

Reserved for maintenance

# PD METER

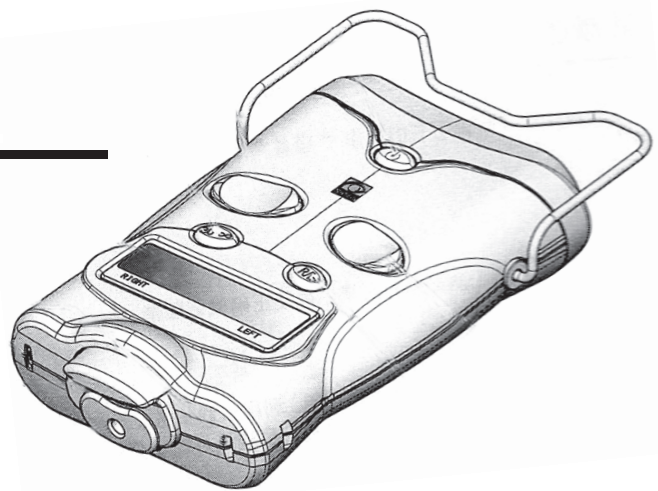
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## Manual

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## Before Use

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Before using the machine, please read carefully through the manual.

Hope the manual is detailed enough for future o, which includes operation, specification, attachment and notice.

Please reserve the manual in case you may need in the future.

If any problem or doubt emerges, please contact us or local distributor, we will offer the best service.



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## Before Use

### 1.1 Brief Introduction

- This PD meter is an advanced machine with an inserting CPU and a LCD screen.

#### ○ Purposes

This PD meter is used to test binocular/monocular pupil distance for providing correct data during glasses fitting.

#### ○ Working Principle

Patient look through the patient windows, staring at the fixed green spot. Setting the testing distance at 1m, using the convex lens in the middle of the eye and and green spot, tester observe the cornea reflection spots and move the sight line on to the middle of the spots. The pd will be displayed on the LCD screen.

Pupil distance is read according to the testing distance, which is set by the button 

Pupil distance is displayed under the vortex distance(VD) at 12mm.

Vortex distance: is the distance from the vortex of the cornea to the lens backward optical center.

Please convert the PD according to the equation below if the VD is not 12mm.

$$PD = PD_{\infty} \times \frac{WD - VD}{WD + 13}$$

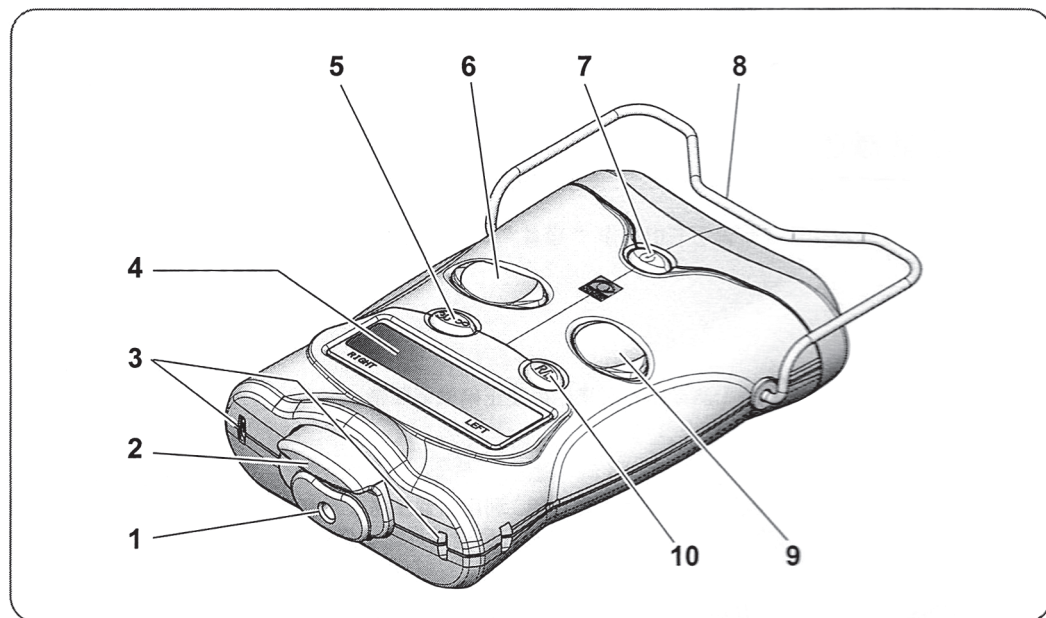
PD: Pupil distance

$PD_{\infty}$  : Pupil distance when the working distance is at  $\infty$

WD: Working distance

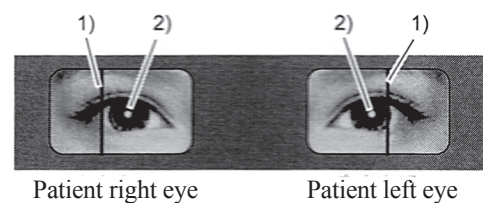
VD: Vertex distance

## 1.2 Structure



### 1 Eye lens

Testers observe and test from this lens



| Number | Name                    | Instruction  |
|--------|-------------------------|--|
| 1)     | Sight line              | Move on to the center cornea reflection spots to test PD |
| 2)     | Cornea reflection spots | Led light reflected on the cornea                        |

### 2 Eye lens cover

### 3 Belt hole

Hole to fix a belt

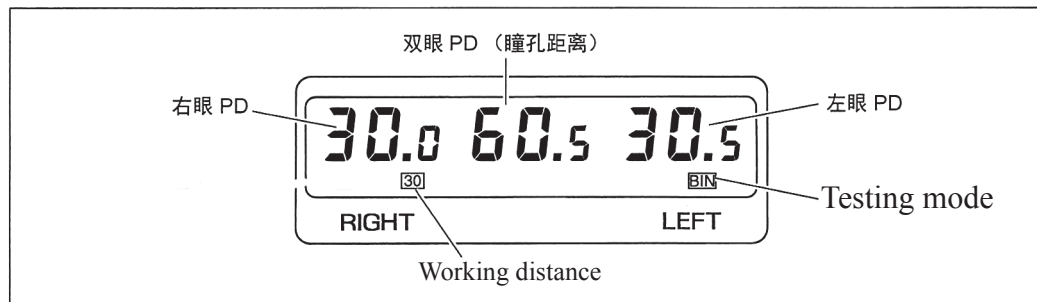
#### 4 Lcd screen

##### Display PD

Except for the PD, the screen also displays working distance and testing mode.

Working distance.....**30** - **∞**

Testing mode .....**BIN** / **R** / **L**





#### 5 Working distance setting button

Working distance is respectively 30cm 35cm 40cm 50cm 65cm 1m 2m and ∞ In a cycle. Working distance increases with every press.

#### 6 Right PD Measuring Button

Press the right side of the button, move the sight line towards nose

|   |   |
|---|---|
|  | Press the right side of the button, move the sight line towards nose      |
|  | Press the left side of the button, move the sight line towards nosetemple |

#### 7 Switch Button

Turn on and off

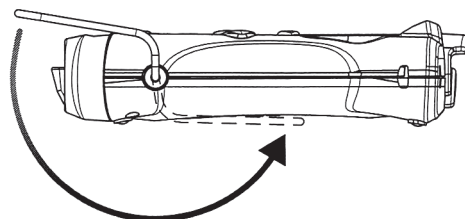
Press the button for 2 seconds to shut down the machine.

The machine is applied with 3min-auto-off system to save power.

#### 8 Forehead brace



Put forehead against the brace to stabilize testing position.

Brace can be folded to the back side of the machine when shelved.



## 9 Left PD Measuring Button

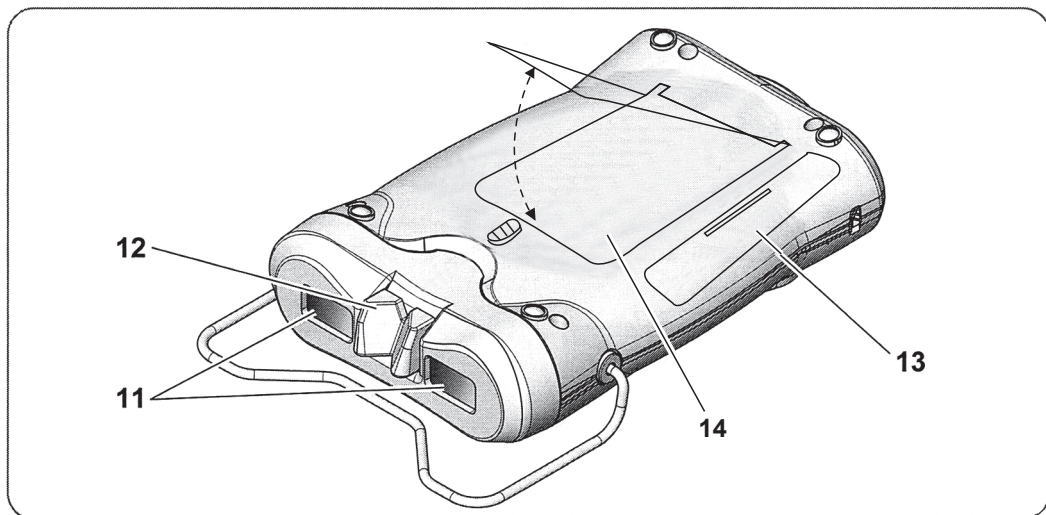
Move the right sight line

|   |   |
|---|---|
|  | Press the right side of the button. Sight line moves towards the temple |
|  | Press the right side of the button. Sight line moved towards the nose   |

## 10 R/L button

To block one eye

Press the button , testing mode is respectively binocular testing **[BIN]** , right pd testing **[R]** and left pd testing **[L]** in a round.



### 11 Patient windows

Patient looks through the window to observe the fixed green spot

### 12 Nose pad

Put the pad against the nose. Pad can be changed.

### 13 Battery cover

### 14 Breath fender

When using please open the fender. When shelving please fold the fender.

### Remarks

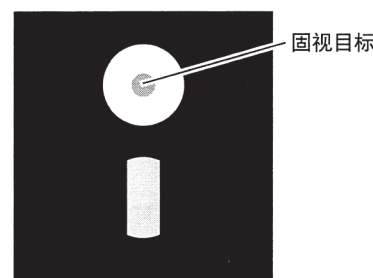
Materials contacting the patient during testing is:

Nose pad: silicon

Forehead brace: ss steel

Button, main body and lens cover: ABS

Belt: nylon

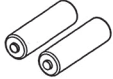





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### 1.3 Content

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Standard packing includes the parts below. Please check if all parts are not absent before using.







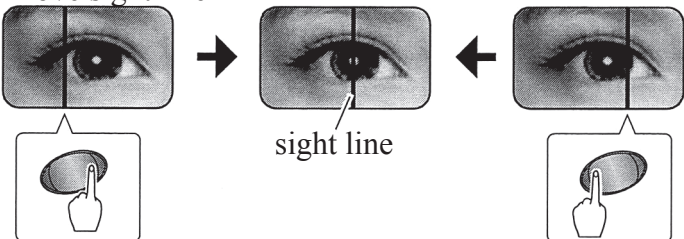

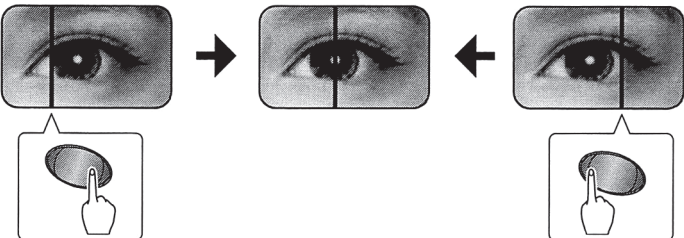
| Part name             | Qty | Sketch  |
|-----------------------|-----|---|
| Alkaline AA batteries | 2   |    |
| Nose pad              | 1   |    |
| Belt                  | 1   |     |
| Manual                | 1   |  |

# 2



## Testing procedure

### 2.1 Button functions

■ Button functions are as below

|   |   |
|---|---|
| Switch button                      | Press the button to turn on. Press for two seconds to turn off  |
| Working distance adjusting button  | Press to change the working distance<br><br>working distance  |
| R/L button                       | To block one eye<br>Press the button , testing mode is respectively binocular testing <b>[BIN]</b><br>right pd testing <b>[R]</b> and left pd <b>[L]</b> testing in a round.<br><br>Open eyes |
| Right PD measuring button        | Move sight line<br><br>sight line   |
| Left pd measuring button         | Move sight line<br><br>sight line   |

### Remarks

- Press button  or  If the sight line is beyond measuring range and cannot move a step, below information will be shown.

Black streaks shown on two sides of the patient eye

Sight line of the left eye exceed the measuring range



Monocular pd is shown on the screen as below

Sight line of the left eye exceed the measuring range



## 2.2 Purposes of correct measuring

For correct measuring

- Please put the nose pad against the nose. Pd is measured according to the right contact between nose and pad. Make sure nose and pad are contacted in right position.
- Hold the machine to make sure it does not tilt to the right or left.
- When testing, please do not move the machine leftwards and rightwards. Or the result is not accurate. In the range of the eye lens, both patient's eyes can not be observed simultaneously. See the pictures on the right side.

To test patient eyes, look through the eye lens, move tester's head slightly to get a clear vision of the cornea reflection spot, but never move the machines a bit.

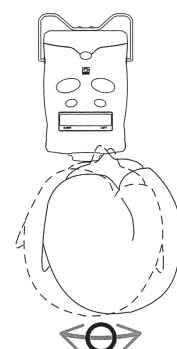


Patient right eye

Patient left eye



Tester



Tester





## 2.3 Turn on/off

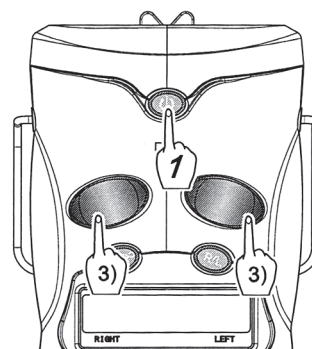
- This chapter explains turning on/off and auto-off function.

### 2.3.1 Turn-on and check before using

**1** Press button  to turn on

**2** Please check the below items before using.

- 2) Look through the patient windows, make sure the green spot is clear
- 3) Look through the eye lens, make sure the sight lines are movable via pressing button  and 
- 4) Make sure the patient windows are clean. Or please cleanse it with soft cloth
- 5) Cleanse the nose pad and forehead brace



### 2.3.2 After use

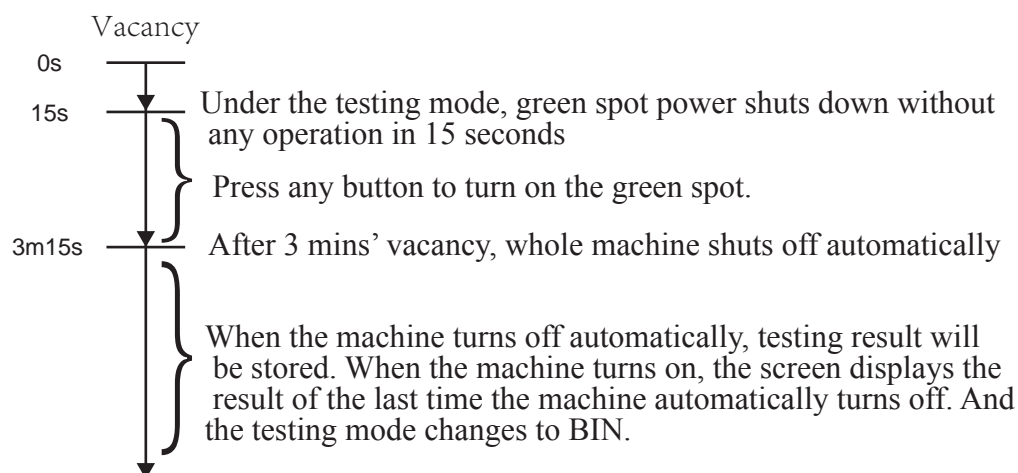
**1** Press the button  until all signals are disappeared

**2** Shelve the machine in clean place

Whatever part is dirty, please cleanse it.

### 2.3.3 Auto-off function

In case that tester may forget to turn the machine off after using and save power, the machine is applied with a 3min-auto-off function. After 15 seconds of vacancy of the machine, the green spot turns off and after another 3 mins, whole machine stops working.



## 2.4 Measuring method

- When measuring PD, please conform to the regulations below. Binocular and monocular measuring methods will be explained respectively.

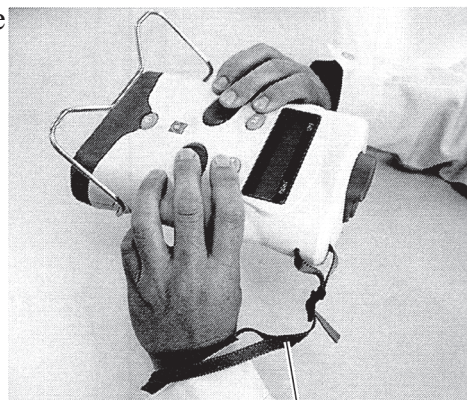
### 2.4.1 Binocular measuring

steps below explains how to measure binocular PD.

#### Notice

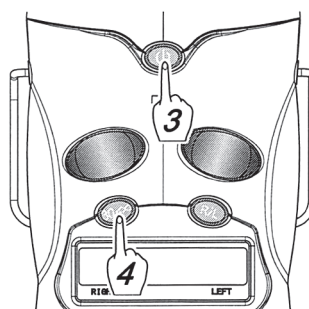
- Before measuring the PD of a patient, please sterilize the nose pad and forehead brace with ethyl alcohol dipped soft cloth.

- 1 Patient seated, take off the glasses or contact lenses
- 2 Twine belt to the wrist and hold the machine




Belt

- 3 Press button  to turn on
- Result of last measurement is shown on the screen



- 4 Choose working distance

Press the button  working distance is changed and displayed on the screen ( 8 distances from 30cm to  $\infty$  )

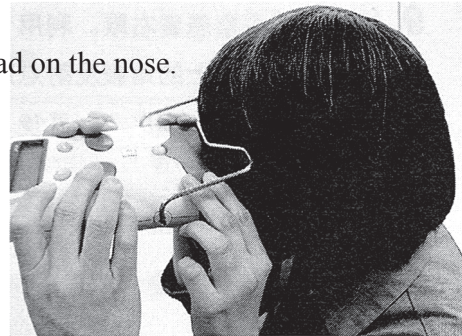
Working distance can be changed after measuring. Under this circumstance, PD will be recalculated according to new working distance.



Working distance

**5** Put the pad against the nose

Or let the patient hold the machine to put the pad on the nose.



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Patient may feel uncomfortable if the pressure is too big between nose and pad.  
When the patient holding the machine on the two side, the patient may be not so clear to observe. Under this circumstance, please let the patient release one hand.

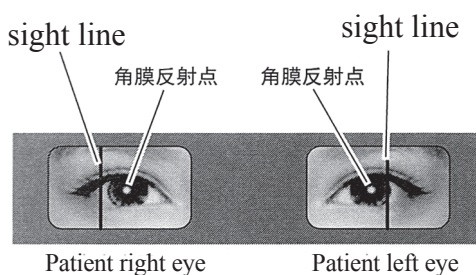
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**6** Guide the patient to stare at the green spot from the patient windows

**7** Put the forehead brace against the forehead of the patient

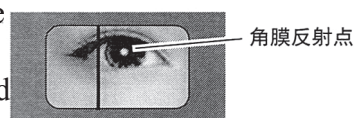
**8** Observe from the eye lens.

Patient right eye is in the left window while left eye in the right.




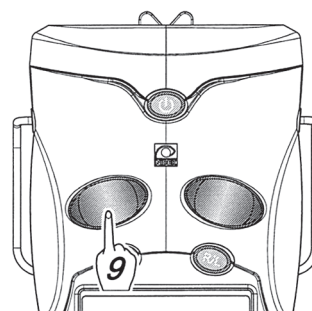
**Remarks**

- Shapes of cornea reflection spot vary due to patients' nose bridge differences.  
Cornea reflection spot may not be located in the center of the eye.

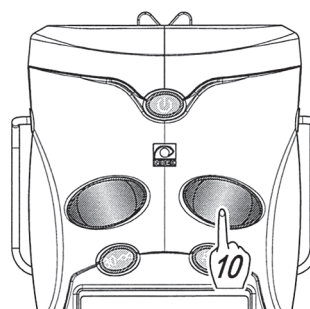



If the machine is move to make the spot in the center of the eye, the nose pad may leave the patient's nose and cause measuring fault.

- 
- 9** Observe the right eye. Press button  and move the sight line onto the center of the cornea reflection spot



- 10** Adopting the same method to measure the left eye



- 11** Record the result
- 12** Press the button  until the screen shuts off

## 2.4.2 Monocular measuring

Steps below explain how to measure the PD of a single eye

### Notice

- Before measuring the PD of a patient, please sterilize the nose pad and forehead brace with ethyl alcohol dipped soft cloth.

**1** Patient staring at the green spot, tester observes from the eye lens

**2** Press button  to block left eye

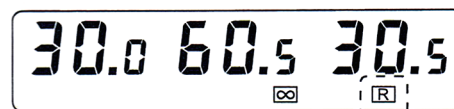
sight line


角膜反射点

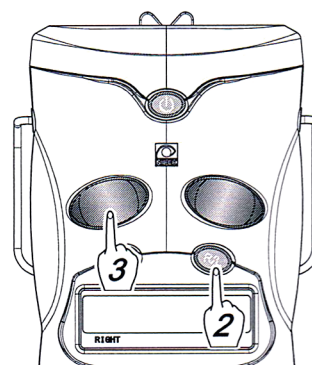


患者右眼

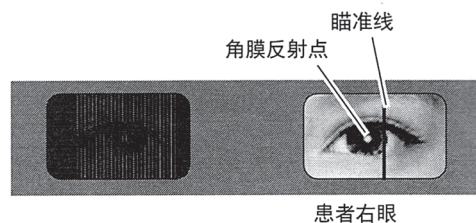
Screen displays R



**3** Observe the right eye from the eye lens.  
Press button  to move sight line on to the center of the cornea reflection spot.




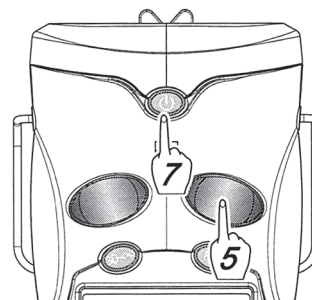
- 4 Press button  to block left eye




Screen displays L



- 5 Observe the left eye from the eye lens. Press button  to move sight line on to the center of the cornea reflection spot .



- 6 Record the results shown on the screen
- 7 Press button  until the screen shuts' off







## Maintenance

### 3.1 Malfunction solutions

If the machine is not working normally, please adjust according to the chart below.  
Or you can contact local authorized dealer.

| Malfunctions   | solutions   |
|--|---|
| Press button  , screen is not on. | • Batteries deplete. Change the batteries and check   |
| Green spot abruptly shuts off  | • Auto-off function is working. Press any button to turn on   |
| Screen abruptly shuts off  | • Auto-off function is working. Press button  to turn on |
| Color nuance between green spot and the surrounding parts  | • LED light normal feature. It does not affect measuring result.  |

\* Check the solutions above. If the malfunction is not solved, please contact local authorized dealer.

### 3.2 Cleansing

- When cleansing the shell, nose pad, forehead brace and patient windows, please follow the steps below

#### 3.2.1 Cleansing shell

When the shell, screen or eye lens is stained, please use a dry soft cloth to cleanse. For stubborn stains, please dip the cloth with some neutral detergent, cleanse and wipe dry.

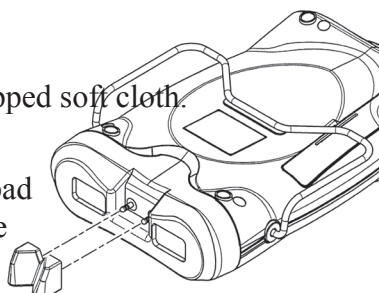
- Do not use painter thinner or abrasive cleaner to cleanse the machine, which may cause damage to the machine

#### 3.2.2 Cleanse the nose pad

 Notice

- Before measuring the PD of a patient, please sterilize the nose pad with ethyl alcohol dipped soft cloth.

- 1 Disassemble the nose pad
- 2 sterilize the nose pad with ethyl alcohol dipped soft cloth.
- 3 Assemble the nose pad  
Slot the pin to the hole bottom of the nose pad  
If nose pad is unable to clean, please use the spared pad.

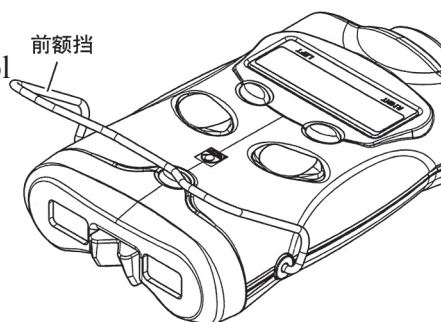


### 3.2.3 Cleanse the forehead brace

#### ⚠ Notice

- Before measuring the PD of a patient, please sterilize the forehead brace with ethyl alcohol dipped soft cloth

Sterilize the forehead brace with ethyl alcohol dipped soft cloth.



### 3.2.4 Cleanse patient windows

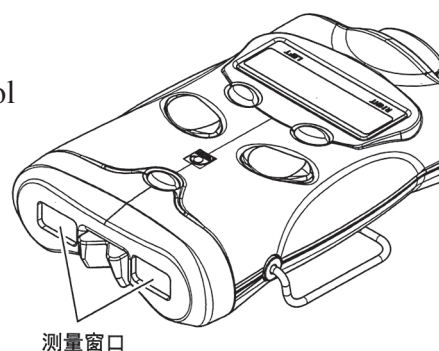
Before measuring, please check the windows if they are clean and clear, or cleanse them.

#### ⚠ Notice

- Before cleansing the windows, please use a air brush to blow the dust to avoid scratches caused by the dust
- Please use soft cloth with detergent to cleanse the window, or the windows and coat will be damaged.

**1** Use air brush to blow the dust

**2** Cleanse the windows slowly with ethyl alcohol dipped soft cloth.





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### 3.3 Changing batteries

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- When changing the batteries, please follow the below steps  
When batteries deplete, please change them.

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#### Notice

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Do not mixedly use the new and old batteries or different type batteries together. Machine will work abnormally or malfunctions may emerge or battery leak may damage circumjacent parts

When positioning the batteries, make sure the positive and negative electrode conforming to the plus and minus symbol in the battery chamber.

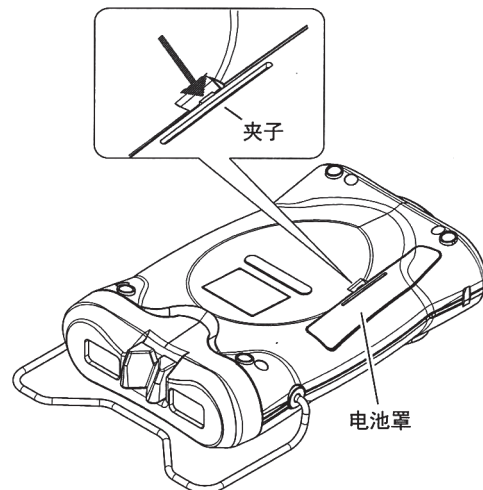
Battery leak may cause malfunctions or damage the circumjacent parts

When changing the batteries, make sure no other matter enters the battery chamber. Or the machine may work abnormally. Battery leak caused by short circuit may damage circumjacent parts

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- 
- Designated battery type  
Alkaline batteries LR6 2PCS OR NI-MH batteries HR6 2PCS
- 

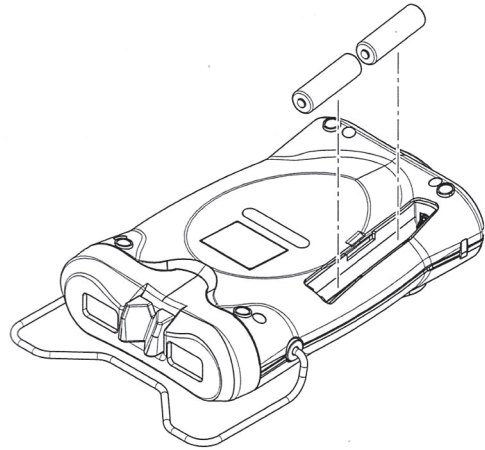
- 1** Shut off the power
- 2** Pull out the battery cover.



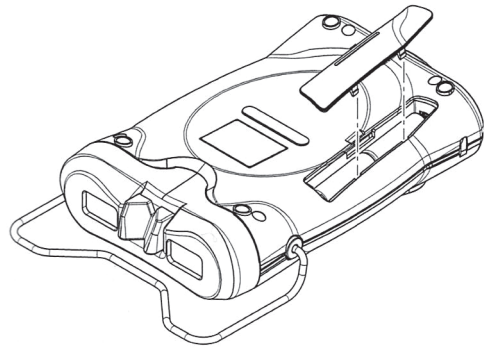
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**3** Take out the deplete batteries

**4** Position the new batteries



**5** Recover the battery cover






## Specifications

### 4.1 Specifications

#### ○ Specifications

|                                |  |  |
|--------------------------------|--|--|
| • Subject                      | Measuring pd   |  |
| • Screen type                  | LCD digital screen   |  |
| • Observing distance           | 1m   |  |
| • Working distance range       | 8 distances including 30cm 35cm 40cm 50cm 65cm 1m 2m and $\infty$  |  |
| • Fixed target                 | green spot transparent illuminating method   |  |
| • Auto-off function            | green spot power shuts down without any operation in 15 seconds<br>After 3 mins' vacancy, whole machine shuts off automatically.           |  |
| • Monocular measuring function | Press button  to choose right/left eye or binocular pd. |  |
| • Measuring range              | 44~83mm  |  |
| • Step                         | 0.5mm  |  |
| • Green spot lamp              | LED  |  |
| • Forehead brace               | Fold the brace when shelving the machine   |  |
| • Power supply                 | alkaline AA batteries LR6*2PCS   |  |
| • Size                         | 147 x 235 x 60   |  |
| • Weights                      |  |  |
| • Environment requirements     | Temperature  | 10~35°C  |
|                                | Humidity   | 30~90%   |
|                                | Atmosphere   | 800~1060hpa  |
|                                | Others   | Indoor Draughty room<br>No harmful particulate, no fog no smoke<br>stable surface. No vibration no collision<br>and no water |