NIDEK

PATTERNLESS LENS EDGER

(With Polishing Ability)

MODEL LE-7070PLB

OPERATOR'S MANUAL

(DIGEST)

NIDEK CO., LTD.
Feb. 2, 1995

The following mainly describes the differences in handling between LE-7070 (Standard type) and LE-7070PLB (Polishing type).

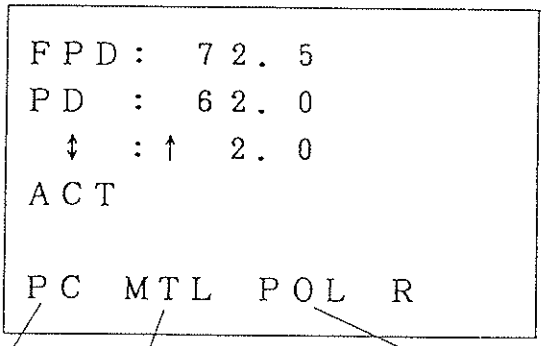
1. Outline

The NIDEK PATTERNLESS LENS EDGER Model LE-7070PLB is a model endowed with polishing ability. This ability allows automatic polishing in the edger without manual polishing work, and the edger performs polishing for flat/rimless or beveled edge. The materials of polishable lenses are plastic, polycarbonate, and acrylic (glass lens cannot be ground). The lenses are polished with a the Polishing wheel after finishing. Polishing requires about 1 minute and 20 seconds for one lens, regardless of its material or power.

Through addition of polishing ability, some parameters are added and functions of keys are changed. See the following descriptions.

2. Layout Display

LE-7070PLB LAYOUT DISPLAY



PC	MTL···Bevel grinding	NON···Non-polishing
ACR	CEL/ZYL···Bevel grinding	POL···Polishing
PLA	FLT/RIM···Flat/Rimless grinding	
~~GLS~~		

[LENS] key [FRAME] key [MODE] key

<Contents of Changes >

(1) Functions of Keys

[MODE] key

Standard type : For selecting grinding mode (AUT, GUI, EX, FLT/RIM)

Polishing type : For selecting ON/OFF of polishing

* To change to the Guided grinding mode, see "[SELECT] key".

[FRAME] key

Standard type : For selecting frame material. (MTL, CEL/ZYL)

Polishing type : For selecting grinding mode. (MTL, CEL/ZYL, FLT/RIM)

* Selecting MTL or CEL/ZYL allows the instrument to go into the Auto (Bevel) grinding mode.

[SELECT] key

The function is the same as the standard type.

To change to the Guided grinding mode during the Auto grinding mode, start the Auto grinding, then press [SELECT] key while Simulation display is shown.

(2) Exclusion of Glass lens grinding mode (GLS)

The instrument is not equipped with a roughing wheel for glass lenses. For polishing, the shapes of a finishing wheel and polishing wheel should be the same precisely, because imbalance of the wheels will cause unsufficient polishing or over-polishing. If glass lens is ground, the finishing wheel is worn out. Then if a lens is ground with the worn-out finishing wheel, the lens edge will be shaped inappropriately, which will result in partial polishing. Therefore, do not grind glass lenses.

(3) Linkage of the the setting of the frame material with the grinding mode

By selecting Metal (MTL) frame or Celluloid (CEL)/Polyamid plastic (ZYL), the instrument goes into the Auto grinding mode. On the other hand, by selecting Rimeless (RIM), the instrument goes into the Flat/Rimless grinding mode.

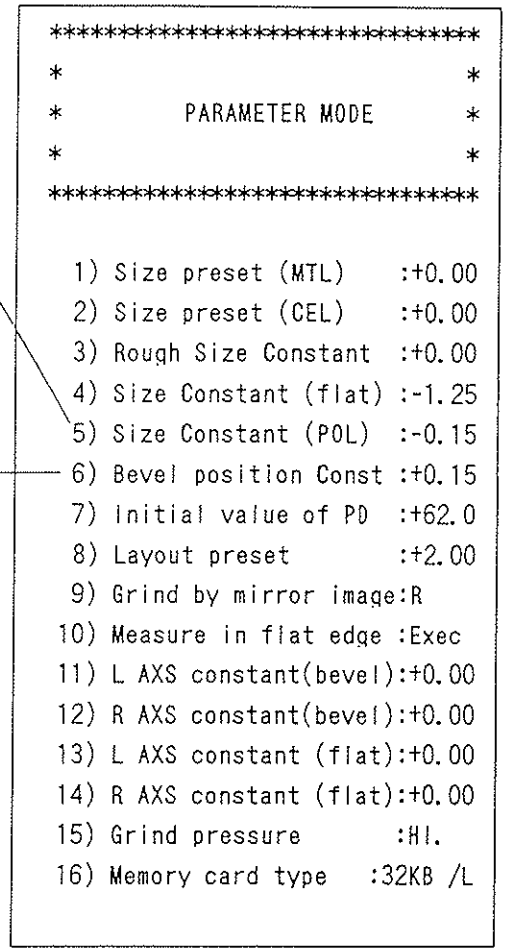
To change to the Guided grinding mode during Auto grinding mode, start Auto grinding, then press [SELECT] key while Simulation display is shown.

(4) ON/OFF of Polishing

To choose to make a polishing or not, press [MODE] key. "POL" on the display panel shows polishing, and "NON" shows non-polishing.

3. Parameter Setting Display

Through addition of the polishing ability, some parameters are changed. The changes are mainly for exclusion of glass lens grinding ability and for addition of polishing ability.



Polishing allowance for final dimension of lens

When the lens has some edge which has not been polished because of insufficient touching between lens and wheel, reduce the parameter. The lower limit is -0.30.

Constant for adjusting the distance between V grooves of Finishing wheel and Polishing wheel

This parameter is set to adjust the moving distance of the carriage when polishing starts after finishing. When the front bevel is not polished, decrease the parameter. When the back bevel is not polished, increase it. The parameter setting range is from -0.3 to 0.3.

⚠ BEFORE USE, READ THIS MANUAL.

⚠ THIS MANUAL DOES NOT CONTAIN TECHNICAL INFORMATION.

This Operator's Manual contains information necessary for the operation of the NIDEK PATTERNLESS EDGER Model LE-7070PL.
This manual provides general information for the product, cautions, specification, accessories, operating procedures, and maintenance. For correct use, it is necessary that this manual, in particular the operating procedures, be thoroughly understood before using this machine. If you find any problem or question about the machine during the operation, please contact your authorized distributor.

TABLE OF CONTENTS

§ 1 INTRODUCTION

1.1 Outline of the Product

This machine is a fully-automatic lens edger which has devices; to read the lens outline of eyeglasses directly from the frame (Frame tracer), and to grind lens edges into the shape of frames. As the lens materials, plastic, polycarbonate, acrylic resin, and glass*1 are available.

This edger has a grinding unit on the left, a display and a control unit on the right, and a tracing unit on the top of the body, if seen from the front. The tracing unit measures the frame shape, the control panel controls the lens layout, and the grinding unit grinds the lens into a specified shape.

Besides conventional roughing/fine grinding wheels, the grinding unit has a wheel for polishing flat edged lenses. With this wheel, the polishing process after grinding can be reduced to just a brief buffing.

※For some words on the display, two types of expressions are used depending on the shipping destination. As to such words as shown below, this manual carries both.

Grinding mode : FLT(Flat)/RIM(Rimless)

Frame material : CEL(Celluloid)/ZYL

---

*1 This edger is not suitable for grinding many glass lenses because the wheels are not constructed for such purposes.

§ 2 CAUTIONS ON HANDLING

●In case of malfunction, never touch the internal structure, but pull out the power cable from the wall outlet and contact your authorized distributor.

●Do not disassemble or modify the machine, otherwise you may get an electric shock or the machine may malfunction. NIDEK will not be responsible for an accident or a possible breakdown caused from such treatment.

●Be sure to keep the soundproof cover closed while grinding lenses. The water for grinding may splash into one's eye.

- Grinding many glass lenses hastens the wearing of the fine grinding wheel because the glass lens is processed only with one wheel.

- When grinding glass lenses, dress the fine grinding wheel after every third or fourth grinding. If the wheel is not dressed constantly, it becomes loaded and grinding will take longer.

- Be sure to specify the correct lens material when setting the grinding conditions. Wrong setting causes lens breakage or wheel wearing.

- Do not use this machine for other than intended use. NIDEK will not be responsible for an accident or a possible breakdown caused by such use.

- Be sure to use the specified electricity, or the machine will not work regularly and be damaged.

- If water gets into the internal structure, it may cause trouble. Be careful not to let the water in through the outer covers when cleaning the grinding unit.

- Handle the stylus with care. It is easy to bend or break.

- To avoid losing the measuring pin, be sure to set it back into the pattern setting unit after every use.

- Use the machine in a horizontal and stable place without vibrations or shocks, or it may work irregularly.

- Do not use the machine in a dusty place, a place exposed to direct sunlight, or in a hot and humid environment.

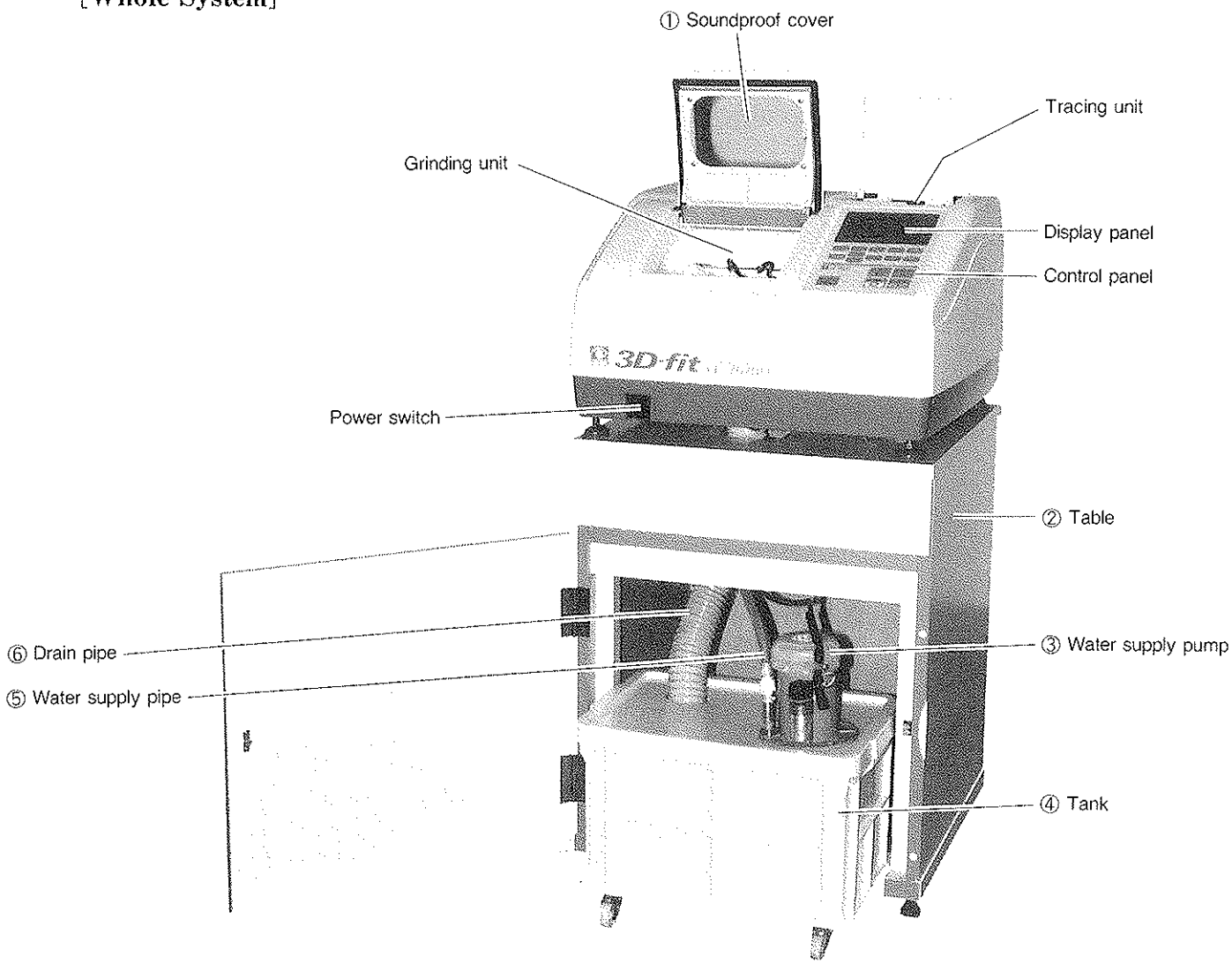
- Be sure to connect all cables and pipes correctly.

- Be sure to supply the power through the exclusive outlet and establish a ground.

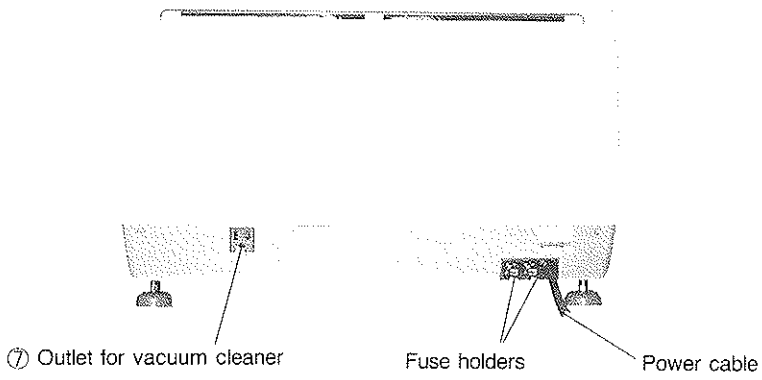
- When the machine will not be used for a long time, disconnect the power cable from the wall outlet after use.

§ 3 CONFIGURATION

[Whole System]



[Rear Side of the Main Body]



① **Soundproof cover**
This prevents water and grinding waste from splashing and decreases grinding noises.

② **Table**
This is a special table for the machine, in which pump and tank can be stored. Drain pipe and water supply pipe are connected to the main body through a hole on the table.

③ **Water supply pump**
This supplies grinding water from the tank to the grinding unit.

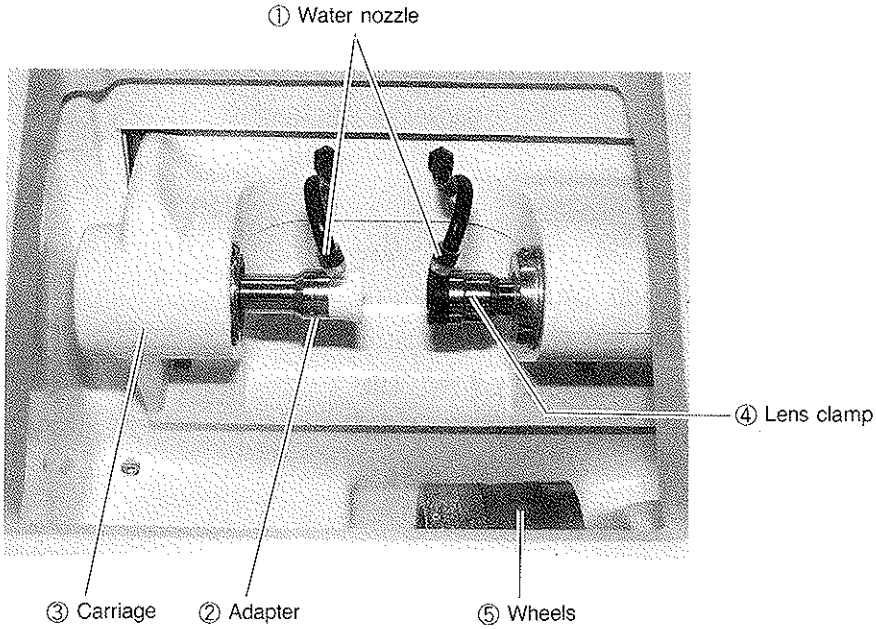
④ **Tank**
Waste water is pooled in this tank.

⑤ **Water supply pipe**
Water for grinding is supplied to the grinding unit through this pipe.

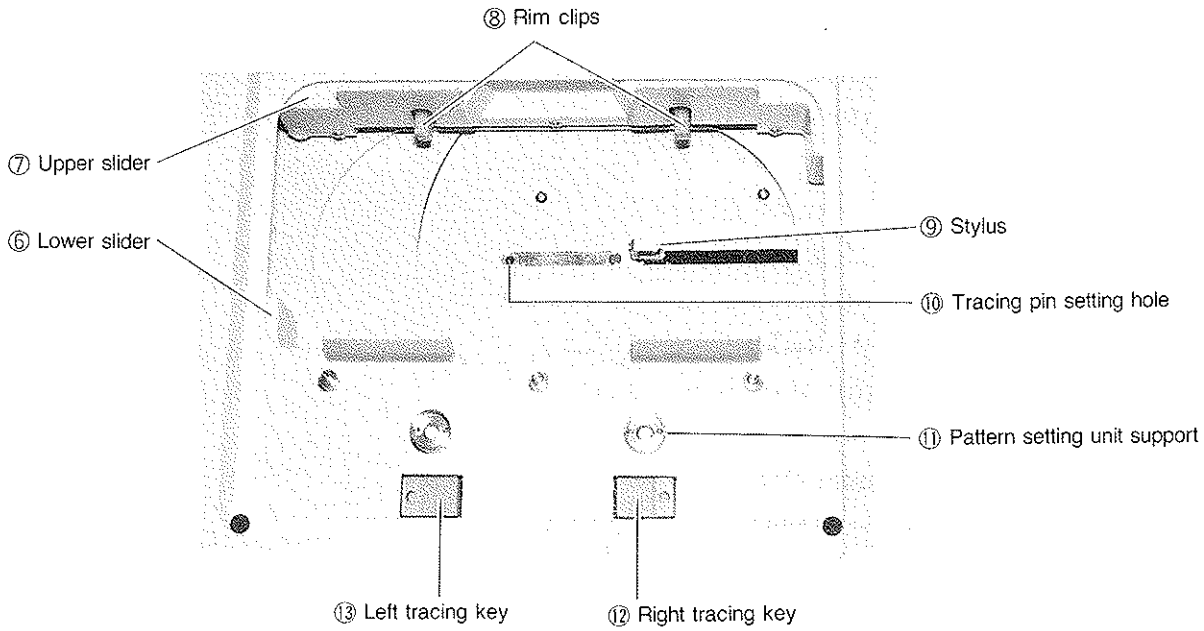
⑥ **Drain pipe**
Waste water drains into the tank through this pipe.
Put a specified stocking (as a filter) to the end of this pipe before use.

⑦ **Outlet for vacuum cleaner**
This is a power outlet for a vacuum cleaner, which is used for gathering the grinding waste of polycarbonate lenses. The power supply for the cleaner will be synchronized to the power switch of the main body.

[Grinding Unit]



[Tracer]



① **Water nozzle**
This pours water on the lens while it is being ground.

② **Adapter**
Lens with a suction cup is set in this part.

③ **Carriage**
This moves the lens to the grinding position in accordance with the traced data.

④ **Lens clamp**
This pushes the lens set in the adapter from the opposite side to fix it.

⑤ **Wheels**
There are three types of grinding wheels; an electroplated roughing wheel, a fine grinding wheel, and a polishing wheel.
The electroplated roughing wheel is used for rough grindings.
The fine grinding wheel has two parts which are for "V" bevelling and for Flat (Rimless) edging.

⑥ **Lower slider**

⑦ **Upper slider**
The frame is set between these sliders.

⑧ **Rim clips**
This holds the rim of frame.
Upper and lower sliders have two rim clips each.

⑨ **Stylus**
This measures the frame shape by tracing the grooves of rims.

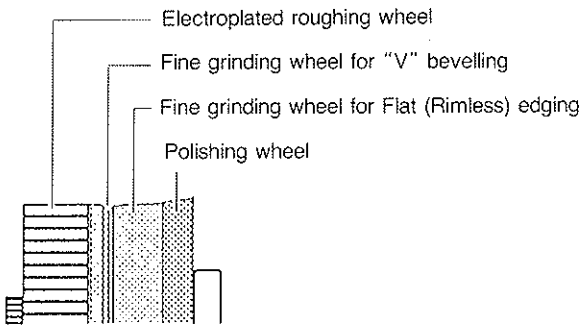
⑩ **Tracing pin setting hole**
Tracing pin is set in this hole for tracing pattern or dummy lens.

⑪ **Pattern setting unit support**
The pattern setting unit is set on this support.

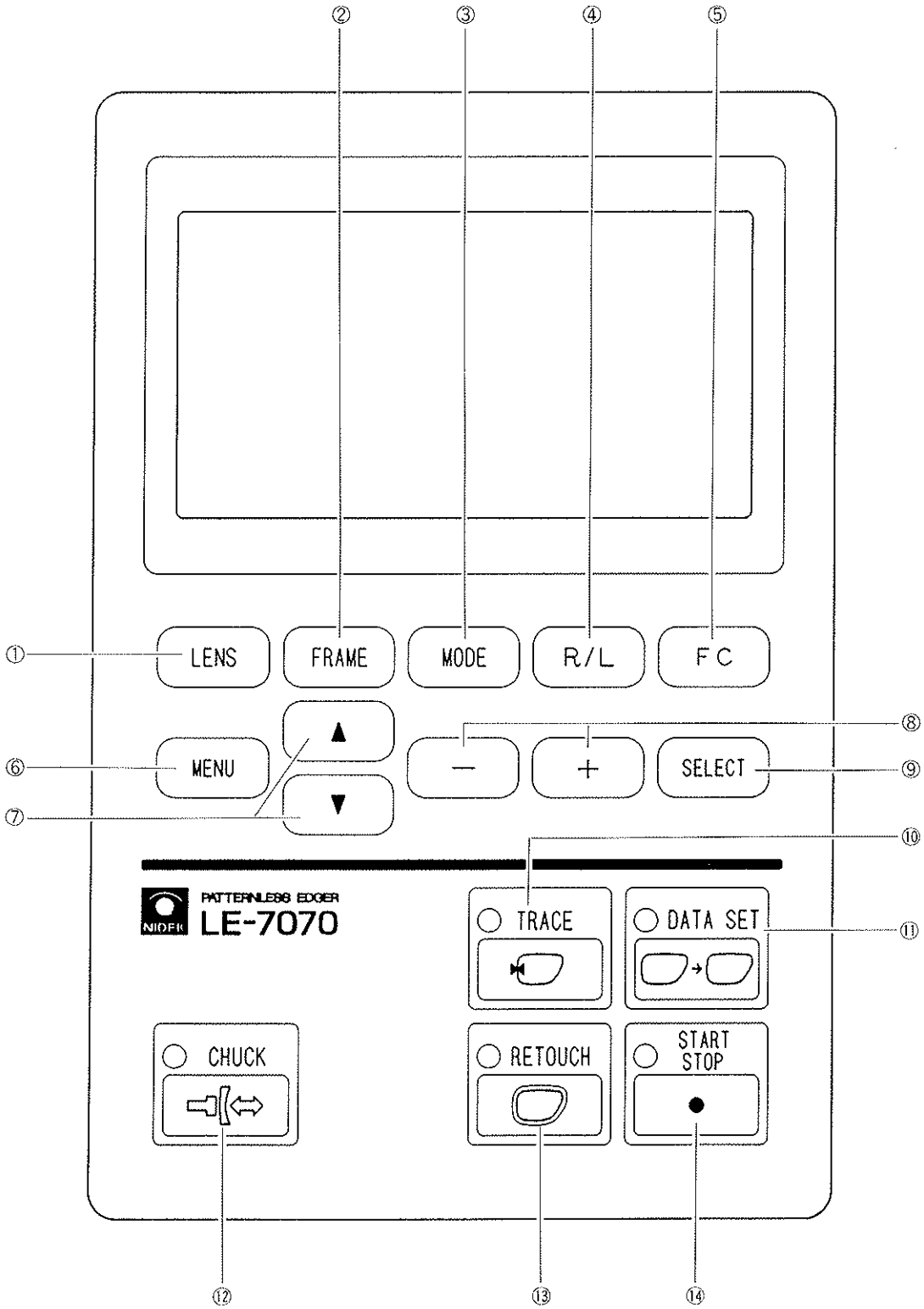
⑫ **Right tracing key**
This starts tracing the right rim.

⑬ **Left tracing key**
This starts tracing the left rim.

[Construction of the Wheels]



[Control Panel]



① [LENS]

This is for specifying lens materials; GLS (glass), PLA (plastic), PC (polycarbonate), or ACR (acrylic resin).

② [FRAME]

・For bevel grindings:
This is for specifying frame materials; MTL (metal), or CEL (celluloid)/ZYL*.
*Display (CEL or ZYL) depends on the shipping destination.

・For flat (rimless) edging or flat edge polishing:
This is for selecting FLT (flat)/RIM.
*Display (FLT or RIM) depends on the shipping destination.

③ [MODE]

・For bevel grindings:
This is for selecting grinding modes; blank (auto), GUI (guided), or EX.

・For flat edge polishing:
This is for selecting grinding modes; blank (flat/rimless edging) or POL (flat edge polighing).

④ [R/L]

This is for specifying the side of grinding lens, right (R) or left (L).

⑤ [FC]

This is for turning ON/OFF the frame changing mode.

⑥ [MENU]

This is for changing the display to Layout display, Menu display, or Parameter exchange mode display.
*This key does not work while grinding.

⑦ [▲] , [▼]

These are for moving the cursor.

⑧ [+] , [−]

These are used for entering the prescribed value, etc.

⑨ [SELECT]

This is for changing the inputting form of layout data, etc.

⑩ [TRACE]

This starts/stops tracing.

⑪ [DATA SET]

This sets the traced data and shows it on the display panel.

⑫ [CHUCK]

This fixes/releases the lens set in the adapter.

⑬ [RETOUCH]

This is used to start retouching.

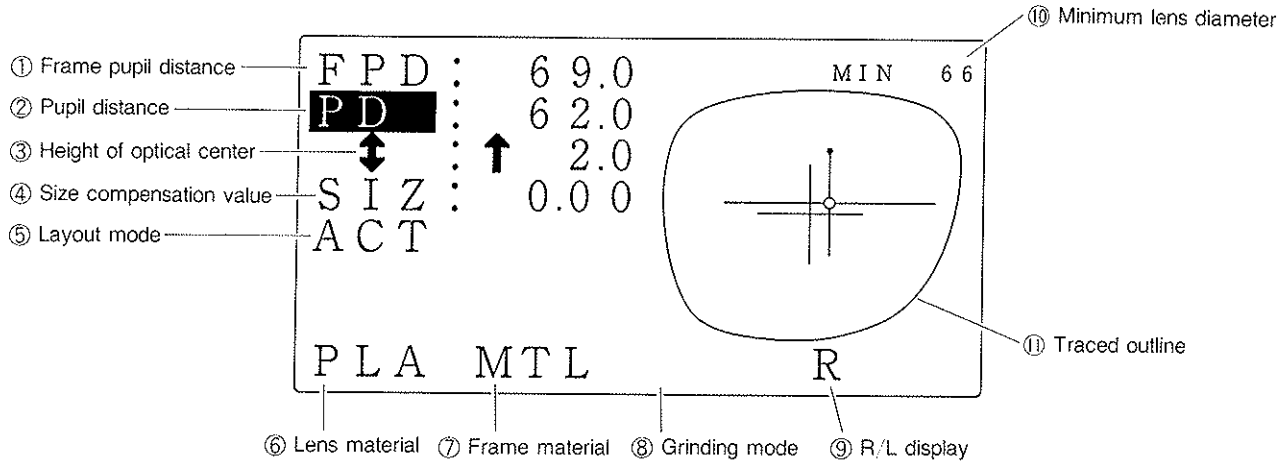
⑭ [START·STOP]

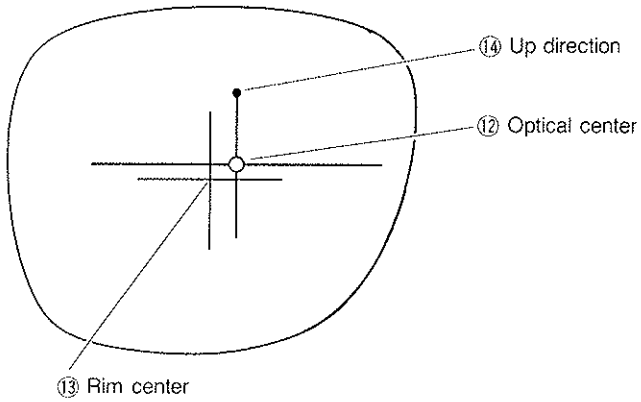
This starts/stops grinding.

[Display Panel]

· LAYOUT DISPLAY

lens layouts and prescription data input, etc. are performed on this display.



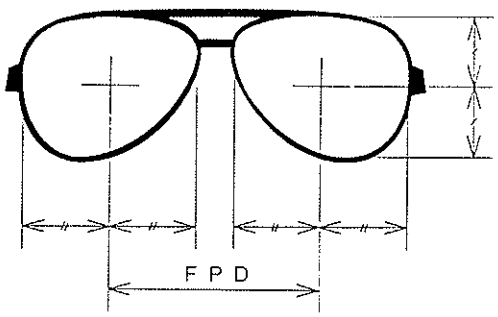


① **Frame pupil distance (FPD)**

This represents the distance between right and left rim centers.

[40.0 – 99.5mm (step: 0.5mm)]

The rim centers are calculated by boxing system.



② **Pupil distance (PD)**

This represents the prescribed pupil distance which is to be manually entered.

[40.0 – 99.5mm (step: 0.5mm)]

It is also available to input Monocular PD (1/2PD).

③ **Height of optical center (↕)**

This represents the height of optical center from the level of rim center (boxing center).

[↓15.0 – ↑15.0mm (Step: 0.1mm)]

④ **Size compensation value (SIZ)**
This represents the compensation value for the desired finishing size in diameter, referred to the traced size of frames or patterns (0.00).
[−9.95 ～ +9.95mm (Step: 0.05mm)]

⑤ **Layout mode**
This represents the selected layout mode [Active mode, Bifocal mode, or Passive mode].

⑥ **Lens material**
This represents the specified lens material [PLA (plastic), PC (polycarbonate), ACR (acrylic resin), or GLS (glass)].

⑦ **Frame material**
This represents the specified frame material [MTL (metal), or CEL (celluloid) / ZYL].
For flat/rimless edging or flat edge polishing, FLT (flat)/RIM appears.

⑧ **Grinding mode**
This represents the selected grinding mode [GUI (guided), or EX (EX lens)].
For flat edge polishing, POL (polish) appears.

⑨ **R/L display**
This represents the specified side of the grinding lens [R/L].

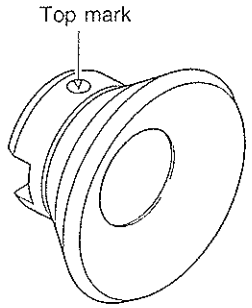
⑩ **Minimum lens diameter (MIN)**
This represents the minimum lens diameter required for grinding, which will appear when data ① − ④ are entered.

⑪ **Traced outline**
This is a plane figure of traced outline in real size.

⑫ **Optical center** (⊹)
This indicates the position of the optical center.
In Bifocal mode, the segment ⌓ appears instead of the optical center.

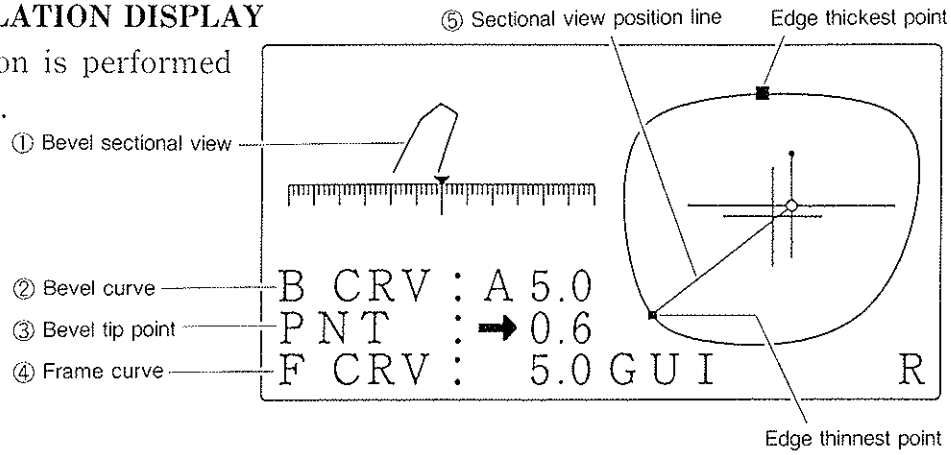
⑬ **Rim center**
In Active mode and Bifocal mode, the rim center is indicated by ┼ .
In Passive mode, by ⊕ .

⑭ **Up direction** (·)
This represents the direction which the top mark of blocked cup faces.



· BEVEL SIMULATION DISPLAY

Bevel simulation is performed on this display.



· MENU DISPLAY

This display is for selecting functions or modes which are used for maintenance and adjustments.

```
**********************************
*            M e n u             *
**********************************

  →   Process counter
      Wheel dressing
      Size adjustment
      Bevel adjustment

            Execute : Press SELECT
```

· PARAMETER EXCHANGE MODE DISPLAY

This display is used for parameter settings, including inputting constants (preset values) of lens size, PD, or height of optical center, or any other adjustments.

```
**********************************
*                                *
*   Parameter exchange mode      *
*                                *
**********************************

→ 1)  Size preset  (PLA, MTL) :+0. 00
  2)  Size preset  (PLA, CEL) :+0. 00
  3)  Size preset  (GLS, MTL) :+0. 00
  4)  Size preset  (GLS, CEL) :+0. 00
  5)  Rough size constant     :+1. 00
```

① **Bevel sectional view**

This represents bevel section on the point where ⑤ Sectional view position line indicates on the traced outline.

The mark "▼" on the scale represents the bevel tip point.

One graduation of the scale is equivalent to 0.2mm.

② **Bevel curve (B CRV)**

This represents bevel curve value. In Guided grinding mode, the bevel curve can be changed with [+] or [−] after the cursor is moved to this position.

※The "A" mark on the head of the value means that the value is calculated by computer and is the most suitable curve value.

③ **Bevel tip point (PNT)**

This represents the amount that the bevel is moved, either backward or forward.

The bevel position can be moved backward or forward horizontally in Guided grinding mode by changing this value with [+] or [−] after the cursor is moved to this position.

④ **Frame curve (F CRV)**

This represents the curve value of the frame measured by the tracer.

⑤ **Sectional view position line**

This represents the position of bevel section which is currently shown.

§ 4 OPERATING PROCEDURES

4.1 Operation flow

Power ON : — **4.2 Basic Operation, 1.**

↓

Perform tracing to obtain the outline for grinding :

○Frame tracings :

- **For tracing with both rims :** — **4.2 Basic Operation, 2.– 3.**
- For tracing one rim : — 4.3.4 Tracing single rims
- For tracing warped frames : — 4.3.6 Tracing goggle type frames

○For using patterns : — 4.3.2 Tracing patterns

○For using dummy lenses : — 4.3.3 Tracing dummy lenses

↓

Load the traced data : — **4.2 Basic Operation, 4.**

↓

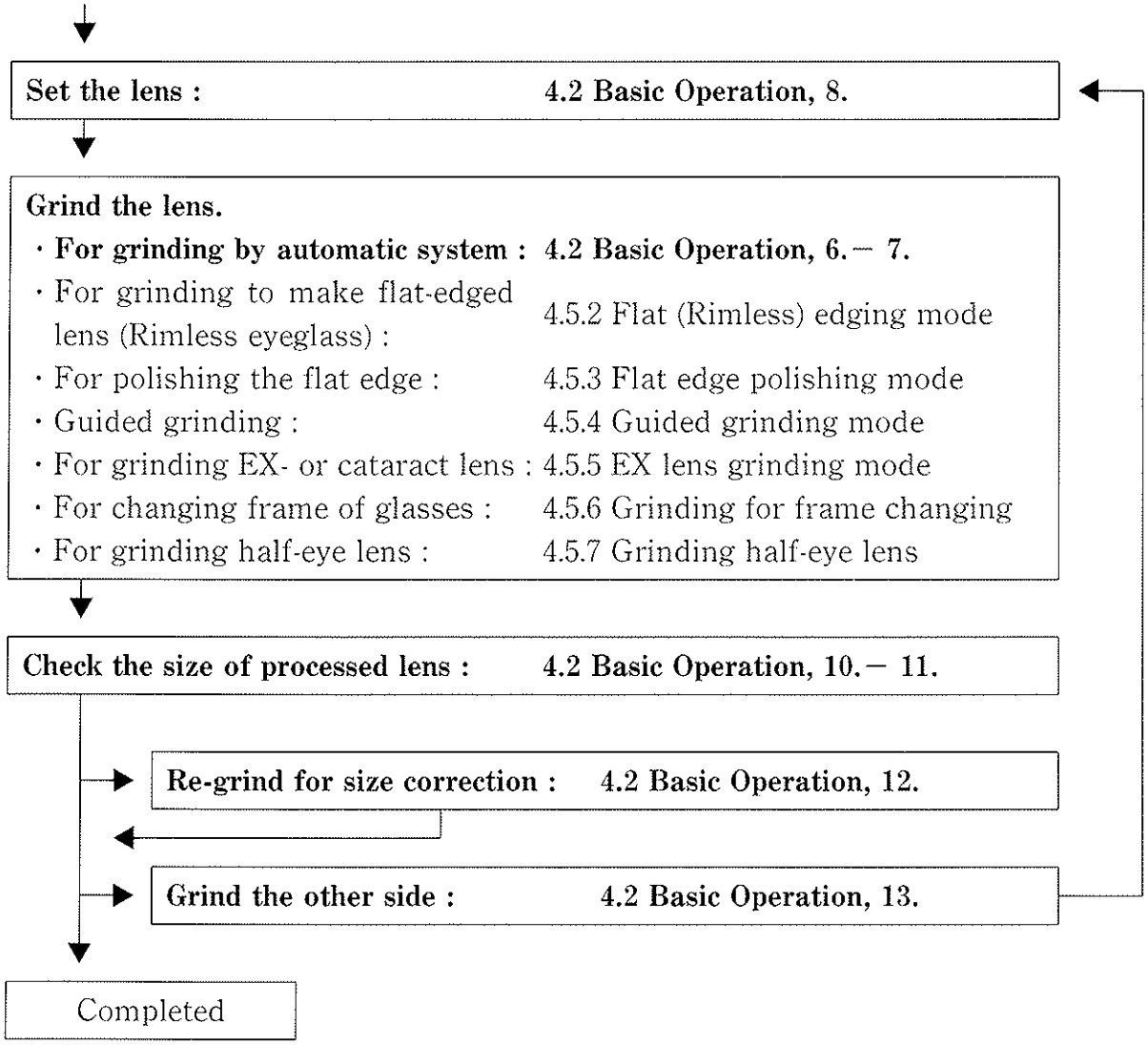
Set each grinding condition : — **4.2 Basic Operation, 5.**

↓

Enter layout data and block the lens

- **For blocking on optical center (Active mode) :** — **4.2 Basic Operation, 6.– 7.**
- For blocking on rim center : — 4.4.3 Passive mode
- For bifocal or trifocal lens : — 4.4.2 Bifocal mode
- For progressive power lens : — 4.4.4 Layout of progressive power lens
- For inputting monocular PD : — 4.4.5 Inputting monocular PD
- For inputting height of the optical center from the lens outline : — 4.4.6 Inputting height from the lens outline
- For inputting eye point by the distance from the nasal and bottom side of rim : — 4.4.7 Eye point layout

↓


Set the lens : 4.2 Basic Operation, 8.
Grind the lens.
· For grinding by automatic system : 4.2 Basic Operation, 6.– 7.
· For grinding to make flat-edged lens (Rimless eyeglass) : 4.5.2 Flat (Rimless) edging mode
· For polishing the flat edge : 4.5.3 Flat edge polishing mode
· Guided grinding : 4.5.4 Guided grinding mode
· For grinding EX- or cataract lens : 4.5.5 EX lens grinding mode
· For changing frame of glasses : 4.5.6 Grinding for frame changing
· For grinding half-eye lens : 4.5.7 Grinding half-eye lens
Check the size of processed lens : 4.2 Basic Operation, 10.– 11.
Re-grind for size correction : 4.2 Basic Operation, 12.
Grind the other side : 4.2 Basic Operation, 13.
Completed

4.2 Basic Operation

An example of whole operation process with selections of tracing both rims*1 , layout in Active mode*2 , and grinding in Auto grinding mode*3 are described in this part.

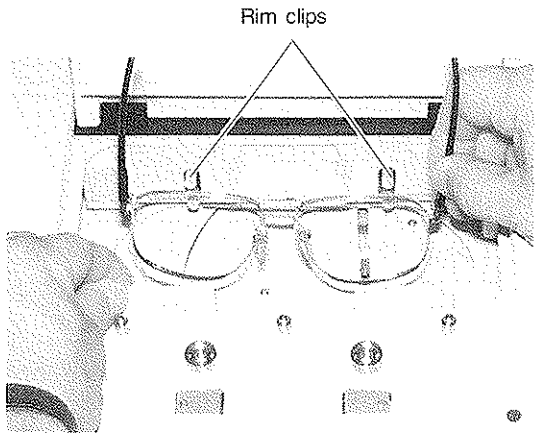
1. **Turn ON the power.**

2. **Set a frame in the tracing unit.**

   1) Open the cover of tracing unit.

   2) Draw the lower slider and place the frame between the rim clips on the upper slider.
   Make sure that the frame is placed at the center of the tracing unit.

   3) Release the lower slider.
   Check to see if the frame is placed between the rim clips on the lower slider, too.



3. **Press** [TRACE].
   Both rims will be traced automatically. The tracing is finished when the frame is released. The lamp at [TRACE] lights.

---

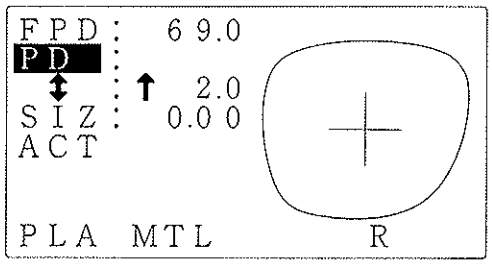
*1 Tracing both rims : With this tracing, the outline of both rims and FPD will be measured.

*2 Active mode : This is one of the layout modes which is for blocking the lens on its optical center.

*3 Auto grinding mode : In this mode, the bevel curve and bevel position are automatically calculated by the computer for their best value for grinding.

4. Press [DATA SET].

The traced outline will be set and shown on the display panel. The lamp for [TRACE] goes out.



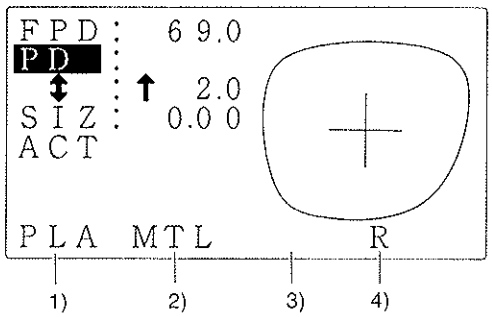
5. Set each grinding condition.

1) Specify the lens material with [LENS].
[PLA (Plastic), PC (Polycarbonate), ACR (Acrylic resin), or GLS (Glass)]
NOTE : Incorrect specification of lens material hastens the wheel wearing. Be sure to set this with care.

2) Specify the frame material with [FRAME].
[MTL (Metal) or CEL (Celluloid)/ ZYL]
NOTE : Display (CEL or ZYL) depends on the shipping destination.

3) Select blank (Auto grinding mode)*4 with [MODE].

4) Specify the side of the grinding lens with [R/L].
[R (Right) or L (Left)]



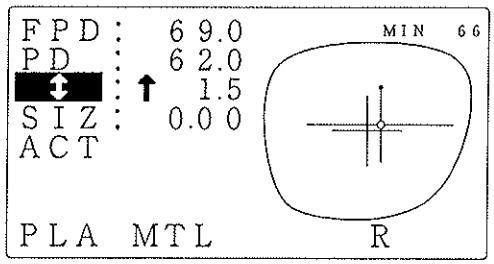
---

*4 For grinding cataract lens or EX lens, select EX (EX lens grinding mode). (See "4.5.5 EX lens grinding mode.)

6. Enter each data of the lens layout. *1

1) Align the cursor to PD with [▲] or [▼], and input the PD value*2 noted on the prescription with [+] or [−].

2) If the optical center should be decentered vertically, align the cursor to ↕ with [▼], and then input the height of the optical center from the level of frame center*3 with [+] or [−].



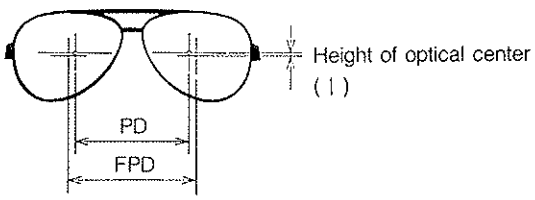
3) If the lens size should be compensated, align the cursor to SIZ with [▼], and input the compensation value with [+] or [−].
e.g. +1.00 : The finished size becomes 1mm bigger.

※The minimum lens diameter required for grinding is shown on the right top of the display at MIN.

NOTE : This value is provided just for reference purpose. It is recommended to use the lens of 2 ～ 3mm longer diameter in case that the optical center and the center of the lens is not the same.

---

*1 Lens layout : The lens outline can be laid out by inputting FPD, PD and height of the optical center. The FPD will automatically be entered when both rims are traced together.



*2 It is also possible to enter the PD by monocular PD. (See "4.4.5 Inputting monocular PD".)

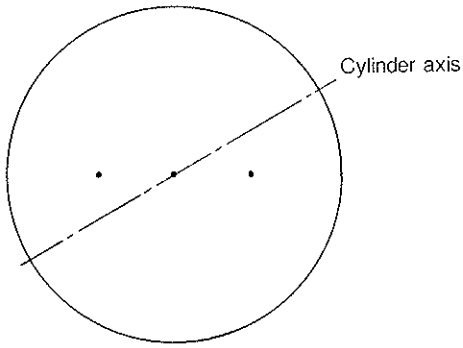
*3 It is also possible to enter the height of optical center by the eye height from the lens outline. (See "4.4.6 Inputting height from the lens outline".)

※It is also possible to make layout by the position of eye point marked on dummy lenses. (See "4.4.7 Eye point layout".)

7. Block a lens with a suction cup.

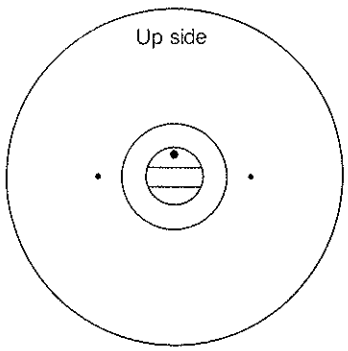
1) Mark at the optical center of the lens with a lensmeter.

When the lens has cylinder power, align the cylinder axis angle of the lens to the prescription value before marking.
※It is best to use NIDEK Auto lensmeter for this purpose.



2) Block the lens with a suction cup.

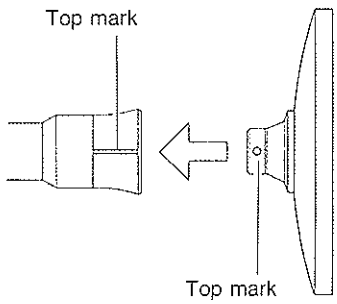
Block the convex surface.
The cup has blocking direction as shown with the top mark. Be careful not to block the wrong side up, especially for dual-tone colored lens.
※It is best to use NIDEK Centering device Model CE-1 for blocking.



NOTE : · For blocking a polycarbonate lens, use a leap cup in order to prevent the cup from moving while grinding.
· For blocking a bifocal lens, see "4.4.2 Bifocal mode".
· For blocking at the rim center of the frame, see "4.4.3 Passive mode".

8. Set the lens to the adapter.

Align the top mark (·) on the cup with that of the adapter and insert the cup securely.

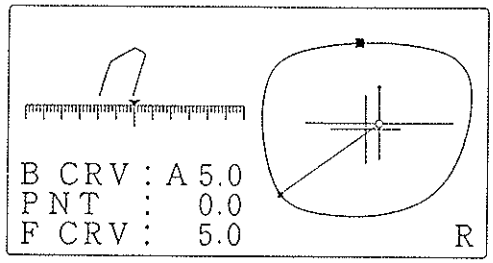


9. Close the soundproof cover and press [START·STOP].

Grinding will be performed automatically as follows.

① Lens chucking
(The lens becomes chucked by the lens clamp.)
⇩
② Lens shape measurement
⇩
③ Rough grinding*1
[Display changes to the simulation display.]
⇩
④ Fine grinding
⇩
⑤ Grindings are completed.
[Layout display returns.]

In the simulation display, sectional view position line rotates along the traced outline, and bevel section at that position will be shown. *2



※The lamp at [START·STOP] lights during ① − ③, blinks during ④, and goes out at ⑤.

10. Take out the lens.

1) Open the soundproof cover.

2) Press [CHUCK] and take out the lens.

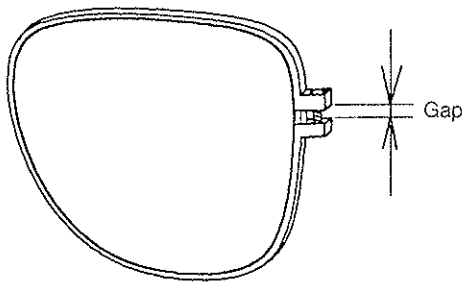
---

*1 When the lens material is set to GLS, rough grinding will not be performed.

*2 If the bevel curve and/or the bevel position should be changed:
Press [SELECT] while ② (Lens shape measurement) or ③ (Rough grinding) is being processed. The mode changes to the Guided grinding mode and the machine stops after ② or ③ to be ready for changing bevel data.
Refer to the steps from "3." in "4.5.4 Guided grinding mode", and change the bevel curve and/or bevel position.

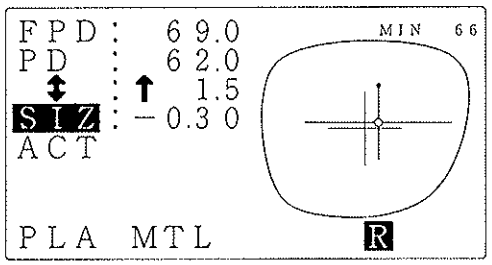
11. Fit the lens in the frame, and measure the gap at the rim joint.

NOTE : Do not remove the cup yet, otherwise the lens cannot be retouched.



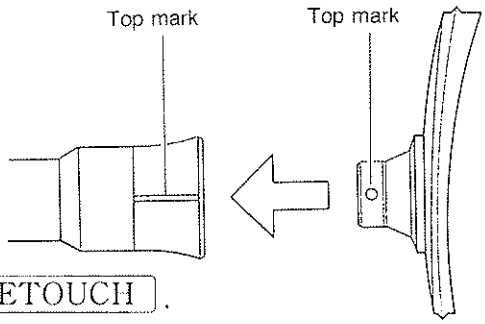
12. If the lens is too large, retouch it to adjust the size.

1) Change the SIZ value with [–] key.
No other parameters than SIZ can be changed.



Guide for size adjustment:
Subtract one-third of the gap size at the rim joint from the SIZ value.
e.g. If the gap were 1mm:
1/3 × 1(mm) ≒ 0.3(mm)
Subtract 0.3 from the SIZ.

2) Set the lens to the adapter in the grinding unit.
NOTE : Be sure to align the top mark (•) on the cup with that of the adapter.



3) Close the soundproof cover and press [RETOUCH].
※The lens will be retouched automatically.

4) After the process, check the lens size again. If the lens is still too large, retouch it again.

13. Grind the other side.

1) Press [R/L] to switch the grinding side.

2) Grind the other side in the same manner as steps 6. – 12.

4.3 Tracings

4.3.1 Selection of tracings

(1) Frame tracings

Normal tracing ▼

Both-rim tracing

Set the frame to the tracing unit.
⇩
Press [TRACE].

See "4.2 Basic Operation" 2.− 3.

For tracing only one rim ▼

Single-rim tracing

Set the frame to the tracing unit.
⇩
Press right or left tracing key.

See "4.3.4 Tracing single rims"

For the case that stylus cannot be set in the groove ▼

Semiauto tracing

Set the frame to the tracing unit.
⇩
Press [TRACE] more than 3 sec.
⇩
Place the stylus into the groove manually.
⇩
Press [TRACE]

See "4.3.5 Semiauto tracing"

For tracing goggle type frames ▼

Goggle-type-frames tracing

Set only one rim and hold the frame temple of the other side.
⇩
Press right or left tracing key.

See "4.3.6 Tracing goggle type frames"

(2) Tracing patterns or dummy lenses

For tracing patterns

▼

Pattern tracing

Set the pattern to the tracing unit.
⇩
Press right or left tracing key.
⇩
Set the tracing pin.
⇩
Press TRACE.

See "4.3.2 Tracing patterns"

For tracing dummy lenses

▼

Dummy lens tracing

Set the dummy lens to the tracing unit.
⇩
Press right or left tracing key.
⇩
Set the tracing pin.
⇩
Press TRACE.

See "4.3.3 Tracing dummy lenses"

(3) Other functions

For tracing while grinding

▼

See "4.3.7 Tracing while grinding"

To stop tracing

▼

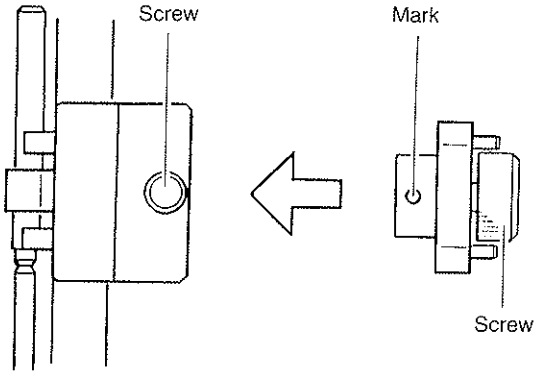
See "4.3.8 Stopping tracing"

4.3.2 Tracing patterns

1. Set a pattern onto the pattern setting unit.

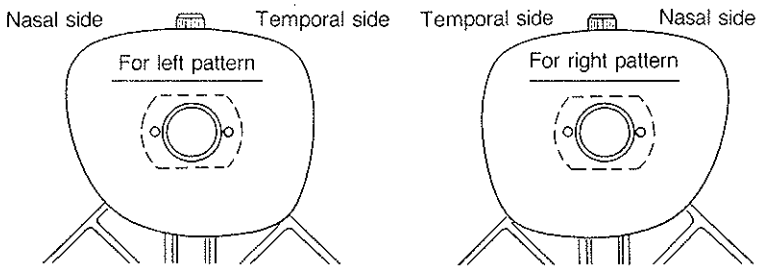
1) Set the pattern holder into the pattern setting unit and fix it with a screw on the unit.

   Make sure that the mark on the pattern holder is aligned to the position of the screw.



2) Remove a screw on the pattern holder.

3) Fit the pattern to the pattern setting unit as shown on the following figure, and fix it with the screw on the pattern holder.

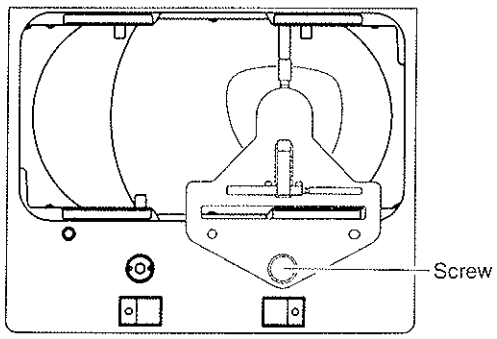


2. Set the pattern setting unit to the tracing unit.

1) Open the cover of the tracing unit.

2) Draw the lower slider and set the pattern setting unit as shown on the right figure.

   Fit the top of the lower slider into the rectangular hole and guide pins into the two holes on the pattern setting unit.



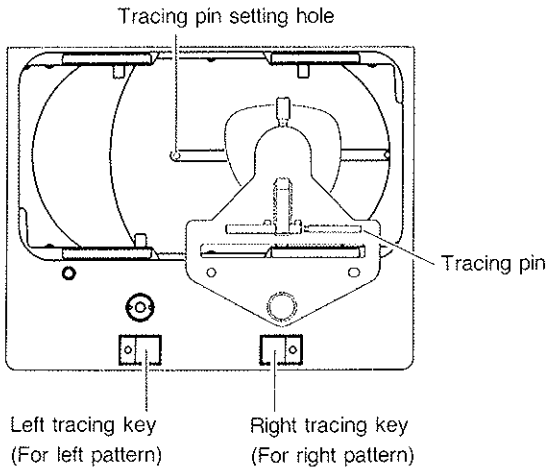
[For setting right pattern]
As to the left pattern, set it to the left side.

3) Fix the pattern setting unit with a screw.

3. **Press the right (or left) tracing key.**

   The tracing pin setting hole moves to the center and stops.

4. **Set the tracing pin deep into the tracing pin setting hole.**



5. **Press** [TRACE].

   The pattern will be traced.

6. **When the tracing is completed, pull out the tracing pin.**

7. **Press** [TRACE] **again.**

   The tracing pin setting hole moves back to where it was and stops.

8. **Loosen the screw and remove the pattern setting unit.**

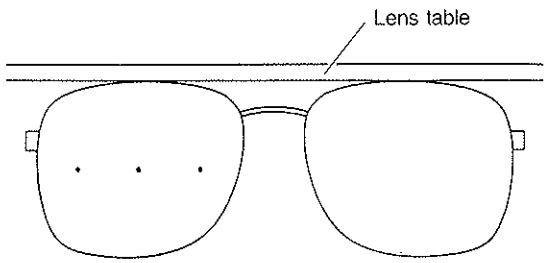
NOTE :

- The FPD (distance between frame centers) cannot be measured when tracing patterns. Measure it manually and input it on the layout display.
- Be sure to attach the tracing pin back to the pattern setting unit, and make sure that it is set securely, otherwise the pin could be lost or dropped on the tracing unit which could cause possible damage.

4.3.3 Tracing dummy lenses

1. Block the concave side of a dummy lens with a dummy lens holder.

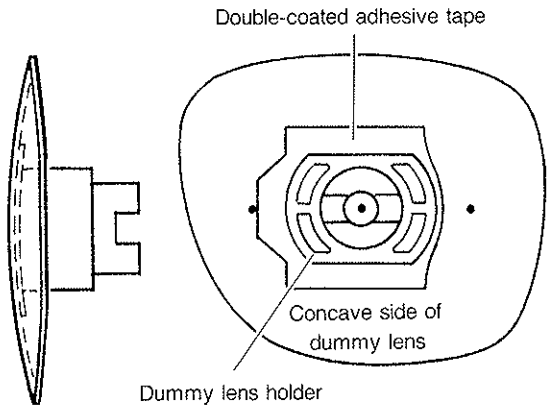
1) Set the dummy lenses fit in the frame horizontally to a lensmeter and mark at the estimated centers.



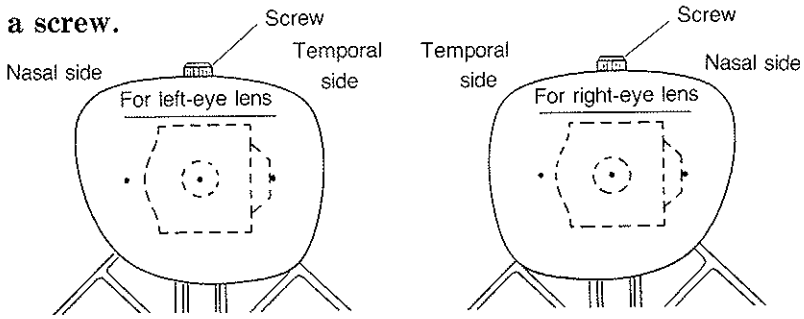
2) Place a provided double-coated adhesive tape on the dummy lens holder.

3) Block the concave side of the dummy lens with a dummy lens holder.

   Align the marks on the dummy lens to the direction of the groove on the holder to block it.



2. Fit the dummy lens holder into the pattern setting unit and fix it with a screw.



3. Trace the dummy lens in the same manner as step 2.— 8. in "4.3.2 tracing patterns".

Set the right dummy lens to the right side of the tracing unit and left dummy lens to the left side just like tracing patterns.

NOTE :

- The FPD (distance between frame centers) cannot be measured when tracing dummy lenses. Measure it manually and input it on the layout display.
  When using eye point layout, it is not necessary to input FPD (see "4.4.7 Eye point layout".

4.3.4 Tracing single rim

This is a procedure to trace one of the frame rims.

1. **Set the frame in the tracing unit in the same manner as step 2. in "4.2 Basic Operation".**

2. **Press the right tracing key to trace the rim for the right eye.**
   For tracing the rim for left eye, press the left tracing key.

NOTE :
The FPD cannot be measured when tracing a single rim. Measure it manually and input it on the layout display.

4.3.5 Semiauto tracing

This is a procedure to bring the stylus into the groove of the frame in case that the stylus cannot be set in the groove automatically.

1. **Set the frame in the tracing unit in the same manner as step 2. in "4.2 Basic Operation".**

2. **Press** [TRACE] *1 **for more than three seconds.**
   The stylus moves and stops at the starting position of tracing.

3. **Use finger to set the stylus into the groove.**

4. **Press** [TRACE].

   Tracing starts.
   When tracing is completed for one rim, the stylus moves to the other side and stops at its starting position.

5. **Trace the other side in the same manner as steps 3. and 4.**

---

*1 For tracing single rim, press the right or left tracing key for more than three seconds.

4.3.6 Tracing goggle type frames

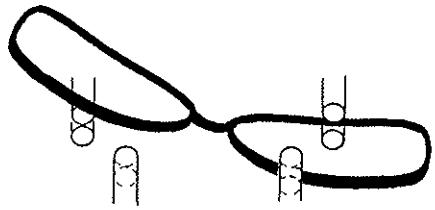
When tracing a sharply warped frame, such as goggles, the stylus may come off from the groove of the frame. In such a case, set only one rim in the tracing unit and hold the frame temple on the other side while tracing.
The following only describes the procedure for the right rim since either rim can be traced in this way.

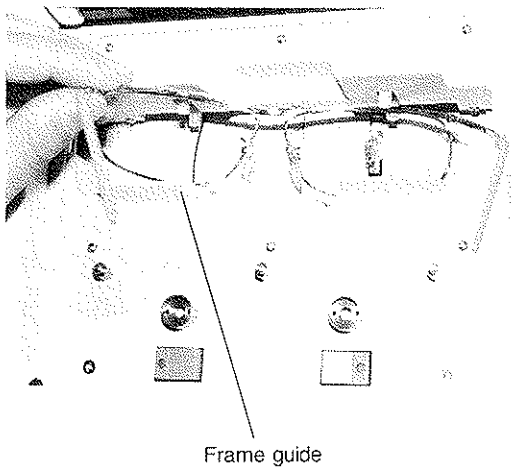
1. **Set the rim for the right eye horizontally to the tracing unit.**

   Do not set the left side.

   Hold the left temple of the frame to keep the right side horizontal.

   Make sure that the left rim is touched to the frame guide of the lower slider.





2. **Press the right tracing switch.**

   Tracing starts.

   The rim clips hold the right rim tight, however do not take your hand off from the temple.

3. **After tracing is over, draw the lower slider and remove the frame.**

NOTE :
The FPD cannot be measured when tracing goggle type frames. Measure it manually and input it on the layout display.

4.3.7 Tracing while grinding

It is possible to perform the next tracing while grinding.

Set the frame and press [TRACE]. The lamp at [TRACE] lights.

In Auto, Guided, or EX mode, tracing begins after bevel is simulated, and in Flat (rimless) or Flat edge polishing mode, it begins after rough grinding.

After grinding is over, press [DATA SET]. The data of the traced outline will be set and shown on the display panel.

4.3.8 Stopping tracing

To stop tracing, follow the instructions below.

1. **Press [TRACE].**

   The stylus stops moving.
   When tracing patterns or dummy lenses, the tracing pin returns to the center of the tracing unit. Pull out the pin after it stops.

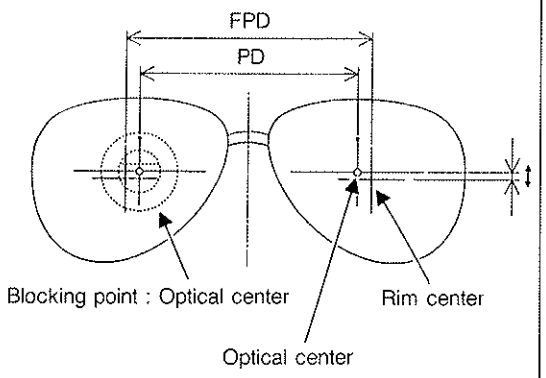
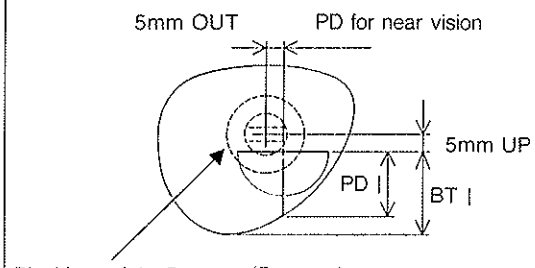
2. **Press [TRACE] again.**
   The stylus returns to its original position and the frame will be released.

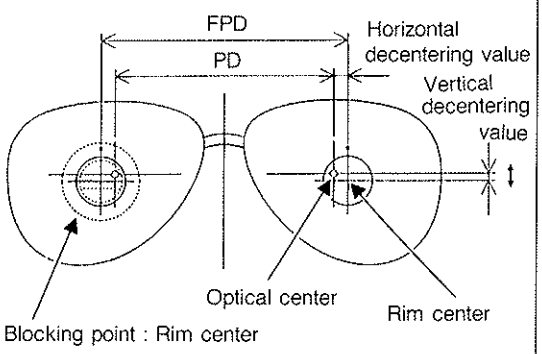
4.4 Layouts

4.4.1 Selection of layouts

(1) Layout modes

There are three layout modes, Active, Bifocal, and Passive. To change the mode, align the cursor to the position where the layout modes are shown and press [SELECT].

Active mode	Bifocal mode
	
This is for blocking the lens at the optical center.	This is for bifocal lenses. Block at 5mm up and 5mm out position from the top line center of segment with a leap cup.
See "4.2 Basic Operation" 6.— 7.	See "4.4.2 Bifocal mode"

Passive mode

This is for blocking the lens on the rim center.
See "4.4.3 Passive mode"

(2) Layouts for special lenses

Bifocal lens

▼

See "4.4.2 Bifocal mode"

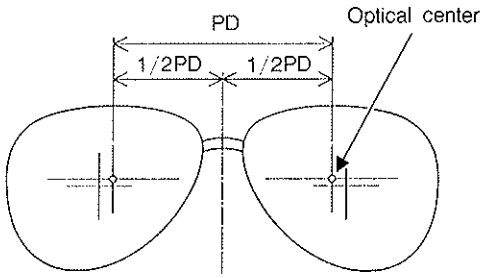
Progressive power lens

▼

See "4.4.4 Layout of progressive

(3) Other laying out forms

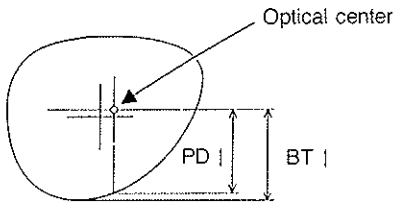
Inputting monocular PD (1/2PD)



This is a form to input the distances measured from the frame bridge center to each eye point.

See "4.4.5 Inputting monocular PD"

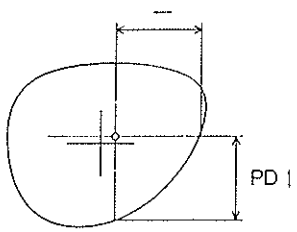
Inputting height from the lens outline



This is a form to input the height of eye point measured from the bottom of lens outline as the optical center.

See "4.4.6 Inputting height from the lens outline"

Inputting eye points



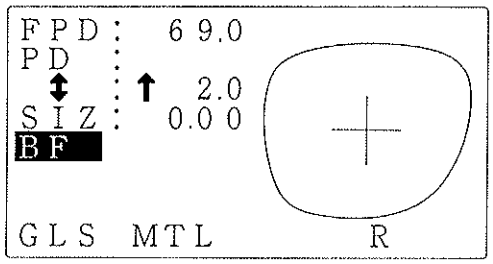
This is a form to input the eye points as the optical center by the distance measured from the nasal and bottom side of lens outline.

See "4.4.7 Eye point layout"

4.4.2 Bifocal mode

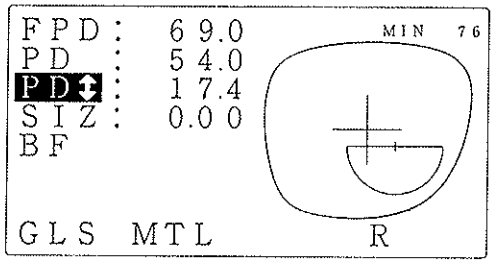
This is a mode for laying out the bifocal lenses.

1. **Select BF (bifocal) for the layout mode.**



2. **Input the prescribed PD for near vision at PD.**

3. **Align the cursor to ↕ and select PD↕ or BT↕ with SELECT.**

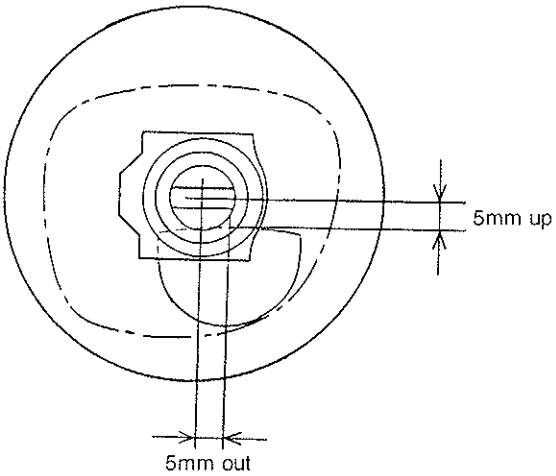


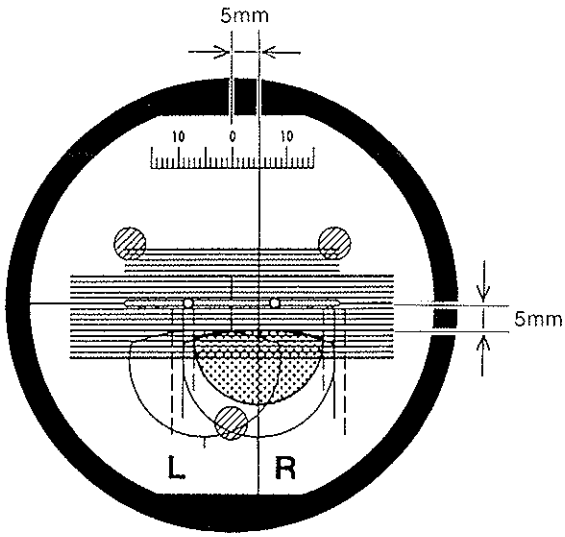
4. **Input the height of the segment at the center of top line.**

   PD↕ : Height of the center point of the segment top line from the straight-down point on the lens outline.

   BT↕ : Height of the center level of segment top line from the lowest point on the lens outline.

5. **Block the lens at 5mm up and 5mm out position from the top line center of segment with a leap cup.**

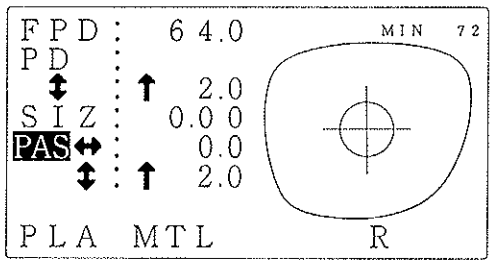




When using NIDEK centering device CE-1

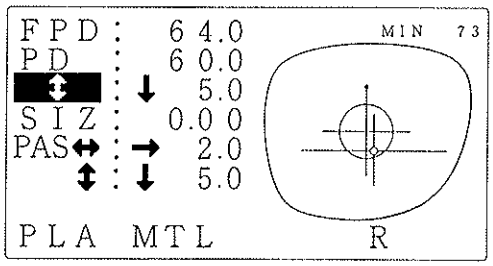
4.4.3 Passive mode

1. **Select PAS (Passive) for the layout mode.**



2. **Input the prescribed PD at PD.**

3. **Input the height of the optical center measured from the level of the rim center at ↕.**



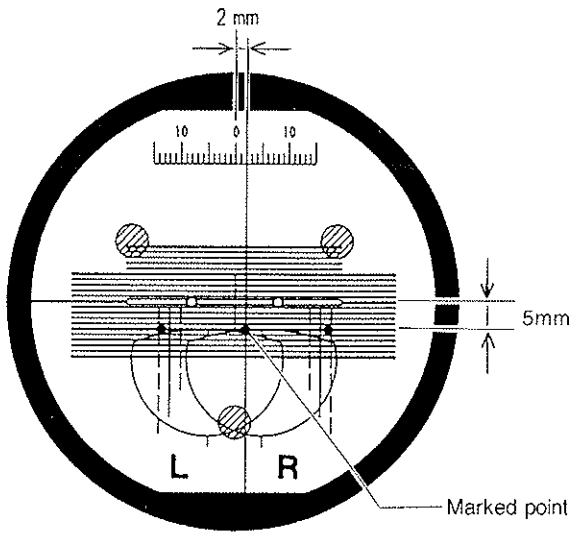
e.g. ↑1.5 : 1.5mm higher than the rim center.
↓5.0 : 5.0mm lower than the rim center.

The decentered value of the optical center for each direction is shown at PAS↔↕.

4. **Align the cylinder axis of the lens to the prescribed angle, and mark the lens with a lensmeter.**

5. **Use a centering device to decenter the optical axis in accordance with the indication at PAS↔↕, and to block the lens with a suction cup.**

e.g. PAS↔ : → 2.0
↕ : ↓ 5.0
Decenter the optical center 2.0mm to the right, and 5.0mm to the bottom to block.



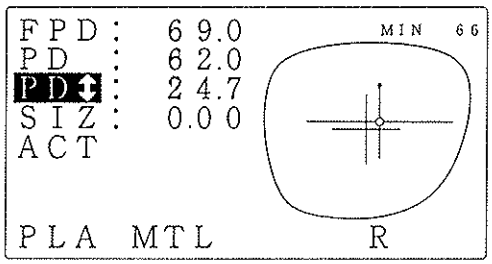
When using NIDEK centering device CE-1

4.4.4 Layout of progressive power lens

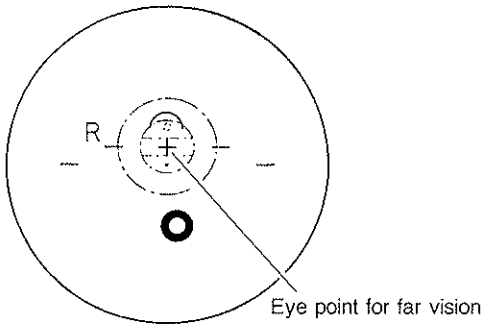
1. **Select** ACT **(Active) for the layout mode.**

2. **Input the prescribed PD at** PD .

3. **Input the height of the eye point marked on the dummy lens.**
   To input the height, follow the process in "4.4.5 Inputting the height from the lens outline".



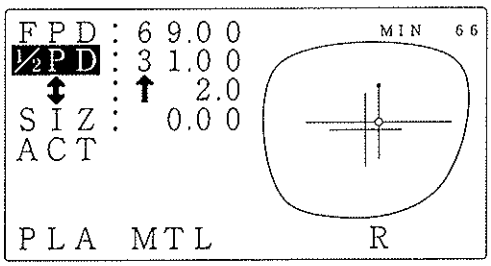
4. **Use a centering device to block on the eye point for far vision, which is printed on the lens.**



4.4.5 Inputting monocular PD

1. **Align the cursor to** PD **and press** [SELECT] .

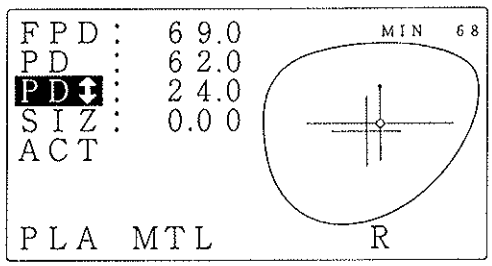
   The PD changes to ½PD .
   The PD returns if [SELECT] is pressed again.



2. **Input the monocular PD (distance from the bridge center to the eye point).**

4.4.6 Inputting height from the lens outline

1. **Align the cursor to ↕ and press [SELECT] to choose the input form.**

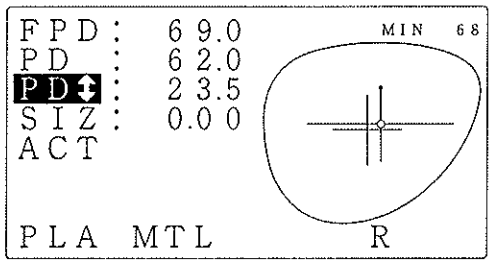


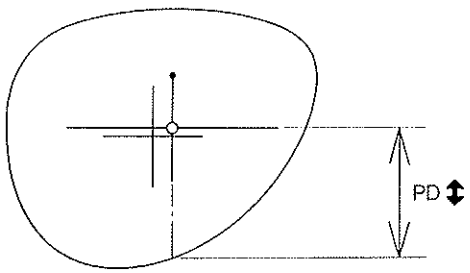
PD↕ ····· Height of the optical center from the straight-down point on the lens outline.

BT↕ ····· Height of the level of optical center from the lowest point of the outline.

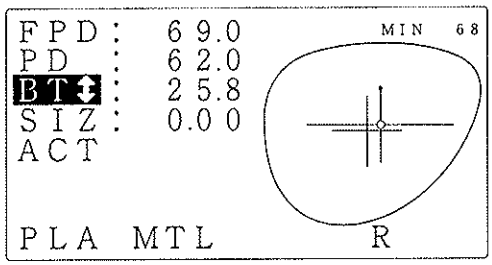
2. **Input the height.**

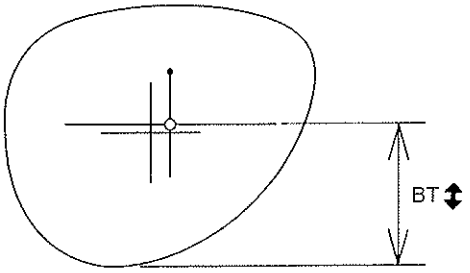
e.g. If the height of the optical center from the straight-down point on the outline were 23.5mm;
PD↕ : 23.5





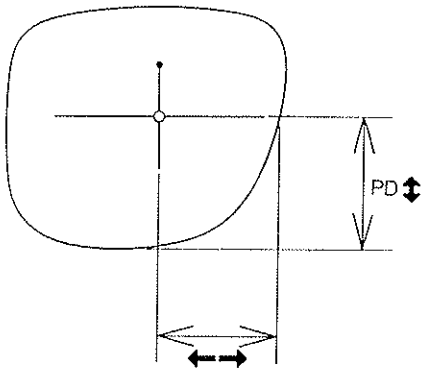
If the height at the level of the optical center from the lowest point of the outline were 25.8mm;
BT↕ : 25.8





4.4.7 Eye point layout

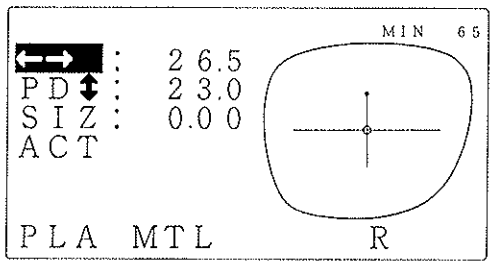
This is a form to input the optical center by the distance from the nasal and bottom side of the lens outline.
This form serves to specify the position of the eye point, which is marked on the dummy lenses, as the optical center.



1. **Align the cursor to F P D and press** [SELECT].

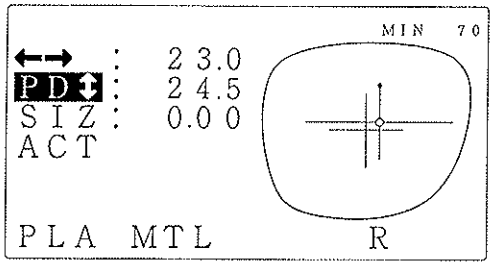
   The display changes to one shown in the right figure.
   The ⊹ mark in the traced outline shows the position of eye point.

   The display with F P D returns if [SELECT] is pressed again.



2. **Input the distance from the eye point to its nasal level point on the lens outline at ⟷.**

3. **Input the height of the eye point from its straight-down point on the lens outline at PD.**



4.5 Grindings

4.5.1 Selection of grinding modes

(1) Grinding modes

There are five selections of grinding modes which can be set with [FRAME] and [MODE].

Grinding modes	Setting of [FRAME]	Setting of [MODE]
Auto grinding mode	MTL or CEL/ZYL	blank
Guided grinding mode	MTL or CEL/ZYL	GUI
EX lens grinding mode	MTL or CEL/ZYL	EX
Flat (Rimless) edging mode	FLT/RIM	blank
Flat edge polishing mode	FLT/RIM	POL

To grind into beveled edge automatically

▼

Auto grinding mode

See "4.2 Basic operation", 9.

To grind EX or cataract lenses into beveled edge

▼

EX lens grinding mode

See "4.5.5 EX lens grinding mode"

To control bevel position

▼

Guided grinding mode

Select GUI.

⇩

Press [START·STOP].

⇩

Check the bevel simulation.

⇩

Change the curve and position of the bevel.

⇩

Press [START·STOP].

See "4.5.4 Guided grinding mode"

To grind into flat edge

▼

Flat (Rimless) edging mode

See "4.5.2 Flat (Rimless) edging mode".

To polish after flat edging

▼

Flat edge polishing mode

This can save the time and labor for buffing to the minimum.

See "4.5.3 Flat edge polishing mode".

※When grinding a lens into beveled edge, refer to the diagram on the next page and select the best grinding mode for the lens.

Grinding mode / Type of lens	AUT	G U I			EX
		CRV value	FRNT	REAR	
Monofocal lens	◎	◎			
Special lenses					
Progressive	◎	◎			
Bifocal	◎	◎			
Cataract				◎	◎
EX				◎	◎

◎ : Best mode

NOTE :

The auto grinding mode does not accept EX lenses or cataract lenses. Use EX lens grinding mode for such lenses.

(2) Special grindings

For the case that the finished lens is too large for frame

▼

Retouching

Change the value at S I Z.

⇩

Press [RETOUCH].

See "4.2 Basic operation" 11,12.

To grind half-eye lenses

Message "Use chuck for half-eye lens" appears.

▼

Half-eye lens grinding

Use the adapter set for half-eye lens to grind.

See "4.5.7 Grinding half-eye lens".

To grind lenses which have already been in one frame to fit to another frame

▼

Grinding for frame changing

Trace the frame.

⇩

Press [DATA SET].

⇩

Press [FC].

⇩

Trace the lens.

⇩

Set grinding conditions and layouts.

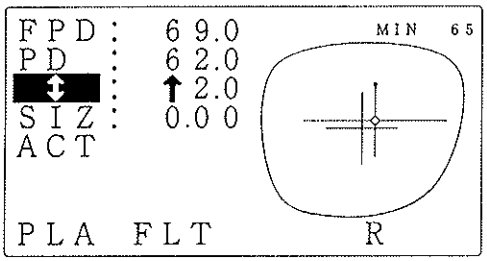
⇩

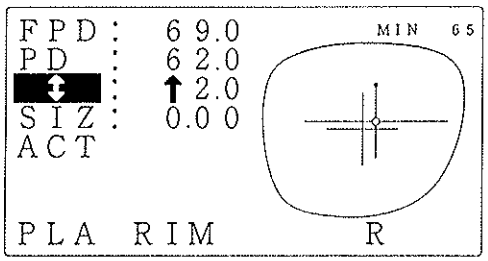
Press [START·STOP].

See "4.5.6 Grinding for frame changing".

4.5.2 Flat (Rimless) edging mode

1. **Select FLT or RIM with** [FRAME].
2. **Select blank with** [MODE].
3. **Press** [START·STOP] **to start grinding.**





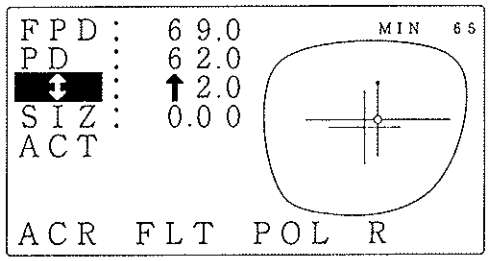
The grinding will be performed as follows.

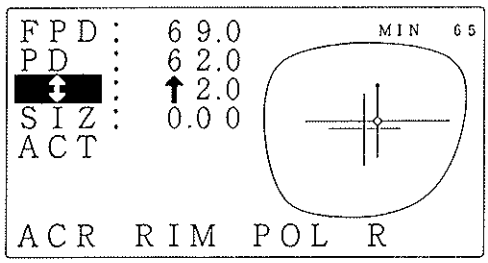
① Lens chucking
⇩
② Lens shape measurement*1
⇩
③ Rough grinding
⇩
④ Fine grinding (Finishing)

NOTE : Glass lenses cannot be processed with this mode.

4.5.3 Flat edge polishing mode

1. **Select FLT or RIM with** [FRAME].
2. **Select POL with** [MODE].
3. **Press** [START·STOP] **to start grinding.**





The grinding will be performed as follows.

① Lens chucking
⇩
② Lens shape measurement*1
⇩
③ Rough grinding
⇩
④ Fine grinding
⇩
⑤ Polishing

NOTE : Glass lenses cannot be processed with this mode.

---

*1 The "② lens shape measurement" will not be performed if parameter item "12) Measure in flat edge" is set to "None" (See "4.6.2 Parameter settings").

4.5.4 Guided grinding mode

With this mode, bevel curve and bevel position can be specified freely.

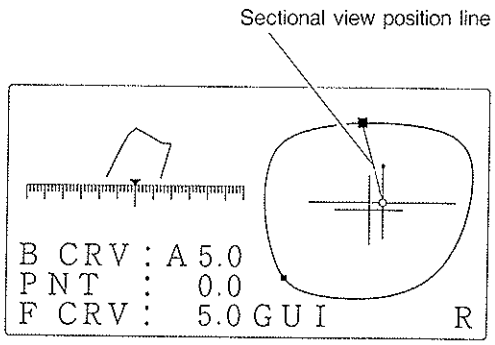
while lens is tracing.

1. **Select GUI for guided grinding mode.**

2. **Press** [START·STOP].
   The grinding will be performed as follows.

   ① Lens chucking
   ⇩
   ② Lens shape measurement
   ⇩
   ③ The display changes to the simulation display and the machine stops.

3. **Simulate the bevel section at each point of the outline on the display.**



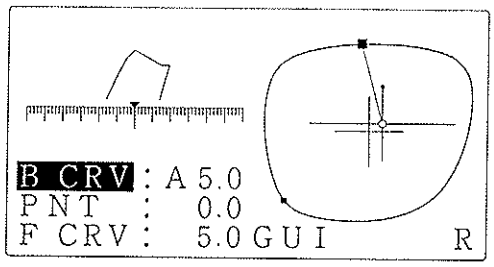
[+] ·····Sectional view position line rotates counterclockwise.

[−] ·····Sectional view position line rotates clockwise.
To stop the line movement, press the key again.

[SELECT] ··· The sectional view position line jumps to the point that the lens edge is thinnest (■) and thickest (■) alternately.

4. Input the bevel data.

(a) To change the bevel position only at the part that the edge is thick.



Align the cursor to **B CRV** to change the curve value and move the bevel.

[−] ·····The bevel moves toward the front surface.
[+] ·····The bevel moves toward the rear surface.

The "A" mark at the top of the curve value shows that it is a computer-calculated value. This value makes the same bevel curve that is processed by auto grinding.

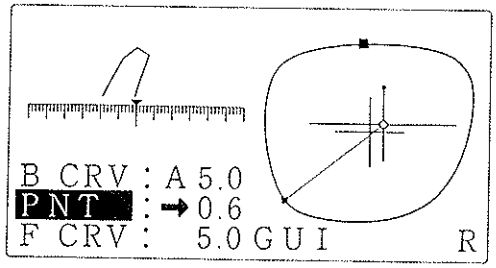
[SELECT] ··· The curve of the front base curve (FRNT) or rear base curve (REAR) will be selected.

Specified curve value
↓
Front base curve
(Curve profiling the front surface of the lens)
↓
Rear base curve
(Curve profiling the rear surface of the lens)

NOTE : The curve value can only be selected within a range that width of the lens edge allows.

(b) To change the position of whole bevel parallel to itself.

Align the cursor to **PNT** and press [SELECT] to simulate the bevel at the point that the edge is thinnest (■). Change the **PNT** value to move the bevel.



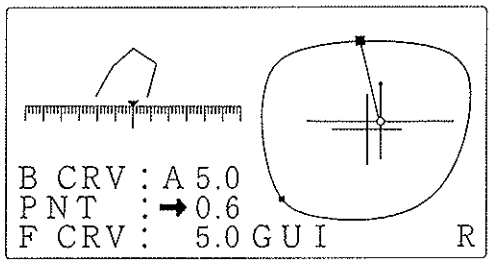
[−] ·····The bevel moves toward the front surface.
[+] ·····The bevel moves toward the rear surface.

NOTE : In order to avoid the bevel being off the lens edge, be sure to watch the simulation at the thinnest position while changing the value.

The arrow at the value (←, →) shows the direction that the bevel is moved.
e.g. B CRV : A5.0
PNT : →0.6
This shows that the bevel was moved 0.6mm toward the front surface parallel to itself while the curve value was 5.0.

5. **Press [▼] to put the cursor away.**

6. **Simulate the whole bevel to see if the desired bevel is obtained.**
See step 3.



7. **Repeat steps 4.— 6. until a proper bevel is obtained.**

8. **Press [START·STOP] to start grinding.**
The grinding will be performed as follows.
④ Rough grinding
⇩
⑤ Fine grinding (Finishing)

The lamp at [START·STOP] lights at ④ and blinks at ⑤.

While the simulation display is presented, it can be changed to the layout display by pressing [MENU]. The layout display here, however, is just a reminder and its data cannot be changed.
The simulation display returns by pressing [MENU] again, but once grinding has started, the display will not be able to change any more.

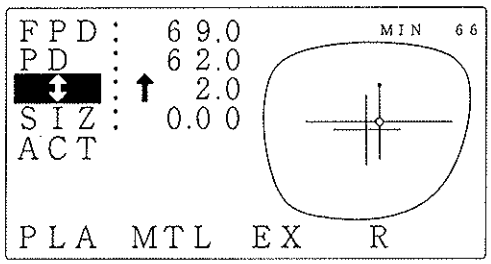
4.5.5 EX lens grinding mode

This mode serves to grind EX lens and cataract lens.
In this mode, the bevel curve will be set to the curve of the rear surface.

NOTE :
Use a leap cup to block the lens. The suction cup cannot hold the convex surface of the lens well enough and it may drop the lens or be moved during the process.

1. **Select EX for EX lens grinding mode.**

2. **Press** [START·STOP] **to start grinding.**
   The grinding will be performed as follows.



① Lens chucking
⇩
② Lens shape measurement
⇩
③ Rough grinding (The display changes to the simulation display.)
⇩
④ Fine grinding (Finishing)

In the simulation display at ③,sectional view position line rotates along the traced outline and bevel section at that position will be shown.*1

---

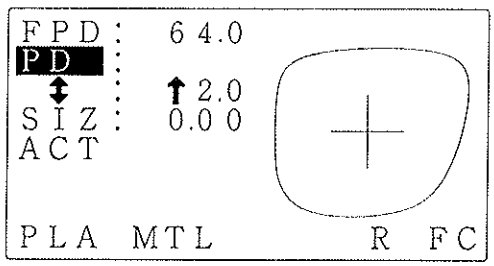
*1 To change the bevel position;
Press [SELECT] while ② (Lens shape measurement) or ③ (Rough grinding) is being processed. The mode changes to the Guided grinding mode and the machine stops after ② or ③ to be ready for changing bevel data.
Refer to steps from "3." in "4.5.4 Guided grinding mode" to change the bevel tip point (PNT).

NOTE :
As to the curve value, do not change but leave it as "REAR". The specified curve or the front base curve are not appropriate for those lenses to grind the bevel properly.

4.5.6 Grinding for frame changing

1. **Trace a new frame.**

2. **Press** [DATA SET].
   The traced outline for the frame appears on the display.

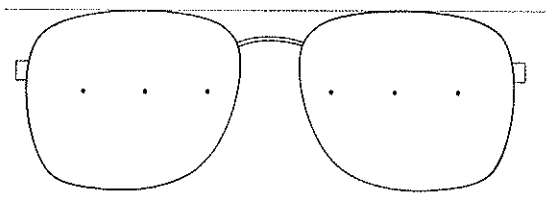


3. **Press** [FC].
   The frame changing mode will be entered as FC appears on the right bottom of the display.

NOTE :
- In order to enter the FC mode, the layout mode should be set to ACT in advance, otherwise it cannot be entered.
- While FC mode is active, the operation of [DATA SET] will not be accepted.

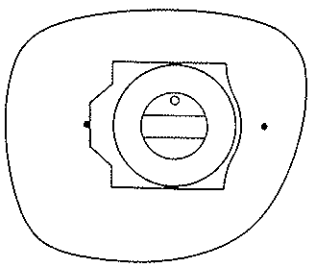
4. **Block the lens with a leap cup.**

   1) With the lenses fit in the frame, mark at the optical centers with a lensmeter.

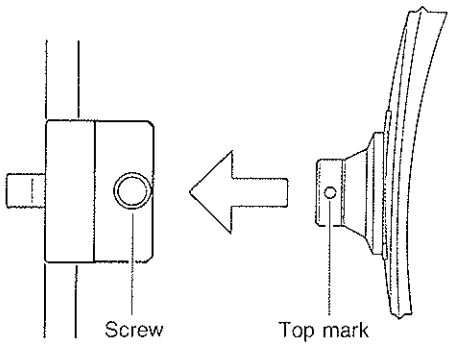


   2) Remove the lenses from the frame.

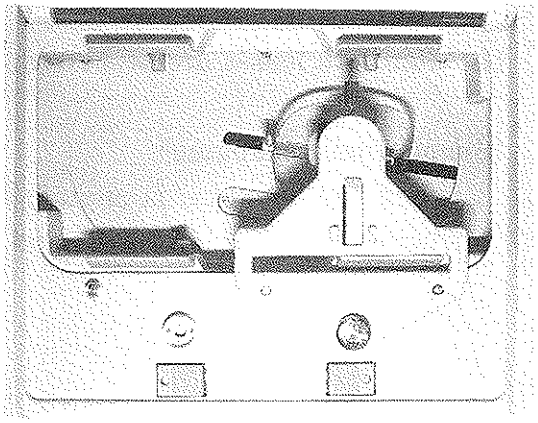
   3) Block the convex surface of the lens with a leap cup, using a centering device.



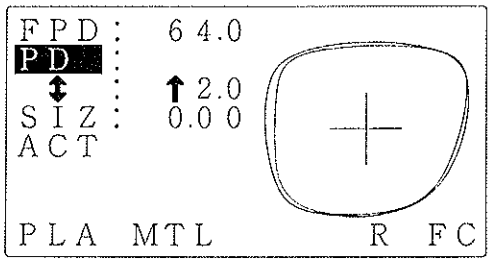
5. **Set the lens to the pattern setting unit and fix it with a screw.**
   To fit the cup, align the top mark with the position of the screw.



6. **Trace the lens in the same manner as "4.3.1 Pattern tracing, step 2.– 8.".**
   Set the right-eye lens to the right side and the left-eye lens to the left side of the tracing unit.

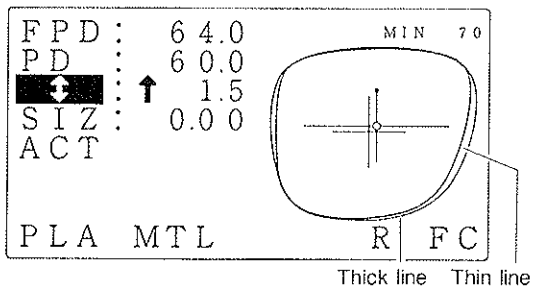


   After tracing is over, the traced lens outline (thick line) appears over the frame outline (thin line) on the display.



7. **Set grinding conditions and enter layout data.**

8. **Make sure that the lens size is enough for the frame.***1
   Check if the whole frame outline (thin line) is within the lens outline (thick line).



*1 If the lens size is not enough for the frame, it is possible to move the location of the frame outline into the lens outline by changing the PD or ↕ values. The finished lens, however, will not follow the prescription.

9. **Remove the lens with the cup from the pattern tracing unit.**

10. **Grind the lens in the same manner as "4.1 Basic operation, step 8.− 12.".**
    The grinding will not start if it is judged, during the lens shape measurement*1, that the lens size is not enough for grinding.

11. **Press [R/L] to switch sides, and grind the lens of the other side in the same manner as step 4.− 10.**

12. **After both lenses are processed, press [FC] to escape from the FC mode.**

〔Simple frame changing〕

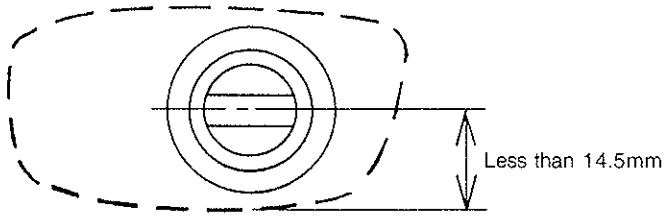
When the lens size is enough for the new frame and there is no need of lens tracing, skip steps 5., 6., 8., and 9. so that trouble for lens tracing can be saved.

---

*1 In the FC mode, a lens can be processed though it has no extra margin because lens shape will be measured, before grinding, at 1.5mm inside of the traced outline with the feeler. The reason is that a complete bevel is not necessary for holding lens in a frame.

4.5.7 Grinding Half-eye lens

When a lens is to be finished that its shortest distance from the blocking point to the position of edge-to-be would be less than 14.5mm, a message "Use chuck for half-eye lens" appears and the machine stops as soon as the START·STOP is pressed.



NOTE :

- To grind into a half-eye lens as above, provided adapter set for half-eye lens (a half-eye adapter, a half-eye lens clamp, and a half-eye cup) as well as the hex wrench (2mm) are required.
- When the traced frame has enough vertical diameter (more than 30mm), standard adapter can be used by blocking the lens at the rim center in the passive mode.

1. **Press** START·STOP.

   The display returns to the layout display.

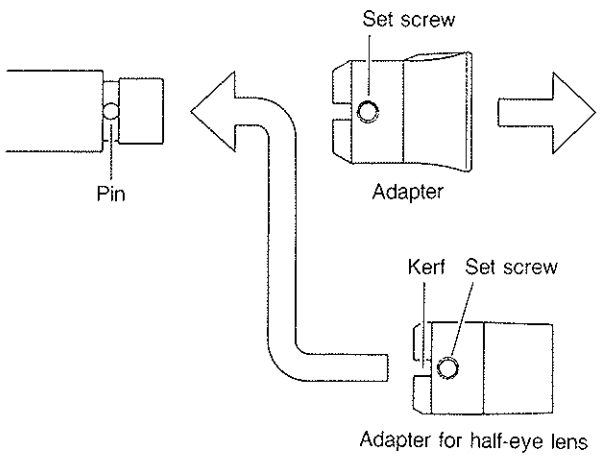
2. **Remove the lens from the adapter.**

3. **Replace the adapter and lens clamp to that for the half-eye lens.**

   1) Loosen the set screw on the standard adapter with a provided hex wrench (2mm) to remove the adapter.

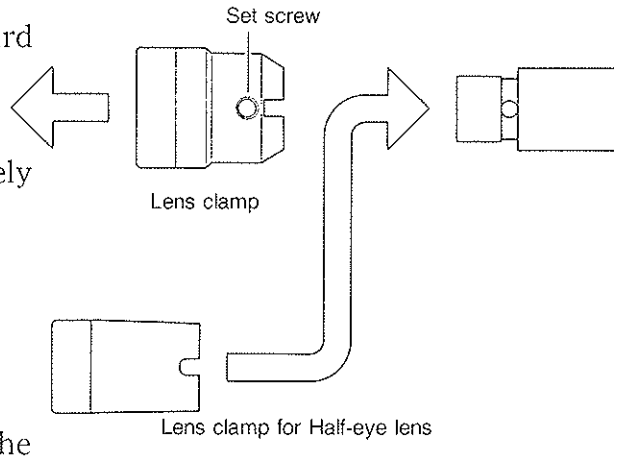
   2) Fit the half-eye adapter to the shaft securely and tighten the set screw to fix it.

      To set the adapter, align the kerf on the adapter with the pin on the shaft, making sure that the set screw is facing toward you.



3) Loosen the set screw on the standard clamp to remove it.

4) Fit the half-eye lens clamp securely to the shaft.

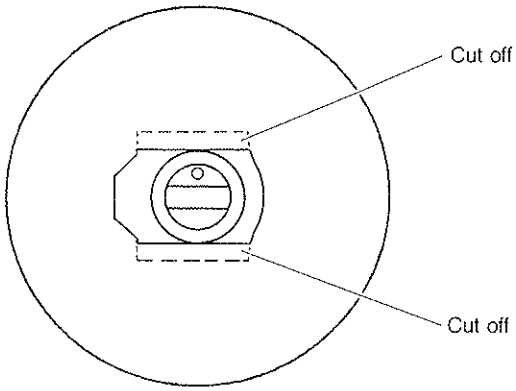


4. Re-block the lens.

1) Remove the suction cup from the lens.

2) Stick a provided double-coated adhesive tape to the half-eye cup and cut off the excess part along the edge of the cup.

3) Block the lens with the half-eye cup.



5. Set the lens to the adapter.

6. Press START·STOP to start grinding.

NOTE :
After grinding, be sure to replace the adapter and the lens clamp to the standard ones.

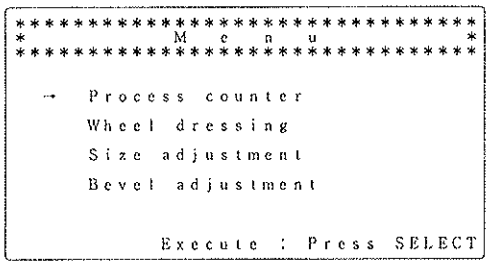
4.6 Auxiliary Functions

4.6.1 Process counter

This is the function to display the count of lenses that have been processed since the production. The count is displayed by each lens materials.

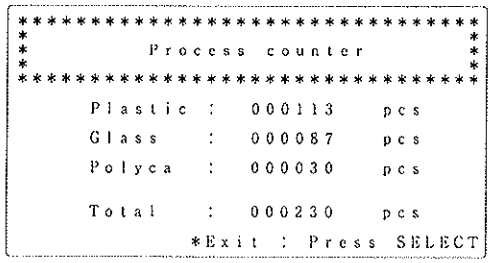
1. **Press** [MENU].

   The layout display alters to the menu display.



2. **Align the pointer to "Process Counter" and press** [SELECT].

   The process count for each material will be shown.*1



3. **The menu display returns by pressing the** [SELECT] **again.**

4. **The layout display returns by pressing** [MENU] **again.**

---

*1 The process of the acrylic lenses will be counted as polycarbonate lenses.

4.6.2 Parameter settings

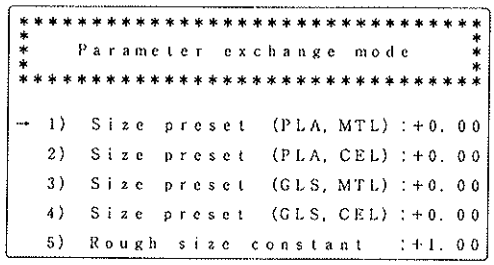
This is a function to set each parameter according to the operator's use.

1. **Press** [MENU].

   Layout display changes to menu display.

2. **Press** [MENU] **again.**

   The parameter setting mode will be entered.

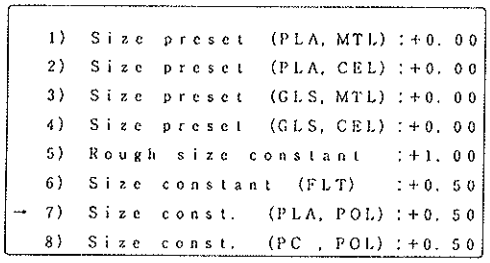


3. **Align the pointer to the desired item.**

   The setting items and their contents are shown below.

4. **Change the setting with** [+] **or** [−].

5. **The layout display returns by pressing** [MENU].



[Parameter items and setting contents]

1) **Size preset** 〈PLA／MTL〉 : ±□.□□
2) **Size preset** 〈PLA／CEL or ZYL〉 : ±□.□□
3) **Size preset** 〈GLS／MTL〉 : ±□.□□
4) **Size preset** 〈GLS／CEL or ZYL〉 : ±□.□□

Factory setting : +0.00[mm]

These are preset SIZ (size) values for each lens-frame combinations, which are used for compensating for the desired finishing size.

(Available setting range : −9.95 ～ +9.95)

The preset values in these parameters will be automatically set at SIZ on layout display.

The lens materials such as polycarbonate and acrylic resin are regarded here as plastics.

5) **Rough size constant** : ±□.□□

Factory setting : +1.00[mm dia.]

This is the size constant of lens margin allowed for fine grinding.

6) **Size constant (FLT)** : ±□.□□

This is the constant for compensating for the desired finishing size in flat edging (rimless grinding) mode. Consequently, this also changes the finishing size in polishing mode the same amount.

7) **Size const. (PLA , POL)** : ±□.□□

8) **Size const. (PC , POL)** : ±□.□□

Factory setting : +0.00[mm]

These are the constants for compensating the polishing amount.

By inputting negative value, the lens will be polished more and accordingly, the finishing size becomes smaller.

7) is for the lens material of plastics or acrylic resin, and 8) is for polycarbonate.

9) **Initial value of PD** : +□□.□

Factory setting : +62.0[mm]

This sets the initial value of PD.

Whenever [+] or [−] is pressed to input the PD, this value appears first.

10) **Layout preset** : ±□□.□

Factory setting : +02.0[mm]

This presets the height of optical center. Set this value as the height of the optical center from the rim center. When inputting the grinding conditions, this value appears automatically at ↕ (could be PD ↕ or BT ↕).

This setting is not effective for eye point layout.

11) **Grind by mirror image** : R, L

Factory setting : R

When both rims are traced, the mirror image of one side will be used as the lens shape data of the other side. This is the parameter to decide which is to be the base side (right or left).

In spite that shape is mirrored, the size (circumference) will not be mirrored but complies with the outline for the respective side.

12) **Measure in flat edge** : Exec / None

Factory setting : Exec

This is for setting whether to measure the lens at flat edging (rimless grinding).

When "Exec" is selected, the lens size will be measured (only rear side) before rough grinding to see if the lens size is enough.

The lens can be processed with no trouble though "None" is selected.

13) **L AXIS constant (bevel)** : ±□.□□

14) **R AXIS constant (bevel)** : ±□.□□

15) **L AXIS constant (flat)** : ±□.□□

16) **R AXIS constant (flat)** : ±□.□□

This is for setting the constant which are for compensating the finished axis angle shift.

13) and 14) are the axis constant for bevel grindings (Auto, Guided, or EX).

15) and 16) are the axis constant for flat edging (rimless grinding) or polishing.

See "7.7 Compensation of Axis Shift".

17) **Grind pressure** : HI., LOW

Factory setting : LOW

This is for adjusting the pressure of lens against the roughing wheel.

18) **Chuck pressure (GLS)** : HI., LOW

Factory setting : HI.

This is for adjusting the chucking pressure for glass lenses.

When the lens breaks because of chuck pressure, set this to "LOW" and use a leap cup.

19) **Memory card type** : None, 32KB/L, 128KB/L, 32KB, 128KB

Factory setting : None

This serves for specifying the type of memory card when the optional Memory Card R/W (Reader/Writer) device is connected, as well as specifying "None" when such a device is not connected or data communication is not wanted.

Select 32KB/L or 128KB/L to read both traced outline data and layout data out, and select 32KB or 128KB to read only outline data out.

When this is set to either 32KB/L, 128KB/L, 32KB, or 128KB, "MEM" will be shown on the layout display.

4.6.3 Memorization of initial display

This is a function to memorize the following items on the layout display.

<Items to be memorized>

- FPD or Eye point layout (Eye point layout or not)
- PD or 1/2PD (PD inputting form)
- ↕, PD↕, or BT↕ (Optical center height inputting form)
- ACT, BF, or PAS (Layout mode)
- PLA, PC, ACR, or GLS (Lens material)
- MTL, CEL/ZYL, or FLT/RIM (Frame material)
- blank, GUI, EX, or POL (Grinding mode)
- R or L (The side displayed first after pressing [DATA SET])

Values on the display cannot be memorized, but PD value and height of optical center can be preset in parameter setting mode. (See 4.6.2 Parameter settings)

<Procedure for Memorization>

1. **Set each item on the layout display as desired.**

2. **Press [START·STOP] for 5 seconds.**

   A beep sounds to notify that each item on display are memorized.
   If the cursor is at MEM, move the cursor away before pressing [START·STOP].

4.6.4 Data communication system

An optional memory card R/W (Reader/Writer) device, when connected with, serves to memorize grinding data (traced outline and layouts), with which, the data can be taken out whenever it is necessary.
The memory capacity varies with the type of memory card.

32KB Type (MC-25) ····· Memorizes data for 25 frames
128KB Type (MC-100) ····· Memorizes data for 100 frames
※More data can be memorized by using a personal computer.

4.7 Treatment After Daily Use

1. **Clean the grinding unit.**
   Follow steps 1.— 4. in "7.1 Wheel dressing" to water the grinding unit and wash out the grinding waste with a provided brush.

NOTE :
- Be careful not to let water go into the back of the carriage. It may cause trouble.
- Clean the grinding unit after every use each day.
  Be sure to clean it on the day that the machine is used. If it is left for some days after it is used, the grinding waste becomes settled and hard to remove.

2. **Turn OFF the power.**

3. **Perform after-use daily checks.** See "4.8.2 Daily checks after use".

4. **Shut the cover of the tracing unit.**

5. **Store accessories in a customary place to avoid possible loss or breakage.**

4.8 Daily Checks

4.8.1 Daily checks before use

Check the following before every use each day.
It is recommended to provide a checking list to make sure everything is checked.

A. Is there enough water in the tank?

The water should be filled up to 80% of the tank.

B. Does the layout display appear when turned ON?

1) Turn ON the power.

2) Ensure that errors do not appear for the layout display.

4.8.2 Daily checks after use

Check the following after every use each day.
It is recommended to provide a checking list to make sure everything is checked.

A. Is the power turned OFF?

B. Is the grinding unit well cleaned?

C. Is the appearance of the body (any stain or breakage) OK?

D. Are all the accessories there with no breakage?

For the content of accessories, See " *§*9. ACCESSORIES".

§ 5 COMMON PROBLEMS AND CORRECTIONS

The machine stops whenever any problem occurs and it is impossible to continue grinding, or to avoid grinding with the same layout twice.
Common problems and their corrections are described below.

PROBLEM	CORRECTION
The stylus cannot be set in the groove of the frame automatically.	Perform semiauto tracings. See "4.3.5 Semiauto tracing".
The stylus comes off the groove of the frame while tracing, and the tracing stops. The lamp at [TRACE] blinks.	Press [TRACE] to return the stylus to its original position, and trace again. If the stylus has come off because the frame is sharply warped, set only one rim and hold the other side to trace. See "4.3.6 Tracing goggle type frame".
The message "Use chuck for half-eye lens" appears and the machine stops.	Use adapter set for half-eye lens to grind. See "4.5.7 Grinding half-eye lens".
Lens shape measurement stops on the half way and the display changes to the simulation display with a part of lens outline blinking.	The size of the set lens is not enough for the grinding size. The blinking line shows the part that is missing. Press [START·STOP] to quit grinding, and use bigger lens or change the layout to restart.
Grinding does not start though [START·STOP] is pressed. Instead, a beeper sounds like "pip peep".	The same side is attempted to grind twice. Press [R/L] to change the indication R or L to grind the lens for the other side.
Error code appears and the machine stops.	It is the error of the machine itself. Press [START·STOP] to reset the machine. If the error code still appears, contact your authorized distributor.

§ 6 STORAGE

NOTE :

- Do not store the machine in hot a or humid environment or where it is exposed to direct sunlight.
- Store the machine in a even and stable place without shocks or vibration.

1. **Pull out the power cable from the outlet.**

2. **If it will not be used for a long time, empty the tank of water.**

3. **Shut the cover of the tracing unit and the soundproof cover.**

4. **Store accessories in a customary place such as the drawer of a table to avoid possible loss or breakage.**

§ 7 MAINTENANCE

7.1 Wheel Dressing

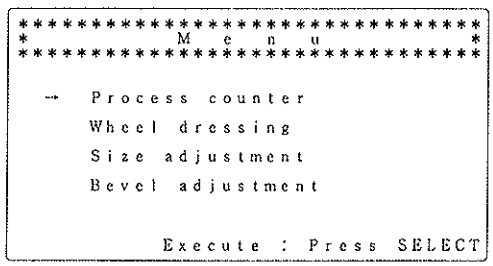
The loading of grinding wheel causes grinding to take longer and to make finished size inaccurate. It is necessary to dress the fine grinding wheel regularly.
Since glass lenses are processed only with the fine grinding wheel, the wheel is more likely to become loaded especially when many glass lenses are processed. In such a case, the wheel must be dressed at every third or fourth grinding.
As well, the unevenness of polishing wheel causes the edge to be polished dimly. In such a case, it is necessary to dress the polishing wheel with a dressing stick for polishing wheel.

NOTE :

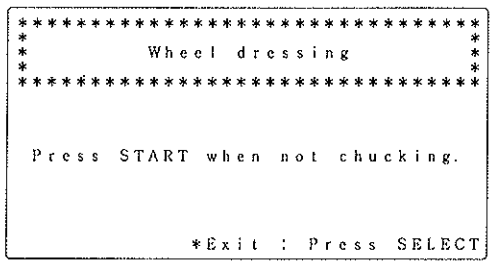
- Never dress the roughing wheel, otherwise the wheel will be damaged.
- To dress the fine grinding wheel, use the provided dressing stick for fine grinding wheel (WA220K).
- To dress the polishing wheel, be sure to use the provided dressing stick for polishing wheel (WA4000 RH-20). Using wrong stick will damage the wheel.
- Be sure to place the end surface of the stick on the wheel, not the corner or the edge; otherwise the wheel will be damaged.
- Hold the stick with both hands. If it is held with one hand, the hand cannot hold the stick strong enough and may damage the wheel with the corner or the edge of the stick.

1. **Press** [MENU].

   Layout display changes to menu display.



2. **Align the cursor to "Wheel dressing" and press** [SELECT].
   The "Wheel dressing" mode enters.



3. **Open the soundproof cover.**

4. **Press** [START·STOP].
   Water runs for a few seconds, and at the same time, wheels begins to turn.

5. **Wet the dressing stick well with running water.**
   For dressing the polishing wheel, place the wet dressing stick gently on the wheel before the water stops.

6. **After water stops, place the dressing stick on the wheel, which is still turning by the force of inertia.**

7. **Repeat steps 4.– 6. a few times.**

8. **After dressing, press** [SELECT] **to recall the menu display.**

9. **Press** [MENU] **twice to recall the layout display.**

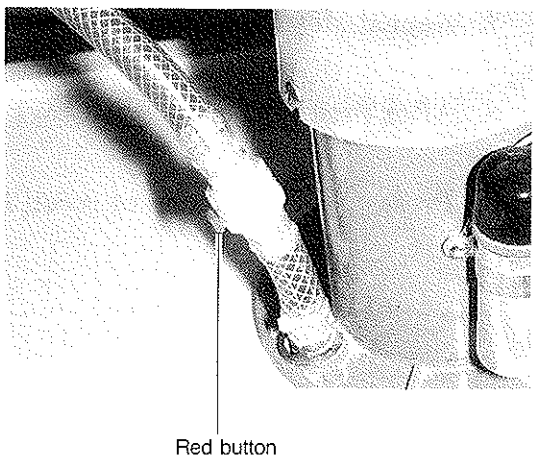
7.2 Replacement of Water and Filter

Change the water in the tank and the stocking filter at the end of the drain pipe regularly once every 100 grindings.

1. **Open the door of the table and draw the tank out.**

2. **Disconnect the water supply pipe and power cable from the tank.**

   To remove the pipe, press the red button.



3. **Remove the water supply pump from the tank and lay it on the side.**

4. **Open the cover of the tank and remove the stocking filter at the end of the drain pipe.**

5. **Drain the skimmed water only.**

6. **Dispose the grinding waste deposited in the tank and in the stocking filter as incombustibles.**

7. **Pour water into the tank up to 80% (approx. 5cm from the brim) of it.**

   The waste disposal becomes easier by spreading a vinyl seat in the tank in advance.

8. **Put the new stocking filter at the end of the drain pipe with a rubber band.**

NOTE :

- Use the stocking filter which NIDEK specifies. Other stockings may become clogged or cause water supply pipe and drain pipe to be clogged.
- The stocking filter is a throwaway article. Do not reuse it, otherwise it may be ripped or have a run and will not function as a filter.

9. **Shut the cover of the tank and place the water supply pump as before.**

10. **Place the tank in the table.**

11. **Connect the water supply pipe and the power cable to the pump.**

7.3 Replacement of Fuses

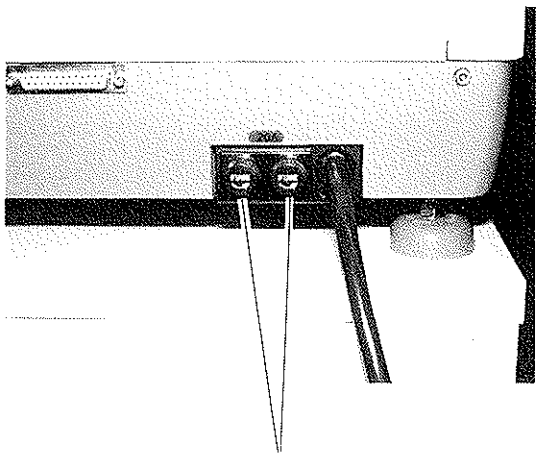
If the machine cannot be activated though the power switch is turned ON, fuse may be blown out. Replace the fuses with new ones.

1. **Turn the power switch OFF (○) and pull out the power cable from the outlet.**

2. **Turn the fuse holders on the rear side of the body to remove them.**

3. **Remove the old fuses from the holders and replace them with new ones.**

4. **Push the holders into the body and turn them clockwise.**



Fuse holders

7.4 Cleaning Exterior

When the exterior of the machine such as covers or panels become dirty, wipe them with a soft cloth. For stubborn dirt, immerse a cloth in a neutral detergent, wring it well, and wipe the part. Wipe off with a dry cloth to finish.

NOTE :
Never use an organic solvent such as paint thinner. This could dissolve the surface.

7.5 Compensation of Size Error

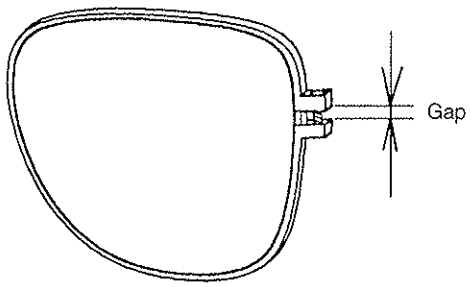
The finished size of the lenses grow as grinding is repeated many times, due to the wearing of the wheels.
In such a case, measure the size of the finished lens in the following procedure, and adjust the size by changing the constant (basic value).

1. Measure the lens size.

1) Trace a metal frame.

2) Grind a lens.

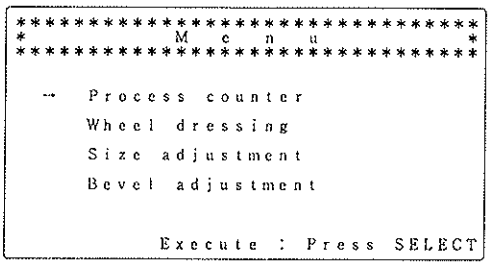
3) Fit the lens in the frame and measure the gap at the rim joint.



2. Adjust the size.

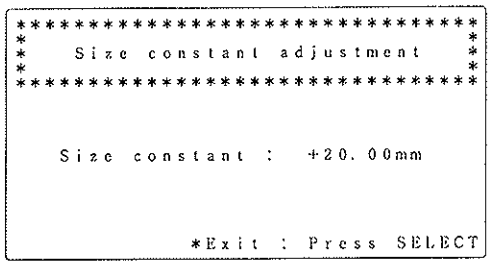
1) Press [MENU].

The layout display changes to the menu display.



2) Align the pointer to "Size constant" and press [SELECT].

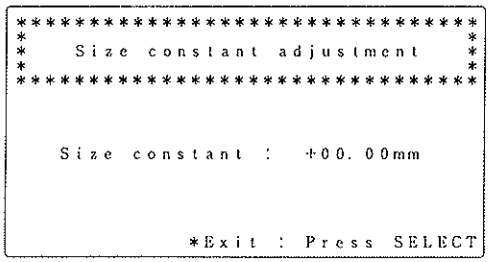
The size constant adjustment mode will be entered and the size constant will be shown.



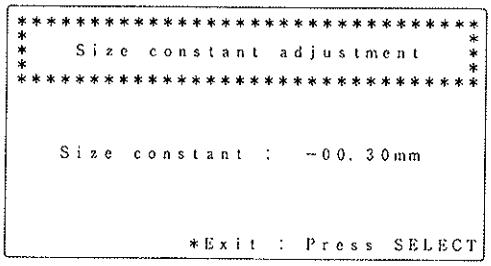
3) Input the compensation value.

Compensation value (as a guide) ≒ −1/3 × Measured gap size

When [+] or [−] is pressed, the value on the display changes to +00.00mm first.



e.g. If the gap were 1mm
−1/3 × 1(mm) ≒ −0.3(mm)



4) Press [SELECT].

The constant will be rewritten in the computer and then the menu display returns.

5) Press [MENU] twice.

The layout display returns.

3. Repeat steps 1. and 2., until the lens size just fits the frame.

7.6 Compensation of Bevel Displacement

When the bevel of a lens is finished to be displaced from the designated position, adjust the bevel position by changing the bevel constant.

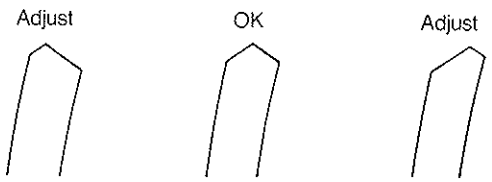
1. Check the bevel position.

1) Trace a frame.

2) Grind a lens of SPH : 0.0D ～ +1.0D.

3) Check at the part where the edge is rather thin to see that the point of bevel tip is at the middle of the edge.

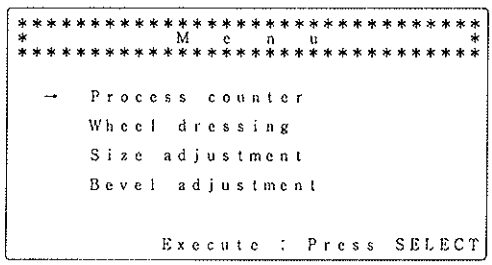
   If the point is leaning to either side, adjust it in the following procedures.



2. Adjust the bevel position.

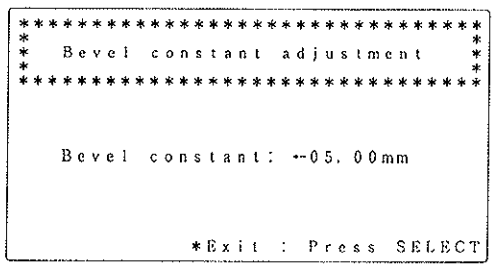
1) Press [MENU].

   The layout display changes to the menu display.



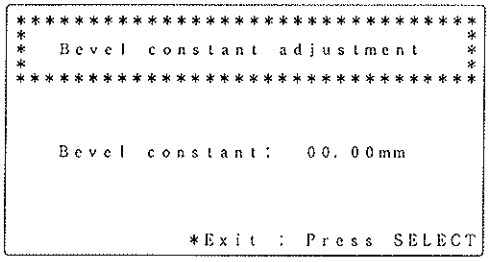
2) Align the cursor to "Bevel constant" and press [SELECT].

   The bevel constant adjustment mode enters and the bevel constant will be shown.

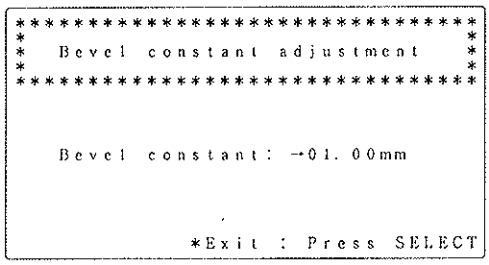


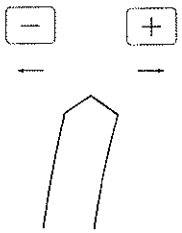
3) Input the compensation value.

When [+] or [−] is pressed, the value on the display changes to +00.00mm first.
To shift the bevel toward the front side of the lens, press [+], and to shift toward the rear side, press [−].
The arrow ← shows that the bevel is moved toward the front side, and → shows that it is moved toward the rear side.



e.g. Bevel constant : →01.00mm
The bevel is moved 1mm toward the rear side of the lens.





4) Press [SELECT].
The constant will be rewritten in the computer and then the menu display returns.

5) Press [MENU] twice.
The layout display returns.

3. **Repeat steps 1. and 2. until the bevel position comes just into the middle of the lens edge.**

7.7 Compensation of Axis Shift

When the axis angle of a lens is finished to be shifted from the designated angle, adjust it as follows.

1. **Press** [MENU].

   The layout display changes to the menu display.

2. **Press** [MENU] **again.**

   Parameter exchange mode enters.

```
**********************************
*                                *
*    Parameter exchange mode     *
*                                *
**********************************

→ 1)  Size preset  (PLA, MTL) :+0.00
  2)  Size preset  (PLA, CEL) :+0.00
  3)  Size preset  (GLS, MTL) :+0.00
  4)  Size preset  (GLS, CEL) :+0.00
  5)  Rough size constant     :+1.00
```

3. **Adjust the axis angle in items 13) − 16).**

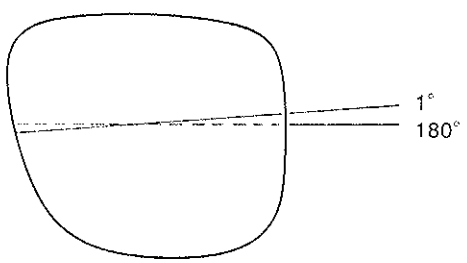
   Adjust the right and left axis angle separately for each edging types; bevel edging (Auto, Guided, and EX) and flat edging (rimless grinding).

   - For bevel edging of left lens : 13) L AXIS constant (bevel)
   - For bevel edging of right lens : 14) R AXIS constant (bevel)
   - For flat/polished edging of left lens : 15) L AXIS constant (flat)
   - For flat/polished edging of right lens : 16) R AXIS constant (flat)

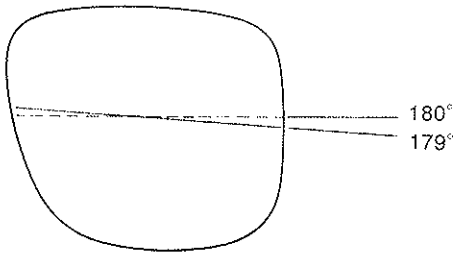
   Add the compensation value to the AXIS constant value presented on the display to adjust the axis angle.

   e.g. If the finished axis angle became 1° while prescribed angle was 180°, add 1.00 to the presented value.

   Setting value : +2.00 ⇨ +3.00



e.g. If the finished axis angle became 179° while prescribed angle was 180°, subtract 1.00 from the presented value.
Setting value : +2.00 ⇨ +1.00



4. **Press [MENU] to recall the layout display.**

5. **Repeat steps 1.— 4. until the correct axis angle is achieved.**

7.8 List of Comsumable Articles

Articles	Order Number
Dressing stick for fine grinding wheel	41002-M611
Dressing stick for polishing wheel	40140-M610
Stocking filter	41217-M040
Fuse (100 ~ 120Vac)	804-02-02067
Fuse (220 ~ 240Vac)	804-02-02066

§ 8 SPECIFICATIONS

Grinding system	Patternless	
Grinding mode	Auto :	Computer bevelling
	Guided :	Manual bevel setting which enables to select the either the curve profiling the front surface or the curve profiuling the rear surface as well as the specified curve value.
	EX :	EX lens and cataract lens grinding
	Polish :	Flat edge polishing
	Flat (Rim) :	Flat (Rimless) edging
Grinding size range	24 ~ 110mm dia. (Min. height of Half-eye lens : 20mm)	
Adjustable range	Finished size (dia.) :	±9.95mm (0.05mm steps)
	Bevel tip point (PNT) :	±9.9mm (0.1mm steps)
	Vertical layout :	±15.0mm (0.1mm steps)
	Horizontal layout :	±9.9mm (0.1mm steps)
Frame tracing	3-dimensional automatic tracing for both frame rims	
	Traceable rim size :	20 ~ 96mm dia.
	Measuring points :	1000 points (for one rim)
Wheels	Roughing wheel :	
	Electroplated	100mm dia., 22mm width
	Fine grinding wheel :	
	Metal bonded	100mm dia., 23mm width
	Polishing wheel :	
	Metal bonded	100mm dia., 12mm width
Water supply system	Pump circulation or direct connection to tap water	
Dimensions	562(W) × 530(D) × 330(H)mm (for main body only)	
Weight	Approx. 52kg (for main body only)	
Power consumption	Approx. 600VA	
Power source	110, 120, 220, or 240Vac, 50/60Hz	

※The voltage and frequency depend on the destination, and they are not changeable. The voltage and frequency are indicated on the name plate.

※Specifications and design are subject to change without notice for improvement.

§ 9 ACCESSORIES

9.1 NIDEK-type Accessories

Operator's manual	1
Suction cups	6
Leap cups	3
Double-coated adhesive tape	1 sheet
Dressing stick for polishing wheel	1
Dressing stick for fine grinding wheel	1
Brush	1
Half-eye cups	3
Half-eye adapter	1
Half-eye lens clamp	1
Leap cup remover	1
Pattern holder set	1
(1 pattern setting unit, 1 pattern holder, and 1 dummy lens holder)	
Spare fuses	2
Case	1
Hex wrench set	1 set (3 wrenches)

9.2 WECO-type Accessories

Operator's manual	1
Double-coated adhesive tape	1 sheet
Dressing stick for polishing wheel	1
Dressing stick for fine grinding wheel	1
Brush	1
Half-eye adapter (WECO specification)	1
Half-eye lens clamp	1
Pattern holder set	1 set
(1 pattern setting unit, 1 pattern holder, and 1 dummy lens holder)	
Spare fuses	2
Case	1
Hex wrench set	1 set (3 wrenches)

9.3 FOMAP-type Accessories

Operator's manual	1
Double-coated adhesive tape	1 sheet
Dressing stick for polishing wheel	1
Dressing stick for fine grinding wheel	1
Brush	1
Half-eye adapter (FOMAP specification)	1
Half-eye lens clamp	1
Pattern holder set	1
(1 pattern setting unit, 1 pattern holder, and 1 dummy lens holder)	
Spare fuses	2
Case	1
Hex wrench set	1 set (3 wrenches)

* Specifications and design are subject to change without notice for improvement.

NIDEK CO., LTD.

HEAD OFFICE : 34-14, Maehama, Hiroishi-cho, Gamagori, Aichi 443, Japan
Telephone: (0533) 67-6611
Facsimile: (0533) 67-6610

TOKYO OFFICE (International Div.) : 6th Floor, Takahashi Bldg., No.2, 3-chome, Kanda-jinboucho
Chiyoda-ku, Tokyo 101, Japan
Telephone: (03) 3288-0571
Facsimile: (03) 3288-0570
Telex: 2226647 NIDEK J

NIDEK INCORPORATED : 47651 Westinghouse Drive Fremont, California 94539, U.S.A.
Telephone: (510) 226-5700
Facsimile: (510) 226-5750

NIDEK SOCIÉTÉ ANONYME : Europarc 59, rue Auguste Perret, 94042 CRETEIL, France
Telephone: (1) 49 80 97 97
Facsimile: (1) 49 80 32 08

95.7
40143-P902A
Printed in Japan