

Auto Lensmeter *SLM-5000* **Operations Manual**

<Important>

Read this manual thoroughly before use.

Keep this manual on hand at all times.

SHIN-NIPPON

INTRODUCTION


This manual provides you information on correct handling and operational procedures as well as safety considerations pertinent to the SLM-5000.

Before carrying out any measurements, read the instructions thoroughly so that effective operation is ensured. As this continues an important reference and user guide, be sure to keep it on hand at all times.

NOTE

- (1) The information contained in this manual is subject to change without notice.
- (2) While reasonable efforts have been made in the preparation of this document to ensure its accuracy, you should contact your local distributor immediately, if any queries arise due to editorial errors or omissions etc.
- (3) If you find any imperfect collating or missing pages, contact your local distributor for replacement.

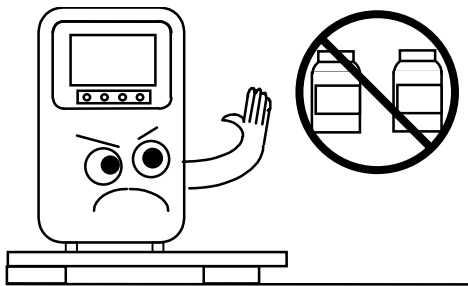
General definitions of safety symbols are indicated below.

	Personal injury or physical damage may occur when this warning is ignored. General warning. Caution. Risk of danger.
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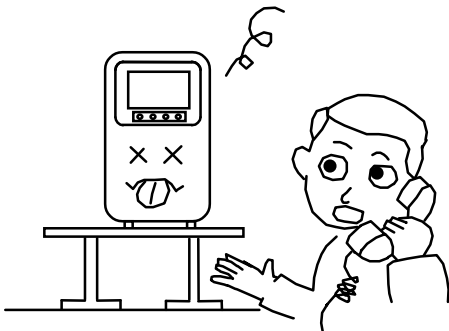
SAFETY CONSIDERATION

General Precautions

- SLM-5000 is NOT a medical device.
- Fingerprints or dust on the optical parts such as lenses may affect the measurement accuracy. Always avoid touching such parts with fingers and keep away from dust getting on them.
- When fingerprints or dust are attached onto such parts, gently wipe them with the supplied dust cloth.



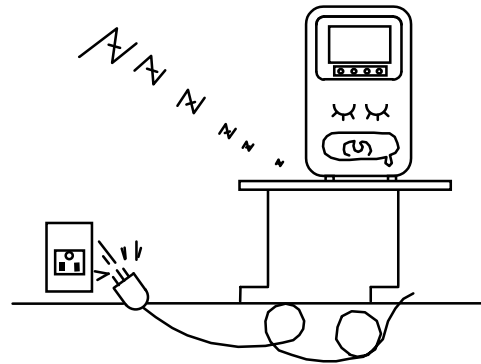
- When water or any liquid gets on the instrument, or when any foreign matters gets inside the instrument, unplug the power cord immediately and contact your local distributor.



- In case of occurrence of abnormality (noise or smoke), unplug the power cord immediately and contact your local distributor. Using the instrument in such a condition may cause fire or physical damage.
- Never dismantle the instrument. Fire or physical damage may result.
- In case of malfunction, never try to repair by yourself. Unplug the power cord immediately and contact your local distributor.

■ Precautions on power source

- The power cord must be grounded at all time.
- Avoid damaging the power cord (such as bending it in an extremely small size, pulling, placing a heavy object on it). When the power cord is damaged (breaks, damage of cover, etc), replace it to a new cord to prevent any electric shock or fire from occurring.
- Insert the power cord firmly into the outlet and the instrument. If not, fire or electric shock may occur.
- Keep the power cord clean without any dust or oil on it. The dirty terminal may cause malfunction or fire.
- When the power cord becomes hot after used, check for the dirt at the terminal part. If you find no dirt, replace the power cord to a new cord. The dirty terminal may cause malfunction or fire.
- Always use SLM-5000 with the rated power voltage. Using the instrument out of the rated voltage range may cause malfunction or fire.
- When plugging and unplugging the power cord, always hold the plug.
- Do not touch the plug when your hands are wet.
- When the instrument is not used for a long time, unplug the power cord from the outlet.

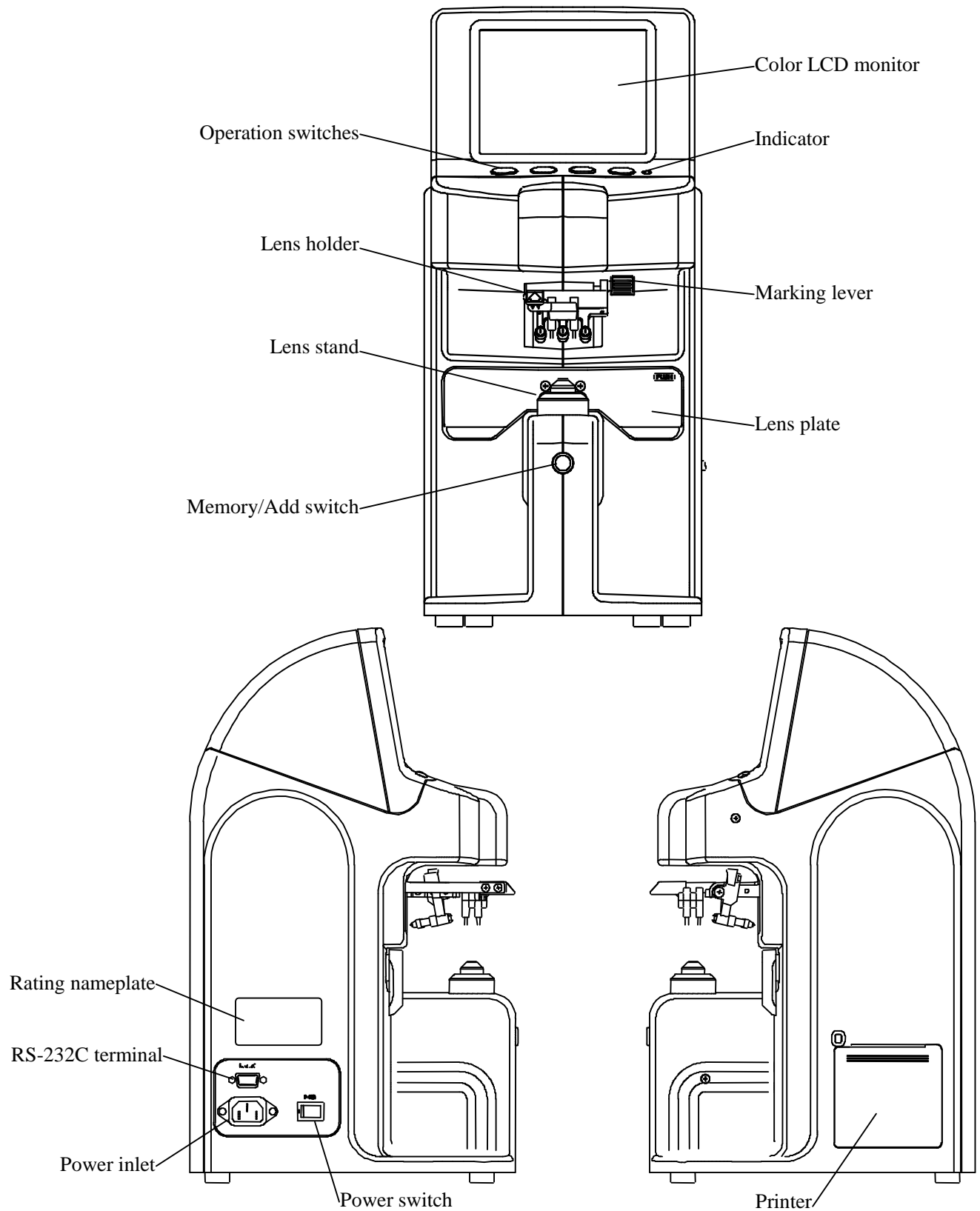


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1. Parts Identification

1.1. Overview



1.2. Accessories

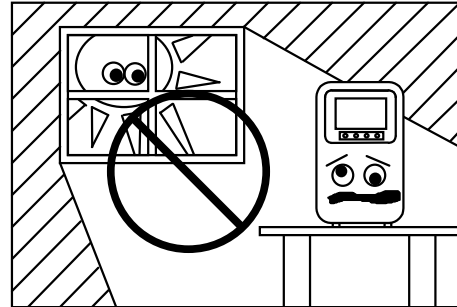
When you unpack the box, please check the followings are all packed without any damages.
Contact your distributor if any accessories are missing or damaged.

- Power cord
- Contact lens stand
- Rolls of printer paper
- Printer shaft
- Dustproof cover
- Dust cloth
- Operations manual
- Marking pen (1set)
- Filing soft

2. Installation Environment

- 1) Do not expose the optic parts, i.e. lens stand, directly to sunlight or bright light from other sources.

Strong light or glare to the instrument may cause the failure of measurement.

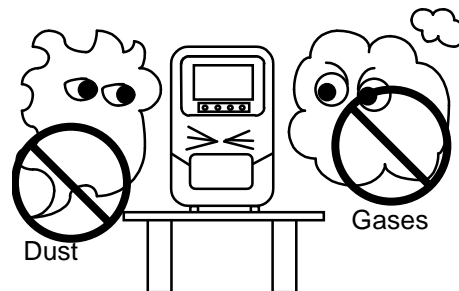


- 2) Do not install the instrument in places where either dust or rubbish may accumulate.
- 3) Environments with extremes in heat and humidity should also be avoided.

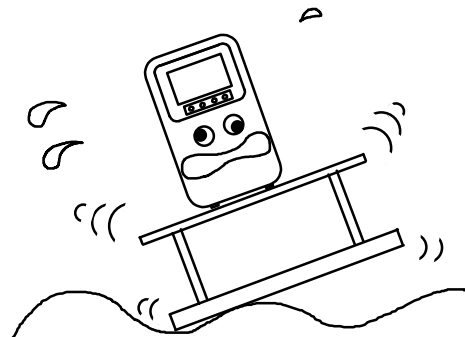
Temperature range for use: 10°C ~ 40°C

Temperature range for storage: -10°C ~ 60°C

Humidity range for use/storage: 70%HR (no dew condensation allowed)



- 4) Keep away from inflammable or explosive gases as well as storage areas of medical supplies and chemicals.
- 5) Keep away from sites that experience strong vibrations or sudden shocks.
- 6) Malfunction is likely to occur if the instrument is not properly stabilized or accidentally overturns. To prevent internal/external damage caused by sudden impact, install the instrument on a surface that is solid and secure. Do not store in high, 'out of reach' places.



3. Safeguard Summary

- 1) Ensure the instrument is properly grounded when connected to the power source.
- 2) Do not touch or allow dust to settle on the optical parts (i.e. lenses), as their measuring accuracy could be adversely affected and incorrect value may result.

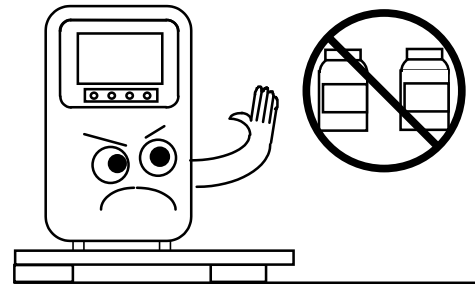


When dust or fingerprints appear, use the supplied dust cloth or a soft cloth to gently wipe off the build-up. Take great care when cleaning these parts, as they are particularly sensitive and fragile.

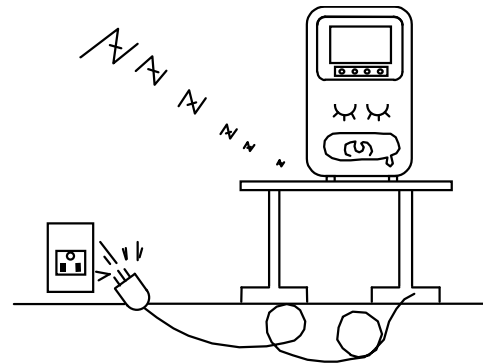
- 3) If the surfaces of the measuring unit and main unit including the operation switches are dirty, gently wipe with a dry cloth. For hard to remove stains, a damp cloth or neutral cleanser is recommended.



At no time use organic solvents which will damage the water based paint finish of the instrument.



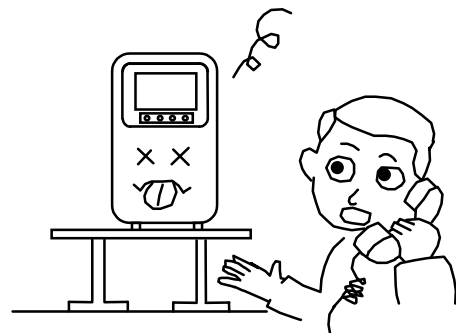
- 4) SLM-5000 is a precision optical instrument. Handle with care at all times, making sure not to accidentally drop it.



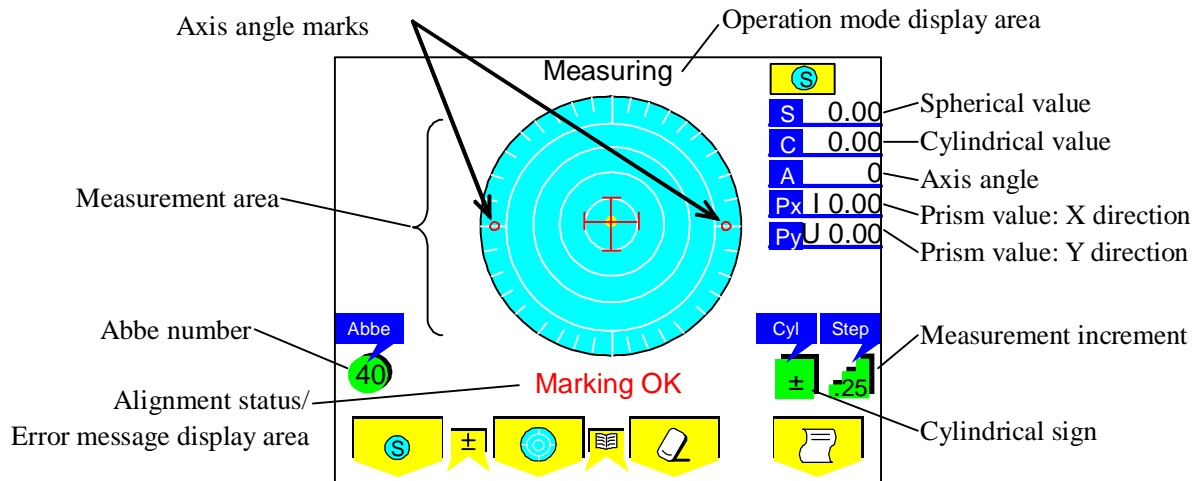
- 5) If the instrument is not to be used for any length of time, remove the power cord from the outlet.

- 6) When not in use, the instrument should be protected with the provided dustproof cover.
















- 7) If the instrument fails to function properly, do not attempt to perform internal service or adjustment. Contact immediately your nearest registered agent, distributor or retail outlet.



4. Measurement Screen



4.1. Switch Function

Name	Description
LENS switch   	designates a type of the lens to be measured: a single lens a lens for a right eye a lens for a left eye
Measurement selection switch <single/progressive lens>  	switch the measurement mode: a single focal lens measurement a progressive lens measurement.
CLEAR switch 	erases the data stored in memory.
PRINT switch 	prints out the data.
Memory/Add switch	stores the measurement data in memory when a single focal lens is measured. determines the measurement value of the far point when the addition is measured. determines the far point for auto measurement of the progressive lens. For the manual measurement, determines the measurement positions and values for the far and near points.
MENU switch 	corresponds to pressing two switches shown on the right at the same time. Shift to and change of each Set up item.  
Cyl switch  →  → 	changes the symbol of cyl in the order of -, +, and ± when two switchs are pressed together.  

4.2. Each Setting

4.2.1. Set up Screen

You can set each measurement condition in the Set up screen.

1/2

Step	0.25	0.12	0.01
Lens Switch	S/R/L		R/L
Lens	Normal	H Cont	S Cont
Auto Memory	Off		On
Prog Auto	Off		On
ADD Measure	F/N.AT	N.AT	Manual
Prog. Graph	Off		On
Graph Print	Off		On
Prism	Off	X-Y	P-B

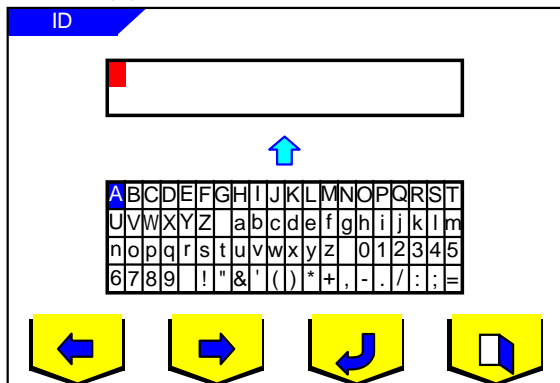
2/2

Prism(mm)	Off					On
Abbe	20	30	40	50	60	
Ray	e			d		
Stand by	Off	3Min	5Min	10Min		
Language	EN	FR	ES	IT	PT	DE 中
Brightness	50%					
ID	ID Screen					
RS 232C	RS 232C Screen					
Date/Time	Date/Time Screen					

Item	Description	Initial Setting
Step	Selection of the increment in diopter. <0.25 / 0.12 / 0.01>	0.25
Lens Switch	Selection of a lens switch function S/R/L : Single Lens / Lens for a right eye / Lens for a left eye R/L : Lens for a right eye / Lens for a left eye	S/R/L
Lens	Setting of the lens type to be measured <Normal: a lens for glasses / H Cont: hard contact lens / S Cont: soft contact lens>	Normal
Auto Memory	Selection of automatic memory in case of Marking OK. On/Off	Off
Prog Auto	Selects whether to perform the automatic judgment for progressive lens. <Off: not perform / On: perform>	Off
ADD Measure	Selection of automatic/manual assessment of far point and near point Auto-memory both of a far and a near points (F/N.AT) Auto-memory only a near point (N.AT) Memory manually (Manual)	N.AT
Prog. Graph	Selects whether to display the automatic assessment gauge of the near point when the progressive lens is measured. <Off: not displayed / On: displayed>	Off
Graph Print	Selects whether to print the automatic assessment gauge for near point after the progressive lens is measured. <Off: not printed / On: printed>	Off
Prism	Selects whether to display prism values, and which unit is used if displayed. <Off: not displayed / X-Y: X-Y display / P-B: prism value - base direction>	X-Y
Prism(mm)	Selects whether to display the prism value of X-Y direction in mm. <Off: not displayed / On: displayed>	Off
Abbe	Selects Abbe number of the lens measured<20 / 30 / 40 / 50 / 60>	40
Ray	Selects the reference wavelength of measurement <e: e line / d: d line>	e
Stand by	Sets how long it takes until power saving function is activated. <Off: zero / 3Min: 3 minutes / 5Min: 5 minutes / 10Min: 10 minutes>	10Min
Language	Selection of language displayed on the screen EN:English FR:French ES:Spanish IT:Italian PT:Portuguese DE:German 中: Chinese	EN
Brightness	Brightness adjustment of the screen 0 ~ 100% (step: 5%)	Adjustment value
ID	Switch to ID screen	-
RS 232C	Switch to RS 232C screen	-
Date/Time	Switch to Date/Time screen	-

4.2.2. ID Screen

Screen (1)



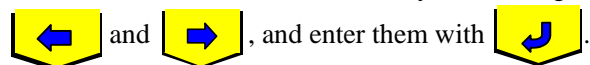
This screen allows you to create the data that would always appear on the printout such as a store name or messages:

Screen (1): for writing the information

Screen (2): for changing and erasing the information

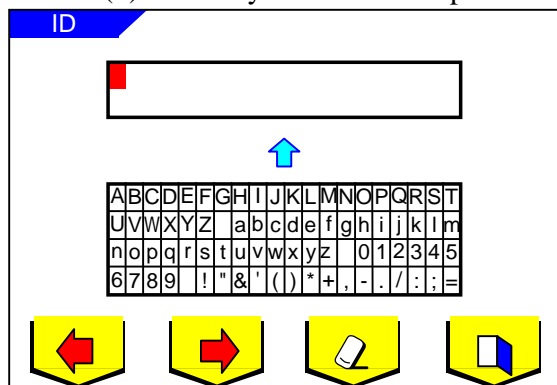
(during Memory/Add switch pressed).



In the Screen (1), select letters and symbols using







Any changes made will overwrite the original letters and symbols.

Screen (2): Memory/Add switch is pressed



To make some changes, press Memory/Add switch to call up Screen (2). Using  and , move the cursor to the letter or symbol you wish to change.

Then, release Memory/Add switch to return to the Screen (1). Select the letter or symbol you wish to change and press .

To erase the letters or symbols selected, press Memory/Add switch to call up Screen (2). Move the cursor to the letters or symbols you wish to erase using  and , and press .



4.2.3. RS 232C Screen

RS 232C

Data Out	Print	Manual	Auto
BaudRate	38400	9600	2400

NB Bit 8
 Parity None
 Stop Bit 1

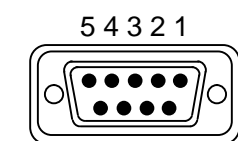
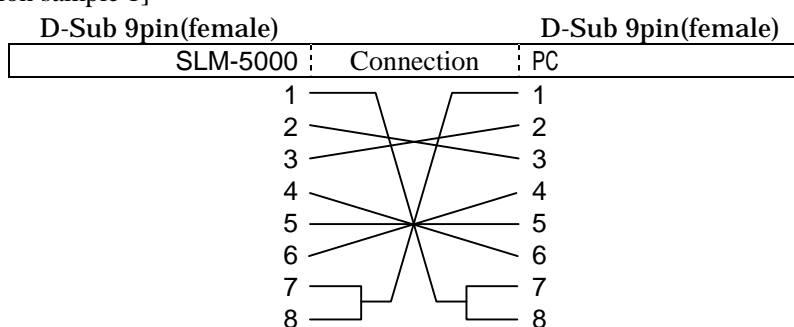
In RS 232C screen, you can set the communication parameters to send the measurement values to a personal computer.

Item	Description			Initial Setting
Data Out	How to output the data		Icon	Print
	Print	print out from the build-in printer		
	Manual	measurement values are output from RS 232C terminal using the switch.		
	Auto	measurement values are continuously output from RS 232C terminal.		
BaudRate	Transfer rate			38400
NB Bit	Character length (data bit)			8 (fixed)
Parity	Parity check			None (fixed)
Stop Bit	Stop bit			1 (fixed)

<Signal names and connection>

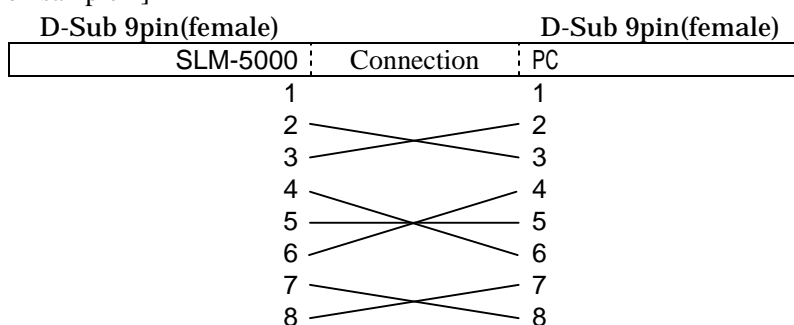
Connect each connector of the serial interface as shown below. Connection shall be made to a CE-mark approved instrument.

[Connection sample 1]



9 8 7 6
D-Sub 9Pin(female)





[Connection sample 2]






4.2.4. Date/Time Screen

Screen (1)

Date/Time			
Date Form	Y/M/D	D/M/Y	M/D/Y
Date	2002 / 01 / 18		
Time	10 : 08 : 28		



This is the screen to set date and time shown on the printout.


Select the item you wish to change using  and , and set the detail with .

Date Form: Y/M/D: year, month, date

D/M/Y: date, month, year

M/D/Y: year, date, month

Date: change of the date

Move the cursor to the item you wish to change with . While Memory/Add switch is pressed, Screen (2) will be displayed. Make changes using







Time: change of the time

Follow the procedure of 'Date' above.

Screen (2): Memory/Add switch is pressed

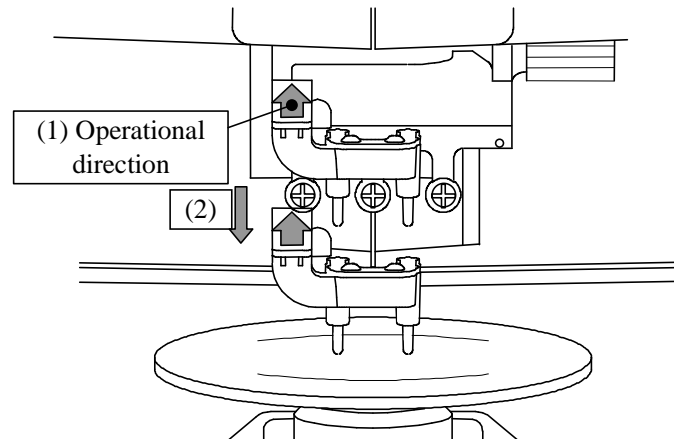
Date/Time			
Date Form	Y/M/D	D/M/Y	M/D/Y
Date	2002 / 01 / 18		
Time	10 : 08 : 28		



5. How to operate the lensmeter

5.1. Lens holder

- (1) Raise the lever to the operational direction until it is unlocked.
- (2) Lower the lens holder slowly and fix the lens.



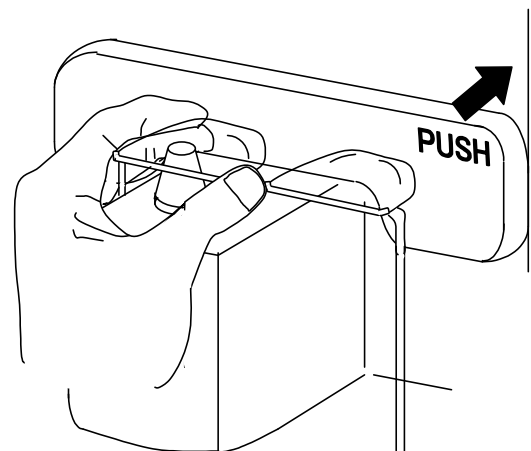
Great care shall be taken to avoid giving a strong impact to the lens when lowering the lens holder.

Make sure that the lens holder is raised to the top when raising it.

5.2. Lens plate

The lens plate is a reference of the astigmatic axis.

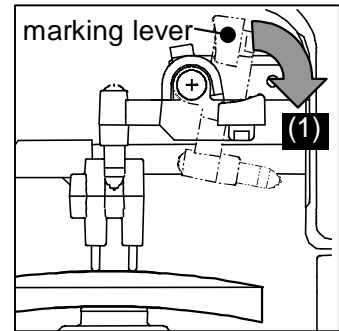
- (1) Push the PUSH mark on the lens plate to unlock it. The lens plate will come out.
(To lock the lens plate, push it again.)
- (2) The lens plate comes out until it touches the lens when pushed. Place the frame lens on the lens stand so that the bottom touches the plate.



5.3. Marking lever

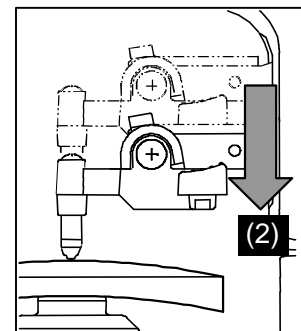
5.3.1. How to operate

(1) Turn and press the marking lever.

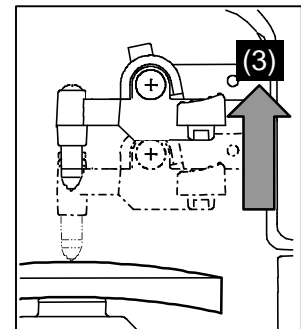


(2) With it turned and pressed, lower the marking lever slowly until the tips of marking pens touch the lens surface softly.

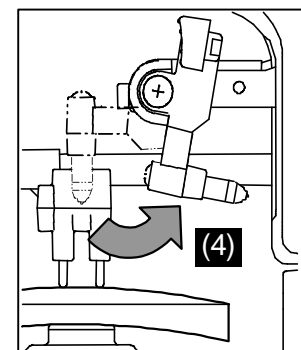
note : Do no repeat marking at the same point.
The marking pen may be damaged early, which requires replacement.



(3) Release the finger slowly after finishing marking on a lens.



(4) Marking lever returns to the initial position.



Observe the following, otherwise you may damage the pen tip.

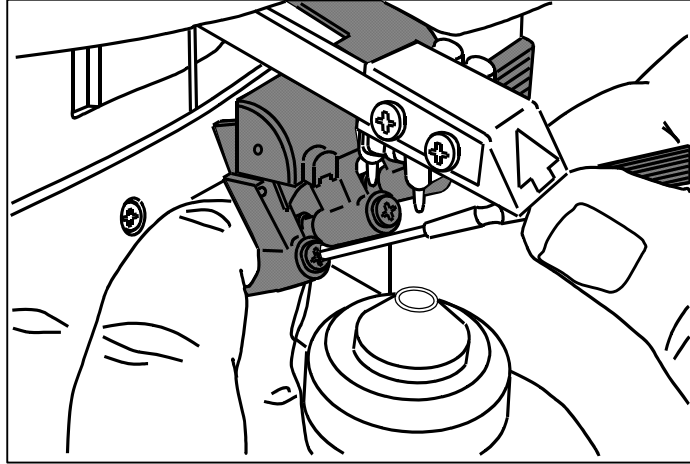
- Do not push the marking pen too hard when marking.
- Do not operate the marking lever when no lens is set.
- Do not touch the pen tip during cleaning.

5.3.2. Replacement of marking pen

A marking pen is an article of consumption.

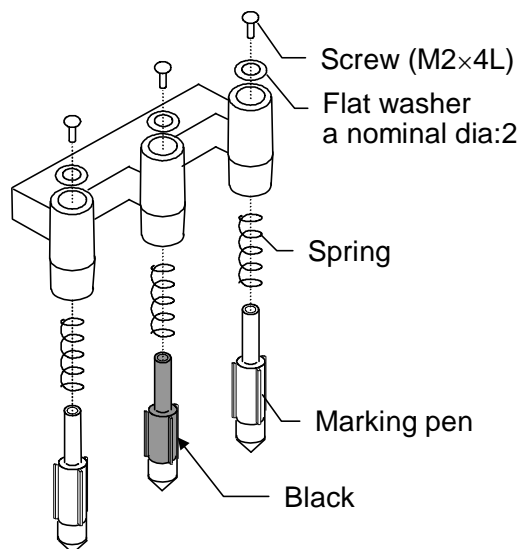
Replace it if an imprint becomes thin or the pen tip is worn out.

(1) Hold the pen tip of the marking pen (the plastic part) and turn the screw to the left to remove.



(2) Attach a spring to a new marking pen as shown below. Then insert the pen back to the initial position.

(3) Holding the marking pen, fix it with the screw.



note : A central marking pen is black and is shorter than pens on both sides.



- Use the marking pen exclusively designed for SLM-5000 only.
- Avoid touching the pen tip when replacing. The tip may be damaged.
- Do not fasten the screw too tightly when replacing. You may damage the part.
- Avoid losing the screw and spring.

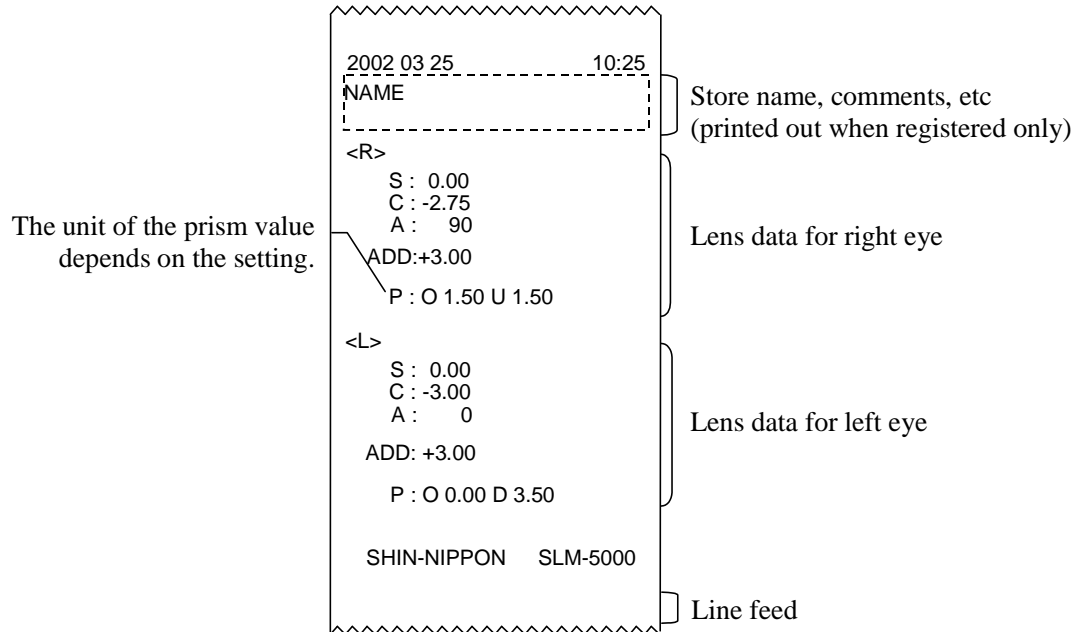
5.4. Printer

5.4.1. How to operate

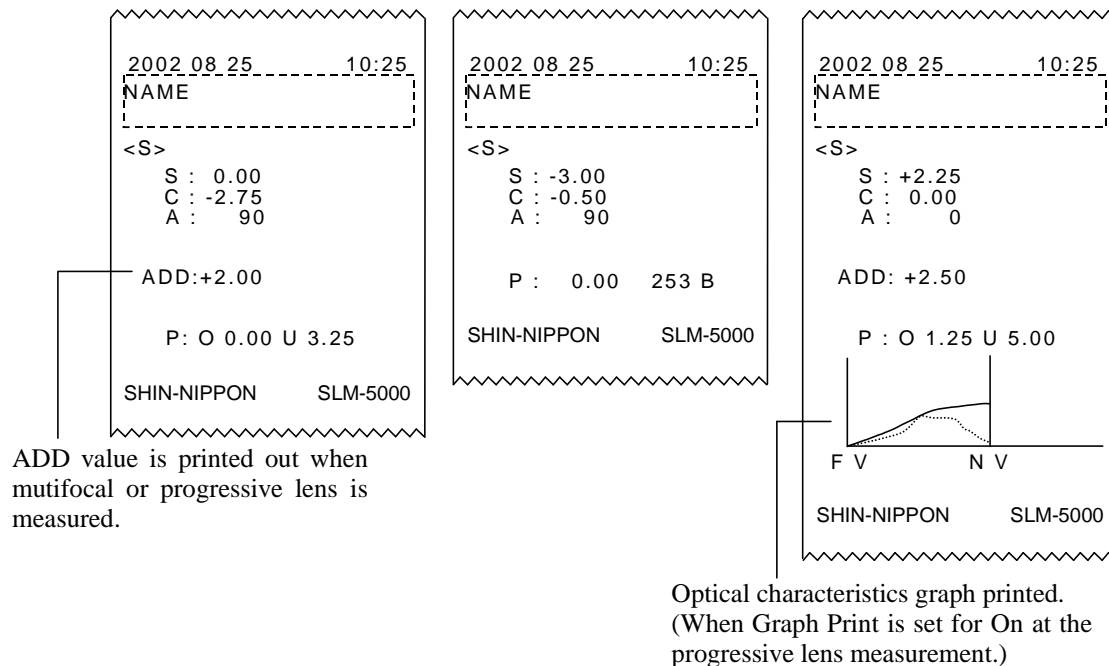
When measurement is finished, press . The measurement result is printed out.

5.4.2. Type of print out

<<Print out sample when lenses for right and left eyes are measured>>

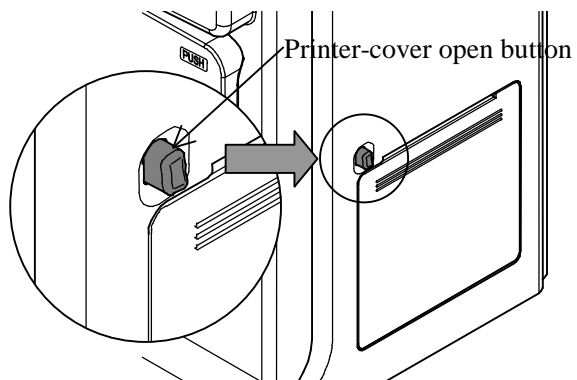


<<Print out sample when a single focal lens is measured>>

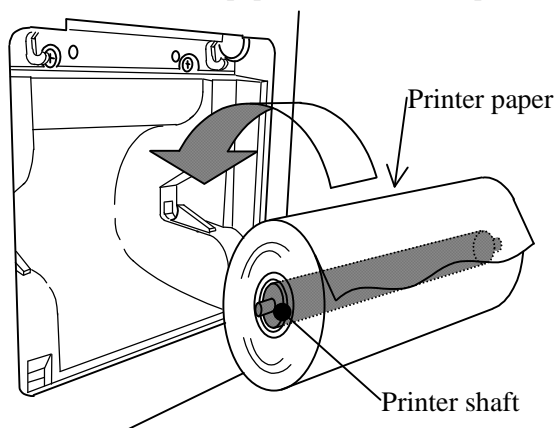


5.4.3. Setting and replacement of printer paper

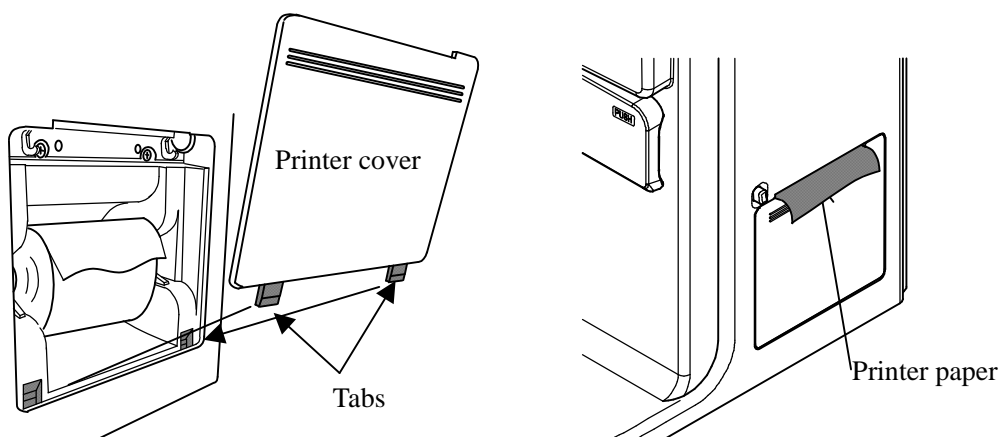
- (1) Push the printer-cover open button to open the cover, and then remove the cover.



- (2) Insert the printer shaft into the roll of the paper and set it in the printer unit.



- (3) Hook the tabs of the cover to the tabs of the unit. Take out the end of the paper a little and close the cover.

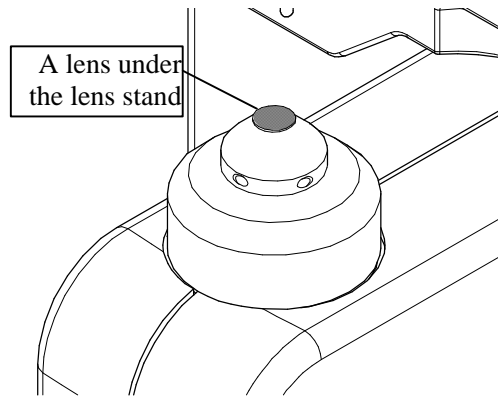


Use the printer paper exclusive to SLM-5000 only.
Never lose the printer shaft since it is the part of the printer unit.

6. Measurement

6.1. Check before Measurement

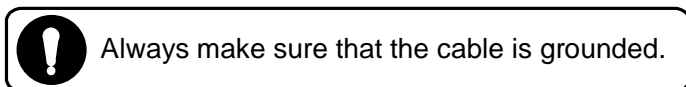
- Check that the lens stand is set properly.
- Check that the lens under the lens stand is clean.



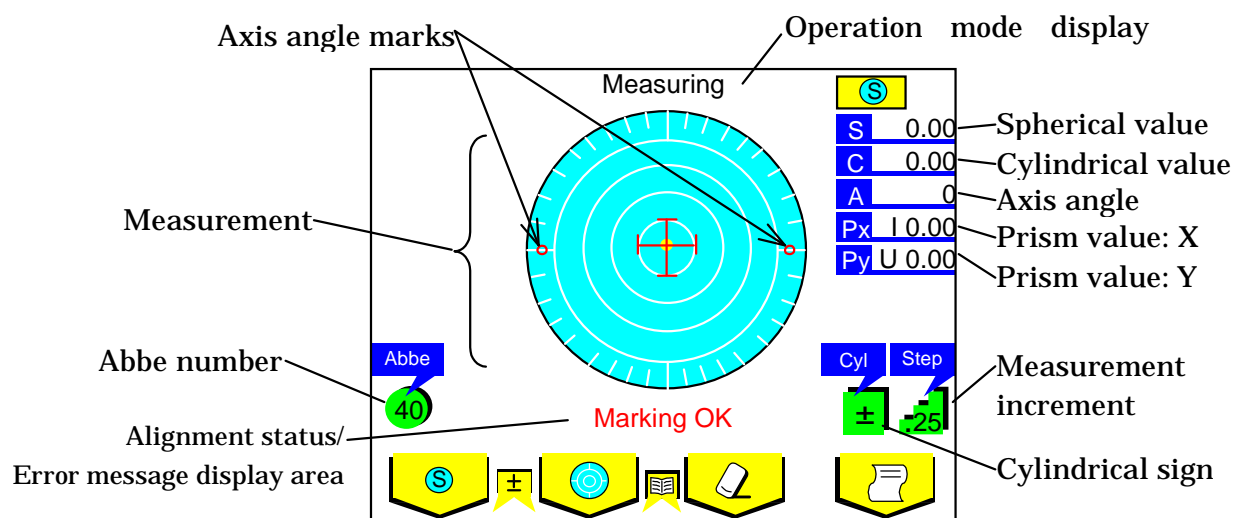
A lens stand removed

(If it is dirty, clean it with a soft cloth.)

- Plug the power cord to the outlet.



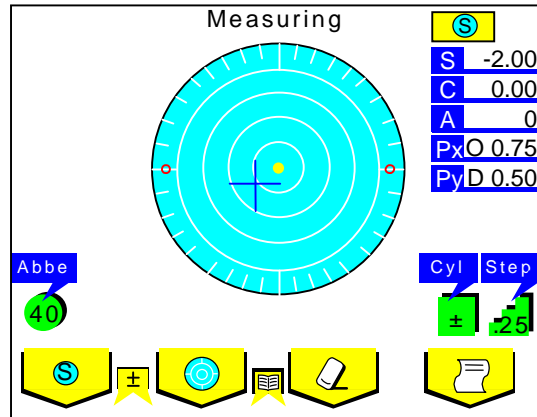
- Set the printing paper in a printer.
(See '5.4.3 Setting and replacement of Printer paper.')
- Check that no lenses are placed on the lens stand.
- Turn the power on. The screen below will appear in a few seconds.



6.2. Single Lens

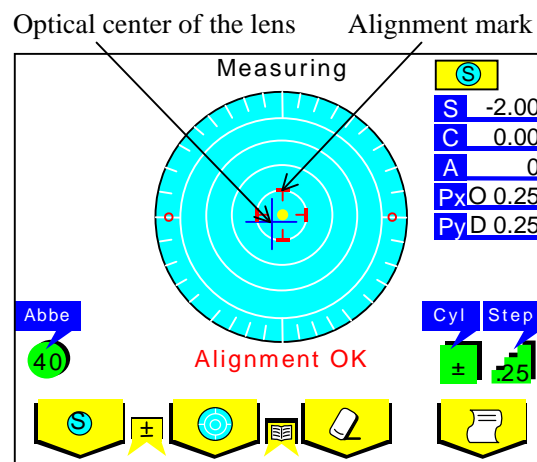
- (1) Place a lens on a lens stand. Lower the lens holder softly on the lens.

The screen as shown on the right will appear.

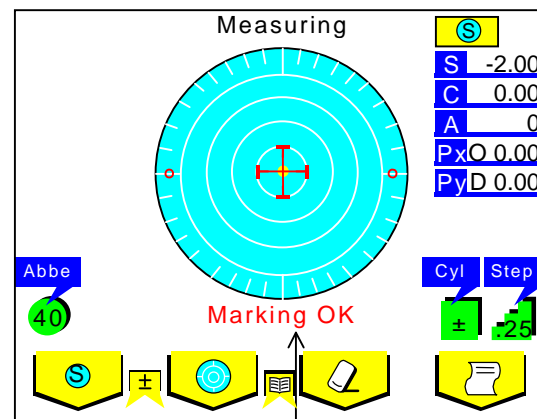


- (2) Move the lens and bring the cross cursor to the alignment mark. The message "Alignment OK" will appear on the screen when alignment completes.

The alignment mark represents the optical center of the lensmeter and the cross cursor that of the lens.





- (3) Move the lens until the cross cursor and the alignment matches. When they match, the message "Marking OK" will appear to indicate that marking is ready to be carried out.

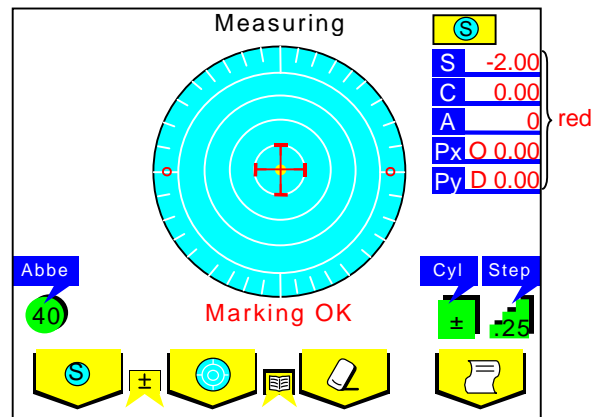


Message to tell you are ready to mark.

- (4) Press Memory/Add switch to store the measurement values of S, C, A and prism in memory. The measurement values will be shown in red at this time. Then, the values will be fixed.

To erase the data in the memory, press  .

Press  to print out the values.



When setting "Auto Memory" "ON" on the set up screen and the message "Marking OK" appears, the data will be saved in memory automatically.

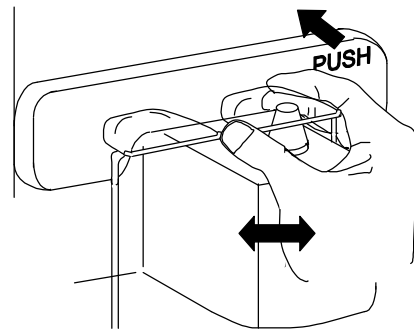


Great care should be taken not to give strong impact to the lens when lowering the lens holder.
Confirm that the lens holder is locked at the top when pushing it up.

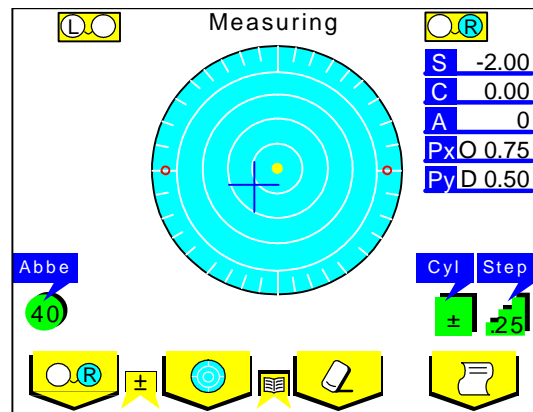
6.3. Frame Lens

- (1) Push "PUSH" mark of a lens plate. The lens plate will come to the front.

Place a lens on a lens stand so that the bottom of the frame touches the lens plate.



- (2) Press of the operation switches to specify the lens as either right or left (in this case, right). Press the switch to display on the upper right of the screen.



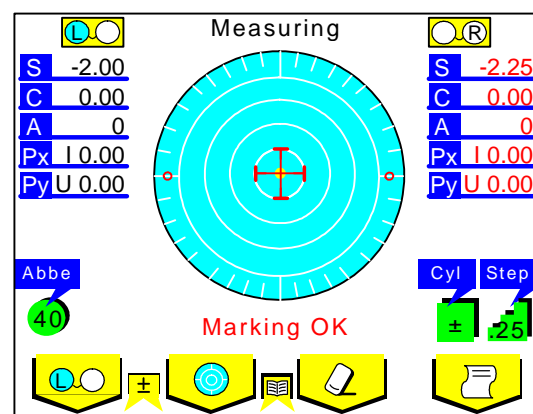
- (3) Align the lens, following the same procedure as a single lens measurement.

- (4) When the measurement completes, press Memory/Add switch to store the measurement values. When it is pressed, values of S, C, A and prism will be stored in memory. The values stored in memory are shown in red.

After stored in the memory, the values displayed on the screen will be fixed.

When setting "Auto Memory" "ON" on the set up screen and the message "Marking OK" appears, the data will be saved in memory automatically.

- (5) Press to switch to the lens for a left eye. At this time, the measurement result for the right lens is fixed on the screen.



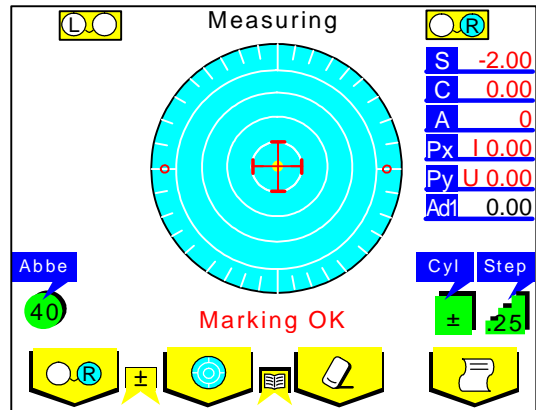
NOTE

You can start measurement from either right or left lens.

After the data for both right and left lenses are stored in the memory, press CLEAR switch so that either data that is selected will be cleared.

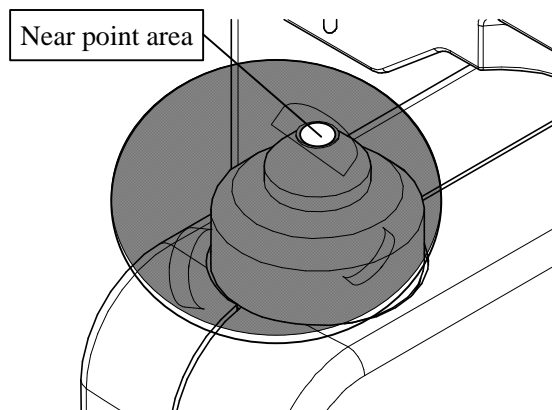
6.4. Multifocal Lens

- (1) Place a lens on a lens stand and lower the lens holder gently.
- (2) Measure the far point and press Memory/Add switch. When Memory/Add switch is pressed, the values of S, C, A and prism are stored in memory. The values stored are fixed and will be shown in red on the screen.
Press it again, then, the value of Ad1 is also shown.




- (3) Measure the near point. Move the lens so that the near point comes to the center of the lens stand.

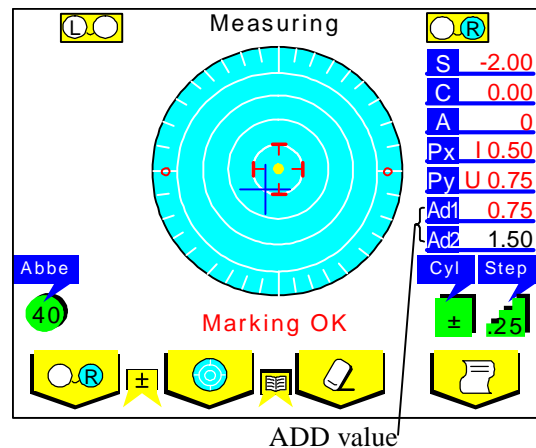
NOTE: "Alignment OK" and "Marking OK" are not necessarily displayed for the near point measurement.



- (4) Press Memory/Add switch to store the ADD value of the near point in memory. After the measurement values are stored, ADD values will become red.

For a trifocal lens, Press Memory/Add switch again to display Ad2 on the screen. Bring the second near point into the center of the lens stand again. Then, repeat the step (3) and (4).

- (5) Press  to change to the right lens measurement. The measurement result of the left lens is left displayed on the screen at this time.



6.5. Progressive Lens

- Set up the items for progressive lens measurement in the Menu screen. Press MENU switch and set Prog Auto and ADD Measure.

Prog Auto:

Off: No automatic judgment for a progressive lens

On: automatic judgment for a progressive lens

ADD Measure:

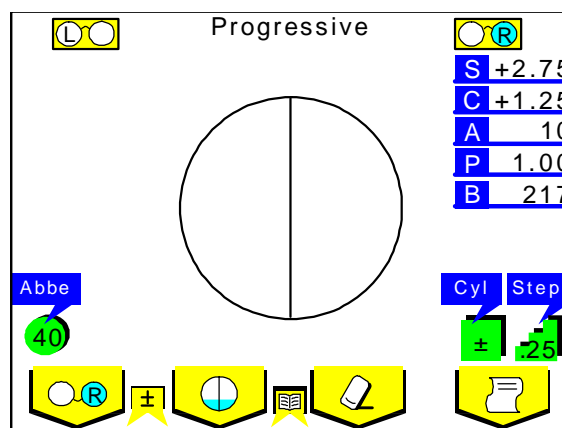
F/N.AT: automatic measurement of a far and a near point

N.AT : automatic measurement of a near point

Manual: manual measurement of a far and a near point

Set up				1/2
Step	0.25	0.12	0.01	
Lens Switch	S/R/L		R/L	
Lens	Normal	H Cont	S Cont	
Auto Memory	Off		On	
ProgAuto	Off		On	
ADD Measure	F/N.AT	N.AT	Manual	
Prog. Graph	Off		On	
Graph Print	Off		On	
Prism	Off	X-Y	P-B	

- Press the measurement selection switch (see 4.1 Switch function) to display the progressive lens measurement screen.



When Prog Auto is On, you can automatically check whether the lens is a progressive lens or not.

Set the lens so that the possible progressive area is placed on the lens stand. Then, the automatic judgment starts.

When the lens is identified as a progressive lens, the progressive lens measurement screen appears.

When the lens is not a progressive lens, the progressive lens measurement screen does not appear.

NOTE

- When ADD value is small (under 1D), automatic judgment may fail. When the progressive area is not properly placed on the lens stand, automatic judgment may also fail. In such a case, try to move the lens slowly back and forth or to the right or left.
- When ADD value is small (under 1D), the lens in the frames is small, or the lens has significant flaws or stains, the far and near points may not be automatically detected. In such a case, try to measure manually.
(See the last part of this section for manual operation of a progressive lens measurement.)

(3) How to measure the progressive lens (when ADD Measure is set for N.AT)

1) *Detection of the progressive area*

First move the lens slowly to the right and left, and back and forth to find the progressive area. When the progressive area is detected, the screen (2) appears.

When the progressive area can not be detected because the ADD value is small, press Memory/Add switch. You can call up the screen (2).

2) *Far point measurement*

When you move the lens toward the instrument according to



, the shape of the alignment cursor changes. Move the lens slowly to the far point.

When the progressive area is off the lens stand, the arrow changes to and the cursor changes to or . In such a case, move the lens to the right and left until the arrow and cursor change back to and respectively. Then, move the lens toward the instrument.

Once the far point is detected, The alignment cursor changes to a symmetrical cross , as shown in the screen (3). When the Memory/Add switch is pressed, the cursor becomes green . Then, the measurement value of the far point is stored in memory.

When selecting "F/N.AT" of "ADD Measure" on the set up screen, a measurement value of a far point is saved automatically too.

3) *Near point measurement*

Move the lens slowly toward you according to the arrow

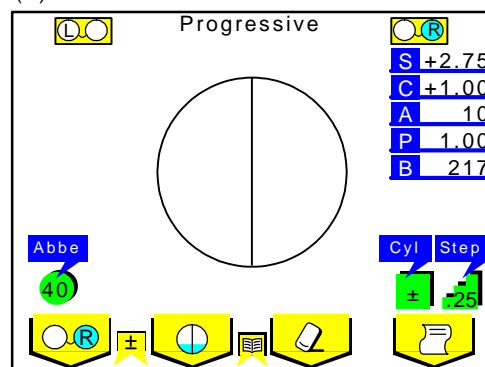


as shown in the screen (4) so that the alignment cursor moves toward the near point.

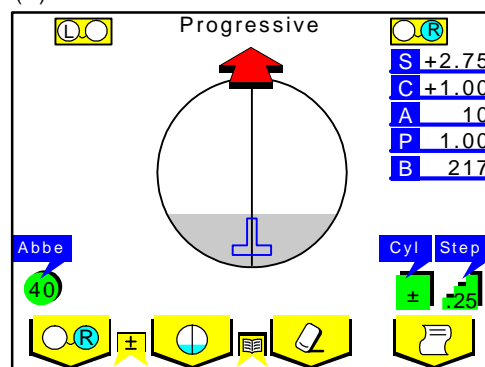
When the progressive area is off the lens stand, the arrow changes to and the cursor changes to or . In such a case, move the lens to the right and left until the arrow and cursor change back to and respectively. Then, move the lens toward you.

When the near point approaches, the alignment cursor changes from blue to red. Carry out alignment carefully. When the near point is attained, a bleep sounds and the cursor becomes green. At the same time, the Add value is automatically stored in memory.

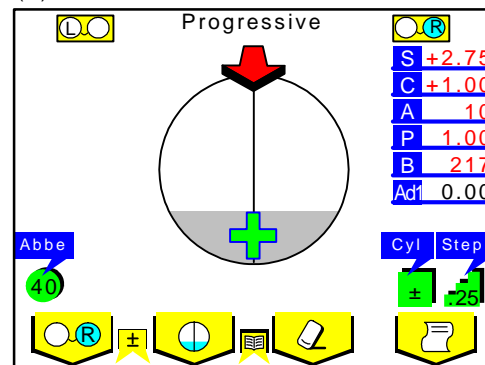
(1)



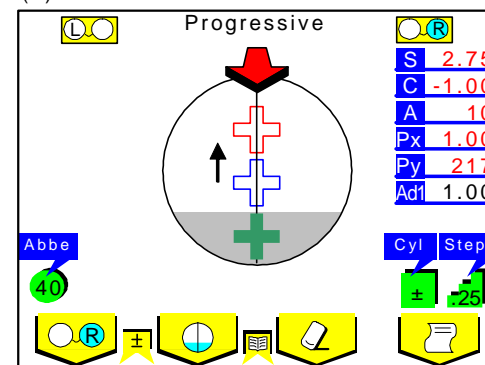
(2)





(3)



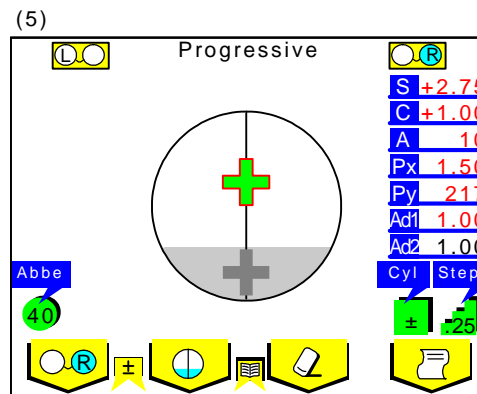
(4)



- * Pressing Memory/Add switch after the measurement allows you to store the Add value (Ad2) at any given position aside from the Add value already stored in memory.

After completion of the measurement, set the lens for the left eye and  press . The progressive judgment screen appears again.

Measure the lens following the same procedure for the right lens.




- * You can start measurement from either right or left lens.


■ Manual Operation and Graphical Representation of ADD value and Assessment

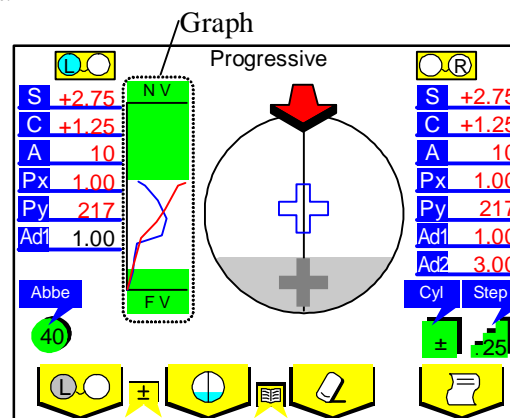
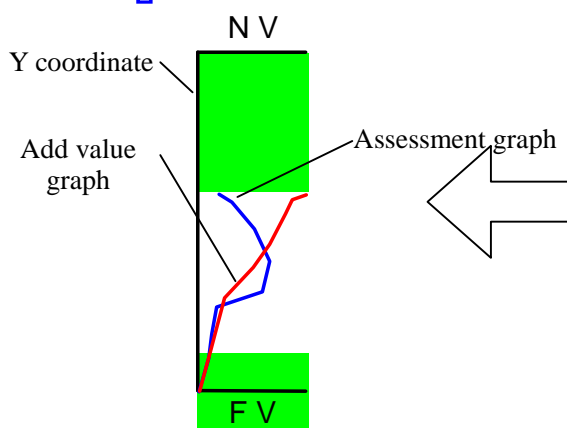
When you set "Prog. Graph" for ON in the Set up screen, a graph for progressive lens is displayed on the measurement screen.

Normally the near and far points are automatically detected. However, some lenses may be difficult to do so. In such a case, measure manually based on the graphs of Add value and assessment.

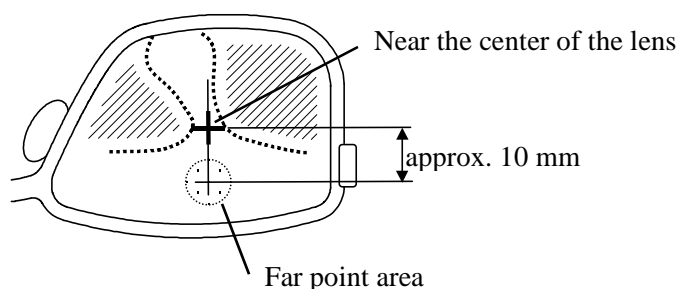
To measure the far point manually, carry out alignment according to the shape of the alignment cursor  as you do for auto measurement.

For near point measurement, press Memory/Add switch where the Add value becomes the highest while the alignment cursor stays in the progressive area.

When the near point is achieved, the assessment graph touches the Y coordinate. Pay attention to the shape of the cursor  and the graph position when you do alignment.



<Frame Lens (Reference)>






6.6. Auto memory function

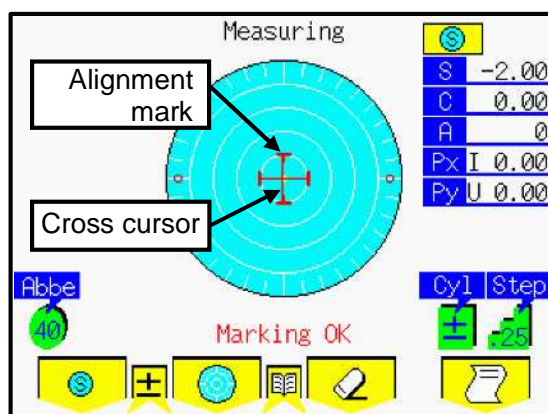
SLM-5000 has a function to automatically store the measurement values in memory when alignment reaches the OK range during measurement of a single focal lens, a multifocal lens and a contact lens.

【How to operate】

Set up 1/2			
Step	0.25	0.12	0.01
Lens Switch	S/R/L		R/L
Lens	Normal	H Cont	S Cont
Auto Memory	Off	On	
Prog Auto	Off	On	
ADD Measure	F/N.AT	N.AT	Manual
Prog. Graph	Off	On	
Graph Print	Off	On	
Prism	Off	X-Y	P-B

Move the cursor to Auto Memory with  and select ON with .

When the setting is completed, press  to return to the measurement screen.

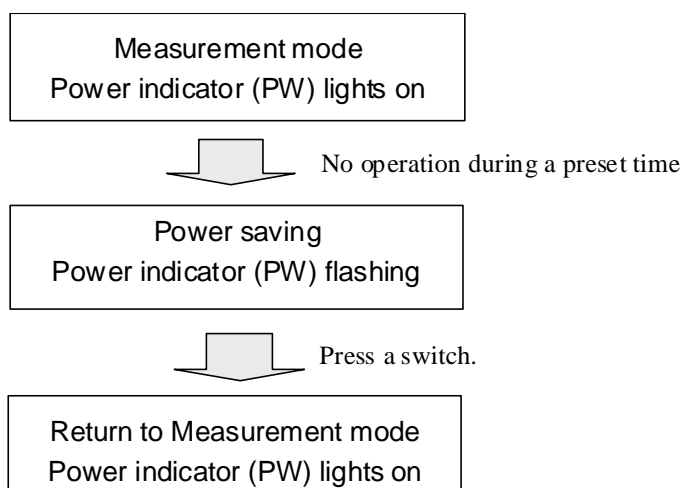


The measurement value is stored automatically in memory when the alignment mark and the cross cursor overlap as shown on the left.

6.7. Power saving function

Power saving function is activated when no switches are operated and/or the measurement value is not updated with the power ON.

(The duration when the power saving function is activated can be selected by "Stand by" in the Set up screen.)



While this function is activated, the power to the measurement light and the LCD monitor is turned off.

To return to the measurement state, press any operation switch.

6.8. Contact lens

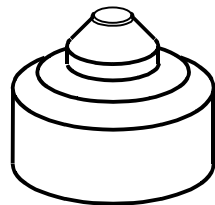
6.8.1. Preparation

- (1) To measure a hard contact lens, select 'H.Cont' in the Menu screen. For a soft contact lens, select 'S.Cont'.

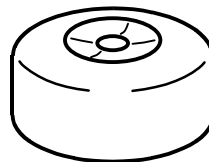
Set up				1/2
Step	0.25	0.12	0.01	
Lens Switch	S/R/L		R/L	
Lens	Normal	H Cont	S Cont	
Auto Memory	Off		On	
Prog Auto	Off		On	
ADD Measure	F/N.AT	N.AT	Manual	
Prog. Graph	Off		On	
Graph Print	Off		On	
Prism	Off	X-Y	P-B	

Navigation icons: Down arrow, Up arrow, Right arrow, and a document icon.

- (2) Change the lens stand to the contact lens stand included in the accessories and measure the contact lens.



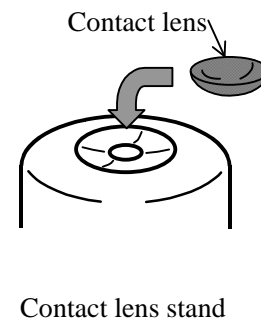
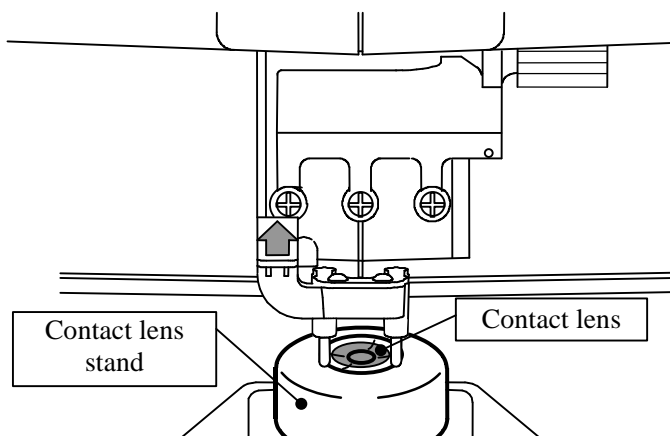
Standard nosepiece



Contact lens stand

6.8.2. How to measure

- (1) Set the contact lens in the contact lens stand as shown below.
- (2) Remove the standard lens stand and mount the contact lens stand.
- (3) Lower the lens holder and hold the contact lens stand.
- (4) Move the contact lens stand vertically and horizontally to bring the lens's center to the center of the instrument.



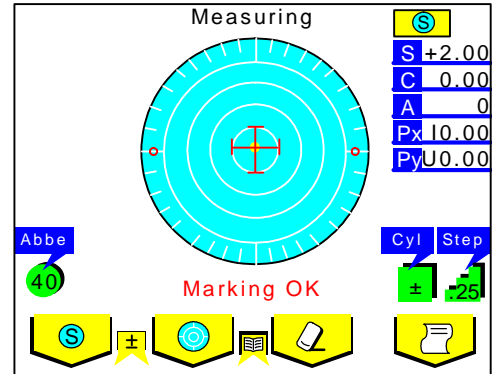
7. Marking

Refer to '5.3 Marking lever' for the lever operation.

7.1. Lens without Astigmatism

- (1) Move a lens until a cross cursor matches with the alignment mark.
When "Marking OK" is displayed, you are ready for marking.

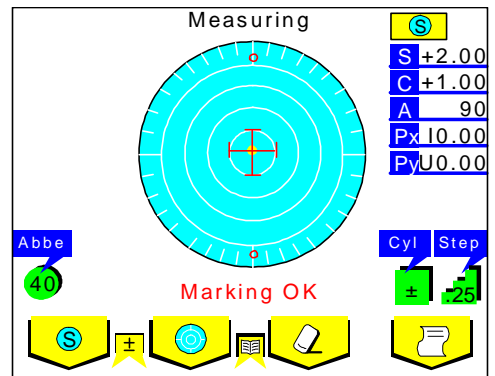
- (2) Lower the marking lever to mark on the lens.



7.2. Lens with Astigmatism

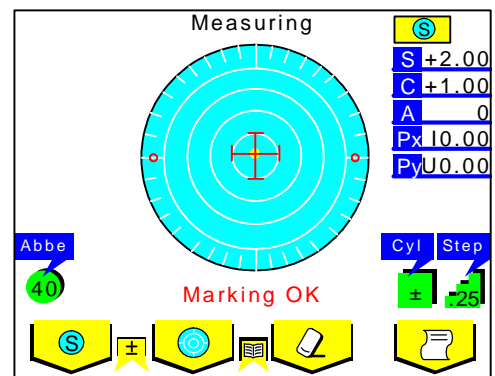
■ Marking according to the axis in the prescription

- (1) Match the target so that the AXIS mark matches the value in the prescription.
- (2) To be more precise, align according to the AXIS value measured.



■ Marking on the cylindrical axis

- (1) Match the target so that the AXIS marks become approximately 0°.
- (2) To be more precise, align so that the AXIS value becomes 0°.



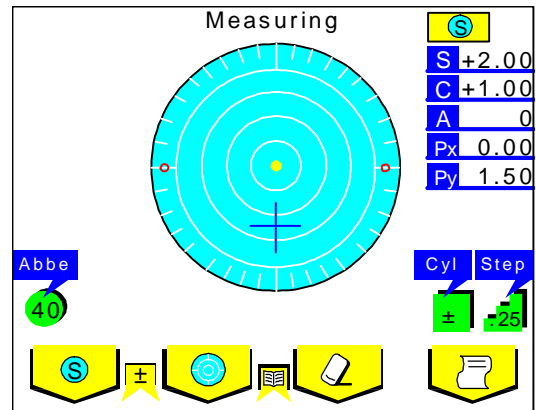
7.3. Marking of prism Lens

■ Prescription expressed in X-Y

- (1) Select "X-Y" from "Prism" in the Menu screen.
- (2) Move the lens so that the prism values displayed on the screen accord with those of the prescription.

Indicated values for prism are as follows.

Px	I	Base In
Px	O	Base Out
Py	U	Base Up
Py	D	Base Down

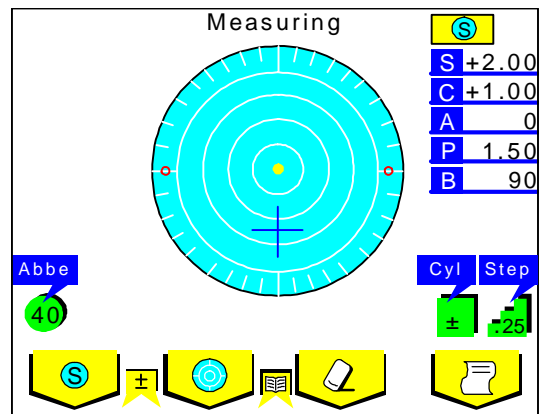


■ Prescription expressed in P-B

- (1) Select "P-B" from "Prism" in the Menu screen.
- (2) Move the lens so that the prism values displayed on the screen accord with those of the prescription.

P: Prism value

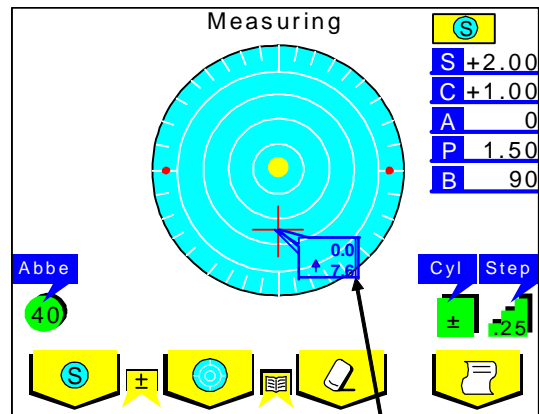
B: Base direction



■ Prescription expressed in mm

- (1) Select "On" from "Prism(mm)" in the Menu screen.
- (2) Move the lens so that the prism values displayed on the screen accord with those of the prescription.

Arrows (↑ ↓ ← →) indicates the direction you should move the lens to make its optical center reached the measurement center.



Prism in mm

8. Error Messages

8.1. Descriptions

Message	Status	Description
Measure Error	Abnormality of the instrument	When the power is turned, values are not initialized (values are not zero (0)).
Paper Empty		No papers are set in the printer.
Printer Cover Open		The printer cover is open.
Printer Heat Over		The printer is overheated.
EEPROM Fault		Abnormality of memory
Sensor Error		Abnormality of camera sensor
*Error * * * (100 – 141)		Abnormality of electronic parts (on the 'Control circuit board')
SPH Over	Measurement abnormality	SPH value exceeds the measurement range.
CYL Over		CYL value exceeds the measurement range.
Prism Over		Prism value exceeds the measurement range.
ADD Over		ADD value exceeds the measurement range.
Retry Error	Abnormality of image processing	Measurement fails because of dust, flaws, unnecessary light, and so on.
Notarget Error		The measurement light does not enter into the receiving light sensor.

*Display with a three-digit code (number).

8.2. Measures taken for the errors

- **Measure Error**
The message appears if the lens is on the lens stand when the power is turned on, or if the lens under the lens stand is dirty.
Remove the lens if it is on the lens stand. If the lens under the lens stand is dirty, gently wipe it with a soft cloth. Then, turn the power back again. (See 6.1 Check before Measurement.)
- **Paper Empty**
The message appears if no papers are set or papers are not set appropriately in the printer.
Set the paper appropriately. (5.4.3. Setting and replacement of printer paper.)
- **Printer Cover Open**
The message appears when the printer cover is open. Check the cover and close it if it is open.
- **SPH/CYL/Prism/ADD Over**
The message appears when the lens exceeds the upper limit of the measurement range is measured.
Measure the lens within the measurement range. (See 9. Specifications.)
- **Retry Error or Notarget Error**
The message appears when the direct sunlight or strong glare is on the instrument, or the lens under the lens stand is extremely dirty or has some flaws.
When the lens under the lens stand is dirty, gently wipe it with a soft cloth. Then, turn the power back on.



When error messages other than described above appears, or the situation does not improve after the measures above are taken, cut the power and unplug the power cord, and then contact your distributor.

9. Specification

Measurement Range	Sphere	-25D ~ +25D	(0.01/0.12/0.25 step)
	Cylinder	0 ~ ±10D	(0.01/0.12/0.25 step)
	Axis	0 ~ 180°	(1°)
	Addition	0 ~ +10D	(0.01/0.12/0.25 step)
	Prism	0 ~ 10Δ	(0.01/0.12/0.25 step)
Measurement wavelength	650nm		
Measurable lens	Unprocessed lens (diameter: 100mm)		Single lens, multifocal lens, progressive lens
	Frame lens		
	Hard contact lens		A special accessory is required.
	Soft contact lens		
Power supply	100 ~ 240V 50/60Hz		
Printer	Thermal printer (paper width 58mm)		
Monitor	Color LCD monitor (5.7 inches)		
Dimension/weight	200(W)x260(D)x443(H) approx.5.2kg		
Environmental condition for use	Temperature: 10°C ~ 40°C Humidity: 70%HR (no dew condensation allowed)		

10. Applicable Laws and Standards

- Law
 - Electromagnetic Compatibility Directive 89/336/EEC
 - Low Voltage Directive 72/23/EEC
- Standard
 - <Safety of a device> EN 61010-1:2001
 - <Electromagnetic compatibility> EN 61326-1: 1997, Amendment A2: 2001
 - Class A

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