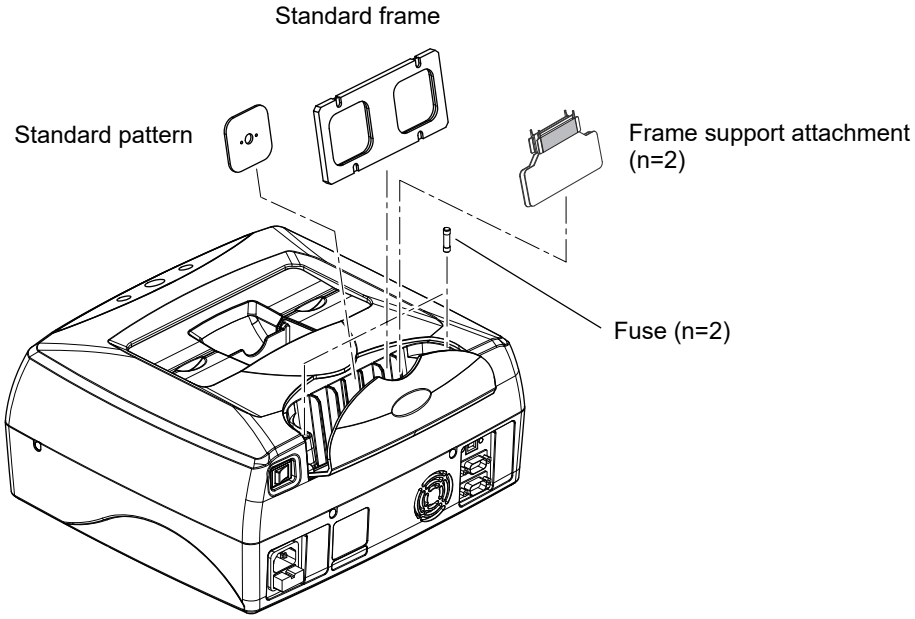
■ The storage space contains the standard frame, standard pattern, two frame support attachments, and two fuses. Store them in the storage space of the tracer to avoid loss or damage when not in use.

1 Place a finger on the indentation of the storage cover as shown in the figure to the right to slide open the cover.

The standard frame, standard pattern, two frame support attachments, and two fuses are contained.

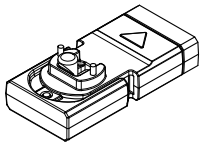


2 After use, return the standard frame, standard pattern, two frame support attachments, and two spare fuses to their original positions as shown in the figure below.



2.6 Storing and Handling the Pattern Setting Unit

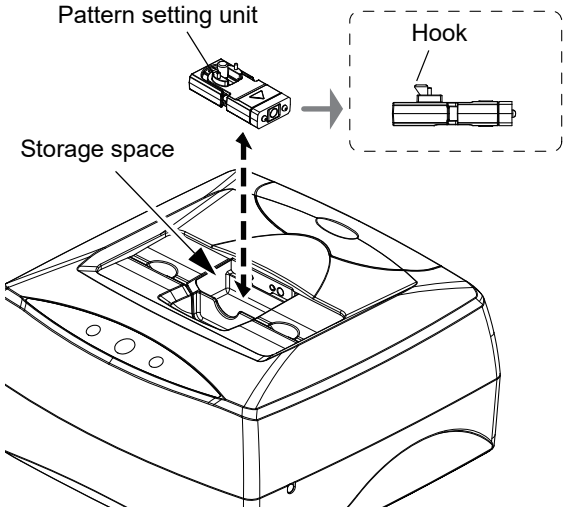
■ Store the pattern setting unit in the storage space of the tracer to avoid loss or damage when not in use.



Pattern setting unit

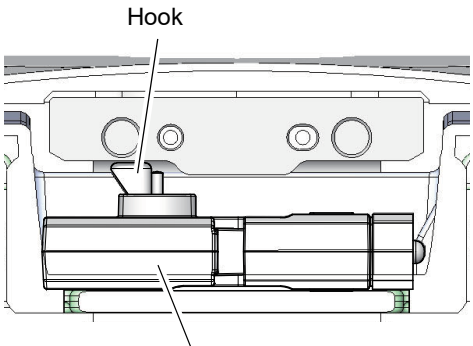
2.6.1 Removing and storing the pattern setting unit

1 With the upper and lower sliders closed, remove the pattern setting unit.



2 When storing the pattern setting unit, insert the pattern setting unit with the hook towards the upper left as viewed from the front of the instrument.

If the pattern setting unit is stored in an incorrect orientation, the hook obstructs the upper and lower sliders and they cannot be opened.



Correct storage orientation

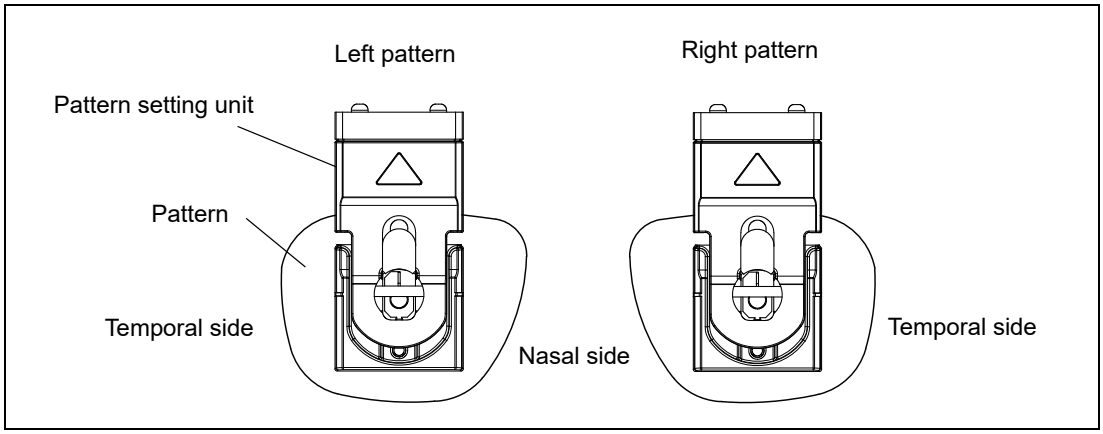
2.6.2 Handling the pattern setting unit

The instrument is operated using a pattern such as for two point frames or a processed lens that was mounted in frames as a demo lens.

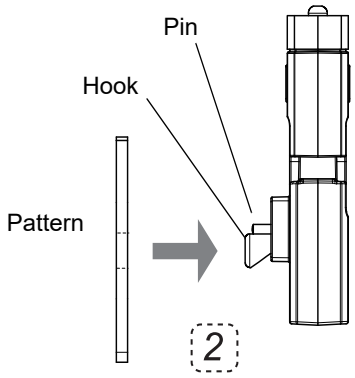
○ Attaching a pattern

1 Confirm the orientation in which the pattern is attached to the pattern setting unit.

Attach the pattern in the orientation shown below.



2 Fit the pattern to the hook of the pattern setting unit.

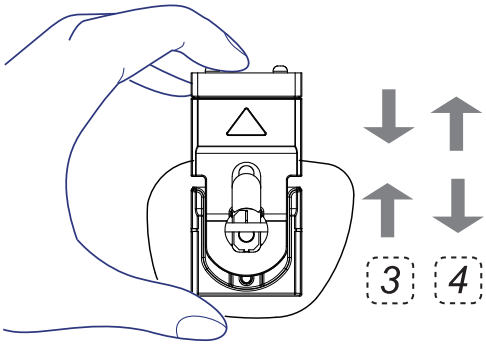


3 While pressing both ends of the pattern setting unit, push in the pattern.

Push the pattern until the hook and two pins of the pattern setting unit fit into the holes of the pattern.

4 Release both ends of the pattern setting unit to lock the pattern.

5 Detach the pattern in the reverse order.

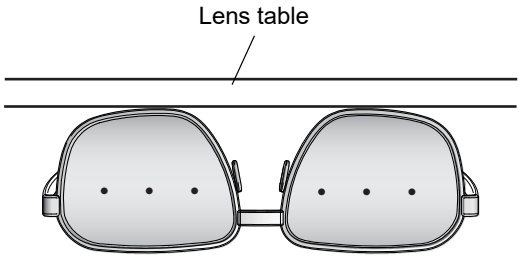


○ Attaching a demo lens

1 Block the convex surface of a demo lens with a pliable cup.

1) Mark the approximate center of the demo lens with a lensmeter.

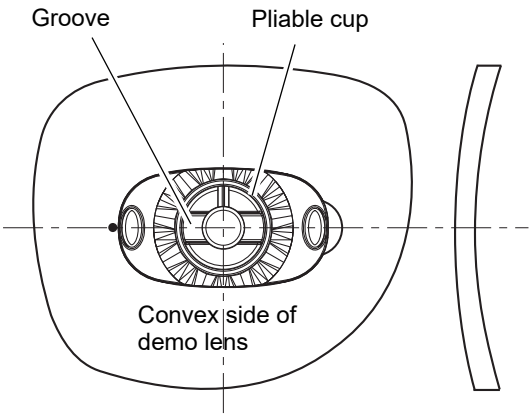
   With a demo lens mounted in frames, contact the frames with the lens table.



2) Stick the double-coated adhesive pad for the pliable cup on the pliable cup.

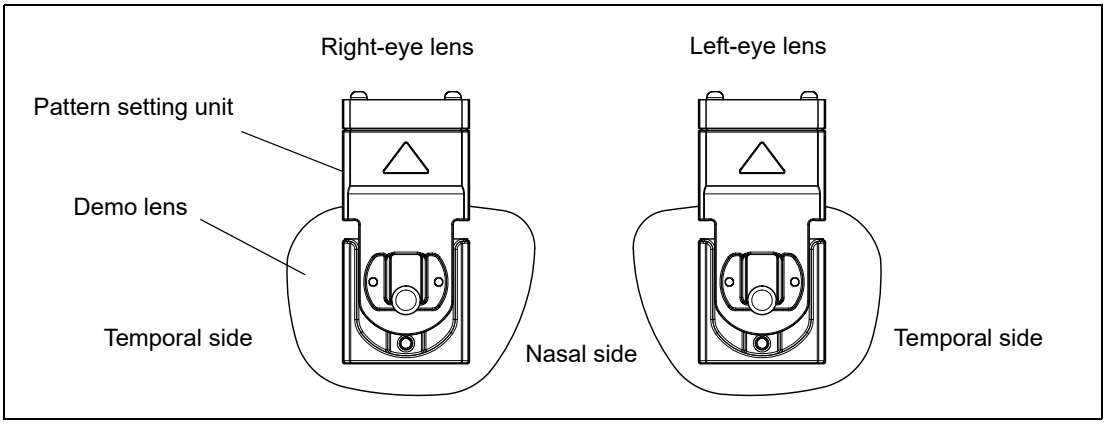
   Block the convex surface of the demo lens with the pliable cup using a centering device.

   Block the lens so that the markings on the demo lens are aligned to the groove orientation of the pliable cup.



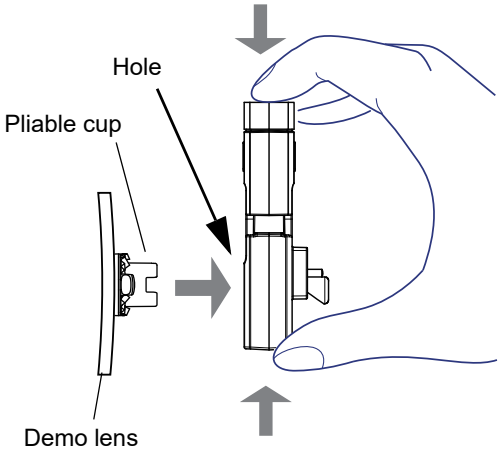
2 Confirm the orientation in which the demo lens is attached to the pattern setting unit.

Demo lenses are attached in the orientation shown below.



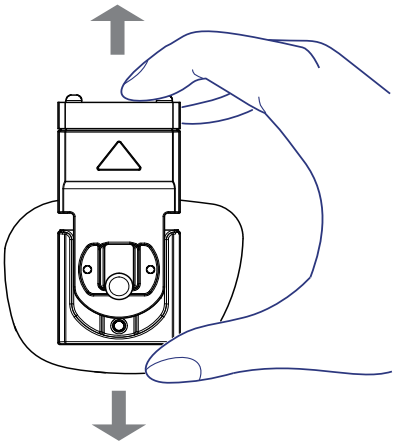
3 Fit the pliable cup on the demo lens to the hole of the pattern setting unit.

While pressing both ends of the pattern setting unit, push in the demo lens.



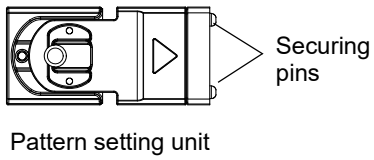
4 Release both ends of the pattern setting unit to lock the demo lens.

5 Detach the demo lens in the reverse order.



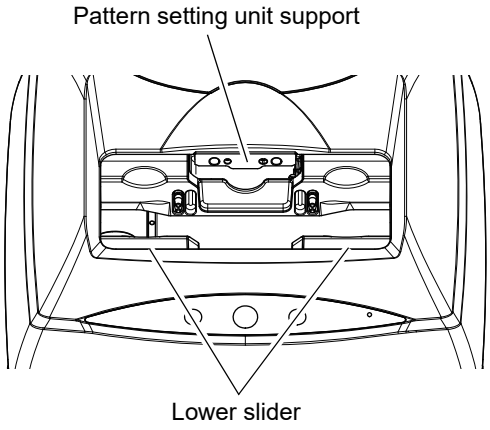
2.6.3 Setting the pattern setting unit to the tracer

The pattern setting unit is fastened to the pattern setting unit support by magnet.



1 With the upper and lower sliders closed, remove the pattern setting unit.

2 Gently move the lower slider all the way to the front to open the upper and lower sliders.



3 Set the pattern setting unit to the pattern setting unit support.

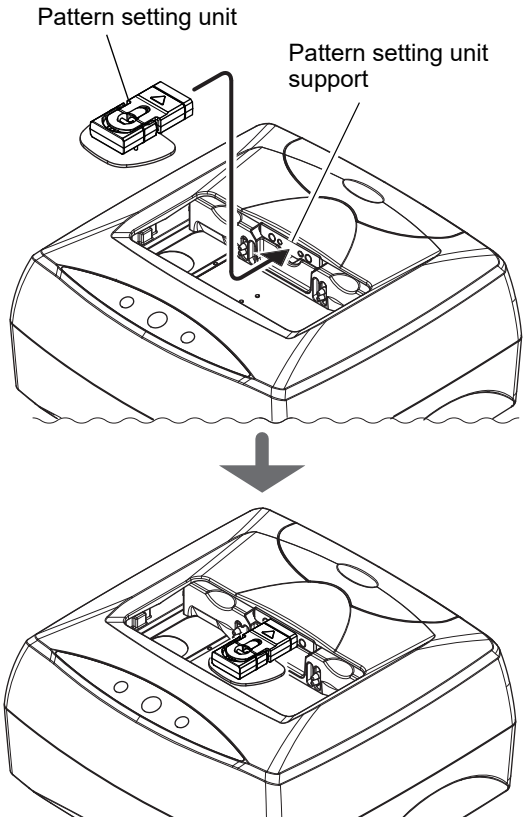
1) Attach the pattern or demo lens to the pattern setting unit.

   For attaching a pattern or demo lens, see *"2.6.2 Handling the pattern setting unit" (page 18)*.

2) With the pattern or demo lens facing down, fit the securing pins of the pattern setting unit into the holes of the pattern setting unit support.

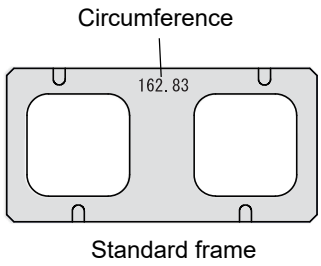
   The pattern setting unit is fastened to the pattern setting unit support by magnet.

4 To remove the pattern setting unit, gently hold the lower slider by hand so that it will not close and then take out the unit.



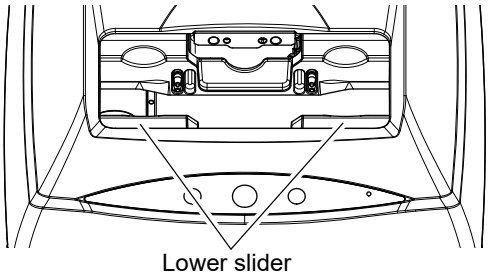
2.7 Setting the Standard Frame to the Tracer

- The circumference (162.83) is indicated on the front of the standard frame.
- Store the standard frame in the storage space of the tracer to avoid loss or damage when not in use.



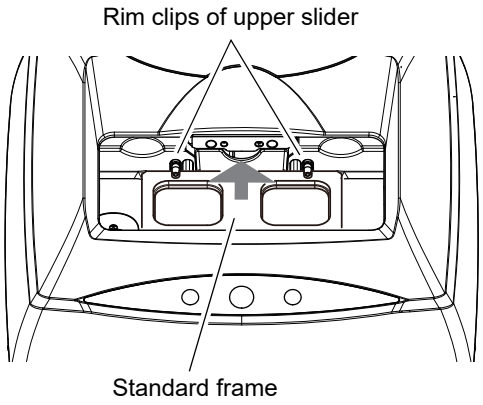
1 Remove the standard frame from the storage space.

2 Gently move the lower slider to the front to open the upper and lower sliders.



3 Set the standard frame with the front side facing up.

With the side on which the circumference is indicated facing up, insert the upper grooves of the standard frame between the rim clips of the upper slider.

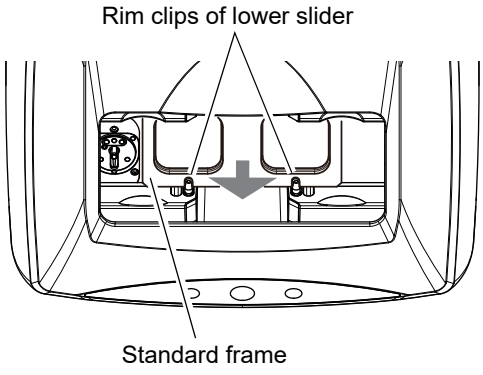


4 Set the bottom of the standard frame.

Gently open the lower slider and insert the lower grooves of the standard frame between the rim clips of the lower slider.

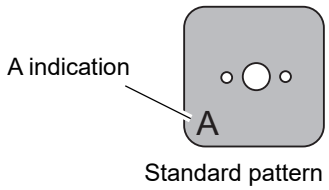
5 To remove the standard frame, gently open the lower slider and then take out the frame.

6 After use, return the standard frame to the storage space.



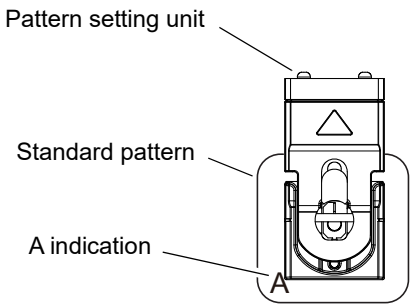
2.8 Handling the Standard Pattern

- “A” is indicated on the front of the standard pattern.
- Store the standard pattern in the storage space of the tracer to avoid loss or damage when not in use.

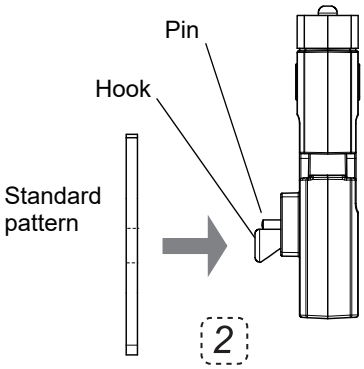


1 Remove the standard pattern from the storage space and confirm the orientation in which the standard pattern is attached to the pattern setting unit.

Attach the standard pattern to the standard pattern setting unit with the side on which “A” is indicated oriented as shown in the figure to the right.



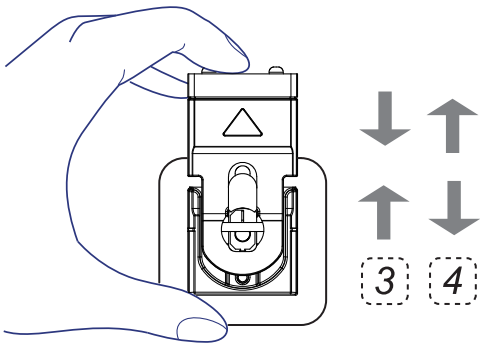
2 Fit the standard pattern to the hook of the pattern setting unit.



3 While pressing both ends of the pattern setting unit, push in the standard pattern.

Push the standard pattern until the hook and two pins of the pattern setting unit fit into the holes of the standard pattern.

Confirm that the standard pattern is not set askew.



4 Release both ends of the pattern setting unit to lock the standard pattern.

5 Detach the standard pattern in the reverse order.

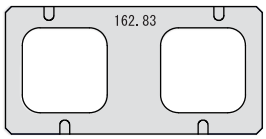
2.9 Tracer Calibration

■ Calibrate the tracer using the provided standard frame and standard pattern.

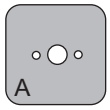
Standard frame: Calibration of frame tracing

Standard pattern: Calibration of pattern tracing

*** It is recommended to calibrate the instrument for high accuracy before use.**



Standard frame



Standard pattern

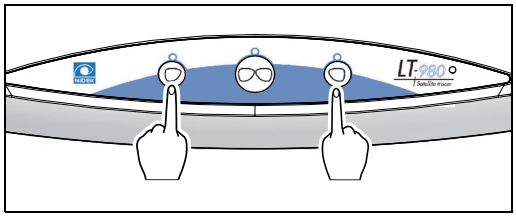
○ Calibrating the standard frame

1 Remove the standard frame and standard pattern from the storage space.

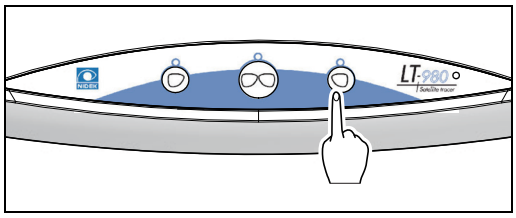
2 Turn on (I) the power switch.

3 After initialization, put the instrument into calibration mode.

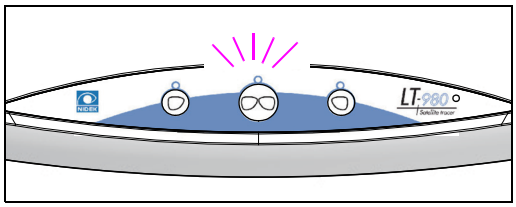
1) While pressing , press .
A beeps sounds.



2) Release .



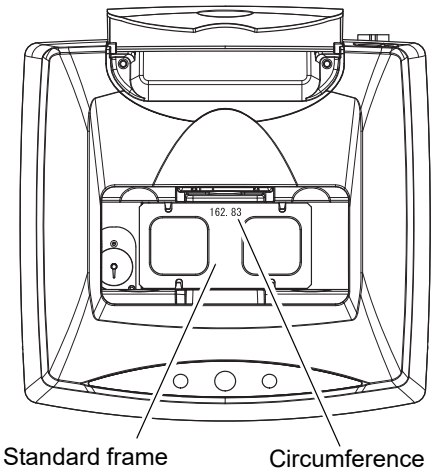
3) Release .
The indicator above blinks.



4 Set the standard frame.

With the side on which the circumference is indicated facing up, insert the upper grooves of the standard frame between the rim clips of the upper slider.

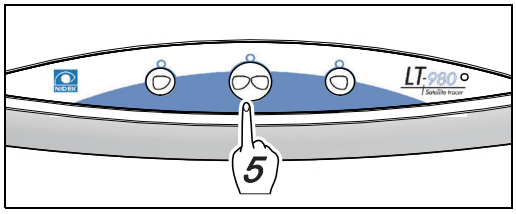
"2.7 Setting the Standard Frame to the Tracer" (page 22).



5 Press .

Automatic calibration (frame) starts. After several tracings, automatic calibration ends.

A beep sounds, the instrument exits from calibration mode, and then the standard frame is released.

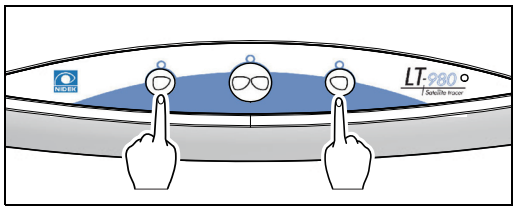


6 Remove the standard frame.

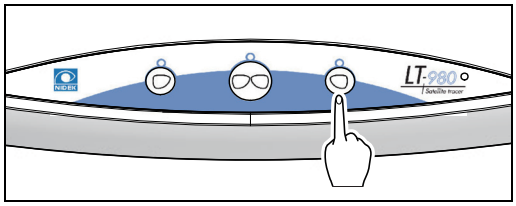
○ Standard pattern calibration

1 Put the instrument into calibration mode again.

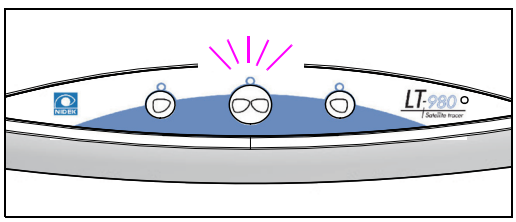
1) While pressing , press .
   A beep sounds.



2) Release .



3) Release .
   The indicator above blinks.

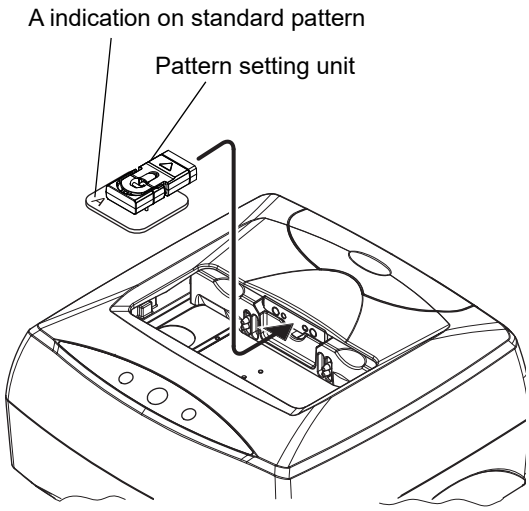


2 Set the standard pattern.

Set the standard pattern with the side on which “A” is indicated facing towards the pattern setting unit.

“2.8 Handling the Standard Pattern” (page 23)

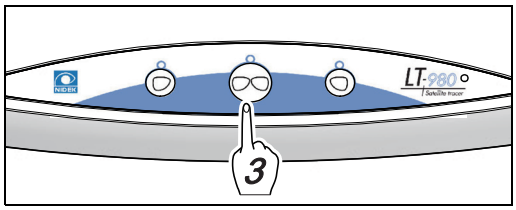
“2.6.2 Handling the pattern setting unit” (page 18).



3 Press .

Automatic calibration (pattern) starts.

When automatic calibration is complete, a beep sounds, calibration mode is exited, and then normal mode is placed.



4 Remove the standard pattern.

Note

- To avoid calibration by frames other than the standard frame or standard pattern, should the circumference exceed the correction value of ±1 mm, the indicator above blinks and calibration is not performed automatically. In such a case, perform the following.

  After confirming that the provided standard frame or standard pattern is being used, press .

  → Calibration is activated.

  If other frames are being used, press or .

  → Calibration is cancelled. Start calibration again using the standard frame or standard pattern.

2.10 Installing the USB Driver

■ When the LT-980 and PC are connected using the USB cable, the USB driver first needs to be installed on the PC. If the connection is made using the RS-232C cable, the USB driver does not need to be installed.

• Before connecting the USB cable to the LT-980, be sure to install the USB driver on the PC.

■ The installation procedure of the USB driver differs depending on the operating system (Windows 10, Windows 11) of the computer.

2.10.1 For Windows 10

This is the procedure for when the operating system of the computer is Windows 10.

Prepare the provided driver CD and USB cable.

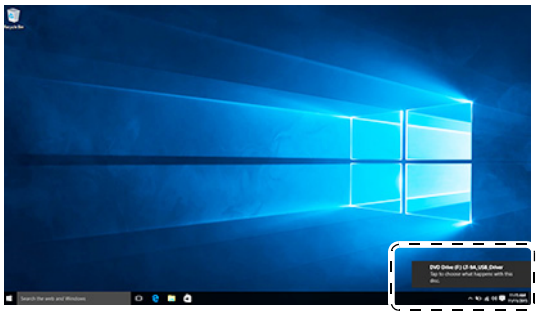
• Start installation without the USB cable connected to the computer.

1 Start the computer and log in as an administrator.

* There are procedures that are not displayed depending on the security setting.

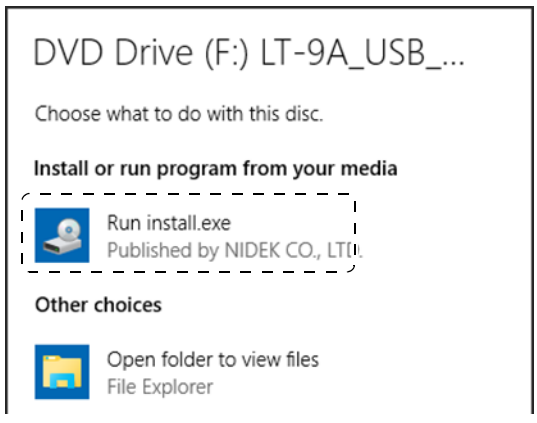
2 Insert the driver CD into the CD-ROM drive.

1) Click “Tap to choose what happens with this disc.” on the screen.



2) When the Choose what to do with this disc screen appears, click “Run install.exe”.

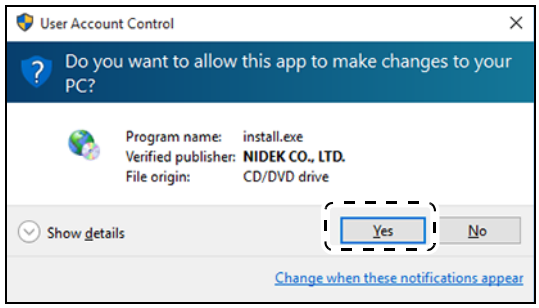
The User Account Control screen appears.



Note

• If the installer does not automatically activate, the Choose what to do with this disc screen is not displayed. Open the CD folder using Explorer and then double-click “Run install.exe”.

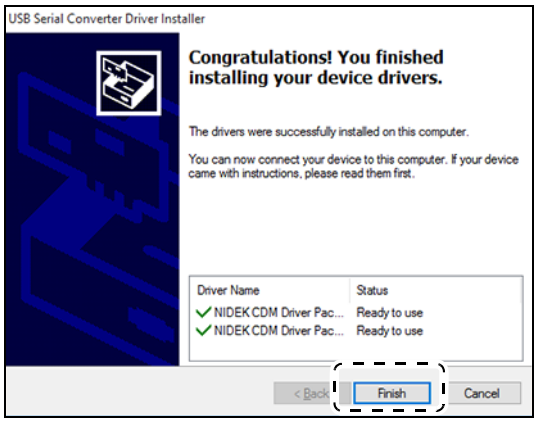
3 Click [Yes] in the User Account Control screen.



4 When the USB Serial Converter Driver Installer screen appears, click [Next].

Installation of the driver starts.

5 When “Congratulations! You finished installing your device drivers.” is displayed, click [Finish].



6 Turn on (|) the power switch of the LT-980.

7 Connect the LT-980 and computer using the USB cable. After a short time, the driver is installed and the USB cable can be used.

“2.11 Connection” (page 31)

*** Installation of the USB driver for Windows 10 is now complete.**

2.10.2 For Windows 11

This is the procedure for when the operating system of the computer is Windows 11.

Prepare the provided driver CD and USB cable.

- Start installation without the USB cable connected to the computer.

1 Start the computer and log in as an administrator.

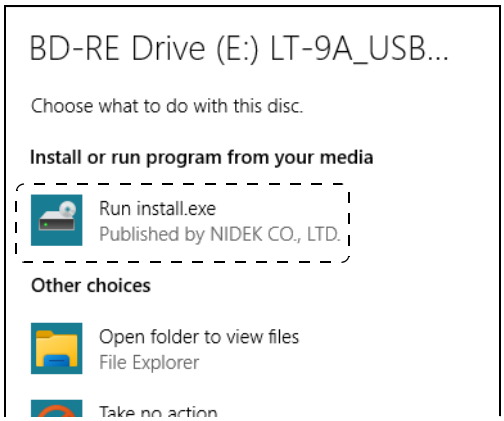
* There are procedures that are not displayed depending on the security setting.

2 Insert the driver CD into the CD-ROM drive.

1) Click “Select to choose what happens with this disc.” on the screen.

2) When the Choose what to do with this disc screen appears, click “Run install.exe”.

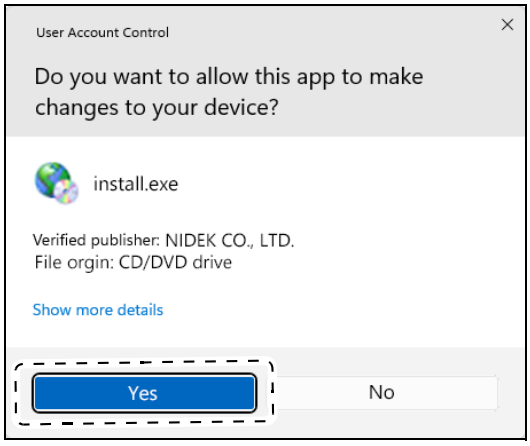
The User Account Control screen appears.



Note

- If the installer does not automatically activate, the Choose what to do with this disc screen is not displayed. Open the CD folder using Explorer and then double-click “Run install.exe”.

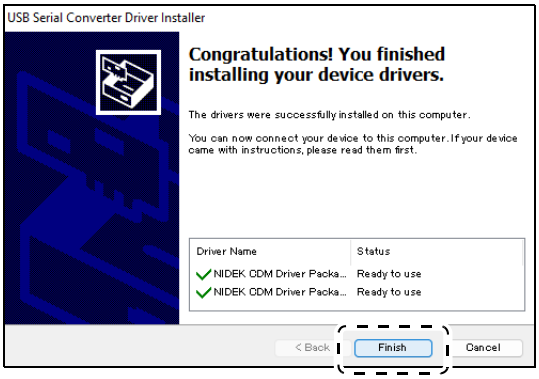
3 Click [Yes] in the User Account Control screen.



4 When the USB Serial Converter Driver Installer screen appears, click [Next].

Installation of the driver starts.

5 When “Congratulations! You finished installing your device drivers.” is displayed, click [Finish].



6 Turn on (|) the power switch of the LT-980.

7 Connect the LT-980 and computer using the USB cable. After a short time, the driver is installed and the USB cable can be used.

“2.11 Connection” (page 31)

*** Installation of the USB driver for Windows 11 is now complete.**

2.11 Connection

■ STD, VCA, and NIDEK LAN connection are possible for the LT-980.

⚠ CAUTION

- Before connecting instruments, be sure that all instruments are turned off.

- Before connecting the USB cable, be sure to install the USB driver.

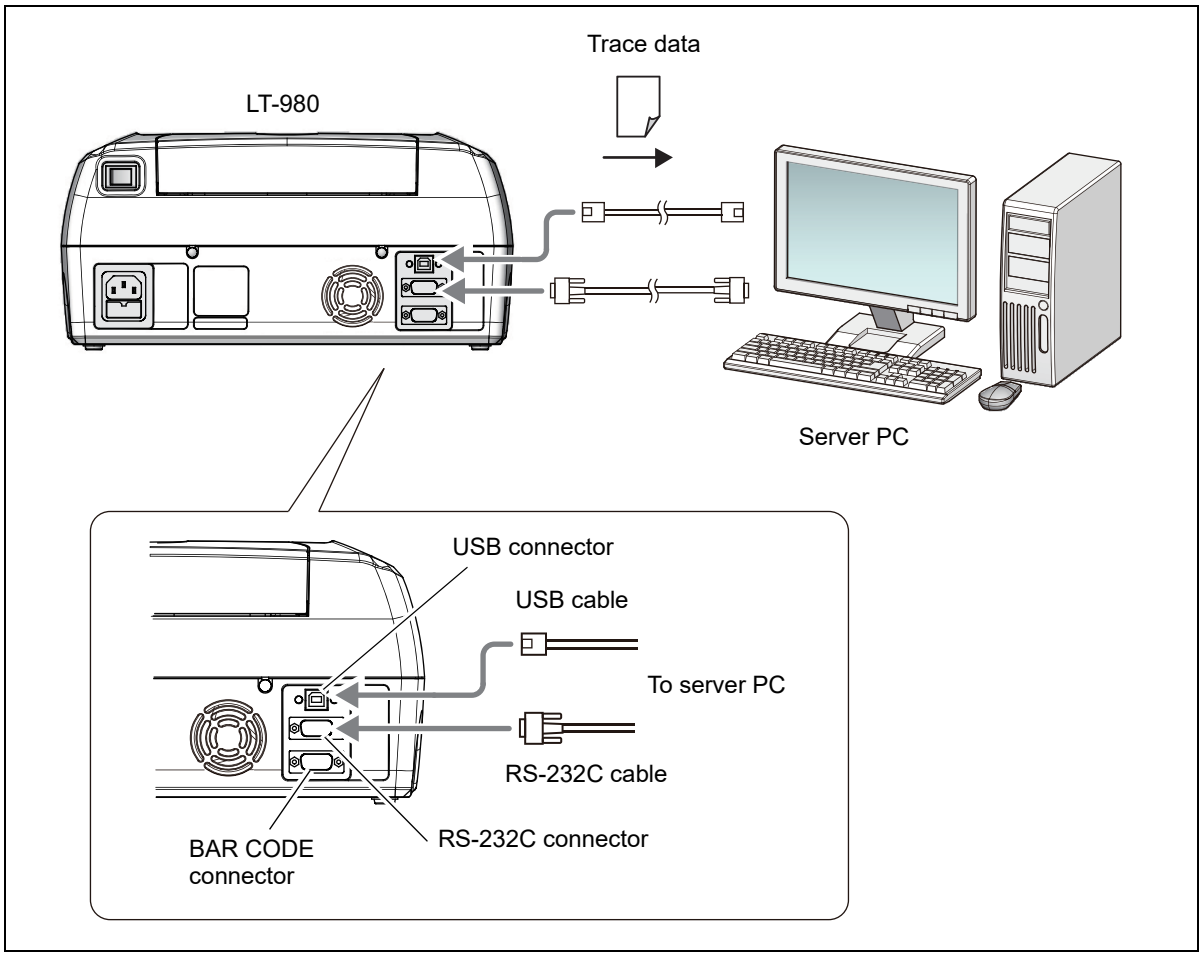
"2.10 Installing the USB Driver" (page 27).

2.11.1 STD connection

This is the configuration in which the LT-980 communicates with a server PC using the NIDEK standard protocol.

The server PC stores and manages data. The LT-980 traces frames or patterns, creates traces data, and then sends them to the server PC.

Connect the server PC and the LT-980 using the RS-232C cable or USB cable.



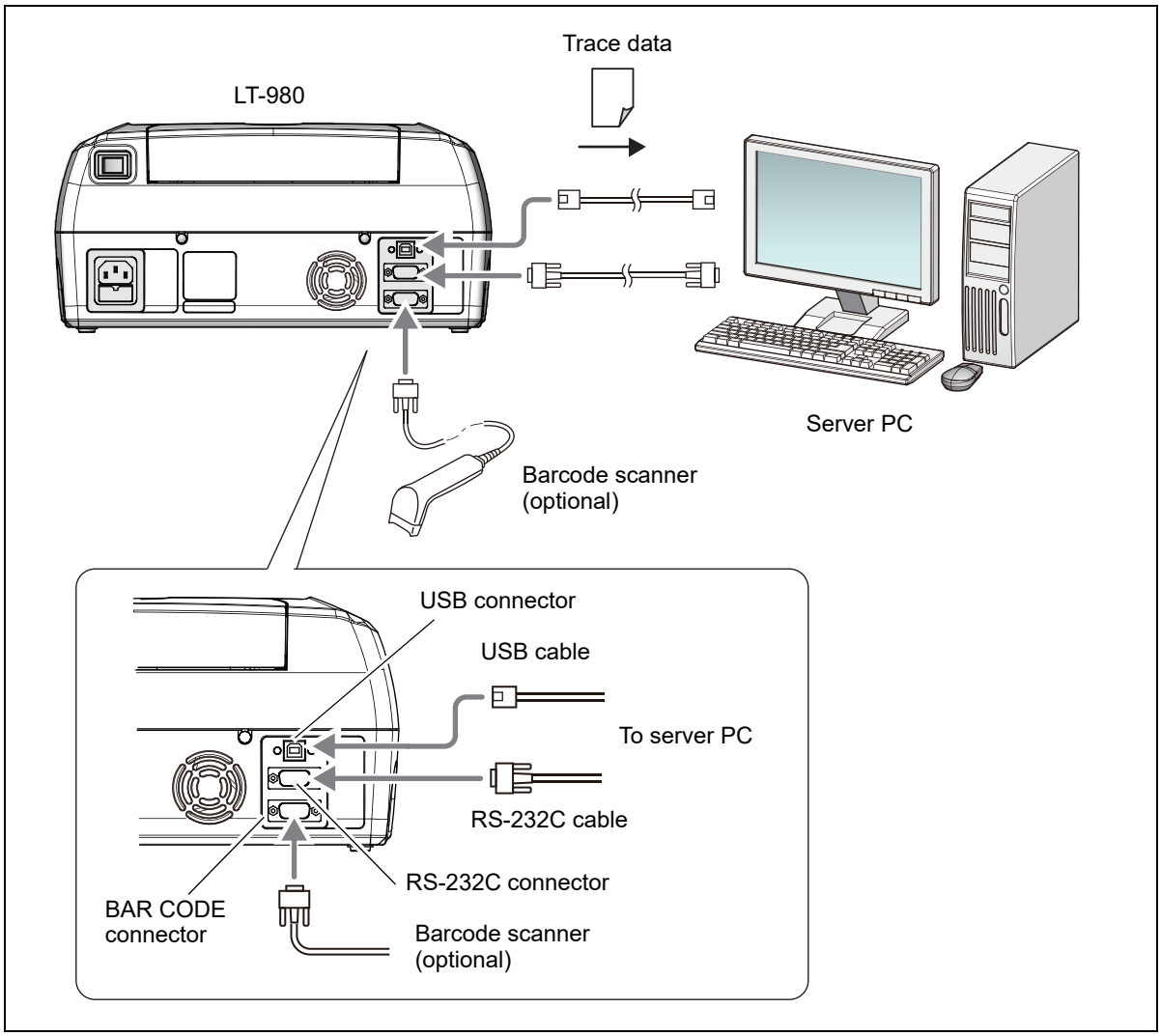
2.11.2 VCA connection

This is the configuration in which the LT-980 communicates with a server PC using the VCA standard protocol.

The server PC stores and manages data. The LT-980 traces frames or patterns, creates traces data, and then sends them to the server PC.

Connect the LT-980 and the server PC using the RS-232C cable or USB cable.

If necessary, connect the optional barcode scanner.



2.11.3 NIDEK LAN connection

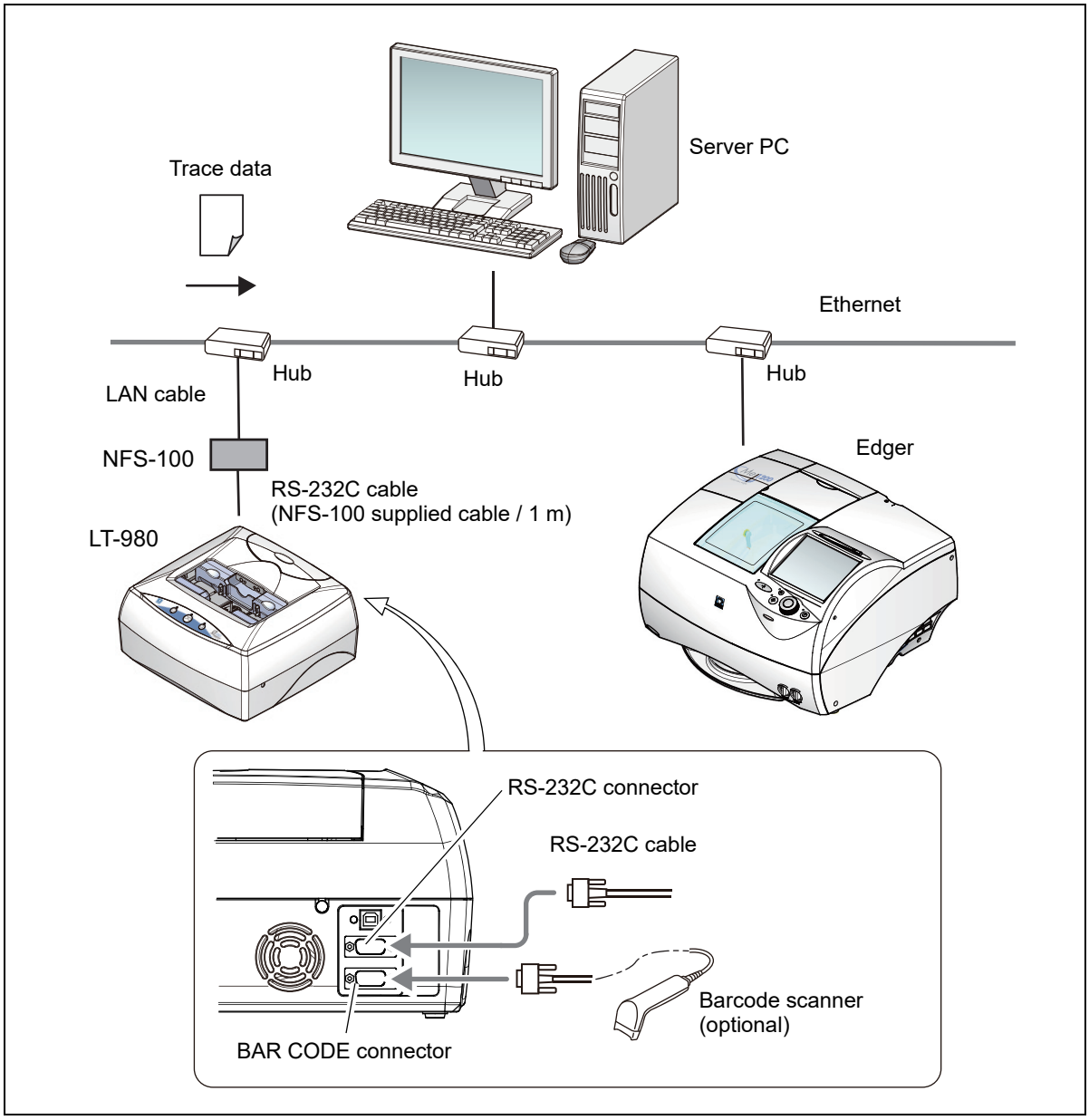
This is the configuration in which the server PC or Ice series serves as a data server.

The LT-980 traces frames or patterns, creates traces data, and then sends them to the server PC.

Connect the LT-980 to the NFS-100 using the RS-232C cable (NFS-100 supplied cable / 1 m).

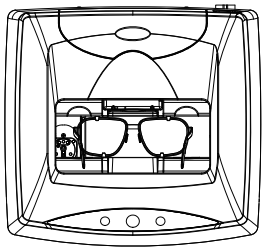
Connect the NFS-100 to the LAN through a hub using a LAN cable (commercially available 10BASE-TMA or 100BASE-TX cable).

If necessary, connect the optional barcode scanner.



3 OPERATING PROCEDURE

- This section describes the instrument start-up, tracing procedure, and daily checks.
- For connecting systems and transferring data, refer to the manual of the connecting device or server software.



3.1 Operation Flow

Power ON

Tracing *"3.3 Tracing" (page 37)*

"3.3.1 Frame tracing (both eyes, single eye)" (page 38)
"3.3.2 Semiauto tracing (both eyes, single eye)" (page 40)
"3.3.3 Goggle type frame tracing" (page 42)
"3.3.4 Pattern tracing" (page 44)
"3.3.5 Demo lens tracing" (page 45)
"3.3.6 Stopping tracing" (page 46)

Power OFF

3.2 Startup and Shutdown

3.2.1 Startup

1 Connect the power cord to the power inlet.

2 After confirming that the power switch is turned off (○), connect the power cord to a wall outlet.

3 Confirm that instruments connected to the LT-980 using the RS-232C cable or USB cable are turned on.

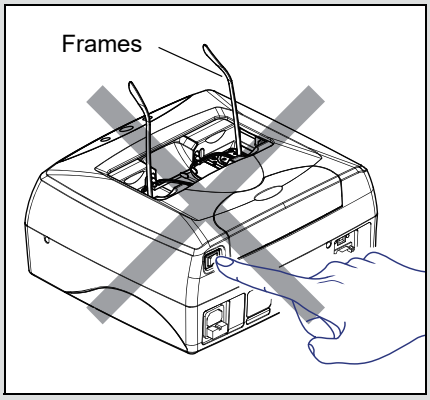
4 Perform check before use.

⚠ CAUTION

- Before turning on the power switch, be sure to check the instrument, power plug, wall outlet, and such.

  " Before use" (page 2)

  "3.5 Daily Checks" (page 48).
- Do not turn on the power with frames set in the tracer.
  The stylus may strike the frames during initialization resulting in deformation or breakage of the stylus.



5 Turn on (|) the power switch.

6 Calibrate the tracer.

"2.9 Tracer Calibration" (page 24).

*** The LT-980 is now ready for use.**

3.2.2 Shutdown

After confirming that the LT-980 is not in the process of tracing or communicating, turn off (○) the power.

⚠ CAUTION

- Never turn off the power switch during tracing. Failure of the tracer may result.

3.3 Tracing

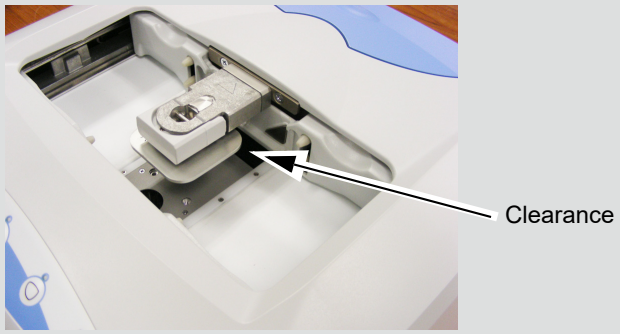
■ Tracing measures the shape*1 of spectacle frames (hereafter referred to as frames) three-dimensionally*2. In addition, patterns or demo lenses can be measured.

Tracing may be conducted using the following methods. Select the desired method.

Frame tracing (both eyes)	Traces both eyes of general frames.
Frame tracing (single eye)	Traces the left-eye or right-eye of general frames.
Semiauto tracing (both eyes)	Performed when the stylus does not automatically run in the frame groove because the groove is not in the middle of rim such as for plastic frames. Set the stylus in the frame groove one side at a time (right eye and left eye) by hand to trace both eyes.
Semiauto tracing (single eye)	Performed when the stylus does not automatically run in the frame groove because the groove is not in the middle of rim such as for plastic frames. Set the stylus in the frame groove one side (right eye or left eye) by hand to trace a single eye.
Goggle type frame tracing	Traces sharply warped frames or frames with a sharply protruding bridge center. Perform this tracing while holding one rim by hand.
Pattern tracing	Traces patterns of two-point, nylor frames, or such.
Demo lens tracing	Traces mounted lenses in the same manner as pattern tracing.

⚠ CAUTION

- A clearance may open between the stylus unit and the upper slider during tracing. Never insert fingers into the clearance because injury may occur. Be sure that no foreign objects fall into the clearance because malfunction may result.



*1. Indicates the outer shape of spectacle lenses or inner shape of spectacle frame rims.
*2. Frame groove is taken to be the length of a single straight line.

3.3.1 Frame tracing (both eyes, single eye)

This is the procedure to trace both eyes or single eye (right eye or left eye) using general frames.

Note

- As distortion may occur and correct measurement cannot be obtained from frames with low stiffness, perform demo lens tracing.

  "3.3.5 Demo lens tracing" (page 45).

- If there is a level difference in the inner circumference of frame rims, the tip of the stylus may be caught by the level difference resulting in frame movement. In such a case, hold the right and left temples by fingers so that frames will not move.

○ Both-eye tracing

This is the procedure to measure the frame shape of both eyes as well as the FPD (Frame Pupillary Distance).

- Be sure to insert frames between the rim clips of the upper and lower sliders.

  If frames are not properly inserted between the rim clips and tracing is performed, instrument malfunction may occur.

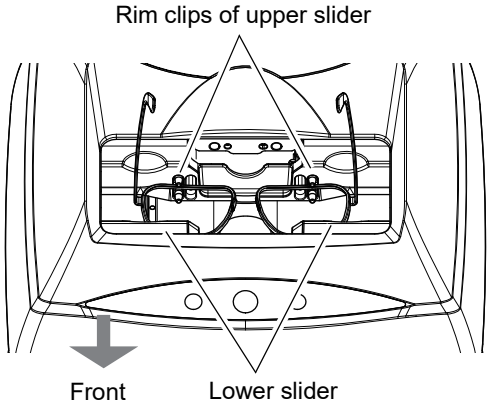
- If frames with a sharply protruding bridge center are traced, the bridge may be damaged and traced results may become inaccurate. For such a case, perform goggle type frame tracing.

  "3.3.3 Goggle type frame tracing" (page 42).

1 Set the top of the frames.

Gently move the lower slider forward to open the upper and lower sliders.

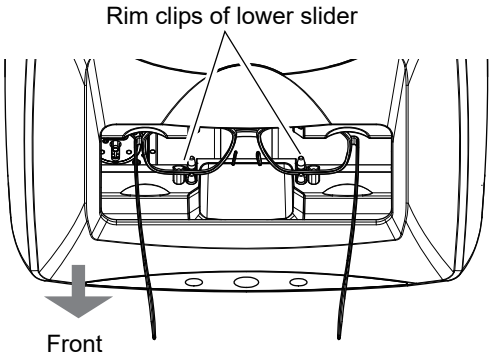
With the frames oriented as shown in the figure to the right, insert the top of the frames between the rim clips of the upper slider.



2 Set the bottom of the frames.

Gently open the lower slider and insert the bottom of the frames between the rim clips of the lower slider.

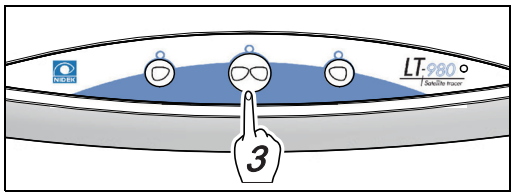
Move the frames left or right to bring them to the approximate center of the upper slider.



3 Start both-eye tracing.

Press . Tracing starts.

When the frames are released, tracing is complete.



4 Gently open the lower slider and remove the frames.

Note

- If is pressed while frames are being retraced after the stylus came off, two beeps may sound and tracing cancellation may not occur. In such a case, wait a moment and press again.

○ Single-eye tracing

This is the procedure to measure the frame shape of the right eye or left eye.

The FPD (Frame Pupillary Distance) cannot be measured during single-eye tracing. Enter the FPD or DBL value manually from a PC or blocker.

1 Set frames.

See Steps 1 and 2 in *"○ Both-eye tracing" (page 38)*.

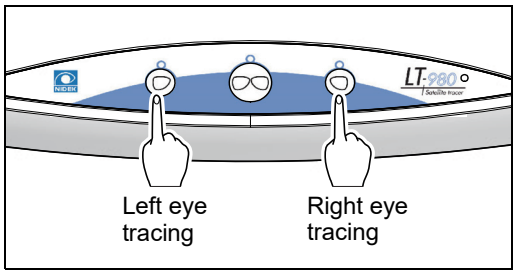
2 Press or .

For left eye tracing →

For right eye tracing →

Tracing starts.

When the frames are released after a short time, tracing is complete.



3 Gently open the lower slider and remove the frames.

3.3.2 Semiauto tracing (both eyes, single eye)

This is the procedure to insert the stylus into the groove by hand when the stylus does not automatically run in the frame groove because the groove is not in the middle of rim such as for plastic frames.

Trace both eyes, right eye, or left eye of frames.

○ Semiauto tracing (both eyes)

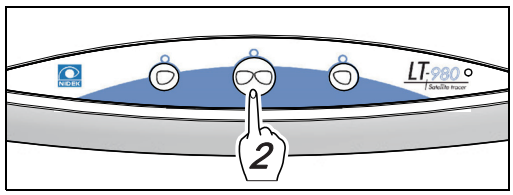
Measures the frame shape of both eyes as well as the FPD.

1 Set frames.

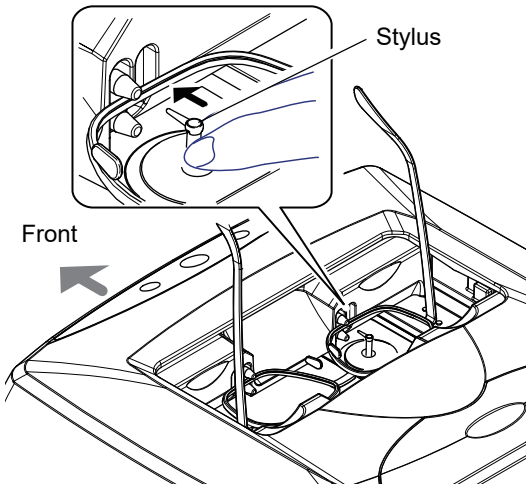
See Steps 1 and 2 in *"○ Both-eye tracing" (page 38)*.

2 Press and hold  for 3 seconds.

The stylus moves and pauses in the tracing start position.



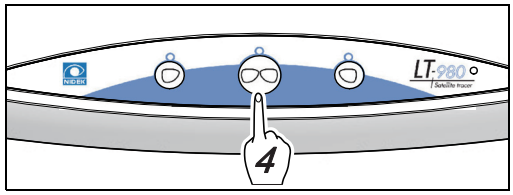
3 Insert the stylus into the groove of the frame bottom.



4 Start tracing.

Press  .

When tracing of one rim ends, the stylus moves to the other rim and pauses in the tracing start position.



5 Trace the other rim in the same manner as Steps 3 and 4.

When the frames are released after a short time, tracing is complete.

6 Gently open the lower slider and remove the frames.

○ Semiauto tracing (single eye)

Measures the frame shape of the right eye or left eye.

The FPD (Frame Pupillary Distance) cannot be measured during semiauto tracing (single eye). Enter the FPD or DBL value manually from a PC or blocker.

1 Set frames.

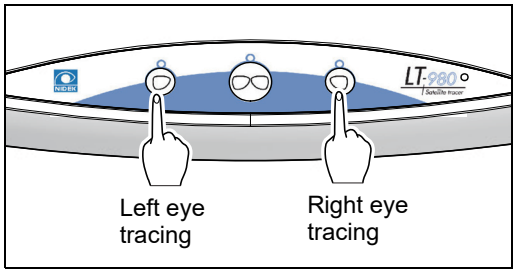
See Steps 1 and 2 in *"○ Both-eye tracing" (page 38)*.

2 Press and hold or for 3 seconds.

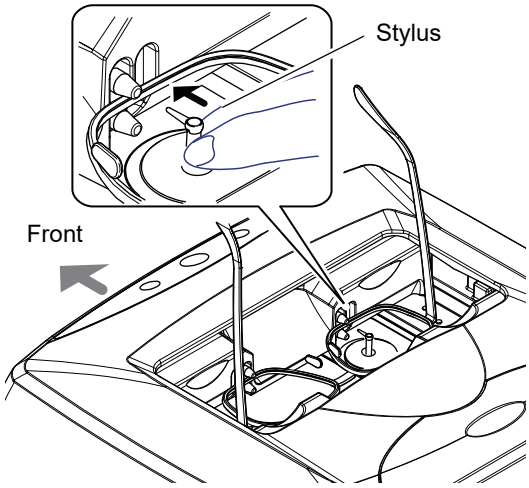
For left eye tracing →

For right eye tracing →

The stylus moves and pauses in the tracing start position.



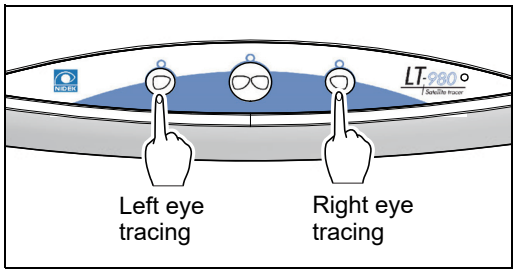
3 Insert the stylus into the groove of the frame bottom.



4 Start tracing.

Press or depending on the side to be traced. Tracing starts.

When the frames are released after a short time, tracing is complete.



5 Gently open the lower slider and remove the frames.

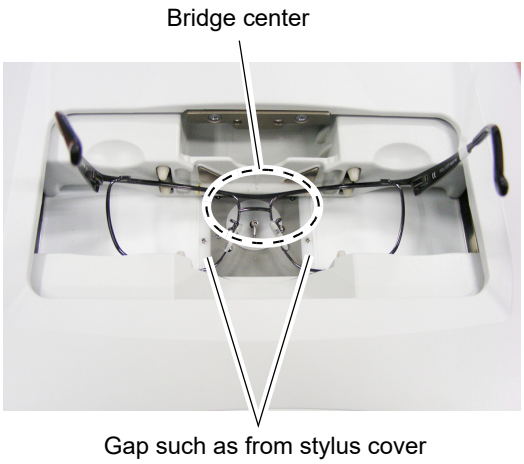
3.3.3 Goggle type frame tracing

When frames are sharply warped, the stylus may come off the groove during tracing. In such a case, fasten only one rim between the rim clips and perform goggle type frame tracing.

The FPD (Frame Pupillary Distance) cannot be measured during goggle type frame tracing. Enter the FPD or DBL value manually from a PC or blocker.

When frames with a bridge center that excessively protrudes forward are attempted to be set, the bridge may contact the gap such as stylus cover. In such cases, perform goggle type frame tracing.

This tracing can be performed for both left and right rims. The procedure for tracing the right rim is described here.



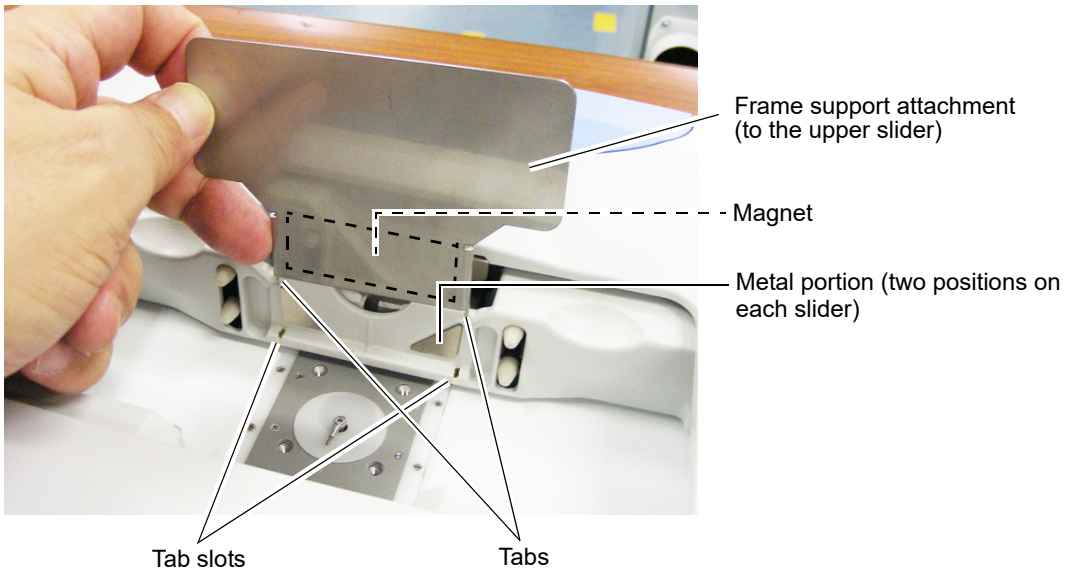
1 Set the frame support attachments.

1) Gently move the lower slider to the front to open the upper and lower sliders.

2) As shown in the picture below, to prevent hand movement, attach the frame support attachment to each of the upper and lower sliders by inserting the tabs into the tab slots. Press the magnet of the attachment against the metal portions of the slider to secure the attachment.

- Confirm that the magnets of the frame support attachments are attached to the metal portions of the upper and lower sliders securely.

  If tracing is performed with the frame support attachments tilted because the magnets are not attached to the metal portions, measurement cannot be performed accurately.



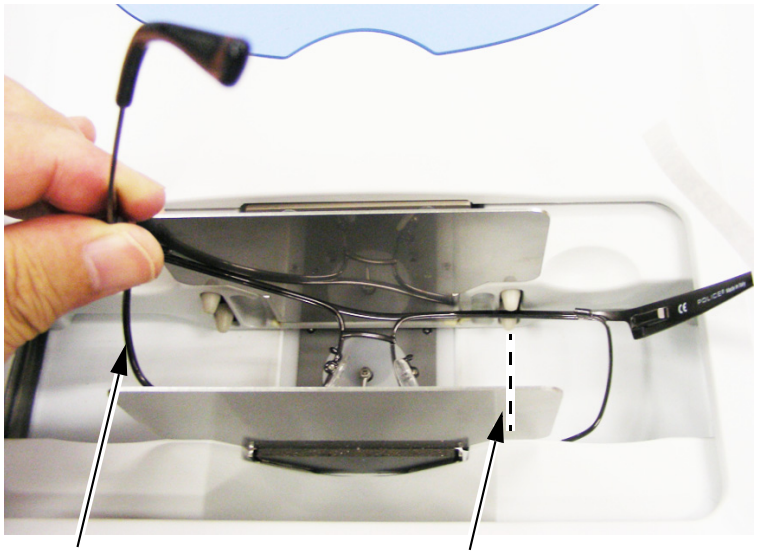
2 Set frames.

As shown in the picture below, do not fasten the left rim between the rim clips but hold the left temple.

Fasten the right rim between the rim clips, maintain the right rim level, and then align the middle of the right rim to the dotted line position.

Support the frames with the frame support attachments to prevent hand movement.

- Be sure to insert frames between the rim clips of the upper and lower sliders.
  If frames are not properly inserted between the rim clips and tracing is performed, instrument malfunction may occur.



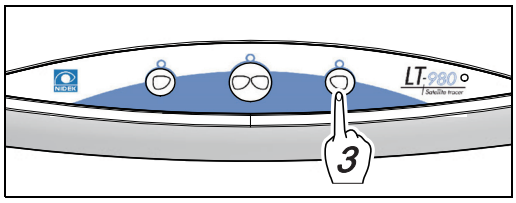
[Side not to be traced]
Hold the rim by hand.
Do not fasten the rim between the rim clips.

[Side to be traced]
(1)Insert the rim between the rim clips.
(2)Make the rim level
(3)Align the middle of the right rim to the dotted line position.

3 Start tracing.

Press  .

Tracing starts.



- The rim clips are closed to fasten the right rim. Do not release the left rim until tracing ends. If the frames shift, correct measurement cannot be performed.

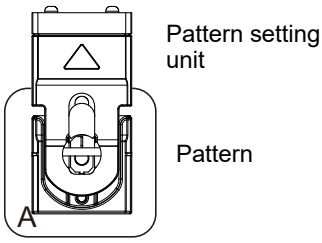
When the frames are released after a short time, tracing is complete.

4 Gently open the lower slider and remove the frames and two frame support attachments.

3.3.4 Pattern tracing

Measures the pattern shape such as for two-point frames.

The FPD (Frame Pupillary Distance) cannot be measured during pattern tracing. Enter the FPD or DBL value manually from a PC or blocker.



Note

- The FPD (Frame Pupillary Distance) cannot be measured during pattern tracing.

1 Attach the pattern to the pattern setting unit.

"O Attaching a pattern" (page 18).

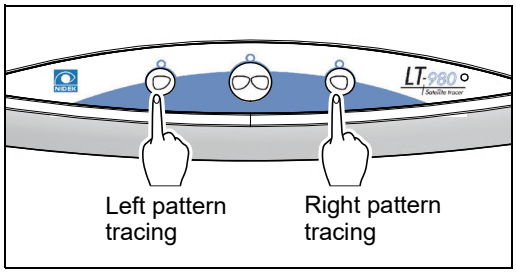
2 Set the pattern setting unit.

"2.6.3 Setting the pattern setting unit to the tracer" (page 21).

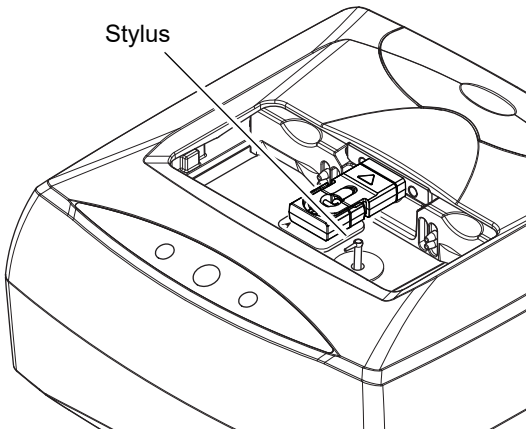
3 Press or depending on the side to be traced.

For left pattern tracing →

For right pattern tracing →



The stylus moves up and pattern tracing starts.



4 After pattern tracing ends, remove the pattern setting unit.

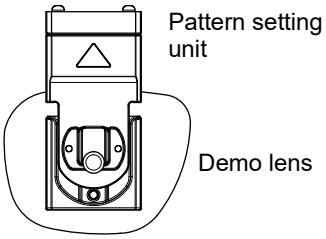
When pattern tracing is complete, the stylus is automatically stored.

3.3.5 Demo lens tracing

Traces a processed lens that was mounted in frames as a demo lens in the same manner as pattern tracing.

Distortion may occur and correct measurement cannot be obtained from frames with low stiffness. In such a case, perform demo lens tracing.

The FPD (Frame Pupillary Distance) cannot be measured during demo lens tracing. Enter the FPD or DBL value manually from a PC or blocker.



1 Attach the demo lens to the pattern setting unit.

"O Attaching a demo lens" (page 19).

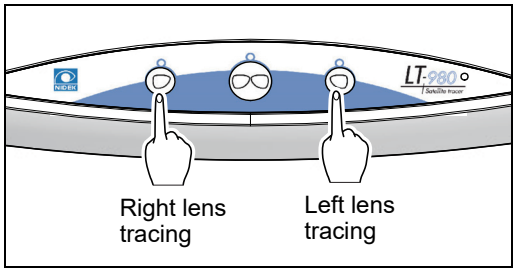
2 Set the pattern setting unit.

"2.6.3 Setting the pattern setting unit to the tracer" (page 21).

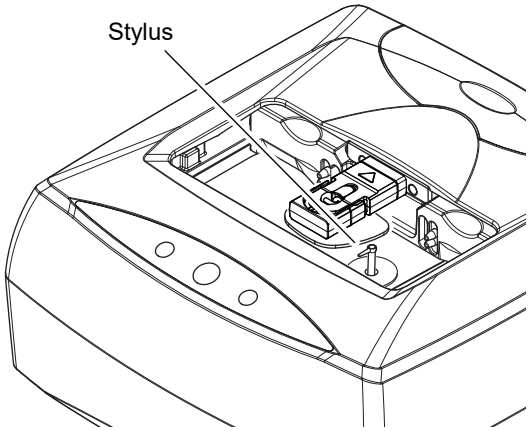
3 Press or depending on the side to be traced.

For right lens tracing →

For left lens tracing →



The stylus moves up and demo lens tracing starts.



4 After demo lens tracing ends, remove the pattern setting unit.

When demo lens tracing is complete, the stylus is automatically stored.

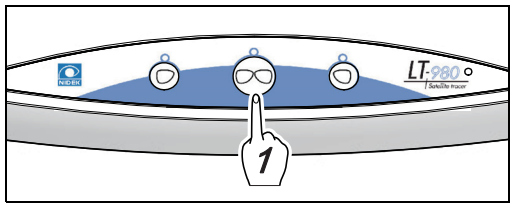
3.3.6 Stopping tracing

Follow the procedure below to interrupt tracing.

○ Stopping frame tracing

1 Press .

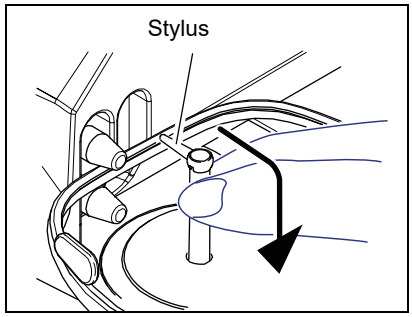
The stylus moves to the original position and the frames are released.



2 Remove the frames.

Note

- If is pressed while frames are being retraced after the stylus came off, two beeps may sound and tracing cancellation may not occur. In such a case, wait a moment and press again.
- If the stylus is caught in the frames and does not move, turn off the power switch, gently release the stylus, and push it down slowly. Then turn the power switch back on.

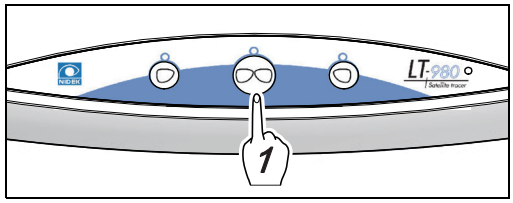


○ Stopping pattern or demo lens tracing

1 Press .

The stylus is stored.

2 Remove the pattern setting unit.



3.4 After Use

1 Perform check after use.

"3.5 Daily Checks" (page 48).

2 Put the provided dust cover on the instrument.

Note

- When the instrument is not in use, turn off the power switch and put the dust cover on.
  If dust settles, it may affect the measurement accuracy.

⚠ CAUTION

- If the instrument is not to be used for a long time, disconnect the power cord from the wall outlet.
  If dust settles between the plugs, the dust will collect moisture, and short circuit or fire may occur.

3.5 Daily Checks

- Check the items in the following checklist before using the instrument. Also, perform the checks after use. If any abnormalities are found, it is the user's responsibility to correct them.
- It is recommended that the following checklists be copied and used accordingly.

○ Checklist before use

Date / Item							
Deformation of instrument							
Stains on instrument							
Deformation of stylus							
Foreign matter on stylus							
Stains on stylus							

○ Checklist after use

Date / Item							
Power switch off							
Loss of pattern setting unit							
Stains or damage to pattern setting unit							
Loss of standard frame							
Stains or damage to standard frame							
Loss of standard pattern							
Stains or damage to standard pattern							

4 MAINTENANCE

4.1 Troubleshooting

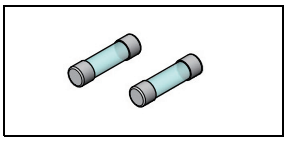
■ In the event that the instrument does not work properly, attempt to correct the problem referring to the following table before contacting NIDEK or your authorized distributor.

Symptom	Remedy
The instrument does not work at all.	• Confirm that the power cord is properly connected. • Confirm that voltage applied to the wall outlet is within the range specified. • Check the fuses. If any fuses are blown, replace all fuses with new ones. For replacing fuses, see *"4.2 Replacing Fuses" (page 50)*.
An error occurs in the circumference.	• Perform calibration. For calibration, see *"2.9 Tracer Calibration" (page 24)*.
Communication cannot be performed.	• Confirm that the RS-232C cable or USB cable is properly connected.

* If the symptom cannot be corrected with the above remedy, contact NIDEK or your authorized distributor.

4.2 Replacing Fuses

■ If the instrument is not started even though the power switch is turned on (|), the fuses may be blown. Replace the fuses with new ones.



⚠ CAUTION

- Before replacing fuses, be sure to turn off the power switch and disconnect the power cord from the wall outlet.
  If fuses are replaced with the power switch turned on, electric shock may occur.
- Use the specified fuses only. (T 1 A 250 V)
  Use of any fuses other than those specified may result in fire.
- Replace all fuses at the same time.
  Even if only one fuse is blown, the other may blow soon.

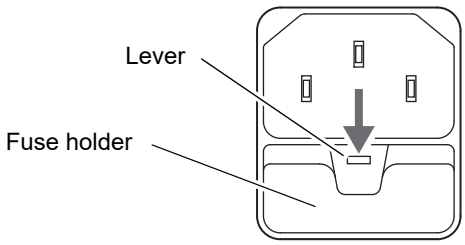
1 Turn off (○) the power switch.

2 Disconnect the power cord from the wall outlet.

3 Disconnect the power cord from the power inlet.

4 Remove the fuse holder under the power inlet.

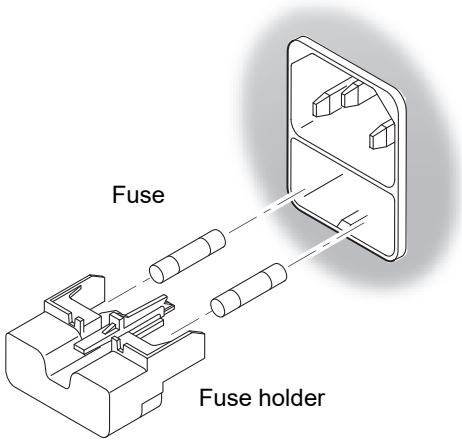
While pushing the lever in the direction shown in the figure to the right, pull out the fuse holder.



5 Remove the two fuses and replace them with new ones.

Fuse rating	T 1 A 250 V

6 Put the fuse holder into its original position.



4.3 Cleaning

■ When the cover or panel of the tracer becomes dirty, clean it with a soft cloth. For stubborn stains, soak the cloth in a neutral detergent, wring well, and then wipe. Finally dry with a soft, dry cloth.

- Never use an organic solvent such as paint thinner.
  It may ruin the surface of the tracer.
- Never use a sponge or cloth soaked in water.
  Water may leak into the inside of the tracer resulting in instrument failure.

4.4 List of Consumables

Part name	Part number	Remarks
Fuse	8040202039	T 1 A 250 V 5×20 mm
Slide cover	40601-M158	Contact NIDEK or your authorized distributor if any damage or deterioration is found.

*** After replacing consumables, restock them.**

5 SPECIFICATIONS AND ACCESSORIES

5.1 Specifications

Tracing unit		
• Tracing method	Automatic 3D binocular tracing	
• Frame tracing	Measurement range	• Shape width: 36 to 85 mm, shape height 18.4 to 66 mm, frame horizontal width: 113 to 180 mm • Maximum height from clamp midpoint: 23 mm • At the maximum height, maximum frame vertical width: 50 mm, maximum frame horizontal width: 150 mm
• Pattern tracing	Measurement range	22 to 74 mm in diameter 15.5 to 66 mm (vertical width)
• FPD measurement function	Available	
• Frame clamping	Automatic one-touch clamping	
• Setting of stylus	Switchable between automatic and semiautomatic	
• Measuring points	1000 points	
• Measurement accuracy	Frame tracing	Circumference: ±0.05 mm (in standard frame measurement) Axis angle: ±0.5 degrees (in standard frame measurement)
	Pattern tracing	Circumference: ±0.10 mm (in standard pattern measurement) Axis angle: ±1.0 degrees (in standard pattern measurement) * Trace results after automatic calibration
• Measurement time	Frame tracing	30 seconds or less (automatic binocular tracing using calibration jig)
	Pattern tracing	20 seconds or less (tracing using calibration jig)
• Measurement item	Lens shape	
	FPD	(Frame Pupillary Distance)
	3-D circumference	(2-D circumference during pattern tracing or demo lens tracing)
	Frame warping angle	(reference value)
	Frame curve	(reference value)

Other functions		
• External communication	RC-232C compatible	Two ports built-in
	PORT1	For connection with a PC or edger
	PORT2	For connection with the barcode scanner
	USB	Port built-in Operating systems (English version) • Windows 10 32-bit / 64-bit • Windows 11

Dimensions, mass, and power suppiy	
• Dimensions	315 (W) ×300 (D) ×155 (H) mm * Accessories and protrusion excluded
• Mass	7 kg or less (tracer only)
• Power source	100 to 240 V AC
• Frequency	50/60 Hz
• Power consumption	70 VA max.

Environmental conditions during use	
• Temperature	5 to 40°C (41 to 104°F)
• Humidity	30 to 80% in the range of 5 to 31°C 31 to 40°C (The minimum acceptable relative humidity is 30%. The maximum acceptable relative humidity is 80% for temperatures up to 31°C (87.8°F) which decreases linearly to 50% at 40°C (104°F).)
• Altitude	2,000 m or less
• Installation location	Interior (with low dust and free from smoke, vibration, and impact)
• Overvoltage	Category II (IEC60664-1)
• Pollution degree	2 (IEC60664-1)

Environmental conditions during transport and storage (packed condition)	
• Temperature	–20 to 70°C (–13 to 158°F)
• Humidity	10 to 85% (non-condensing)

Accessories	
• Standard accessories	Fuse (2 units), Hexagonal wrench, Stylus cover, Standard pattern, Pattern setting unit, Standard frame, Frame support attachment (2 units), USB driver CD for Windows, RS-232C cable, USB cable, Power cord, Dust cover, Operator’s manual
• Optional accessories	Barcode scanner (41266-E010), RS-232C cable (5 m, 10 m), USB cable (5 m)

6 INDEX