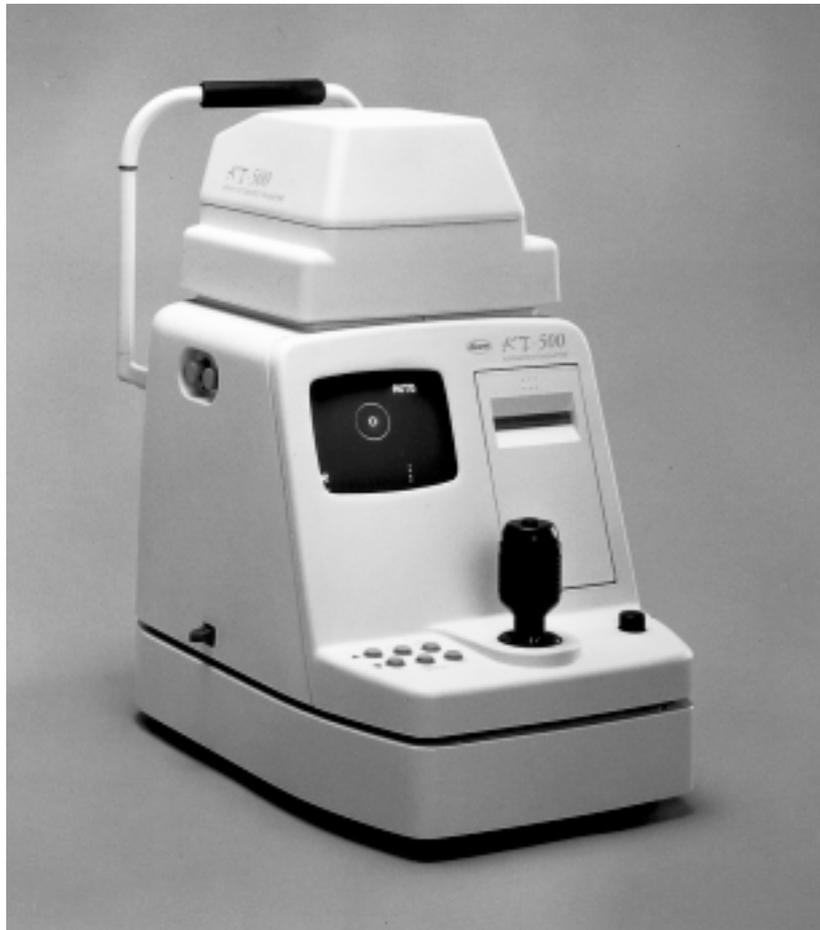


AUTOMATED TONOMETER

*KT-500*

**INSTRUCTION MANUAL**



*Kowa*

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# Introduction

Thank you for your purchase of Kowa's KT-500 Automated Tonometer. This instrument measures intraocular pressure without contacting. Alignment is performed semi-automatically. This manual provides a description of the operating procedure of the KT-500 along with important precautions to be observed during its use.

Please read this entire manual carefully to ensure that the system is able to demonstrate its full capabilities and be used effectively. After you have finished reading it, please keep it in an easily accessible location near the system for future reference.

## CAUTION

- Always make sure to properly ground the power supply of the system to protect against personal injury.
- Never attempt to disassemble or modify the system or its power supply.
- Never install the system in a manner that blocks its ventilation holes

## Precautions Concerning Use

- Handle the system with care to prevent it from being subjected to strong shocks.
- Avoid installing or storing the system in locations subjected to high temperatures and humidity, direct sunlight or high levels of dust.
- Always cover the system when not in use to protect its components.

### Precautions concerning use of the electrical system

- Install the system in a location where there is little risk of the plug being pulled out. If the plug should happen to be pulled out, only plug it back in after first turning off the main switch.
- The manufacturer is not liable for malfunctions or injuries resulting from maintenance or repairs performed by persons other than the specified repair service.
- The manufacturer is not liable for malfunctions or injuries resulting from modification, maintenance or repairs using parts other than the specified repair parts.
- The manufacturer is not liable for malfunctions or injuries based on results obtained by not observing the cautions or operating procedure described in this instruction manual.
- The manufacturer is not liable for malfunctions or injuries caused by use of this system under ambient conditions that deviate from the conditions of use of this system, including the power supply and environmental conditions, as described in this instruction manual.
- The manufacturer is not liable for malfunctions or injuries caused by fire, earthquake, flood, lightning or other natural disasters.
- The input voltage should always be maintained within  $\pm 10\%$  of the rated voltage.
- Wait approximately 5 seconds (until the power supply stabilizes) after turning on the main switch before operating any of the panel switches.
- Do not turn the main switch on and off in succession. Allow an interval of at least 4 seconds before turning the main switch on and off.
- Make sure to turn the power switch off before inserting or removing any plugs.

### Precautions concerning use of the main unit

- The instrument should be installed, transported and/or stored in a dust free place free from high temperatures, high humidity and direct sunlight. The environmental conditions described below should be observed strictly.

	in operation	Transportation, Storage
Environmental temperature	10 to 40 °C	-15 to +60 °C
Relative humidity	30 to 85 %	10 to 95 %

- Be careful not to let any condensation form on this instrument when in use, storage, or transportation.
- The non-contact tonometer used by this system is designed for screening purposes. Measured values may contain error depending on the particular conditions of use. When measured values are questionable, it is recommended to perform a more precise examination using an aplanation tonometer.
- The printer used by this system produces the best results when used within a temperature range of 10-40°C and humidity range of 30-80%. Please do not use the paper in environments outside these ranges.
- Due to nature of the paper used, long-term storage can cause it to deteriorate. When desiring to store printed results for a long time, it is recommended to first copy them onto ordinary copier paper prior to long-term storage.
- Perform the following inspections when resuming use of the system after not using for a long time.
- Inspect soiling of the air nozzle surface
- Inspect the inside of the air nozzle begin operations on controls and switches on the operation panel.
- Turn power switch off before unplugging or plugging of power cord.

### Disposal Precautions

- When disposing of this instrument, comply with the regulations of countries or areas in which the instrument is used.

# Precautions Concerning Use of Medical Electrical Equipment

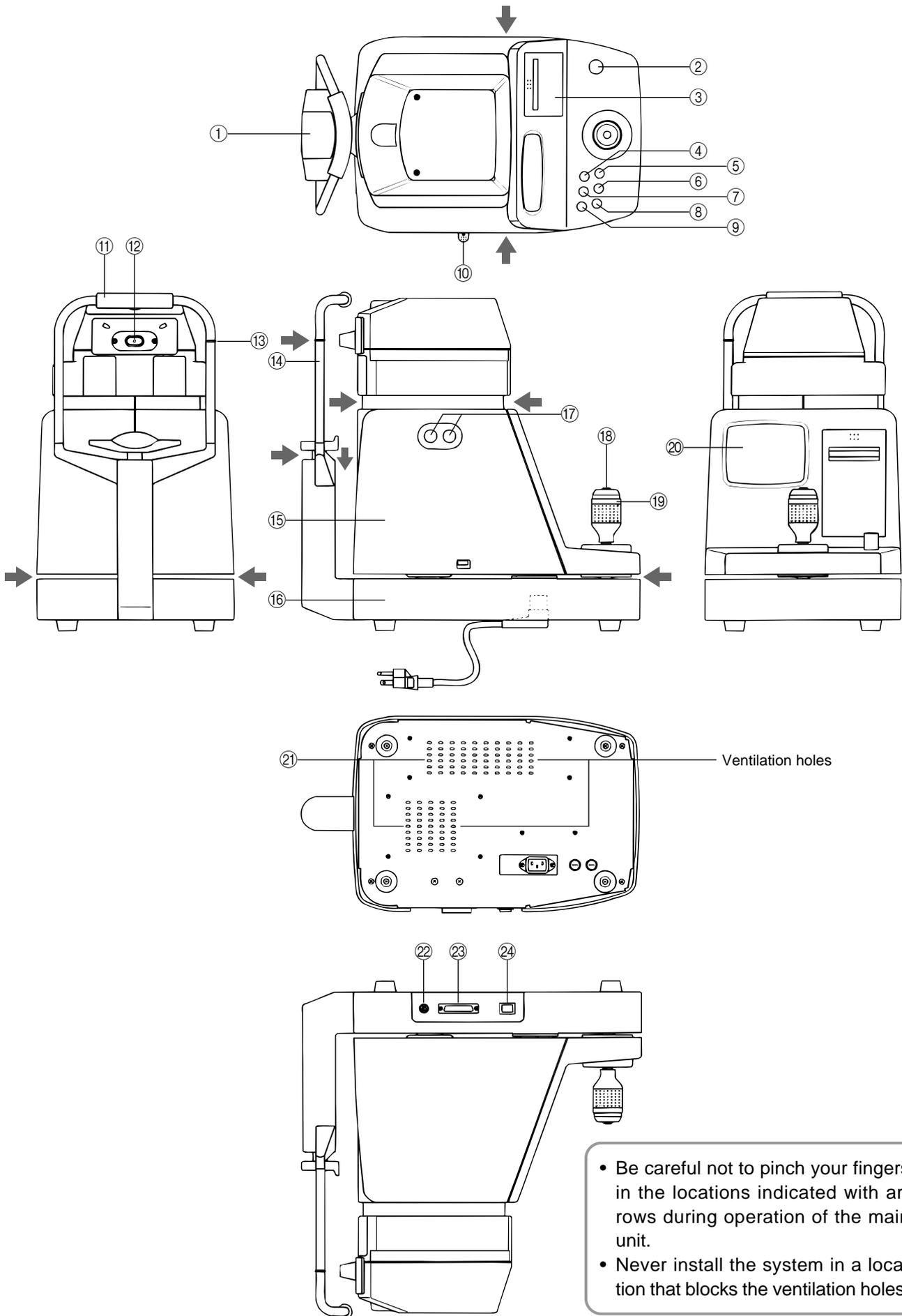
This section describes general precautions concerning the use of medical electrical equipment based on Notification No. 495 of the Pharmaceutical Affairs Bureau of the Ministry of Health and Welfare dated June 1, 1972.

1. Equipment should only be operated by qualified personnel.
2. The following items must be observed when installing equipment.
  - (1) Install in a location free of moisture.
  - (2) Install in a location where there is no risk of detrimental effects caused by air pressure, temperature, humidity, ventilation, sunlight, dust, salt or air containing sulfur and so forth.
  - (3) Install the equipment in a stable manner while paying attention to inclines, vibrations and shock (including that during transport).
  - (4) Do not install in locations where chemicals or pharmaceuticals are stored or where there is generation of gas.
  - (5) Use the proper power supply frequency, voltage and allowable current values (or power).
  - (6) Confirm the status of battery-powered power supplies (degree of discharge, polarity, etc.).
  - (7) Make sure the equipment is properly grounded.
3. The following items must be observed before using the equipment.
  - (1) The equipment must be inspected for switch contact, polarity, dial settings and meter readings to confirm that it is operating properly.
  - (2) Confirm that the equipment is properly grounded.
  - (3) Confirm that all cords are properly and securely connected.
  - (4) Avoid combined use of equipment since this can lead to errors in accurate diagnoses and danger.
  - (5) Re-inspect any external circuits that come in direct contact with patients.
  - (6) Check any battery-operated power supplies.
4. The following items must be checked during use of the equipment.
  - (1) Do not exceed the time or quantity required for diagnosis or treatment.
  - (2) Continuously monitor the equipment for any abnormalities as well as the status of the patient.
  - (3) When an abnormality is noticed in the equipment or patient, appropriate measures must be taken such as terminating operation of the equipment while ensuring the safety of the patient.
  - (4) Do not allow the patient to touch the equipment.
5. The following items must be observed following use of the equipment.
  - (1) Turn off the power after first returning all operating switches, dials and other components to their status prior to use in accordance with the specified procedure.
  - (2) When pulling out cords, pull out the cord while holding onto the plug body so as not to apply excessive force to the cord itself.
  - (3) The following items must be observed with respect to the location where the equipment is stored.
    - (a) Store in a location free of moisture.
    - (b) Store in a location where there is no risk of detrimental effects caused by air pressure, temperature, humidity, ventilation, sunlight, dust, salt or air containing sulfur and so forth.
    - (c) Store the equipment in a stable manner while paying attention to inclines, vibrations and shock (including that during transport).
    - (d) Do not store in locations where chemicals or pharmaceuticals are stored or where there is generation of gas.
  - (4) Store all accessories, cords, leads and other components in an organized manner after cleaning.
  - (5) Always make sure to clean the equipment so that it functions properly the next time it is used.
6. In the event equipment should malfunction, the operator should not attempt to correct the problem, but rather appropriately indicate that the equipment is not operating properly and await repairs by qualified personnel.
7. Never attempt to disassemble or modify the equipment.
8. Maintenance and Inspection
  - (1) All equipment and components should be inspected regularly.
  - (2) When resuming use of equipment that has not been used for a long time, always confirm that the equipment operates properly and safely before use.
9. Be careful of the possibility that incorrect operation may be caused by strong electromagnetic waves. This instrument may suffer from incorrect operation when surrounded by strong electromagnetic waves. Electromagnetic waves emitted by this instrument may also affect other external instruments.

General examples

  - (1) Electric waves emitted by cellular phones may cause unexpected incorrect operation.
  - (2) Use of this instrument may cause incorrect operation of a pacemaker.

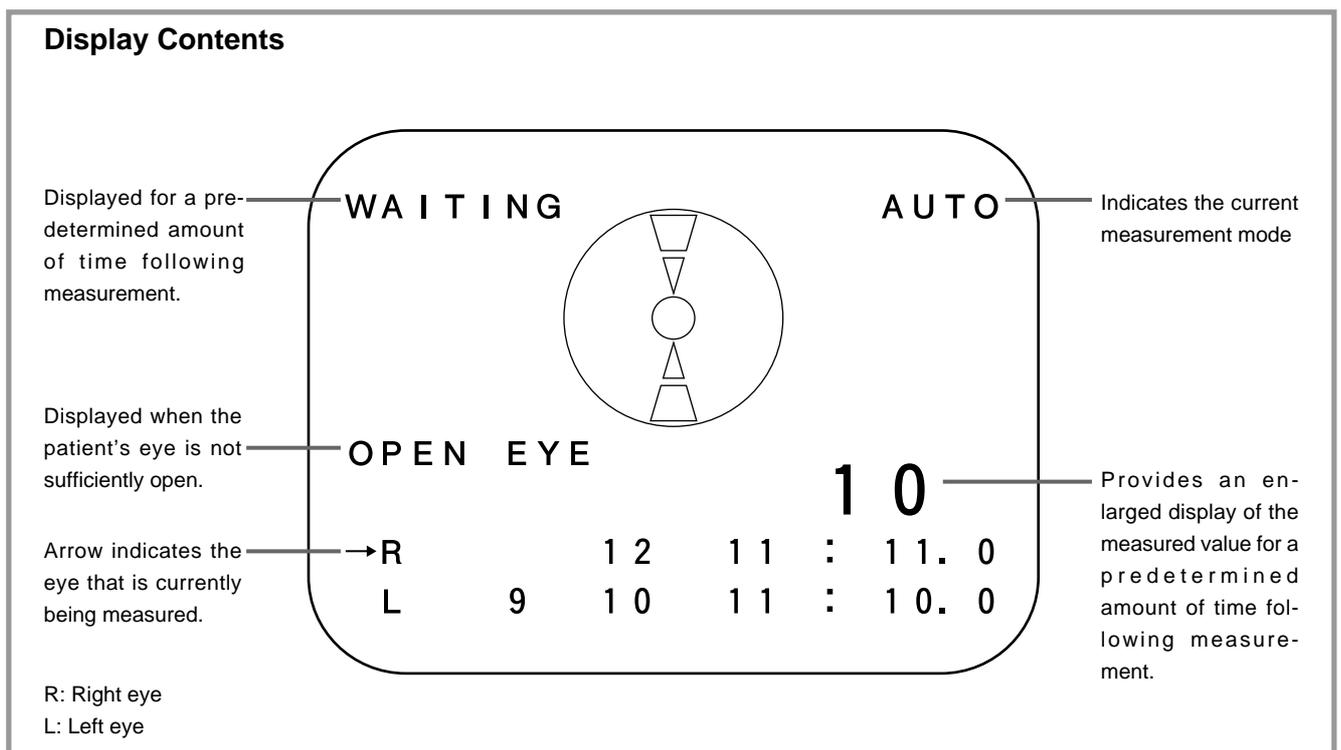
# 1. Names of Components



- Be careful not to pinch your fingers in the locations indicated with arrows during operation of the main unit.
- Never install the system in a location that blocks the ventilation holes.

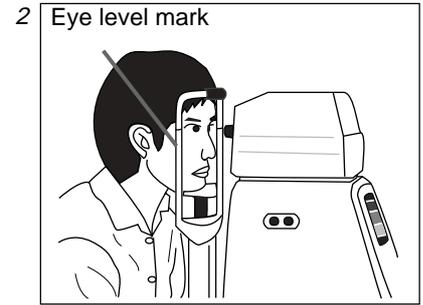
## System Overview

- ① **Chin Rest**  
The patient's chin is placed on this rest.
- ② **Frame Stopper**  
This prevents the frame from moving to the left and right and forward and backward.
- ③ **Printer Cover**
- ④ **MENU/CLEAR Key**  
Pressing this key clears all data. Pressing this key for at least 4 seconds switches the system to the menu mode.
- ⑤ **PRINT Key**  
This key is used to print out results. When there is data in the system that has not been printed out, the LED lamp above the button lights. This LED lamp flashes when in the power saving mode.
- ⑥ **AUTO/MANUAL Key**  
This key is used to switch between automatic and manual operation.
- ⑦ **TEST Key**  
Pressing this key for at least 1 second switches the system to the calibration mode.
- ⑧ **Down (▽) Key**  
This key is used to lower the chin rest.
- ⑨ **Up (△) Key**  
This key is used to raise the chin rest.
- ⑩ **Safety Lock Switch**  
This switch is used to activate a locking mechanism that restricts operation of the frame to prevent the measurement nozzle from contacting the patient's eye.
- ⑪ **Forehead Rest**  
The patient's forehead is placed against this rest.
- ⑫ **Air Nozzle**  
Air is blown from this nozzle during measurement. It also contains an internal light source for alignment.
- ⑬ **Eye Level Mark**  
This is used as a reference when observing the patient's eye level.
- ⑭ **Forehead Rest Supports**
- ⑮ **Frame**
- ⑯ **Power Supply**
- ⑰ **Display Adjustment Knobs**  
These are used to adjust the brightness and contrast of the display.
- ⑱ **Measurement Button**  
Pressing this button causes air to be emitted from the air nozzle to perform measurement.
- ⑲ **Joy Stick**  
This is used to move the frame to the left and right and forward and backward. Rotating the joy stick moves the frame up and down.
- ⑳ **Display**
- ㉑ **Ventilation Holes**
- ㉒ **Keypad Connection Terminal**  
This is used to connect a keypad for entry of ID.
- ㉓ **RS232C Connection Terminal**  
This is used to connect a personal computer for transmission of data.
- ㉔ **Power Switch**

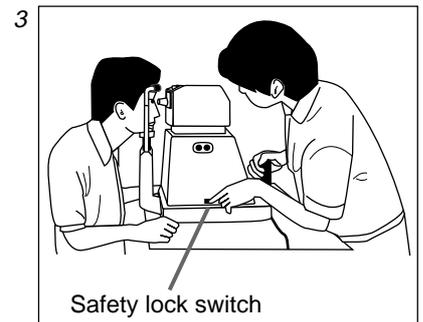


## 2. Measurement Procedures

1. Use the joy stick to move the frame towards the front until it stops.
2. Have the patient place his or her chin on the chin rest using the eye level mark on the forehead rest support as a reference.
  - Instruct the patient to place his or her chin on the chin rest and forehead against the forehead rest.
  - Raise or lower the chin rest by pressing the D and — keys to align the patient's eyes with the eye level mark.



3. Slowly move the frame towards the patient's eye with the joy stick while holding down the safety lock switch so that the distance between the patient's eye and the air nozzle is within 11 mm.
  - Perform this operation while viewing the distance between the nozzle and patient's eye from the side so that the nozzle does not make contact with the patient's eye.
  - The safety lock function is activated when the safety lock switch is released.
  - Proceed to the next step after first checking that the frame does not move any closer to the patient's eye.



### CAUTION

- The glass surface of the air nozzle may become soiled if it comes in contact with the patient's eyelashes or is covered with dust or debris. Since this prevents an accurate measurement from being made, clean the surface regularly. Clean the glass surface of the air nozzle by applying a small amount of alcohol to a piece of soft gauze or lens cleaning paper and wiping twice. When cleaning, be careful not to touch the opening in the air nozzle.
4. Temporarily move the frame back towards the operator until it stops using the joy stick.
    - Move the frame up and down and to the left and right with the joy stick so that the front of the eye appears on the display screen.
    - Rotating the joy stick causes the field of view to move up and down on the screen. At this time, instruct the patient to look at the stationary green light visible inside the main unit.
  5. Move the frame towards the patient's eye with the joy stick while viewing the display screen.
    - At this time, instruct the patient to look at the green point of light inside the air nozzle.

### CAUTION

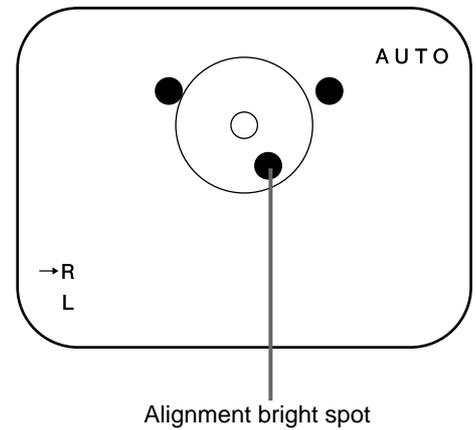
- In order to clean the inside of the nozzle, blow air through the nozzle several times before use by pressing the measurement button. At this time, make sure that no one is in front of the nozzle.

## Auto Mode

6. Since three bright spots will be visible on the surface of the cornea as shown in the illustration (open the patient's eye by hand when the two upper spots are not visible), move the frame with the joystick so that the alignment bright spot near the center is located within the outside circle of the double circle.

- The auto-alignment mechanism will be activated when this bright spot falls within the outside circle.

7. After confirming that the alignment bright spot is located in the center of the double circle, slowly move the frame towards the patient's eye with the joystick.



8. A trapezoid like that shown in Fig. A will appear on the screen. Move the frame closer to the patient's eye with the joystick. When proper alignment has been reached, the pattern shown in Fig. B will appear on the screen after which air will be emitted and measurement will be performed automatically.

- When the screen appears as shown in Fig. C, this indicates that the air nozzle is too close to the patient's eye. Since a beeping warning tone will sound when this occurs, promptly move the joystick towards the operator to move the nozzle away from the patient's eye.

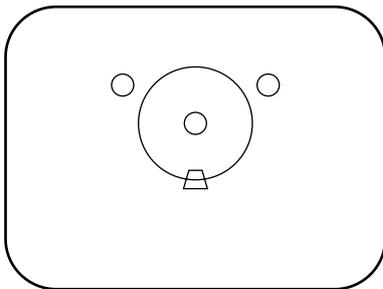


Fig. A

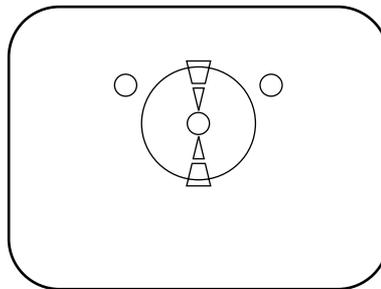


Fig. B

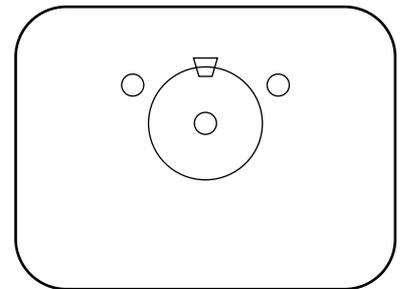


Fig. C

- When the screen does not appear as shown in Fig. B or air is not emitted even if it is displayed for reasons of the patient moving his or her eye or poor condition of the cornea, pressing the manual button allows measurement to be performed in the same manner as in the manual mode.

## CAUTION

- When the alignment display is not shown in the screen, the warning tone will not sound even if the nozzle becomes too close to the patient's eye.
- The warning tone will not sound if the WARNING parameter in the menu mode is set to OFF.
- The warning tone will stop sounding a short time after the nozzle is moved away from the patient's eye. Once the warning tone sounds, promptly move the joystick towards the operator to move the nozzle away from the patient's eye.
- The warning tone provides only an auxiliary measure for preventing the nozzle from becoming too close to the patient's eye. Always use the safety lock switch during measurement to ensure safe measurement.
- Intraocular tension cannot be measured accurately if the patient's eye is not sufficiently open. If the patient's eye is not open enough, the message "OPEN EYE" will appear on the display screen. At this time, measurement will not be performed in the auto mode even if the display shown in Fig. B appears on the screen. Either instruct the patient to open his or her eye wider or hold the patient's eye open by hand until at least one of the upper two bright spots is visible.
- Even if the message "OPEN EYE" appears on the display screen, when the condition, which the proper alignment has been reached, has been kept for at least 4 seconds, air will be emitted and measurement will be performed automatically.

This function makes measurement will be possible for the patient who can not open his or her eye.

## Manual Mode

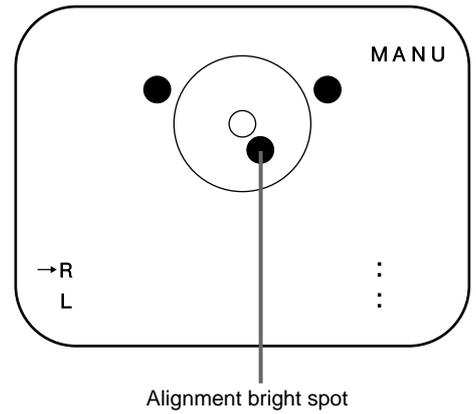
6. Since three bright spots will be visible on the surface of the cornea as shown in the illustration, move the frame with the joy stick so that the alignment bright spot near the center is located within the outside circle of the double circle.

7. Slowly move the frame towards the patient's eye while keeping the bright spot in the center of the circle.

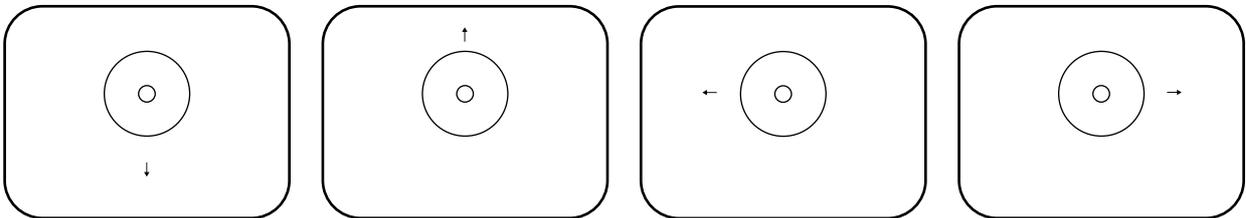
- Just as in the auto mode, move the frame closer to the patient's eye with the joy stick until the pattern shown in Fig. B on the previous page is displayed.

8. Check the alignment display and press the measurement button.

- Air will be emitted from the nozzle to perform measurement.



During measurement, the arrows shown below may appear on the screen.



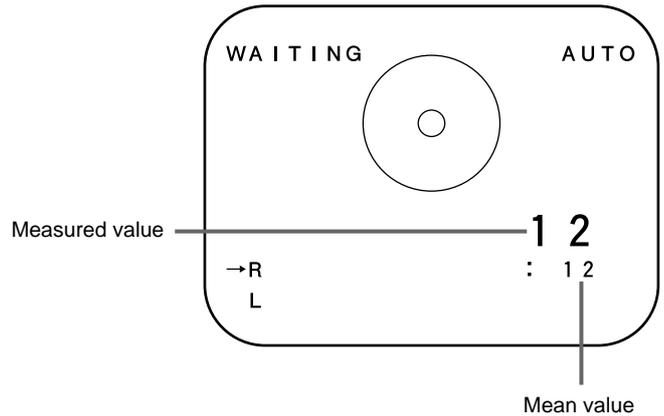
These arrows mean that the auto alignment mechanism has reached the limit of its movement.

- ← When this arrow is displayed, move the joy stick to the right until the arrow is no longer displayed.
- When this arrow is displayed, move the joy stick to the left until the arrow is no longer displayed.
- ↓ When this arrow is displayed, continue pressing the ≠ key to raise the chin rest until the arrow is no longer displayed.
- ↑ When this arrow is displayed, continue pressing the Ø key to lower the chin rest until the arrow is no longer displayed.

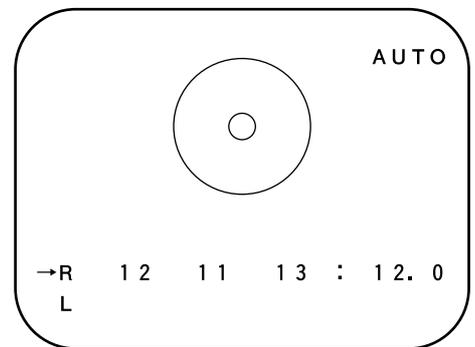
Once the arrow is no longer displayed, realign the frame at the measurement position with the joy stick.

### 3. Measured Values

Measured values are displayed as shown in the illustration when measurements are performed. At the same time, previously measured values and the mean value are also displayed. Following measurement, the measured value will be shown in the form of an enlarged display for a predetermined amount of time. During this time, WAITING is displayed in the upper left corner of the display. Additional measurements cannot be made while this is displayed.



Measurements are performed at least three times, and the mean value that is displayed represents the intraocular pressure. (Intraocular pressure fluctuates over time due to factors such as breathing and pulse. Taking the mean of three measured values enables these fluctuating factors to be offset.)



#### Error Displays

When measurement has not been performed properly, ERROR is displayed on the screen for a predetermined amount of time. When this occurs, measured values are not displayed and the mean value does not change. Additional measurements cannot be made while ERROR is displayed on the screen.

- Possible causes of an ERROR display include ① eye movement, ② blinking, and ③ severe abnormality in the shape of the cornea.

#### Asterisk Data

When there is the possibility of the data being unreliable even though measurement has been performed, an asterisk "\*" will appear along with the measured value. When this occurs, repeat measurement while making sure the patient's eye is adequately open and remains still.

- The asterisk "\*" mark appears when there is a disturbance in the pressure flat waveform, the height of the pressure flat waveform is inadequate, or there is excessive variation in measured values.

#### Limits of accuracy

Degree of accuracy claimed for devices with a measuring function.

- ±1mmHg more than 0 and less than 30mmHg
- ±2mmHg more than 30, 60mmHg or less

## 4. Printing of Measurement Results

Data measured up to that point in time can be printed out by pressing the PRINT key after measurement.

- Pressing the PRINT key when there is no data will cause paper to be through the printer during the time it is pressed.

NAME	M/F
ID [0001]	
R 6 7 7 :	6.7
L 11 10 11 :	10.7
-----	
KOWA KT-500	VER1.0
-----	

Data is cleared from the screen when it is printed out. The message shown in the illustration will appear on the screen when the printer is out of paper after the PRINT key has been pressed.

Pressing any key or the measurement button will return the display to the regular measurement screen. PAPER END will be displayed on the screen until paper is added to the printer.

PRINTER PAPER ENDED  
PUSH ANY KEY

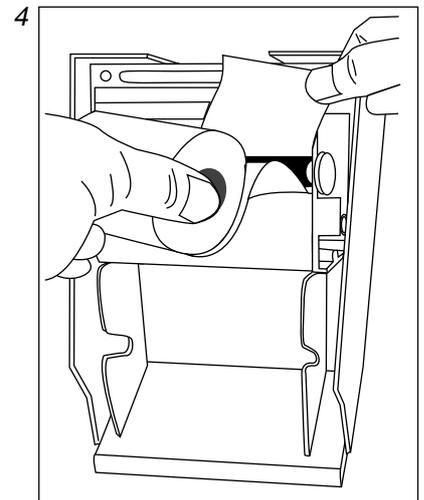
### Replacing Printer Paper

- When replacing the printer paper, first check that the patient does not have his or her chin resting on the chin rest. There is the risk of the frame moving towards the patient's eye during paper replacement.

1. The printer cover will pop open a little when the top of the printer cover is pressed. Open the cover up all the way.
2. Lift up the paper lock lever to unlock the paper.
  - Take out any old paper left in the printer.
3. Take out the printer paper roller and thread the end of the new paper around the roller.
4. Insert the printer paper as shown in the illustration and lower the lock lever to lock in position.
5. Pass the paper through the opening in the printer cover.
6. Close the printer cover and cut off any excess paper. This completes the paper replacement procedure.

### CAUTION

- Make sure that the side of the printing paper on which data is to be printed is facing in the right direction. If it is not, data will not be printed on the paper.



## 5. Menu Mode

This mode is used to set the various functions of the KT-500.

### Starting the Menu Mode

Hold the menu key down for at least 4 seconds.

When the menu mode is started, the screen will appear as shown in the illustration.

```
> ID
DATE
AUTO OFF
PRINT FORM
WARNING
DISPLAY
PRINT KEY
END
```

ENTER : AUT/MAN

### Parameter Selection

Select parameters using the ▲ and ▼ keys.

Finalize selections with the AUTO/MANUAL key.

When a selection has been finalized, that parameter will be displayed on the screen.

### End of the menu mode

When END is selected and finalized with the AUTO/MANUAL key, the system will return to the regular measurement mode.

### CAUTION

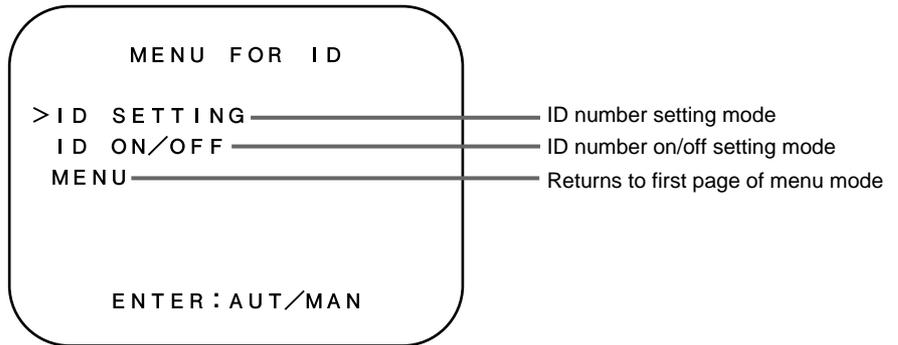
- An internal battery is used to store the date and settings made in the menu mode. Although the battery will last for 4-6 months after it has been fully charged (requiring approximately 12 hours), turn the power switch on for at least 30 minutes a week to allow the battery to charge. If the battery becomes worn out, the data and settings made in the menu mode will return to the state shown in the illustration at right.

```
DATE
1996/ 1/ 1 12:00AM
ID      [0000]
ID NO   :   ON
CLDR FORM : YYY/ MM/ DD
AUTO OFF :   YES
PRINT FORM: REGULAR
WARNING  :   ON
DISPLAY  :   ON
PRINT KEY : PRINT SEND
```

## Parameters

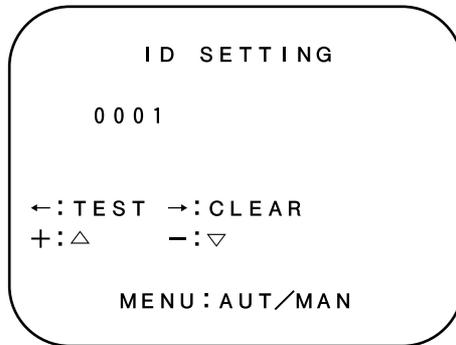
### ① ID

The following screen is displayed when ID is selected.



### [ID SETTING]

This is used to set the ID number.



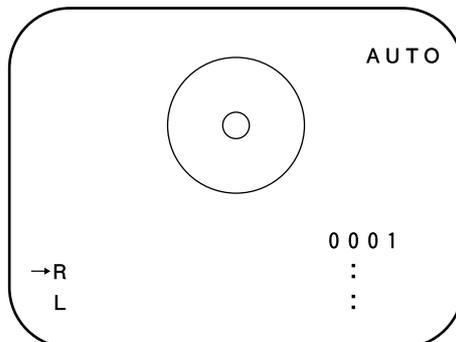
TEST CLEAR Keys: Used to select the digit at which the ID number is to be set.  
 D, — Keys: Increases or decreases ID number

### [ID ON/OFF]

This is the ID number on/off setting mode.

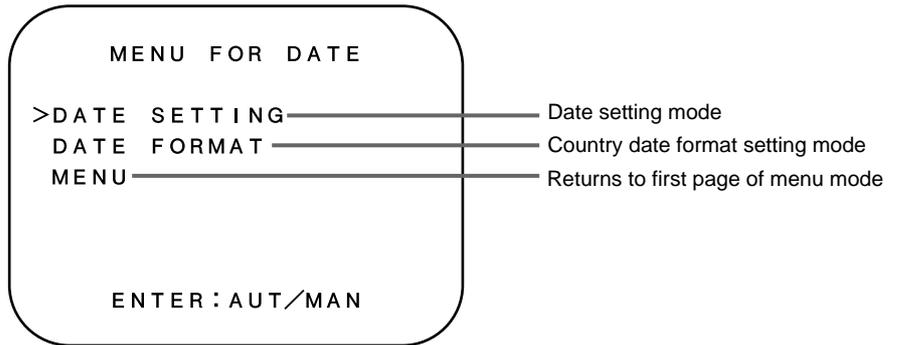
When ON: The ID number is printed out when PRINT FORM of the menu mode is set to REGULAR. The ID number is displayed on the screen as shown in the illustration. When data is printed out, the ID number is automatically incremented by 1.

When OFF: A blank space is printed out in the manner of ID [ ] when PRINT FORM of the menu mode is set to REGULAR. This is used when desiring to write the ID number in by hand.



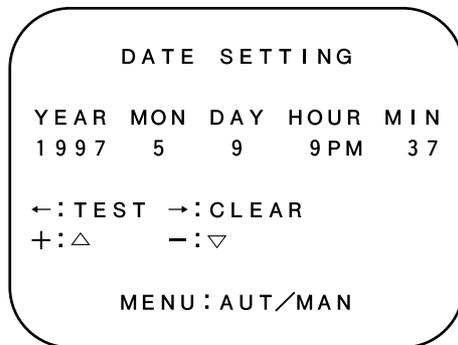
② DATE

The following screen is displayed when DATE is selected.



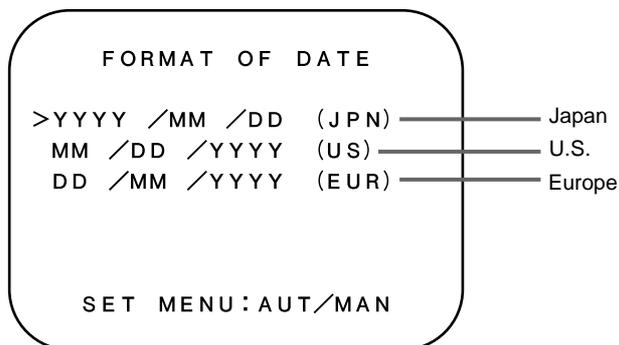
**[DATE SETTING]**

This is the date setting mode.



**[FORMAT OF DATE]**

This is the country date format setting mode. This is used to set the format of the date that is printed out when printing out measurement data.



③ AUTO OFF

This is used to set power saving operation.

When YES: The system automatically enters a power saving mode when it is not operated for a predetermined amount of time (approximately 5 minutes). When the system is in the power saving mode, the display is empty and all functions are stopped. The LED lamp above the PRINT button flashes to distinguish this mode from the status when the system is turned off. Pressing any key or the measurement button immediately returns the system to measurement status.

- All measurement data is cleared prior to entering the power saving mode.

When NO: The system does not enter the power saving mode.

④ PRINT FORM

This is used to set the form of the printout when measurement results are printed out with the printer.

REGULAR: Date, name, sex (M/F), ID number and measurement data are printed out.

SHORT: Name, sex (M/F) and ID number are not printed out.

⑤ WARNING

This is used to set the proximity warning tone to on or off.

When ON: The warning tone sounds.

When OFF: The warning tone does not sound.

⑥ DISPLAY

This is used to set the screen display.

When ON: The screen is displayed normally.

When OFF: The screen is displayed only during alignment and to display measurement results. All other information is not displayed.

⑦ PRINT key

PRINT key operations are set.

PRINT ONLY: Performs printing only. No data is transferred to PC.

SEND ONLY: Data are transferred to PC. Printing is not performed.

PRINT AND SEND: Both printing and data transfer to PC are performed. (This is selected at the shipment from factory.)

- If you need detail information about the data transfer to PC, please contact our service personnel.
- Setting with the PRINT KEY is valid so far as the system setting is maintained as the system was shipped from the factory, however, it becomes invalid after the system has been switched to Ver1.09 compatible mode.
- Consult our service personnel when it is necessary to switch to Ver1.09 compatible mode. This switching is not necessary under normal conditions.

## 6. Calibration

The system should be calibrated periodically to maintain its accuracy.

Pressing the TEST key for at least one second changes the system to the mode for performing system calibration (TEST MODE) (Fig. A).

- Pressing the TEST key interrupts calibration and returns the system to the previous display.
- Check that there is nothing in front of the air nozzle.

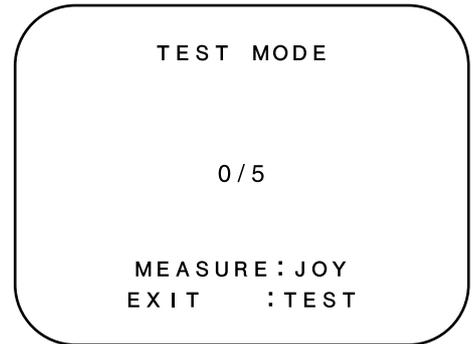


Fig. A

A measurement is performed for the purpose of calibration when the measurement button is pressed. The screen will appear as shown in Fig. B. When calibration is completed, a beeping tone will sound and the system will return to the previous display 2 seconds later.

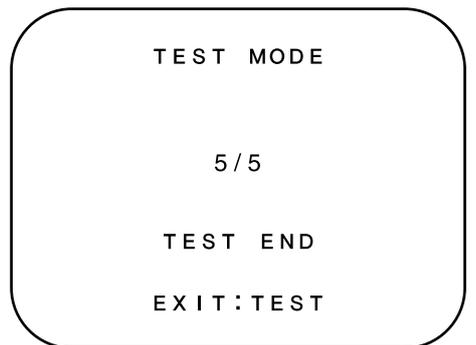


Fig. B

## 7. Maintenance and Inspection

Since the KT-500 is a precision instrument, routine maintenance and inspections have an effect on the quality of measurement results. Please read this section carefully to ensure that the system is used properly and safely.

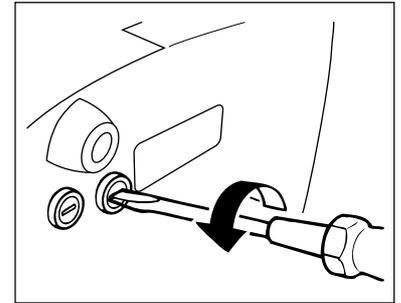
### Cleaning the Exterior

Wipe any soiling of the exterior off using a cloth and a neutral detergent. Never use paint thinner or other organic solvents when cleaning since they can damage the surface.

### Fuse Replacement

Inspect the fuses in the bottom portion of the power supply unit after turning the main switch off and unplugging the power cord. Replace the fuses if they are burnt out.

The fuses are contained in fuse holders. The fuse holders can be removed by turning in the direction indicated by the arrow. While being careful not to bend, insert the new fuse after checking the indicated capacity.



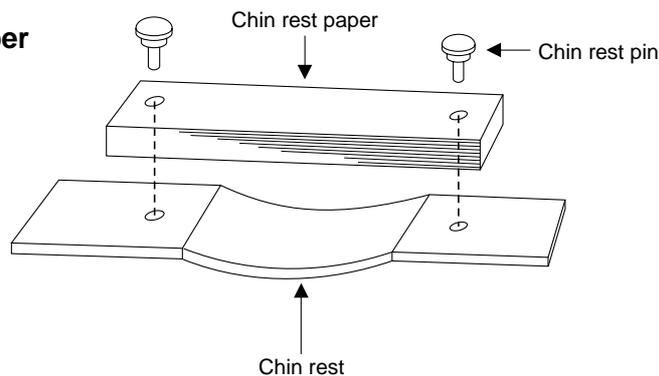
### CAUTION

- Only replace the fuses after first turning off the main switch and unplugging the power cord. Failure to do this can result in the risk of electrical shock.

### Regular inspection

In order to use this instrument safely for a long time, we recommend that you carry out a regular inspection. Consult your Kowa dealer where you purchased this instrument for details and cost of the inspection.

### Attaching the Chin Rest Paper



### Consumable Supplies

	Ordering No.
Chin rest paper	1114-2220
Printer paper	*NP Recording Paper
Fuse	220V – 240V : 173002 100V – 117V : FGB0-125-3A

### Accessories

Dust cover	1
Fuses	2
Printer paper	2 rolls
Printer paper shaft	1
Chin rest pins	2
Chin rest paper	1 pack
Power cord	1
Instruction manual	1

## 8. Keypad

ID numbers can be entered from a keypad when an ID number is displayed on the screen during alignment.

- ID numbers are displayed on the screen when PRINT FORM is set to REGULAR and ID ON/OFF is set to ON in the menu mode.

ID numbers are incremented by 1 by pressing the PRINT button or by pressing the RETURN key on the keypad. ID numbers are also incremented by 1 automatically simultaneous to printing. The ID number can be reset to 0000 by pressing the period "." key on the keypad.

- Applicable keypad: NEC PC98 series-compatible keypad (connector type: 8-pin mini DIN)

### Data Management Using a PC

Connecting the KT-500 to a personal computer using an RS232C cable makes it possible to transmit data to data management application software exclusively for use with the KT-500. Please ask your dealer for additional information about this application software. (In order to use this software, a personal computer able to operate with Windows95 and an RS232C cable must be provided by the user.)

- Applicable RS232C cable: 25-pin D-sub, cross type

## 9. Specifications

### Major Specifications

Measuring Range	0-60 mm Hg (measuring range non-switchable)
Measuring Unit	1 mm Hg
Measurement Time	Within 100 msec
Operating Distance	11 mm
Eye Observation Range	16 mm x 10 mm
Monitor Television	5-inch/black-and-white
Printer	58 mm wide, thermosensitive line printer
Internal Stationary Lamp	Green LED
Frame Operating Range	Front and back: 40 mm, Left and right: 86 mm
Head Operating Range	Up and down: 20 mm
Head Auto-Alignment Operating Range	Up and down: $\pm 3$ mm, Left and right: $\pm 3$ mm
External Dimensions	450(H) x 260(W) x 450(L) mm
Weight	17 Kg

### Electrical Ratings

Power Supply Input Voltage	AC 100 V~ AC240V
Frequency	50/60 Hz
Power Supply Input (Power Consumption)	65 VA
Lightning Protection Class	Class I instrument
Lighting Protection Capacity	Type B instrument

### Other

Operating Environment	Ambient temperature: +10 to +40°C, relative humidity: 30 to 80%
Transport and Storage Environment	Ambient temperature: -15 to +60°C, relative humidity: 10 to 80%



Notified Body No.0197

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