

# SERVICE MANUAL FOR LIQUID SCANNER

< MODEL: LSR-M2 >

## CAUTION

- Before the maintenance of Kumahira Liquid Scanner LSR-M2, read this manual carefully to fully understand the product.
- Instruct other maintenance personnel with this manual, in particular about "Cautions".
- Keep this manual in a safe place for future reference in the maintenance of Liquid Scanner.

August 2020 <4<sup>th</sup> Edition>



## Revision History

| Edition         | Revised Date | Contents                                                                                                                                                                                                                                                                                          | Revised page                             | Software version |
|-----------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------|
| 1 <sup>st</sup> | June 2018    | Initial version issued                                                                                                                                                                                                                                                                            |                                          | 1.00             |
| 2 <sup>nd</sup> | June 2019    | Software version                                                                                                                                                                                                                                                                                  | i                                        | 1.03             |
|                 |              | Addition of body cover and cushioning                                                                                                                                                                                                                                                             | p.2                                      |                  |
|                 |              | Revision to troubleshooting                                                                                                                                                                                                                                                                       | p.12, 13                                 |                  |
| 3 <sup>rd</sup> | August 2019  | Software version                                                                                                                                                                                                                                                                                  | i                                        | 2.00             |
|                 |              | Replacement and adjustment for lamps                                                                                                                                                                                                                                                              | p. 5-8                                   |                  |
|                 |              | Replacement for can sensor pad                                                                                                                                                                                                                                                                    | p. 9                                     |                  |
| 4 <sup>th</sup> | August 2020  | External appearance<br>Addition of the screw ring and rubber mount in the maintenance parts list<br>Addition of "4.2.2 Replacement for screw ring and rubber mount"<br>Revision of the figure for "Replacement for bottle sensor cap"<br>Revision to troubleshooting<br>Revision to "7. Appendix" | p.1<br>p.2<br>p.4<br>p.4<br>p.14<br>p.15 | 2.01             |

\* The edition number is described on the cover page of this manual.

## Information

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### Trademarks

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The system names and product names used in this document are protected as the trade name of the development manufacturers in general.

Note that TM and ®-mark is not specified in this manual.

## Safety Precautions

■ In order to use the product safely and to avoid human injury and property damage, the following symbols are used. Before reading this manual, fully understand meanings and contents of each symbol.

### Safety symbols

■ The following symbols indicate the degree of injury and damage caused by improper operations.



**WARNING**

Risk of death or serious injury from improper use



**CAUTION**

Risk of minor injury or property damage from improper use

■ The following pictorial symbols indicate actions to be observed



Prohibited operations



Required actions



**WARNING**



### Do not insert foreign objects.

Do not insert metallic or conductive objects into any opening of Liquid Scanner LSR-M2 (hereinafter referred to as the product). It may cause a fire, electric shock, or other hazards.



### Do not let the product get wet.

Do not carry or operate the product with wet hands. During screening, be careful not to spill or splash liquids in a container over the product. Dirt or liquid on the target container must be wiped off before screening to avoid a fire, electric shock, or other hazards.

If a liquid is spilled on the product, turn off the power immediately, disconnect the power plug. Then wipe off the spilled liquid.

Contact your service dealer if a liquid or foreign object is dropped into inside the product.



### Do not connect unrated power supply.

Be sure to use the provided AC adapter and connect the adapter to the rated voltage to avoid a fire, electric shock, or other hazards.



### Do not apply strong pressure, impact, or damage.

(1) Do not drop the product or AC adapter. Do not apply strong pressure or impact to them.

(2) Do not forcibly press the display, and do not scratch it with a sharp item.

(3) Do not bend or pull the power cable excessively.

(4) Do not hit the product or sensor with a liquid container or other objects during screening.

(5) Do not roughly set a container on the product.

It may cause an electric shock or other hazards.



### Do not touch any heated component.

Do not touch directly the lamps, the lamp surroundings, display, LED indicators, and AC adapter while they are hot. It may cause a burn or low-temperature burn.



### Do not touch the power plug during a thunder or storm.

It may cause an electric shock.



### Do not use at the following places.

(1) Directly exposed to water droplets

(2) Dusty or dirty places

(3) Exposed to direct sunlight

(4) Directly exposed to steam or oil mist

(5) A place where dew condensation may occur.

It may cause an electric shock or other hazards.

(6) A place where the ambient temperature is under 0°C or over 40°C

(7) High humidity place

(8) Unstable place where the product may drop or fall.

(9) A severely vibrated location

(10) A place where flammable gases are generated.

## Safety Precautions



### WARNING



**If a malfunction or failure occurs, stop using the product immediately and disconnect the power plug.**

Examples of malfunctions and failures

- (1) The product does not start after the power button is pressed to turn on.
- (2) The power turns on and off repeatedly by moving the power plug or cable.
- (3) Abnormal noise or smell is noticed.
- (4) A liquid or foreign object is dropped into inside the product.

Continuous use of the malfunctioned or failed product may cause a fire, electric shock, or other hazards. If you find these troubles on the product, turn off the power immediately, remove the power plug, and contact your service dealer.



**Insert the power plug firmly.**

The power plug not inserted completely may cause a fire or electric shock.



**Remove dust on the plug regularly.**

Gathered dust on the power plug may cause a fire, due to poor insulation under high humidity.



### CAUTION



**Do not use solvent.**

Do not use alcohol, scouring powder, soap powder, benzene, thinner, wax, oil, or hot water. In addition, do not apply pesticide, glass cleaner, hair spray or other chemicals to clean the product. It may cause a fire, electric shock, or other hazards.



**Do not watch the lamp light directly for a long time.**

It may hurt your eyes.



**Do not set the sound volume too high.**

Hearing the sound continuously at high volumes stimulating ears may damage your hearing.



**Hold the power plug and disconnect it.**

Damage to a power plug or power cable may cause a fire, electric shock, or other trouble.



**Disconnect the power plug before carrying or maintenance.**

For your safety, disconnect the power plug before carrying or cleaning the product. Do not touch the halogen lamp or its surroundings while they are hot. It may cause a burn or low-temperature burn.



**Disconnect the power plug after using.**

When the product is not used for a long time or it is stored, disconnect the power plug and store the product according to the storage environment.



**Hold the bottom of the product to carry it.**

When carrying the product, hold the bottom of it and handle it with care to avoid strong impact. In addition, be careful not to pinch your fingers at installation. Do not hold the sensor pole or the can holder to carry the product to avoid injury or other trouble.

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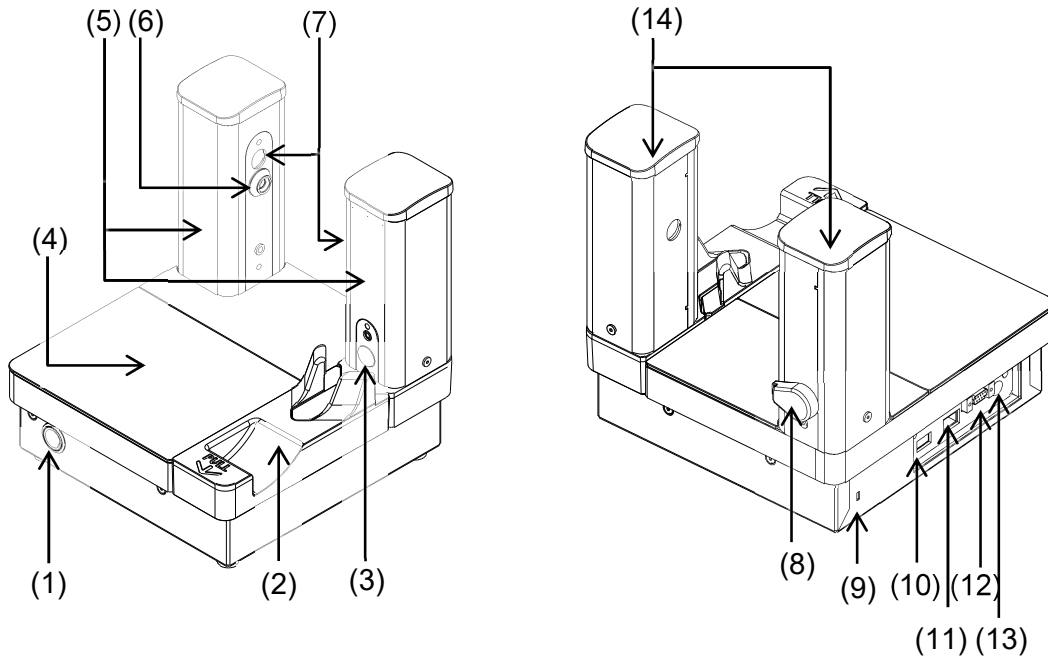
## 1. Introduction

This document is the Service Manual for the following product.

■ Liquid Scanner: LSR-M2

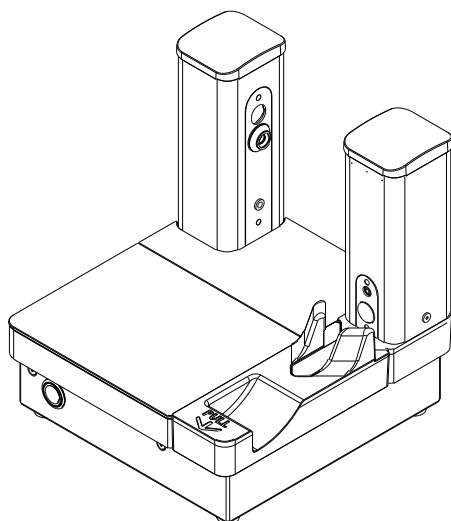
## 2. Parts and Function

### 2.1 Main body

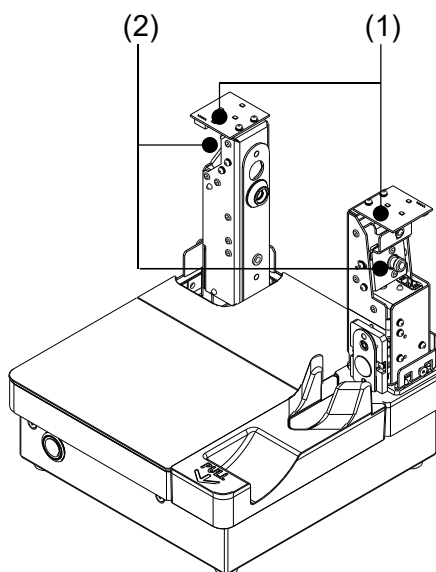


| No.  | Name                                 | Description                                                                                                                                                                             |
|------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1)  | Power button                         | A button to turn on or off the power<br>Pressing the button turns on the lamp in blue (Power ON).<br>Pressing the button again turns off the lamp (Power OFF).                          |
| (2)  | Can holder                           | A plastic sliding holder to hold a can for screening.                                                                                                                                   |
| (3)  | Can sensor<br>(with can sensor pad)  | A sensor to scan a can<br>A can sensor pad is attached on the surface.                                                                                                                  |
| (4)  | Display (touchscreen)                | A display indicates a screening result and other operational information.<br>Also, it is used for setup and start-up inspection.<br>A display protector is provided on the LCD display. |
| (5)  | Sensor pole (L) / (R)                | Poles between where a bottle is screened.                                                                                                                                               |
| (6)  | Bottle sensor                        | A sensor to scan a bottle<br>A rubber hood is provided at the edge of the sensor.                                                                                                       |
| (7)  | Lamp (L) / (R)                       | Lamps to irradiate a bottle to be screened.                                                                                                                                             |
| (8)  | Bottle sensor cap                    | A cap to cover the bottle sensor during the initialization and storage.<br>Attach the cap on the side of sensor pole after the initialization.                                          |
| (9)  | Locking hole for theft<br>prevention | A hole for connecting a commercial theft prevention cable (by Kensington) or the like. Hole dimensions: 3 mm × 7 mm                                                                     |
| (10) | USB port                             | USB 2.0 port to connect a USB interface device                                                                                                                                          |
| (11) | Ethernet port                        | Ethernet port to connect with a local area network (LAN)                                                                                                                                |
| (12) | External output port                 | An optional port to output the screen result to an external device. Refer to User Manual [6.8 Connection to an external device] for the details.                                        |
| (13) | DC socket (12 V)                     | A socket to connect the provided AC adapter.                                                                                                                                            |
| (14) | LED indicator (L) / (R)              | LEDs to show the screening result by a color.                                                                                                                                           |

## 2.2 Sensor pole inside



Appearance of Liquid Scanner main body



Appearance after removing sensor poles

| No. | Name      | Description |
|-----|-----------|-------------|
| (1) | LED board | -           |
| (2) | Lamp      | -           |

## 3. Maintenance Parts/ Consumables

## ■ Maintenance parts

| No. | Name                      | Model                | Description                                  |
|-----|---------------------------|----------------------|----------------------------------------------|
| 1   | LED board                 | KH-0784- * * - * * G | This board is common to both right and left. |
| 2   | Rubber hood               | -                    | -                                            |
| 3   | Bottle sensor cap         | -                    | A strap code is provided.                    |
| 4   | Display protector         | -                    | -                                            |
| 5   | Lamp                      | -                    | A lamp cable is provided.                    |
| 6   | AC adapter                | -                    | Power cable with plugs                       |
| 7   | Liquid scanner body cover | -                    | -                                            |
| 8   | Cushioning                | -                    | -                                            |
| 9   | Screw ring                |                      |                                              |
| 10  | Rubber mount              |                      |                                              |

## ■ Consumables

| No. | Name           | Model | Description |
|-----|----------------|-------|-------------|
| 1   | Can sensor pad | -     | -           |

## 4. Service Maintenance Parts/ Consumables Replacement

### <Caution>

- Be sure to observe the instructions described in Safety Precautions.
- Before replacing, turn off the power and disconnect the power plug.
- Before replacing, take measures to prevent damage from static electricity.
- Use a hexagon wrench (width across flats: 2 mm) to remove or install the screws on the sensor pole and to adjust the ball plunger of lamps.
- Use a phillips screwdriver (size code: PH0 or PH1) to remove and install the screws on the can sensor.
- Be careful not to touch the board during the parts replacement or the adjustment.

#### ■ Items to be prepared

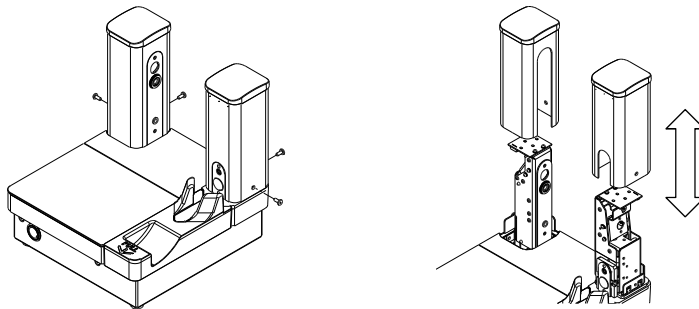
| No. | Name                 | Standards                | Remarks |
|-----|----------------------|--------------------------|---------|
| 1   | Hexagon wrench       | Width across flats: 2 mm | -       |
| 2   | Phillips screwdriver | PH0, PH1                 | -       |

### 4.1 Removal and installation of sensor poles

#### <Caution>

- Be careful not to hit the board when removing and installing the sensor pole.

Remove the screws and sensor poles (L and R) to replace the board.

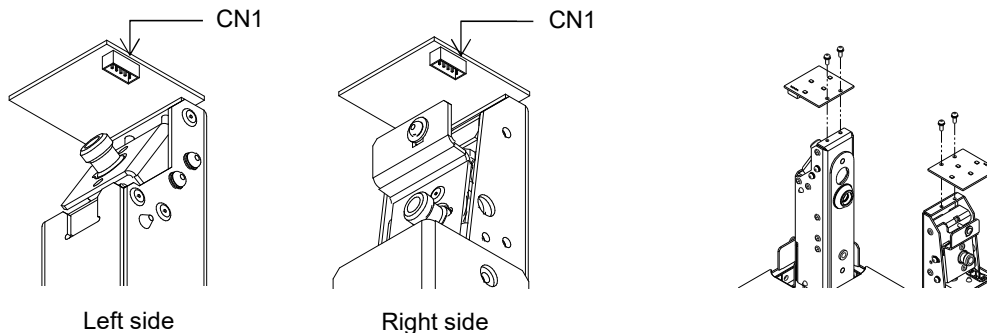


### 4.2 Replacement for parts

Install the parts in the reverse sequence to removal.

#### 4.2.1 Replacement for LED board

- (1) Remove the harness (CN1) and screws, and then replace the LED board.  
(The LED board is common to both right and left.)



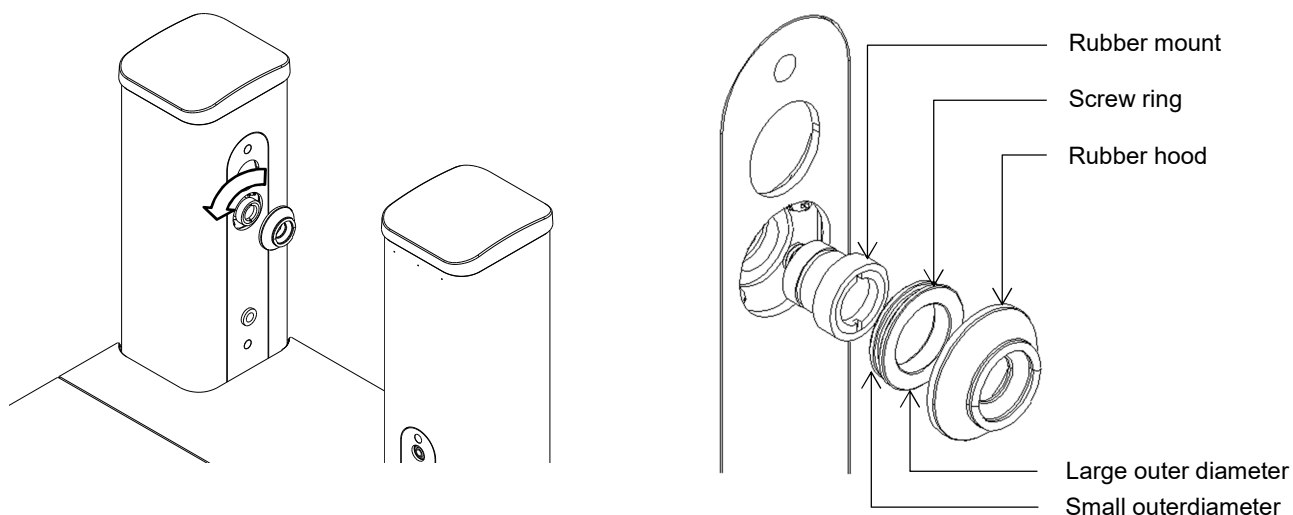
- (2) Perform the bottle and can sensor checks, and confirm that the lamp illuminates normally. (Refer to [5. Check after parts replacement] about the details.)

#### 4.2.2 Replacement for rubber hood, screw ring, and rubber mount

Turn the rubber hood to the left and remove it, and then replace the rubber hood or screw ring.

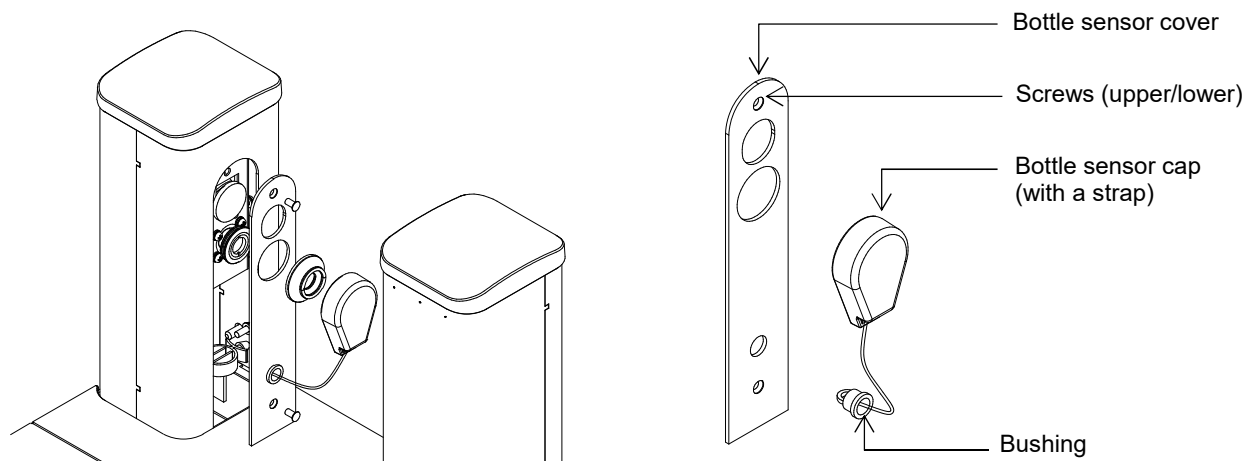
When you remove the rubber mount, hold the detached rubber hood and turn the rubber mount to the left together with the rubber hood.

- Turn the larger side of the screw ring towards the rubber hood, and mount the screw ring.
- Turn the rubber mount tightly after the replacement.



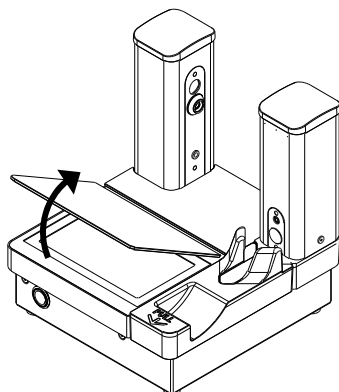
#### 4.2.3 Replacement for bottle sensor cap

Remove the rubber hood and loosen two screws of the bottle sensor cover and then remove it. Also, detach the bushing and replace the bottle sensor cap.



#### 4.2.4 Replacement for display protector

Pick up the display protector gently and remove it and then replace it.



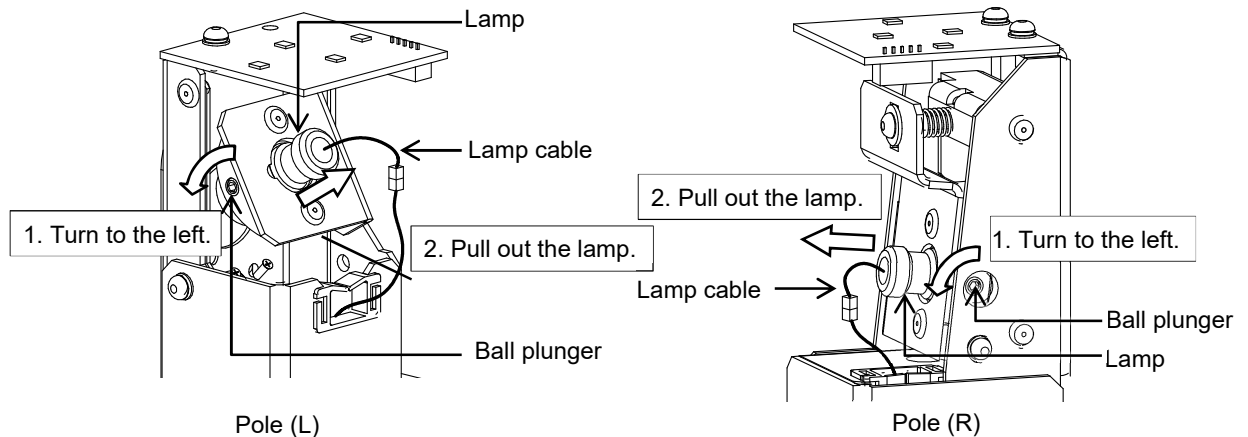
## 4.2.5 Replacement and adjustment for lamps

## &lt;Caution&gt;

- Be careful of the lamp direction when replacing the lamp. The lamp should be fixed well in the lamp holder. If the lamp is not mounted properly, the correct screening cannot be obtained.
- Check the lamp operation after the replacement or adjustment. (Refer to [5. Check after parts replacement] about the details.)

## (1) Remove the lamp cable from the lamp.

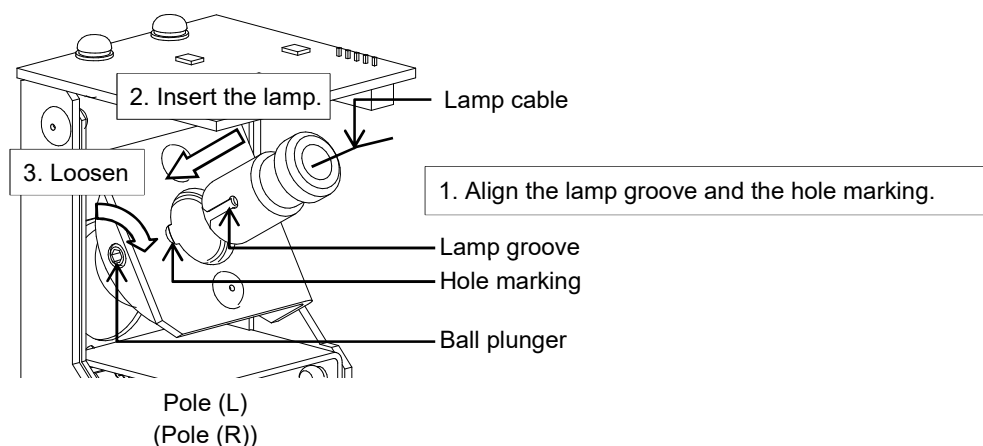
Make a half counterclockwise turn of the ball plunger to loosen and pull out the old lamp.



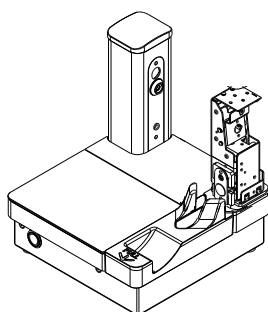
## (2) Aline the lamp groove with the hole marking facing each other and then insert a new lamp.

When the lamp is inserted completely, the ball plunger is mounted in the lamp groove and jointed temporary. Then, fasten the ball plunger to fix the lamp and connect the lamp cable.

- The temporary joint may be difficult when the ball plunger is too loosened. In that case, fasten the ball plunger and insert the lamp again.

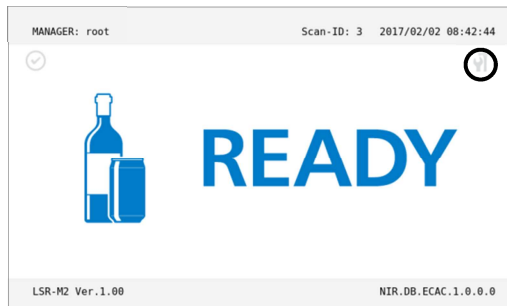


## (3) Install the sensor pole (L) after replacing the lamp. Do not install the sensor pole (R) yet.



- (4) Start the system and log on as a “Manager”.

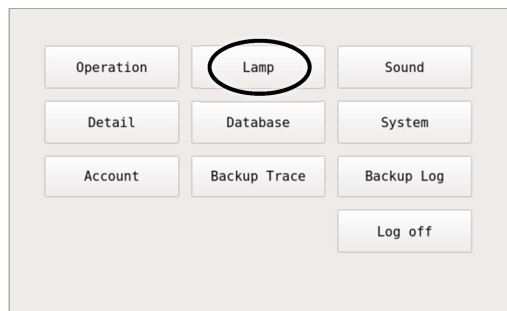
Touch the tool icon on the top right corner of the display to open the main menu. Refer to User Manual [6. Preparations] about the start-up and the tool icon.



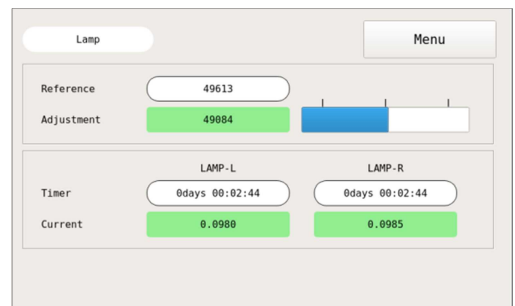
Touch the tool icon.

- (5) The main menu appears on the display.

Touch the “Lamp” button. The lamp check menu is displayed.



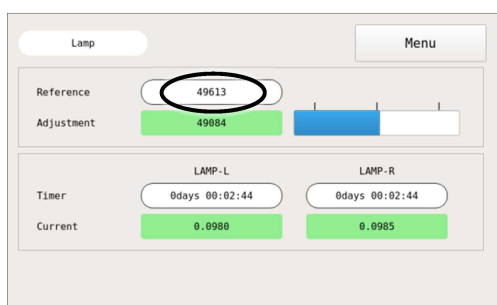
Touch “Lamp”



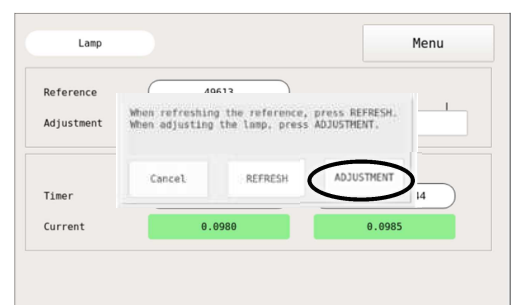
< Lamp check menu >

- (6) Touch the Reference value and then touch the “ADJUSTMENT” button in the window.

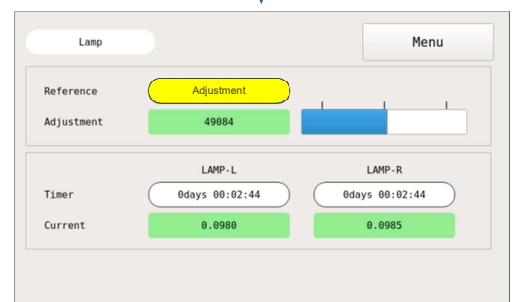
“Adjustment” is displayed in the Reference value area.



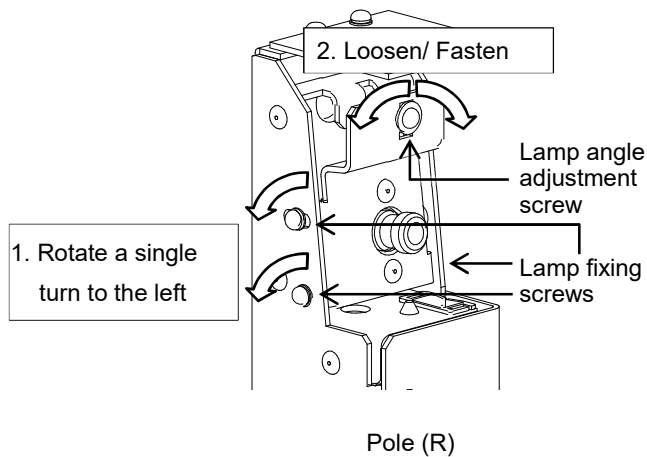
Touch the reference value.



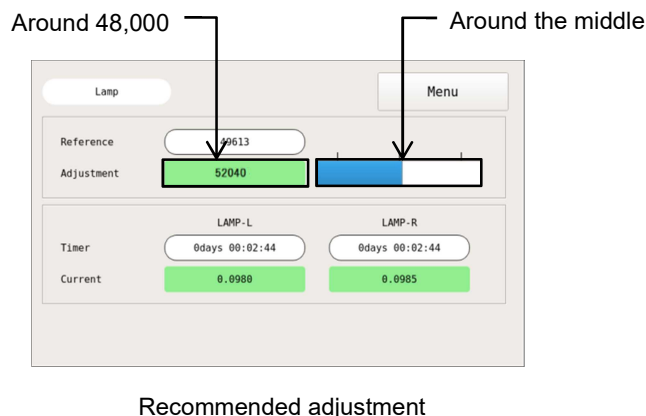
Touch the “ADJUSTMENT” button.



(7) Loosen three lamp angle fixing screws (a single counterclockwise turn).

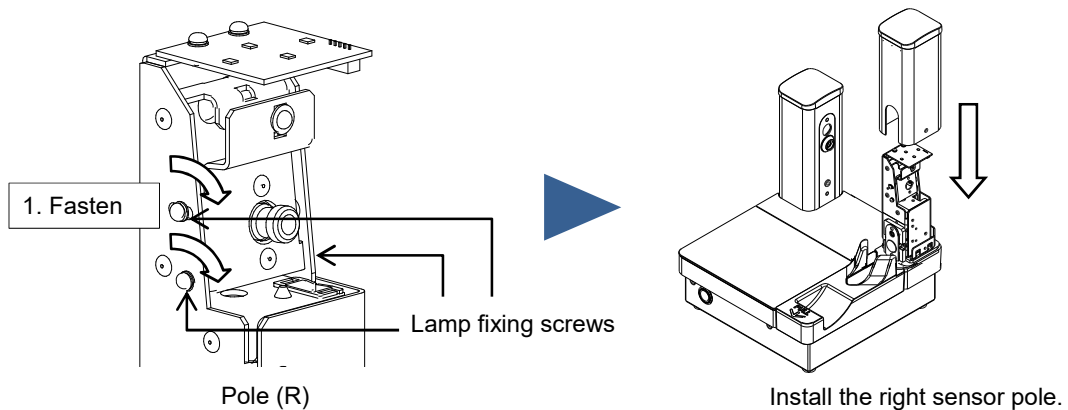


(8) Set the Adjustment value around 48,000 with the lamp angle adjustment screw.

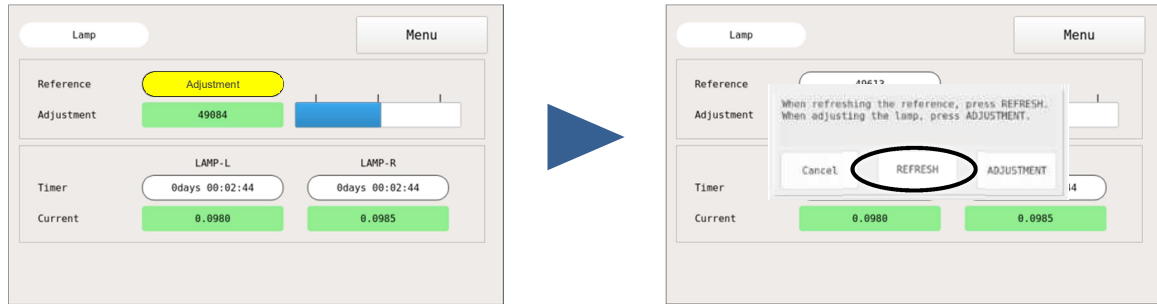


When the adjustment value cannot be set around 48,000, adjust the lamp angle to make the value as high as possible.

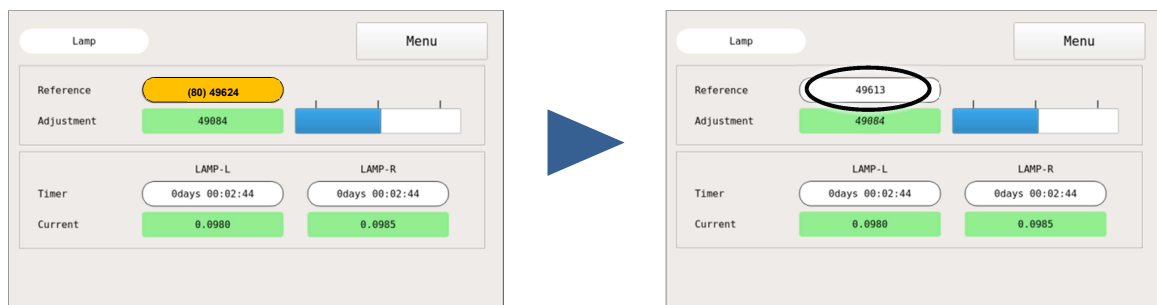
(9) Fasten three lamp angle fixing screws after the lamp adjustment and then install the right sensor pole.



- (10) Touch the yellow “Adjustment” button and then touch the “REFRESH” button in the window.

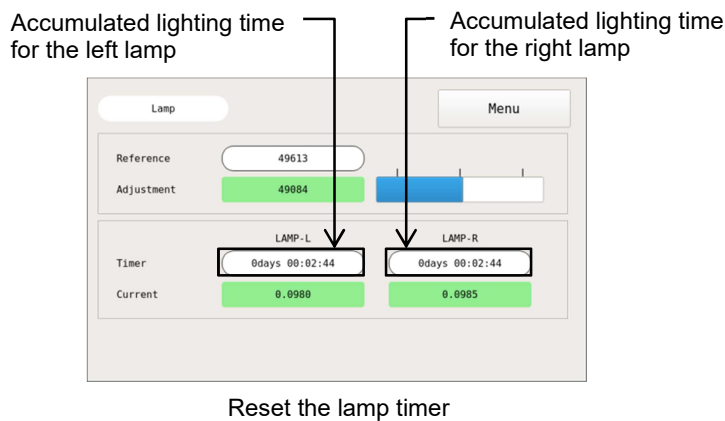


- (11) The Reference value is automatically adjusted. Wait until the automatic adjustment is completed and the Reference value area turns white.



If the Reference value area turns red with the description “Error”, after automatic adjustment, the lamp replacement is required.

- (12) After the lamp replacement, touch the lamp timer, which indicates the accumulated lighting time of the corresponding lamp, to reset. It starts to count again after the reset. You need to log on as a “Manager” to reset the lamp timer.



- (13) After the lamp replacement and adjustment, perform the bottle sensor check to check the operation. Refer to [5. Check after parts replacement] for the check.

## 4.2.6 Replacement for can sensor pad

## &lt;Caution&gt;

- Attach a can sensor pad correctly. If air enters inside or the pad is curled up, a correct screening result may not be acquired. (Refer to User Manual [9.3 Replacement for can sensor pad].)

- (1) Remove two screws, can sensor cover, and the damaged can sensor pad.



- (2) Install a new can sensor pad into the can sensor cover.



← Can sensor cover

← Can sensor pad

- (3) install the cover on the device while pushing air out of the inside of the pad.



- (4) Perform the can sensor check to check the normal operation.  
(Refer to [5. Check after parts replacement] about the details.)

## 5. Check after parts replacement

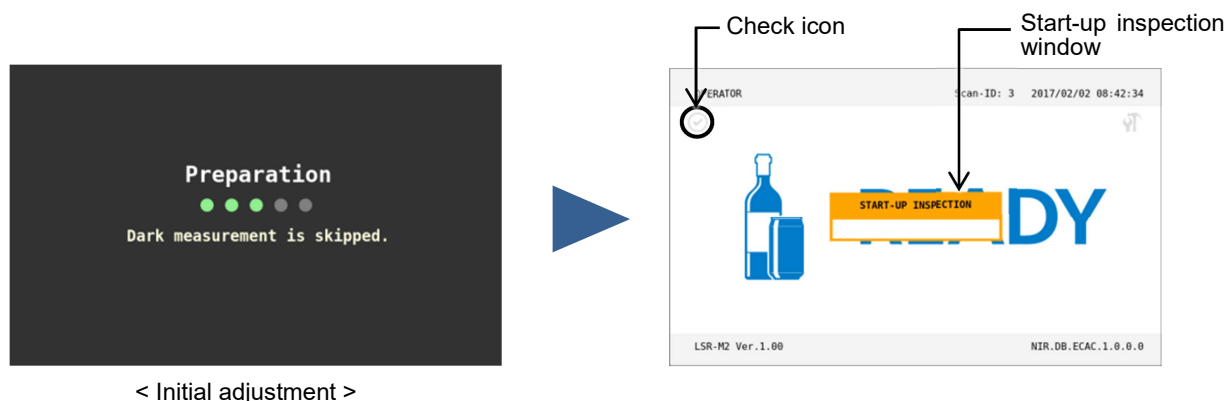
### <Caution>

- After replacing the service parts and consumables, be sure to perform the bottle sensor check and can sensor check to confirm that the product operation is normal.

(1) Turn on the power to start the system. (Refer to User Manual [6.2 Power ON].)

After the initialization, "READY" and the "START-UP INSPECTION" window appear on the display.

- The "START-UP INSPECTION" window can be shown/ hidden by touching the check icon.



(2) Bottle sensor check

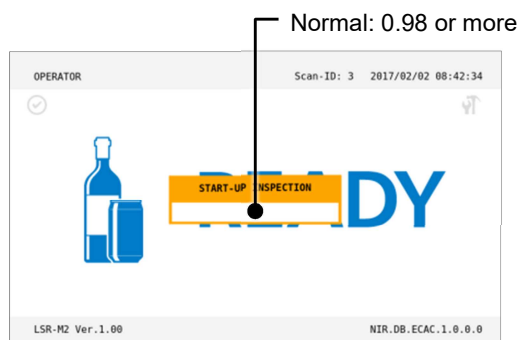
Prepare a bottle container filled with water, and screen it for the bottle sensor check. (Refer to User Manual [7.1 Bottle screening].)

Check the numerical values in the "START-UP INSPECTION" window.

- Normal value: 0.98 or more
- Abnormal value: Less than 0.98

If the value is under 0.98, change the screening portion of the bottle and bring it close to the bottle sensor, and perform the bottle sensor check again.

In case the value is still under 0.98, it may be a device failure. Refer to [6. Troubleshooting] about failures.



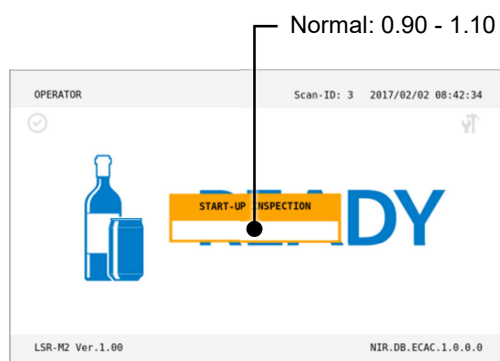
(3) Can sensor check

Prepare a metal can container filled with water, and screen it for the can sensor check. (Refer to User Manual [7.2 Can screening].)

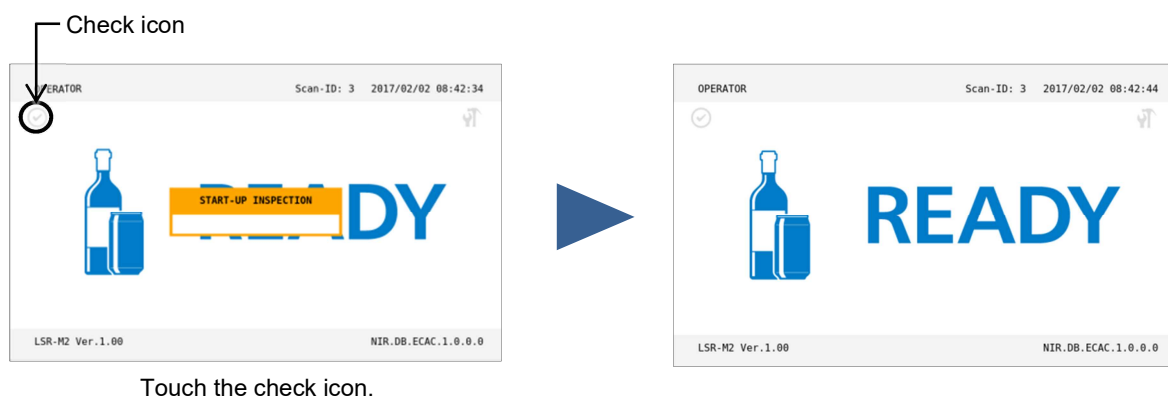
Check the numerical values in the “START-UP INSPECTION” window.

- Normal value: 0.90 – 1.10
- Abnormal value: Less than 0.90 or More than 1.10

If the value is abnormal, it may be a device failure. Refer to [6. Troubleshooting] about failures.



(4) After the sensor check, touch the check icon to hide the “START-UP INSPECTION” window.



## 6. Troubleshooting

Possible troubles during installation or operation, and its solutions are described as below.  
Please refer to followings as needed.

| Status/ Problem                                                                                                                                                      | Possible reasons                                                                                                                                                | Solutions                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| During the bottle sensor check, the numerical value is less than 0.98.<br><br>or<br><br>A safe liquid is not determined as "SAFE".                                   | Auto initialization has been failed.                                                                                                                            | Restart the system.                                                                                                                                |
|                                                                                                                                                                      | Auto initialization is executed without the bottle sensor cap.                                                                                                  | Restart the system.                                                                                                                                |
|                                                                                                                                                                      | The bottle label blocked the lamp light (red beam).                                                                                                             | Irradiate the lamp light (red beam) to the portion without label.                                                                                  |
|                                                                                                                                                                      | The lamp light quantity is out of the appropriate range.                                                                                                        | Adjust the lamp light quantity. Refer to [4.2.5 Replacement and adjustment of lamp].                                                               |
|                                                                                                                                                                      |                                                                                                                                                                 | If the adjustment of lamp does not improve the light quantity, replace the lamp with new one. Refer to [4.2.5 Replacement and adjustment of lamp]. |
|                                                                                                                                                                      | The bottle being held was moved during the screening (the message "WAIT" on the display).                                                                       | Do not move the bottle during the screening.                                                                                                       |
|                                                                                                                                                                      | There is very little liquid in the container. (Out of specifications)                                                                                           | It is impossible to screen. Refer to User Manual [11.2 Specification table].                                                                       |
|                                                                                                                                                                      | The container is not suitable for the screening. (Out of specifications)                                                                                        | It is impossible to screen. Refer to User Manual [11.2 Specification table].                                                                       |
|                                                                                                                                                                      | The liquid is not registered with the database of the product.                                                                                                  | The liquid not registered with the database is not determined as "PASS".                                                                           |
| During the bottle screening, the screening starts automatically more than once.<br><br>During the bottle screening, the screening does not start or does not finish. | The ambient lighting of the product has changed suddenly.                                                                                                       | Update the reference value. Refer to User manual, [9.4 Reference update]                                                                           |
|                                                                                                                                                                      | The bottle being held was moved during the screening. (The message "WAIT" on the display)                                                                       | Do not move the bottle during the screening.                                                                                                       |
| During the can sensor check, the numerical value is less than 0.90 or more than 1.10.<br><br>or<br><br>A safe liquid is not determined as "SAFE".                    | The lamp light from the bottle sensor does not transmit through the liquid in the bottle. The label on the bottle may prevent the lamp light from transmitting. | While holding the bottle in the proper position, adjust the direction, angle and height of the container.                                          |
|                                                                                                                                                                      | The can sensor pad is damaged or deteriorated.                                                                                                                  | Replace the can sensor pad. Refer to [4.2.4 Replacement for can sensor pad].                                                                       |
|                                                                                                                                                                      | The can sensor pad is curled up; air intrudes into its inside; or it is not installed correctly.                                                                | Install the can sensor pad correctly.                                                                                                              |
|                                                                                                                                                                      | The can holder hits the can strongly.                                                                                                                           | Release your hand gently from the can holder                                                                                                       |
|                                                                                                                                                                      | The can has been deformed; or the can is damaged by pushing the can holder forcibly.                                                                            | Do not push the can holder strongly to avoid the deformation or damage to the can                                                                  |
|                                                                                                                                                                      | The container has inclined.                                                                                                                                     | Set the container vertically.                                                                                                                      |
|                                                                                                                                                                      | There are some embosses on the can surface and the can does not contact with the can sensor.                                                                    | Push the can holder gently to have a good contact between the can and the can sensor.                                                              |
|                                                                                                                                                                      | There is very little liquid in the container. (Out of specifications)                                                                                           | It is impossible to screen. Refer to User Manual [11.2 Specification table].                                                                       |
|                                                                                                                                                                      | The container is not suitable for the screening. (Out of specifications)                                                                                        | It is impossible to screen. Refer to User Manual [11.2 Specification table]                                                                        |
| During the can sensor check, the screening starts repeatedly.                                                                                                        | The liquid is not registered with the database of the product.                                                                                                  | The liquid not registered with the database is not determined as "PASS".                                                                           |
|                                                                                                                                                                      | The can holder hits the can strongly.                                                                                                                           | Release your hand gently from the can holder                                                                                                       |
|                                                                                                                                                                      | The can has been deformed; or the can is damaged by pushing the can holder forcibly.                                                                            | Do not push the can holder strongly to avoid the deformation or damage to the can                                                                  |
|                                                                                                                                                                      | The can holder or the device is moving or vibrating.                                                                                                            | Please wait until the vibration stops. Set the device on a stable and horizontal site.                                                             |

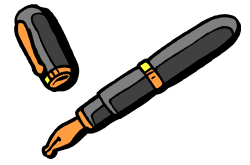
| Status/ Problem                                                                                                   | Possible reasons                                                                                                                                  | Solutions                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| During the can screening, the screening does not start or does not finish.                                        | The can sensor fails to have a good contact with the can                                                                                          | Push the can holder gently to let the can contact with the can sensor.<br>Rotate the can to change the contacting surface.                  |
|                                                                                                                   | The can holder is not stable.                                                                                                                     | The can holder may be damaged. Contact your service dealer.                                                                                 |
| [LAMP WARNING] and [SYSTEM ERROR] appears on the display.                                                         | The bottle sensor cap remains covering the sensor after the initialization, or there is a lamp light blocking item in front of the bottle sensor. | Remove the bottle sensor cap.                                                                                                               |
|                                                                                                                   | The lamp is blown out. (No red beam is generated.)                                                                                                | Adjust or replace the lamp. Refer to [4.2.5 Replacement and adjustment for lamps].                                                          |
|                                                                                                                   | The luminance of the lamp has decreased.                                                                                                          |                                                                                                                                             |
| [LAMP WARNING] appears on the display.                                                                            | The luminance of the lamp has decreased.                                                                                                          | Adjust or replace the lamp. Refer to [4.2.5 Replacement and adjustment for lamps].                                                          |
| [CHECK LAMP] appears on the display.                                                                              | The service life of lamp is expired.                                                                                                              | Adjust or replace the lamp. Contact your service dealer.                                                                                    |
| [ALARM NOT DETECTED] or [WAIT] appears on the display despite no screening is performed.                          | The initialization has not completed properly or the operating environment has drastically changed.                                               | Attach the bottle sensor cap on the bottle sensor properly and restart the system.                                                          |
| [SYSTEM ERROR] appears on the display.                                                                            | A serious error occurs in the system.                                                                                                             | Restart the system.                                                                                                                         |
| The system does not start up normally.<br><br>or<br><br>The initialization does not finish.                       | A trouble occurs in the system during the start-up.                                                                                               | Restart the system.                                                                                                                         |
| During operation, an error message from operating system appears on the display.                                  | The power is abnormally shut down last time.                                                                                                      | Wait a while until the startup is completed. If the product does not start up within 3 minutes, restart the system.                         |
| During operation, an error message from operating system appears on the display and no operation can be accepted. | An electric, electromagnetic, or other external interference prevents the CPU from operating.                                                     | Restart the system. If the device cannot start up normally, disconnect the AC adaptor and reconnect it, and then, restart the system again. |
| During operation, the LCD display turns black and no operation can be accepted.                                   |                                                                                                                                                   |                                                                                                                                             |
| The power does not turn ON.                                                                                       | AC adapter or power cable is disconnected or broken.                                                                                              | Connect or replace the AC adapter and power cable.                                                                                          |
| The LED indicator does not illuminate.                                                                            | The LED board is damaged.                                                                                                                         | Replace the LED board. Refer to [4.2.1 Replacement for LED board].                                                                          |
|                                                                                                                   | The cable is disconnected.                                                                                                                        | Check the connection of the cable for LED board.                                                                                            |
| No sound comes out during the operation.                                                                          | The sound volume is set at extremely small or mute.                                                                                               | Adjust the sound volume. Refer to User Manual [Sound volume adjustment].                                                                    |

## 7. Appendix

### Liquid Scanner

| Liquid Scanner LSR-M2           |                                                                                                                                              |               |                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------|
| Delivered to<br>(customer name) |                                                                                                                                              |               |                                |
| Serial No.                      |                                                                                                                                              | Software Ver. |                                |
| No                              | Items                                                                                                                                        | Checked       | Remarks                        |
| 1                               | There is no damage or dirt on the main body.                                                                                                 |               |                                |
| 2                               | The installation site and environment are suitable for the specification.                                                                    |               |                                |
| 3                               | The power cable with plugs and AC adapter are connected correctly.                                                                           |               |                                |
| 4                               | When the power switch is turned on, the product starts normally (initialization starts), and the message "READY" appears on the display.     |               |                                |
| 5                               | The display (touchscreen) can be operated normally.                                                                                          |               |                                |
| 6                               | An alternative mode setting is selected correctly.<br>- ECAC mode<br>- Japanese mode                                                         |               |                                |
| 7                               | The light quantity is in the range of [47000 - 52000].                                                                                       |               |                                |
| 8                               | The normal operation is assured through the bottle sensor check.                                                                             |               |                                |
| 9                               | The normal operation is assured through the can sensor check.                                                                                |               |                                |
| 10                              | During standby or operation, the LED indicators are lit up properly.                                                                         |               |                                |
| 11                              | A beep sound is generated properly during screening.                                                                                         |               |                                |
| 12                              | During standby, "LAMP WARNING" or "ALARM NOT DETECTED" does not appear on the display.                                                       |               |                                |
| 13                              | When the power switch is pressed and turned OFF, the product is shut down normally.                                                          |               |                                |
| 14                              | The screws are tightened firmly after the replacement.<br>- Lamp part, LED board part, Can sensor part, Bottle sensor part, Sensor pole part |               | Check when replacing the part. |
| 15                              | Rubber mount is mounted firmly.                                                                                                              |               | Check during the maintenance   |
| 16                              | Rubber hood is mounted firmly.                                                                                                               |               | Check during the maintenance.  |
| 17                              | < Note >                                                                                                                                     |               |                                |

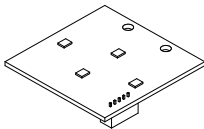
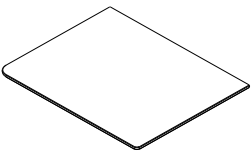
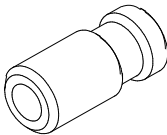
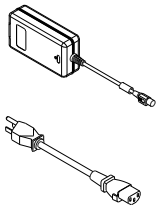
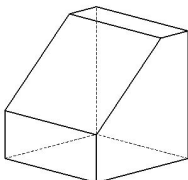
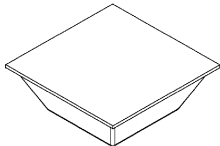
- NOTE -



Manufactured by

**Kumahira Co., Ltd.**

## Spare parts for Liquid scanner LSR-M2

| No. | Spare part name                      | Appearance                                                                          | Drawing No.    | Guidance for replacement                                 | Required qty. |
|-----|--------------------------------------|-------------------------------------------------------------------------------------|----------------|----------------------------------------------------------|---------------|
| 1   | LED board                            |    | 552-00054-0000 | When damaged or failed                                   | 2 pcs/ unit   |
| 2   | Rubber hood                          |    | 552-00054-0100 | When damaged or deteriorated                             | 1 pc/ unit    |
| 3   | Bottle sensor cap                    |    | 552-00054-0203 | When damaged or lost                                     | 1 pc/ unit    |
| 4   | Display protector                    |   | 552-00054-0302 | When damaged or lost                                     | 1 pc/ unit    |
| 5   | Lamp                                 |  | 552-00054-0406 | When failed or service life is over (total: 12000 hours) | 2 pcs/ unit   |
| 6   | AC adapter<br>Power cable with plugs |  | 552-00054-0500 | When damaged or failed                                   | 1 pc/ unit    |
| 7   | Liquid scanner body cover            |  | 552-00054-0600 | When damaged or deteriorated                             | 1 pc/ unit    |
| 8   | Cushioning                           |  | 552-00054-0700 | When damaged or deteriorated                             | 4 pcs/ unit   |

## Spare parts for Liquid scanner LSR-M2

| No. | Spare part name | Appearance                                                                        | Drawing No.    | Guidance for replacement     | Required qty. |
|-----|-----------------|-----------------------------------------------------------------------------------|----------------|------------------------------|---------------|
| 8   | Screw ring      |  | 552-00054-0800 | When damaged or deteriorated | 1 pc/ unit    |
| 8   | Rubber mount    |  | 552-00054-0900 | When damaged or deteriorated | 1 pc/ unit    |