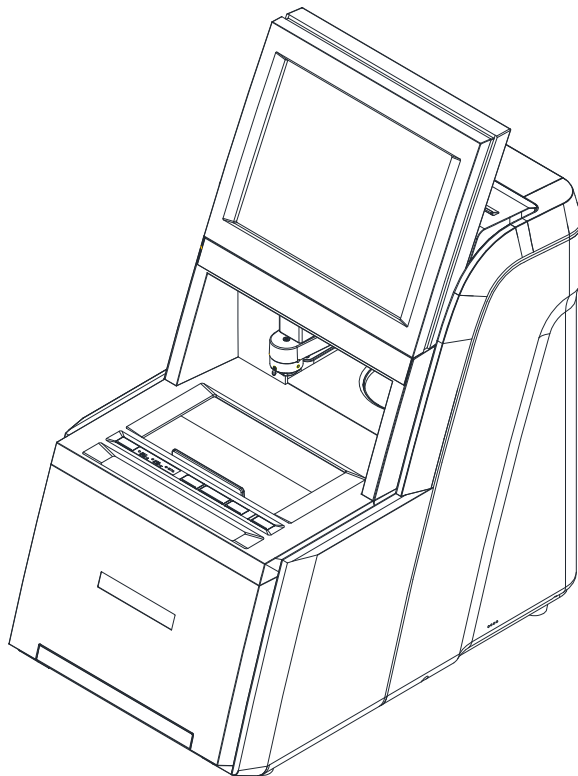


# **KAIZER (HAB-8000)**

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## **Service Manual**

R2.0 (Release Date: Sep / 06 / 2013)



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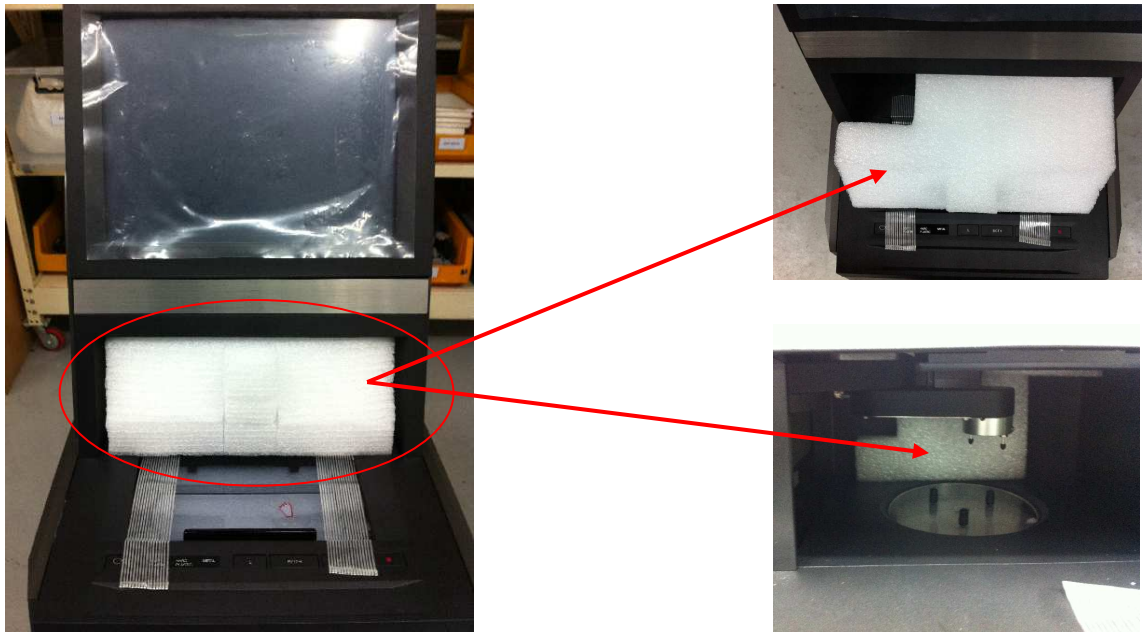
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## 1. Installation Procedure

### 1.1. Removing the Fixing PE-Foam and Tape

1.1.1 Put the Auto Blocker on the place where it is to be installed.

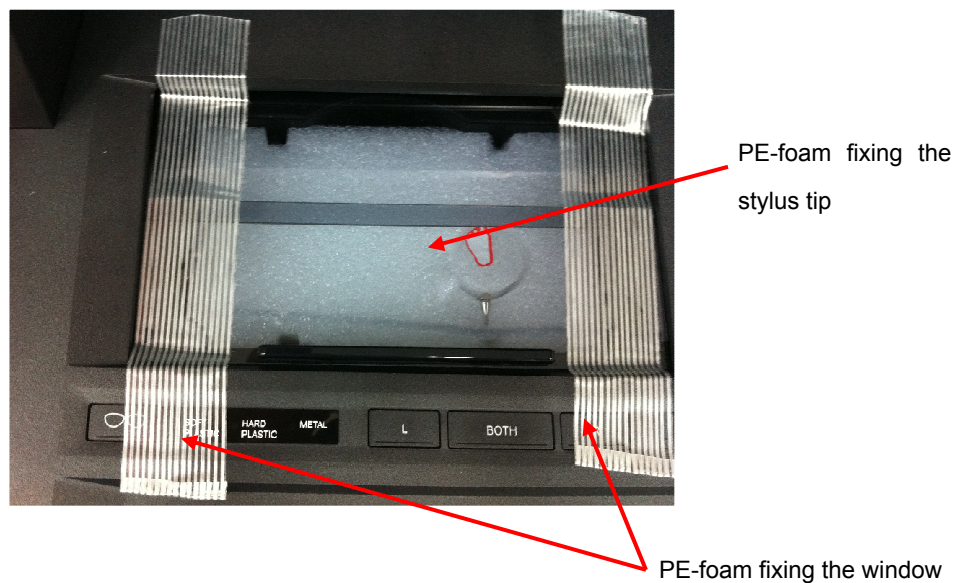
1.1.2 Remove the PE-Foam that fixing the blocking arm as shown in the picture below.



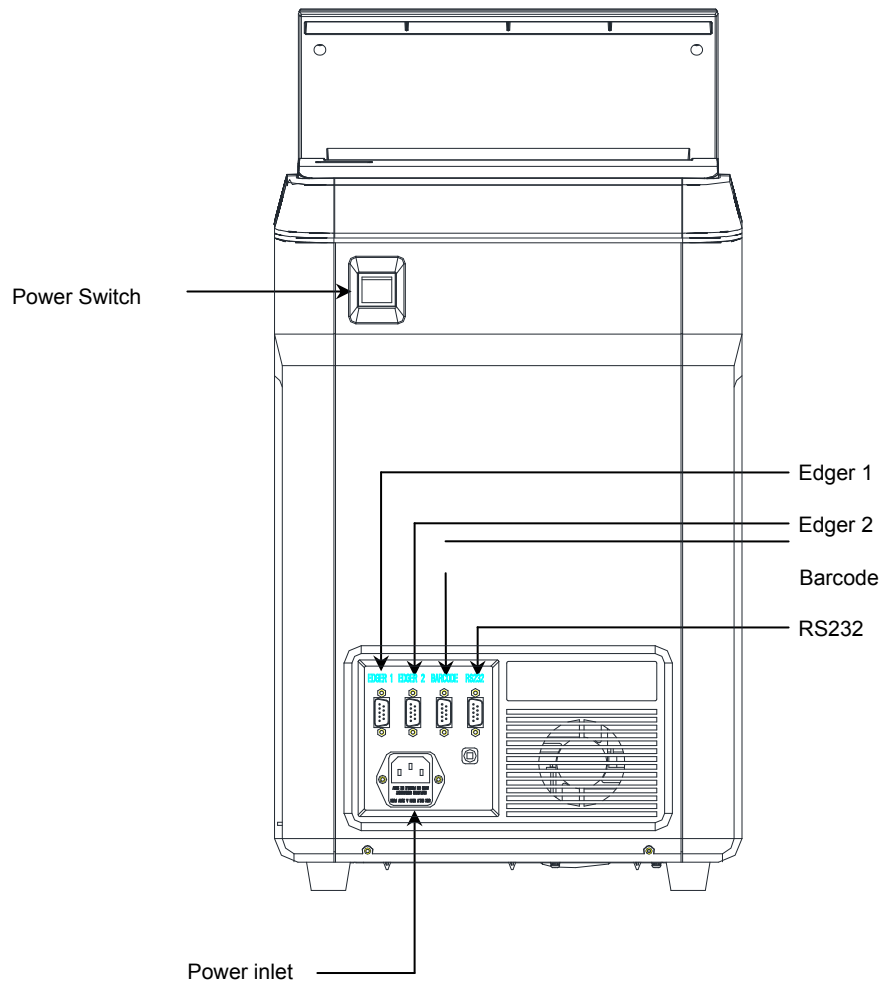
1.1.3 Close the shutter. If the shutter is opened, the blocking arm will not work.

1.1.4 Remove the tape and the PE-Foam that fixing the frame reader as shown in the picture below.

→ Make sure the movement of R-axis and Z-axis of stylus tip is smooth.



1.2. Connecting the power cable and the communication cable





## 2. Check / Adjustment Procedure

### 2.1. Outline of the check and adjustment procedure.

1. Checking the PI status and the communication (Test Mode)
2. Checking alignment condition of the image camera
  - To Improve the blocking accuracy
3. Checking alignment condition lensmeter camera
  - **After replacing the LED board(LED lamp) (page 34)**
  - **After replacing the 4-pin hole or whole lensmeter assembly.**
4. Checking the blocking condition / blocking calibration
  - **After changing the image camera position (page 6)**
  - **After replacing the leap block adapter(b grip assy) (page 39)**
  - **After replacing the blocking arm assy(page 27)**
  - To improve the blocking accuracy
5. Checking LM Blocking / calibration
  - **After changing the lensmeter camera center setting. (After 0D Setup) (page 7)**
  - To improve the blocking accuracy
  - To match the condition of the lensmeter of the Auto Blocker up with lensmeter at the customer site.
6. Tracer Calibration
  - To improve the accuracy of the frame reader(tracer)
7. Digital scan calibration
  - To improve the accuracy of the digital scanning
8. Trial Lens Setup
  - **After replacing the 4-pin hole or whole lensmeter assembly.**
  - To improve the accuracy of the lensmeter


### 2.2. Checking the PI status and the communication (Test Mode)

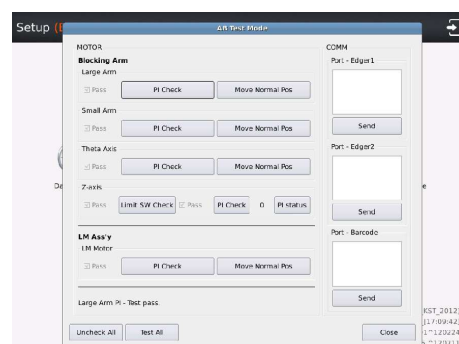
#### 2.2.1. Entering the Test Mode

1. Press the menu icon (  ) and then press the test mode icon(  ).

2. Check the PI status of the blocking arm and the lensmeter.

Check communication conditions of Edger 1, Edger 2, barcode.



 **The shutter should be closed while checking the blocking arm. If the shutter is opened, the blocking arm will not work.**

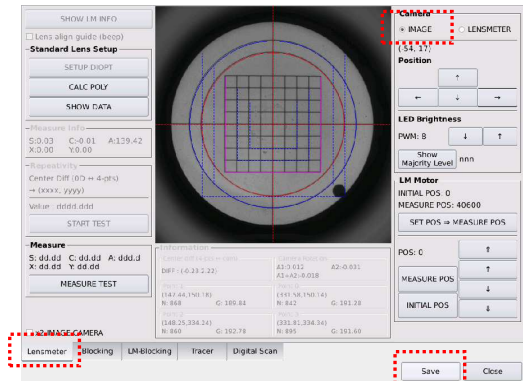


## 2.3. Checking alignment conditions of the image camera and the lensmeter camera.

### 2.3.1. Checking the alignment condition of the image camera

#### 1. Going into the calibration screen.

- 1) Press the menu icon(  )and then the calibration icon(  ).
- 2) Select the “Lensmeter” tab at the bottom left side.
- 3) Select the “IMAGE” at the upper right side menu.

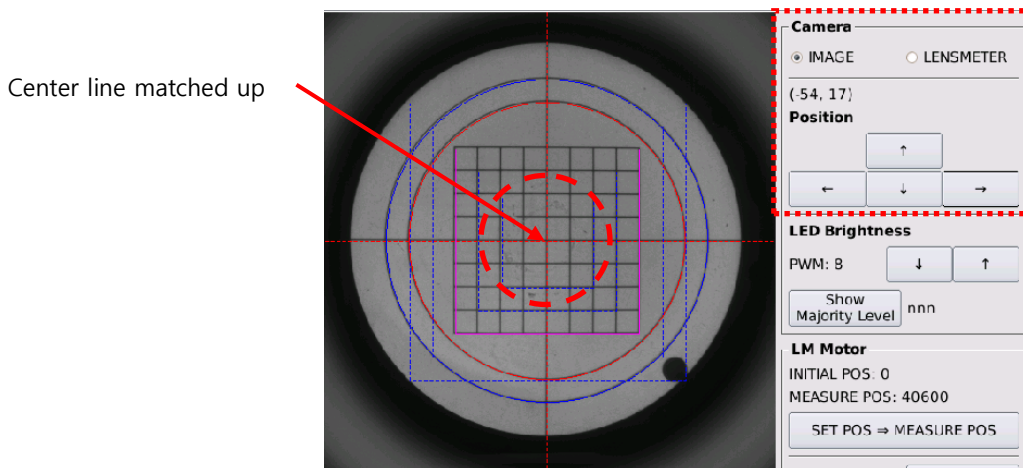


#### 2. Place the lattice pattern jig plate.

- 1) Remove the normal support plate and then place the lattice pattern jig plate.
- 2) Match up the lattice pattern with red horizontal / vertical lines in the display by rotating the lattice pattern jig plate.

#### 3. Checking the alignment condition

- 1) Check center positions of red horizontal / vertical lines in the display and lattice pattern coincide.




#### 4. Adjusting the center of image camera.

- 1) Align the center positions of red horizontal / vertical lines in the display with the lattice pattern with arrow buttons at the right upper side.



#### 5. Saving the alignment condition.

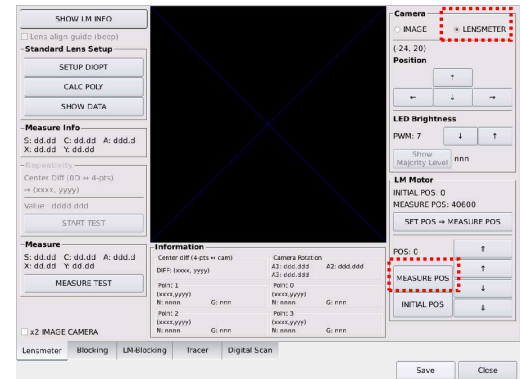
- 1) Press the save button at the bottom right side.
- 2) Press the OK button at the pop up display (save complete).
- 3) Perform the 'Blocking Calibration' certainly.

 After changing the image camera position, “2.4. Checking the blocking condition / Blocking calibration” operation(page 8) needs to be performed certainly.

## 2.3.2. Checking the alignment condition of the lensmeter camera

### 1. Going into the calibration screen.

- 1) Press the menu icon(  ) and then press the calibration icon(  ).
- 2) Select the 'Lensmeter' tab at the bottom left side.
- 3) Select the "LENSMETER" at the upper right side menu.

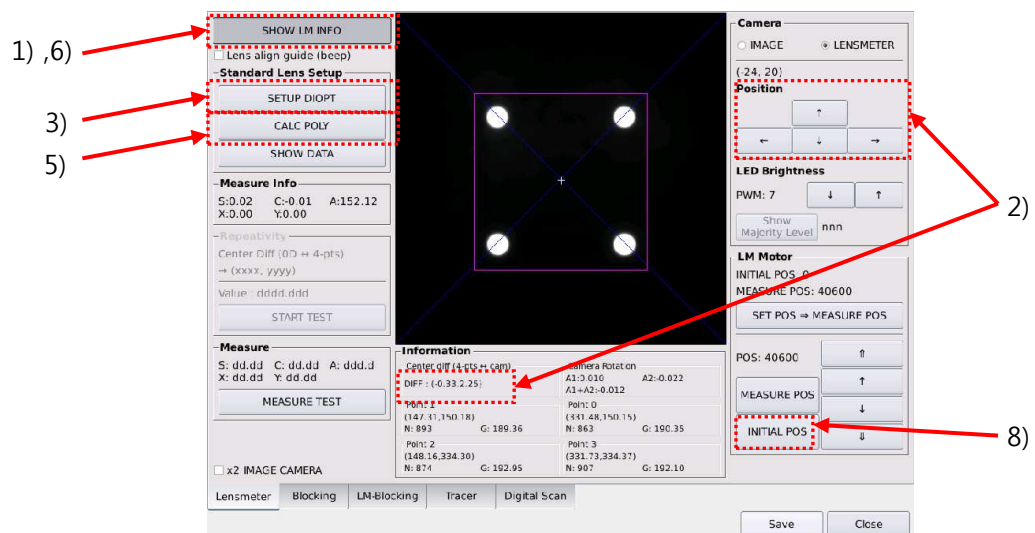


### 2. Transferring the lensmeter to the measuring position.

- 1) Press the "MEASURE POS" button at the bottom right side.

### 3. Checking the alignment condition of lensmeter camera. (0D Setup)

- 1) Press the [SHOW LM INFO] button at the upper left side to activate the information of 4-Pin holes.
- 2) Check the "Center diff (4-pts ↔ cam)" in the "Information" box.
  - ➔ Standard value:  $(0.0 \pm 0.5, 0.0 \pm 0.5)$ , most closely to 0
  - ➔ If the value is out of range, adjust the value with arrow buttons at the "Position" box.
- 3) Press the [SETUP DIOPT]. (It will take 5~6 seconds to open the 'Select Diopter' pop-up window.)
- 4) Press 'Apply' button in the 'Select Diopter' pop-up window. This will set the '0D'
- 5) Press the 'CALC POLY' button.
- 6) Press the [SHOW LM INFO] button to deactivate the LM Information.
- 7) Press the 'Save' button to save the change.
- 8) Press the 'INITIAL POS' button in the 'LM Motor' box.



#### 4. Save the change

- 1) Press the "Save" button at the bottom right side.
- 2) Press the OK button at the pop up display (Save complete).
5. Perform the procedure of **2.5.1 Checking LM Blocking center and calibration**(page 13)

☞ **If the 0D setup setting is changed, the LM-blocking center calibration must be performed.**

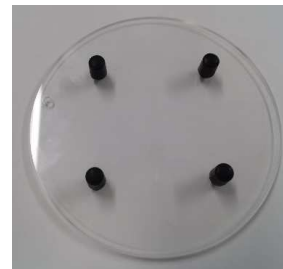
### 2.4. Checking the blocking condition / Blocking calibration.

#### 2.4.1. Preparing the blocking calibration plate and the jig leap block

- 1) Prepare the jig leap block (red color) and attach the enclosed tape (3M Leap 3 Pad-1693M) like the picture below so that the leap tape may not get out of the one linear edge of the leap block.
- 2) Prepare the blocking calibration plate. (It has four pins and doesn't have center hole)





Jig Leap Block



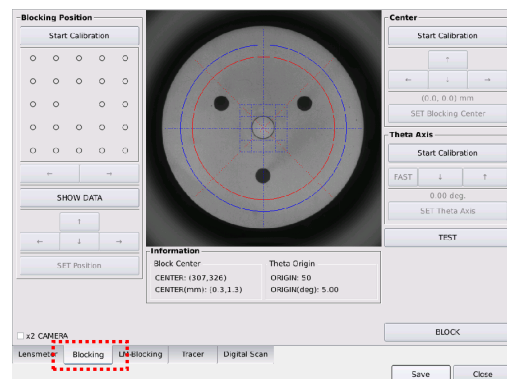
Blocking Calibration Plate

#### 2.4.2. Checking the blocking center / center calibration

##### 1. Going into the calibration screen.

- A. Press the menu icon(  ) Calibration and the press the calibration icon(  ).

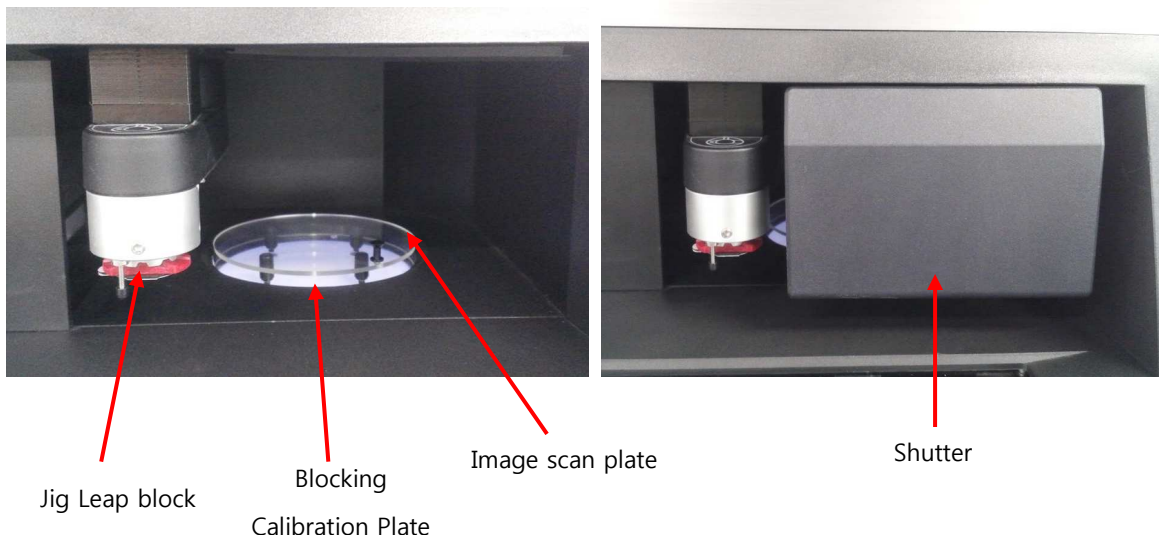
- B. Select the "Blocking" tab at the bottom left side.



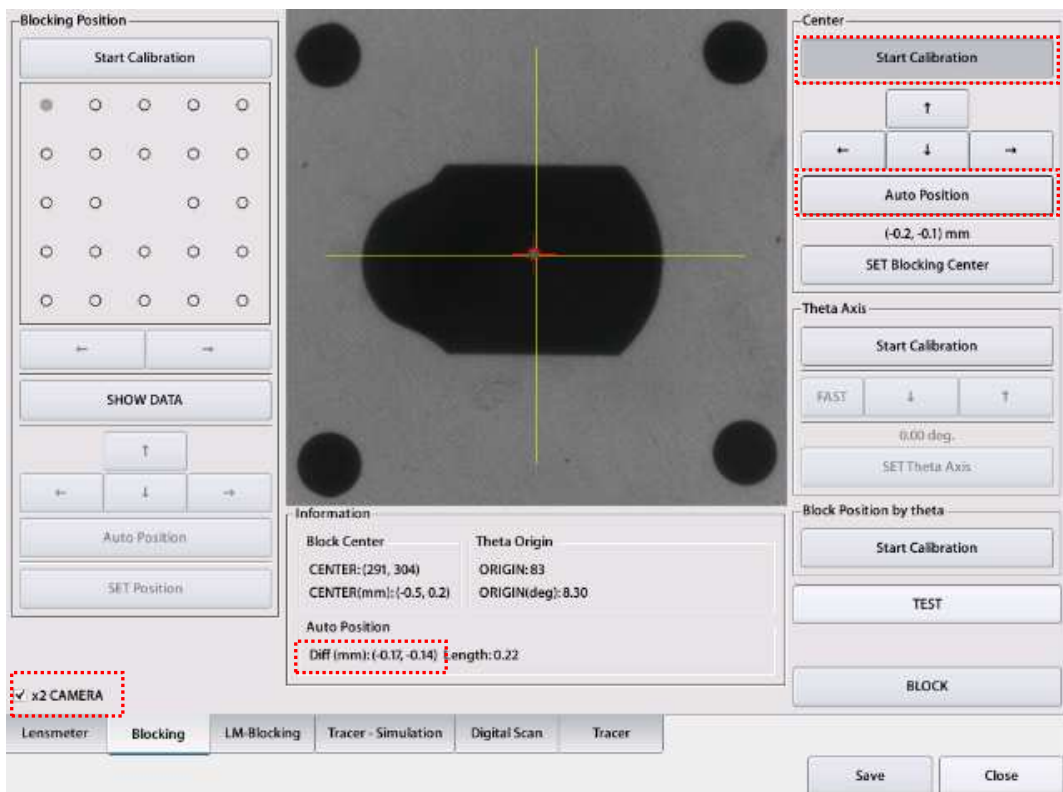
##### 2. Checking the blocking center

- 1) Open the shutter.
- 2) Place the blocking calibration plate instead of the normal support plate.
- 3) Place the image scan plate on the blocking calibration jig.
- 4) Insert the jig leap block into the blocking arm.
- 5) Close the shutter.





- 6) Check 'x2 CAMERA' at the bottom left side.
- 7) Press the 'Start Calibration' button in the 'Center' box at the top right side. This will let the blocking arm block the center position.
- 8) Press the 'Auto Position' button in the 'Center' box at the top right side.
  - ➔ Check the 'Diff' Value in the 'Auto Position' information box. If there is the value of 0.16 and over, press the 'Set Blocking Center' button and then press the OK button at the pop up window.
  - ➔ If all values are 0.15 and less, it doesn't need to calibrate the center position, so just press the 'Start Calibration' button to deactivate the center calibration function without saving.





3. Saving the change.
  - A. Press the [Save] button at the bottom right side.
  - B. Press the OK button at the pop up window.

☞ **After changing the blocking center position, “2.4.3 “Blocking position calibration” operation needs to be performed certainly.**

### 2.4.3. Blocking axis calibration

#### 1. Going into the calibration screen.

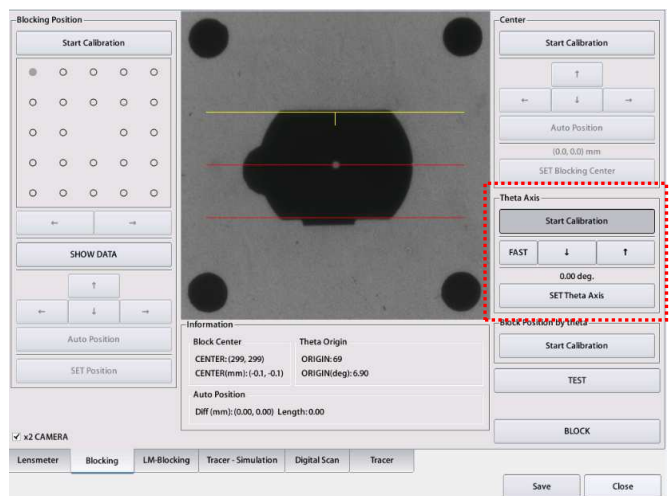
- 1) Press the menu icon() and then press the calibration icon().
- 2) Select the “Blocking” tab.

#### 2. Checking the blocking axis condition.

- 1) Insert the jig leap block into the blocking arm.
- 2) Open the shutter.
- 3) Place the image scan plate on the blocking calibration plate.
- 4) Close the shutter.
- 5) Press the [Start Calibration] button in the “Theta Axis” box. Check the upper edge of leap block coincides with the yellow line of the screen. . If it's correct, just press the 'Start Calibration' button to deactivate the calibration function without saving. If it's not correct, perform the “Blocking axis calibration” below

#### 3. Blocking axis calibration

- 1) Adjust the angle of yellow line until it coincides with the upper edge of the leap block displayed on screen with arrow buttons. ('Fast' button allows you to rotate the yellow line fast.)
- 2) Save the change by pressing the [SET Theta Axis] button.
- 3) Detach the jig leap block on the image scan plate and then insert it into the blocking arm again.
- 4) Place the image scan plate on the support plate again.
- 5) Press [Start Calibration] button at the “Theta Axis” box and then check upper edge of leap block coincides with the yellow line of the screen again.





- 6) If it is not correct, repeat the blocking axis calibration one more time. If it's correct, just press the 'Start Calibration' button to deactivate the calibration function without saving

#### 4. Save the calibration data.

- 1) Press the [Save] button.
- 2) Press the OK button at the pop up display (Save complete).

### 2.4.4. Blocking position calibration.

#### 1. Going into the calibration screen

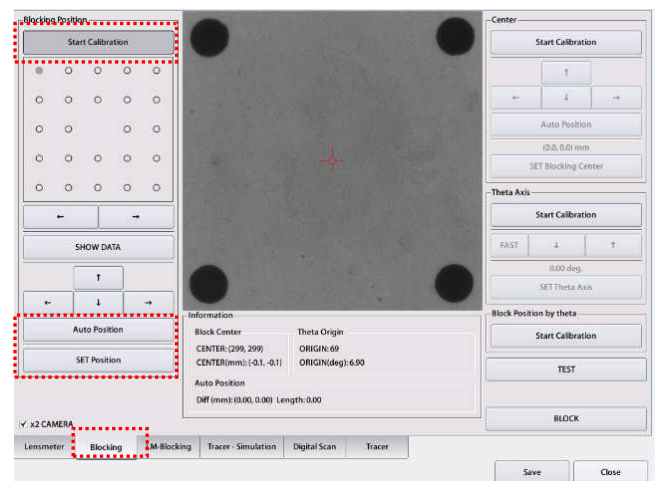
- 1) Press the menu icon(  ) and then press the calibration icon(  )
- 2) Select the "Blocking" tab.

#### 2. Preparing the blocking position calibration

- 1) Open the shutter.
- 2) Place the image scan plate on the blocking calibration plate.
- 3) Insert the jig leap block into the blocking arm.
- 4) Close the shutter.

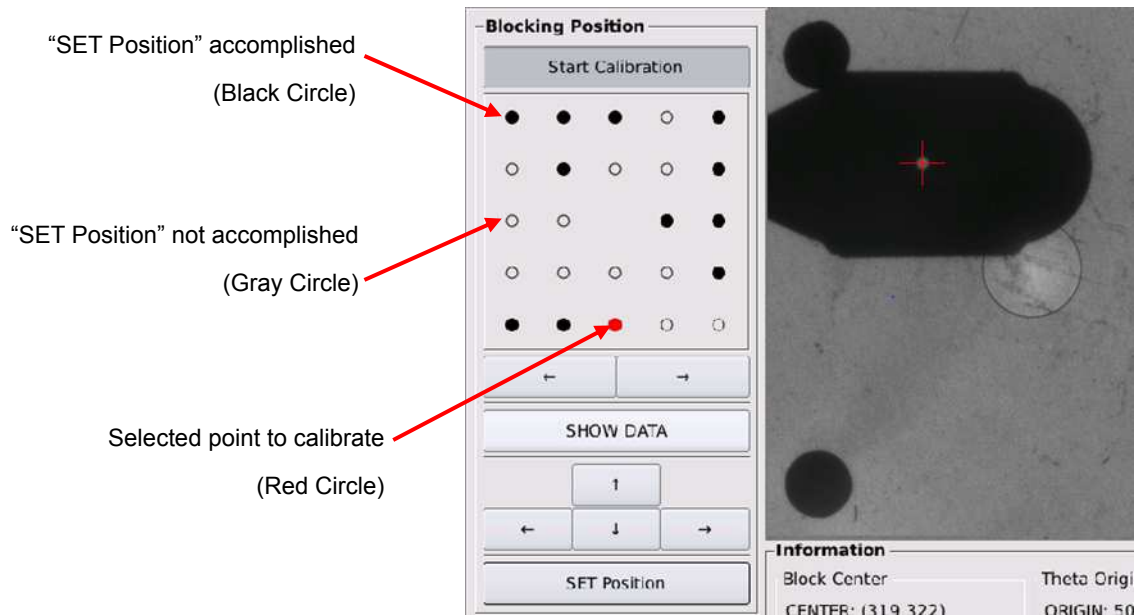
#### 3. Blocking position calibration (24 position)

- 1) Press the [Start Calibration] button in the "Blocking position" box.
- 2) Select one point from 24 points to be calibrated by pressing that point directly or pressing blocking position move button.
- 3) Press the [BLOCK] button at the bottom right side.
- 4) Press the 'Auto Position' button.
  - ➔ Check the 'Diff' Value in the 'Auto Position' information box.
  - ➔ If there is the value of 0.1 and over, press the 'Set Position' button. Detach the jig leap block and inset it into blocking arm. Block it at the same position and then calibrate this position again by pressing the 'Auto Position' button and 'Set Position' Button.
  - ➔ If all values are 0.09 and less, move on to the next position.
- 5) Detach the jig leap block on the image scan plate and then insert it into blocking arm.
- 6) Select next point by pressing the blocking position move button or pressing the point that calibration not be performed.
- 7) Perform the calibration for every 24 points by repeating 2) ~ 6) steps.



#### 4. Save the calibration data..

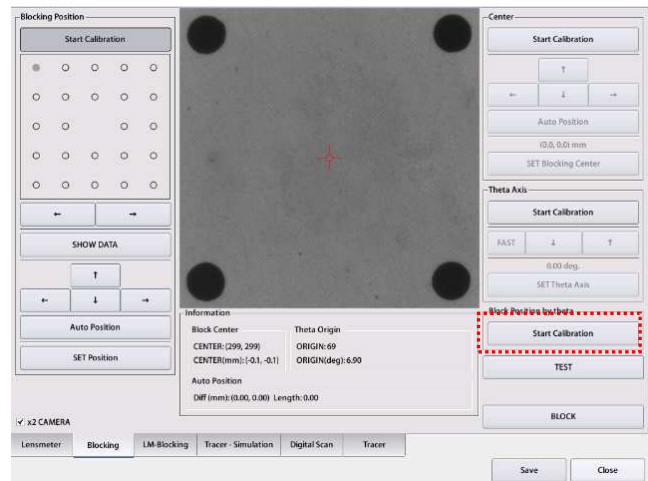
- 1) Press the [Save] button at the bottom right side.
- 2) Press the OK button at the pop up display (Save complete).



#### 2.4.5. Blocking position by theta calibration

##### 1. Going into the calibration screen.

- 1) Press the menu icon (⚙️) and then press the calibration icon (🔧).
- 2) Select the "Blocking" tab.
- 3) Press 'Start Calibration' button in the 'Blocking Position by theta' box.

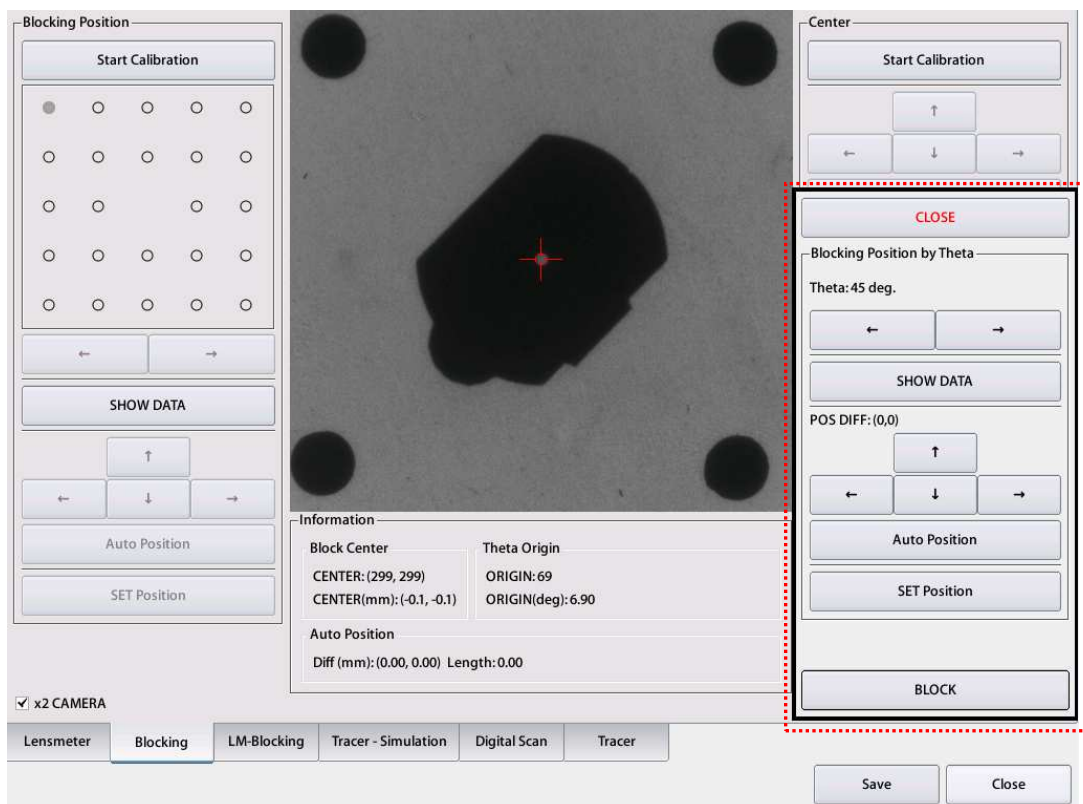


## 2. Blocking calibration by theta calibration.

- In the 'Blocking calibration by theta', you can calibrate the position of 45, 90, 135, 180, 225, 270, 315 degrees.
  - 1) Insert the jig leap block into the blocking arm.
  - 2) Press 'BLOCK' button.
  - 3) Press 'Auto Position' button after blocking.
  - 4) Press 'Set Position' button.
  - 5) Detach the jig leap block and insert it into the blocking arm.
  - 6) Press right side arrow button to calibrate the next degree.
  - 7) Repeat 2) ~ 6) for each degree.

## 3. Save the calibration data

- 1) Press the 'CLOSE' button.
- 2) Press the 'Save' button.
- 3) Press the OK button at the pop up display (Save complete).



## 2.5. Checking LM Blocking / Calibration

### 2.5.1. Checking LM Blocking center and calibration

1. Place the normal support plate on the work space certainly. (Blocking Calibration Plate has a bad effect on the lensmeter.)

2. Going into the calibration screen

1) Press the menu icon (  ) and then press the

calibration icon(  ).

2) Select the “LM-Blocking” tab

3. Preparing the calibration lens

1) Prepare the following lens for calibration.

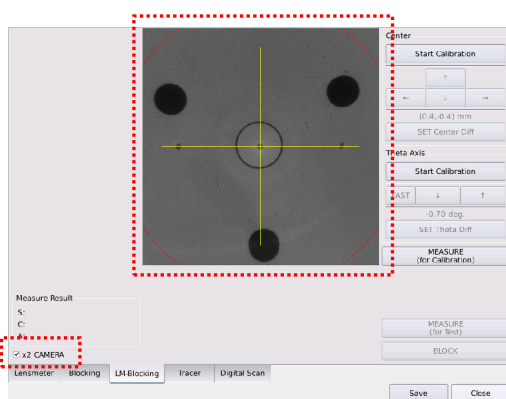
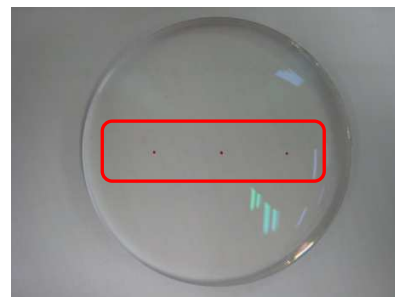
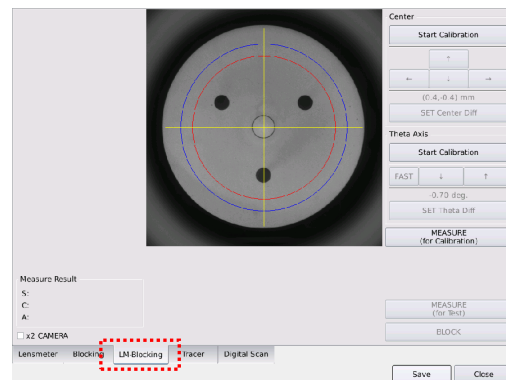
➔ (Sph : -2D, Cyl : 0D)

2) Mark the dotting on the lens with a lensmeter.

4. Aligning the calibration lens

1) Place the calibration lens on the normal support plate and then align the optical center with the yellow ‘+’ mark on the display.

Use the ‘x2 CAMERA’function to enlarge image.



5. LM Blocking center calibration

1) Press the [Start Calibration] button in the “Center” box.

2) The red ‘+’ mark means the optical center of the calibration lens that the lensmeter measures. If the yellow ‘+’ mark and the red ‘+’ mark don’t coincide, move the red ‘+’ mark to yellow ‘+’ mark with arrow buttons in the “Center box”.

## 6. Save the calibration data.



- 1) Press the [Save] button.
- 2) Press the OK button at the pop up display (Save complete).

## 7. Checking the LM Blocking center calibration condition.

- 1) Repeat 3 ~ 5 steps until two '+' always coincide.

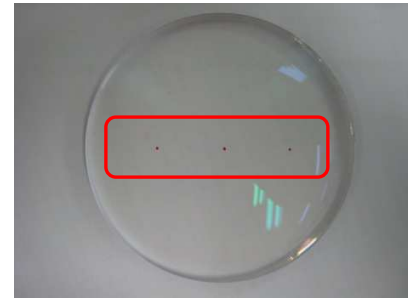
## 2.5.2. Checking LM axis / Calibration

### 1. Going into the calibration screen.

- 1) Press the menu icon (  ) and then press the calibration icon (  ).
- 2) Select the "LM-Blocking" tab.

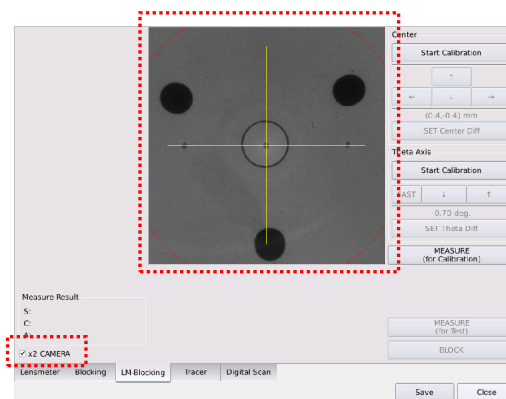
### 2. Preparing the calibration lens

- 1) Prepare the following lens for calibration.  
→ (Sph : -2D, Cyl : -1D)
- 2) Mark the dotting on the lens with the lensmeter.



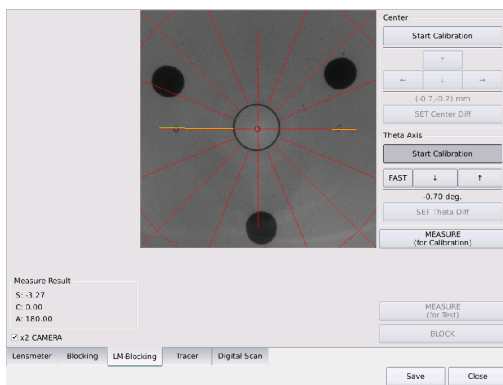
### 3. Aligning the calibration lens

- 1) Place the calibration lens on the normal support plate and then align the optical center with the yellow '+' mark on the display.  
Use the 'x2 CAMERA' function to enlarge image.

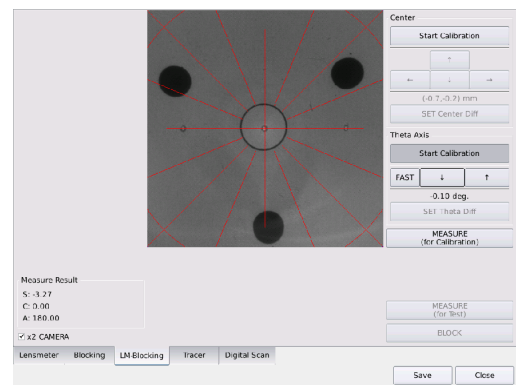


#### 4. LM axis calibration

- 1) Press the [Start Calibration] button in the "Theta Axis" box.  
 → The yellow line is the axis measured by the lensmeter of the auto blocker.
- 2) If the yellow line and the red horizontal line don't coincide, rotate the yellow line with up, down arrow buttons.
- 3) Press the [Start Calibration] button again and then check that the calibration condition is good.  
 → If the calibration was well done, yellow line will not appear.



[Before calibration]



[After calibration]

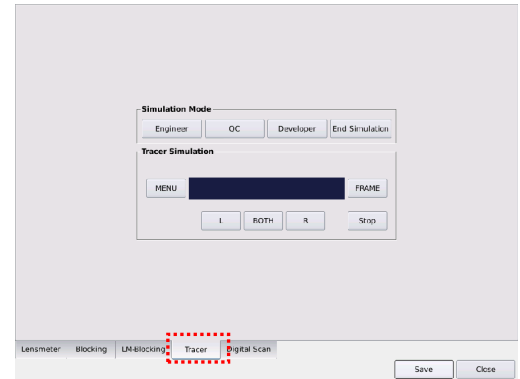
#### 5. Save calibration data

- 1) Press the [Save] button.
- 2) Press the OK button at the pop up display (Save complete).



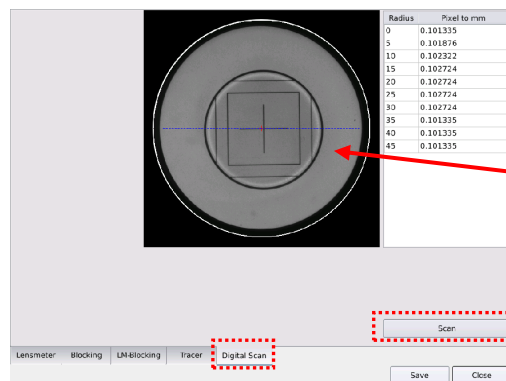
## 2.6. Tracer (Frame reader) calibration.

1. Going into the calibration screen.
  - 1) Press the menu icon (⚙️) and then ,press the calibration icon.
  - 2) Select the “Tracer” tab.
2. Tracer calibration
  - ➔ Perform the tracer calibration in the same way as CFR-4000.



## 2.7. Digital Scan Calibration

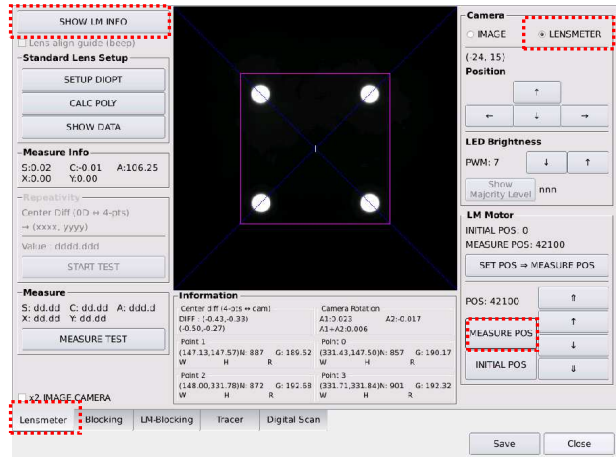
1. Going into the calibration screen.
  - 1) Press the menu icon (⚙️) and then, press the calibration icon.
  - 2) Select the “Tracer” tab.
2. Digital Scan calibration
  - 1) Remove the normal support plate and then place the image scan plate.
  - 2) Place the digital scan calibration jig (Ø50 ±0.01) in center.
  - 3) Press the [Scan] button at the bottom right side.
3. Save the calibration data.
  - 1) Press the [Save] button.
  - 2) Press the OK button at the pop up display (Save complete).



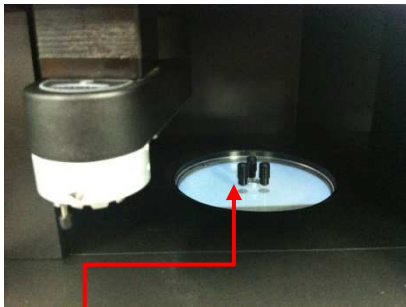
Digital Scan calibration jig  
(Ø50 ±0.01)

## 2.8. Trial Lens Set up

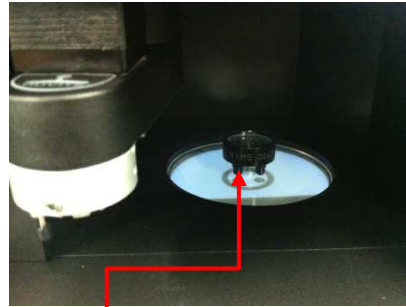
1. Going into the calibration screen.
  - 1) Press the menu icon (⚙️) and then press the calibration icon (🔍).
  - 2) Select the 'Lensmeter' tab.
  - 3) Press the 'MEASURE POS' button.
  - 4) Press the 'SHOW LM INFO' button.



2. Setup the trial lenses
  - 1) Put on the Trial Lens Support Plate instead of normal support plate.
  - 2) Place the +2.5D trial lens on the trial lens support plate.

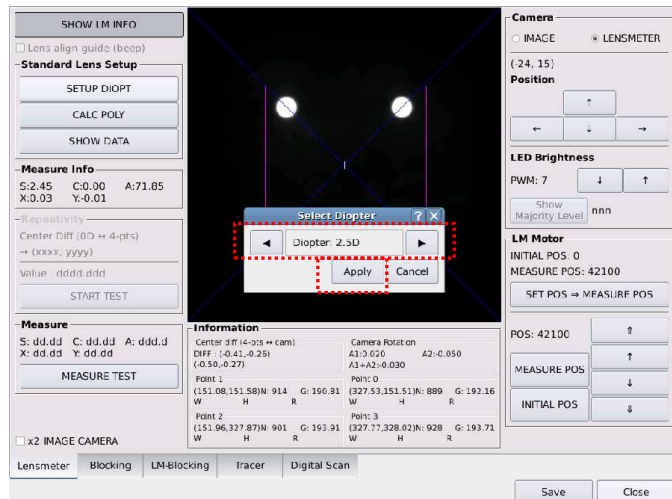
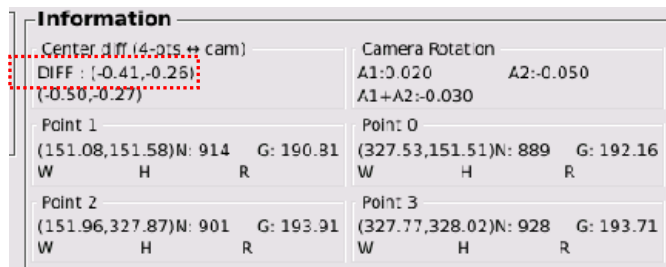


LM Setup Support

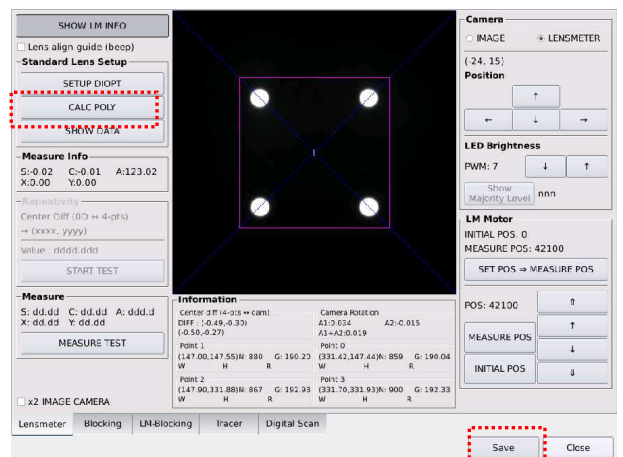
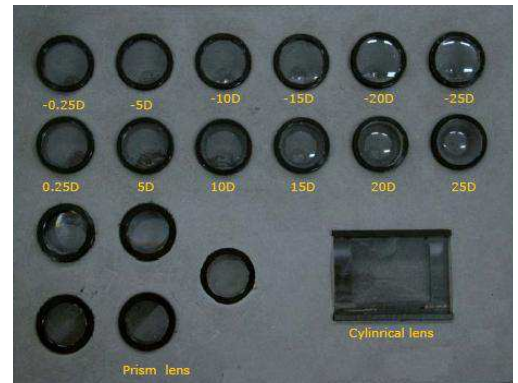


-2.5D Trial Lens

- 3) Moving the +2.5D lens on hand, 『Center diff (4-pts ↔ cam)』's value near to  $(0 \pm 0.05, 0 \pm 0.05)$ .
- 4) Press the 'SETUP DIOPT' button. → 'Select Diopter' window will popup.
- 5) Select the [Diopter : 2.5D].
- 6) Press the 'Apply' button.



- 7) Setup the remainder trial lenses by same method.
  - ➔ -25D, -20D, -15D, -10D, -5D, -2.5D, +2.5D, +5D, +10D, +15D, +20D, +25D
- 8) Press the 'CALC POLY' button.
  - ➔ Make the equation with lens setup data.
- 9) Save and exit



### 3. Replacement

#### 3.1. Opening the cover

##### 3.1.1 Opening the side (left & right) covers

1. Unscrew the two screws at the bottom side of the cover with the 2.5mm hexagonal wrench.



2. Grab the bottom of the cover with both hands and lift up the cover.

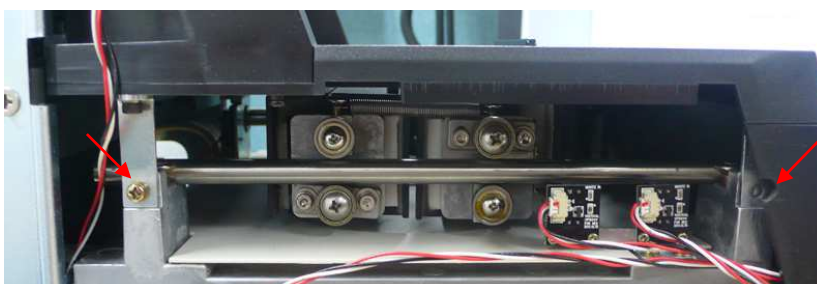


##### 3.1.2 Opening the front cover

1. Unscrew the two screws at the bottom side of the cover with the 2.5mm hexagonal wrench.



2. Unscrew the four screws fixed at the left and right side of the frame reader body.



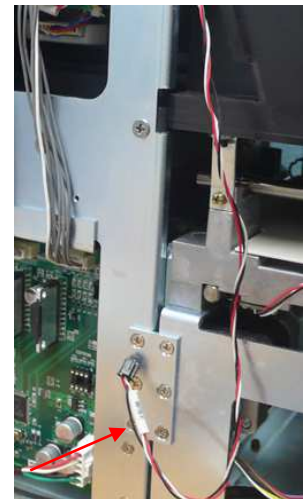
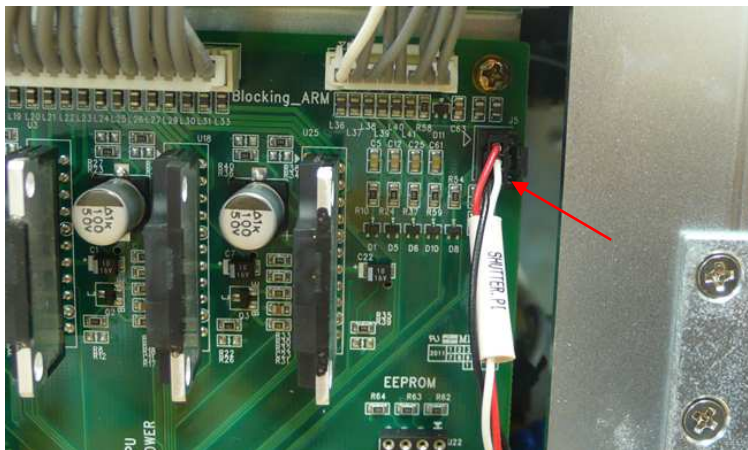
3. Tilt the LCD backward and loosen the two screws fixing the upper side of the cover.



4. Open the drawer.



5. Disconnect the cable connector of the shutter PI from the socket (J5) of the motor board (left side) and take the cable out of the frame.



6. Pull the front cover forward.
7. Disconnect the cable connector of the button board from the socket (J29) of the frame reader mainboard.



8. Remove the front cover.

☞ **Caution: The front cover can be opened after the left & right covers are opened.**

### 3.1.3 Opening the back cover

1. Unscrew the two screws at the bottom side of the cover with the 2.5mm hexagonal wrench.



2. Tilt the back cover upward and pull out the hook of the back cover from the groove of the top cover.



☞ **Caution: The back cover can be opened after the left & right covers are opened.**

## 3.2. Closing the cover

### 3.2.1 Closing the back cover

1. Hold the back cover slanted and then put the hook of the back cover in the groove of the top cover.

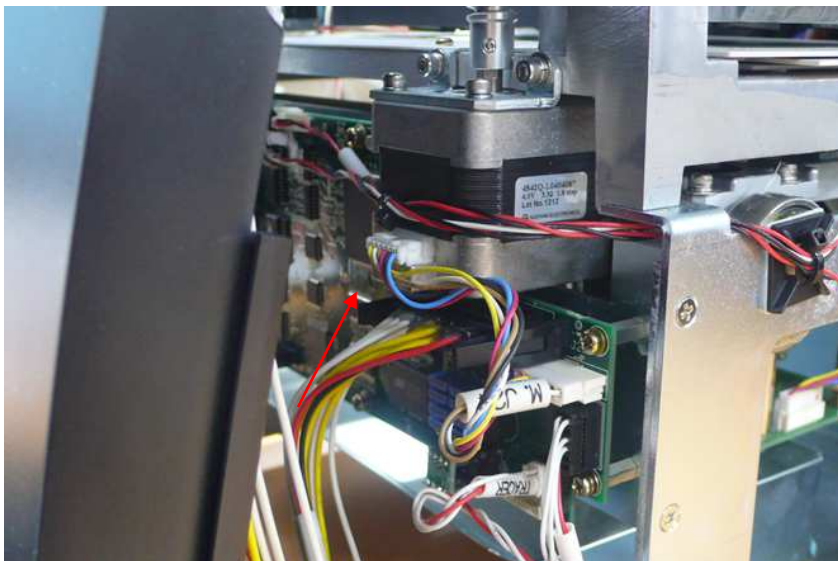


2. Fasten the two screws at the bottom side of the cover with the 2.5mm hexagonal wrench.



### 3.2.2 Closing the front cover

1. Connect the cable connector of the button board to the socket (J29) of the frame reader mainboard.



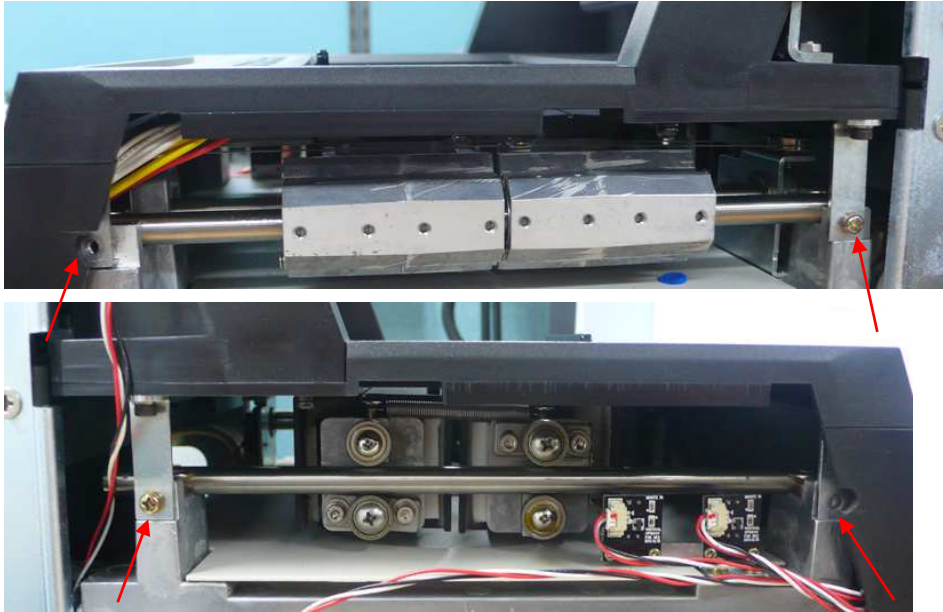
2. Tilt the LCD backward and then place the front cover on the auto blocker with keeping the drawer opened.

Put the hook of the front cover into the groove of the top cover and then grab the front cover and the top cover to keep two parts from separating.





3. Place the four brackets (2 on the left, 2 on the right) on the joint position of the frame reader body.



4. Put the hook at the back side of the front cover in the groove of the lens supporter bottom cover.

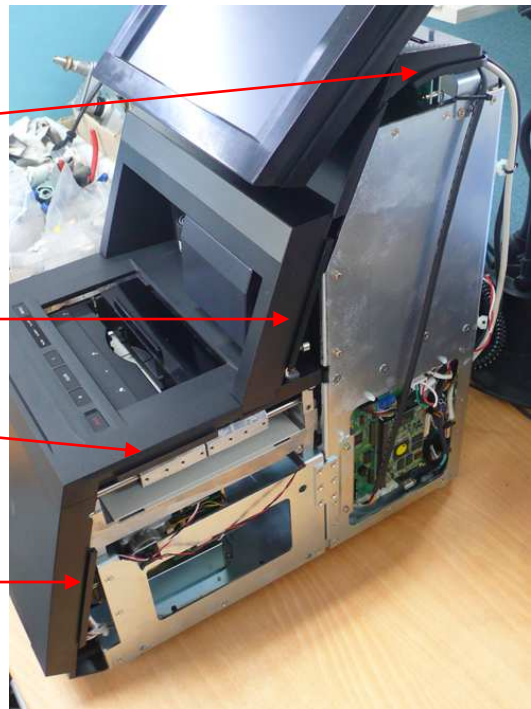
Hook

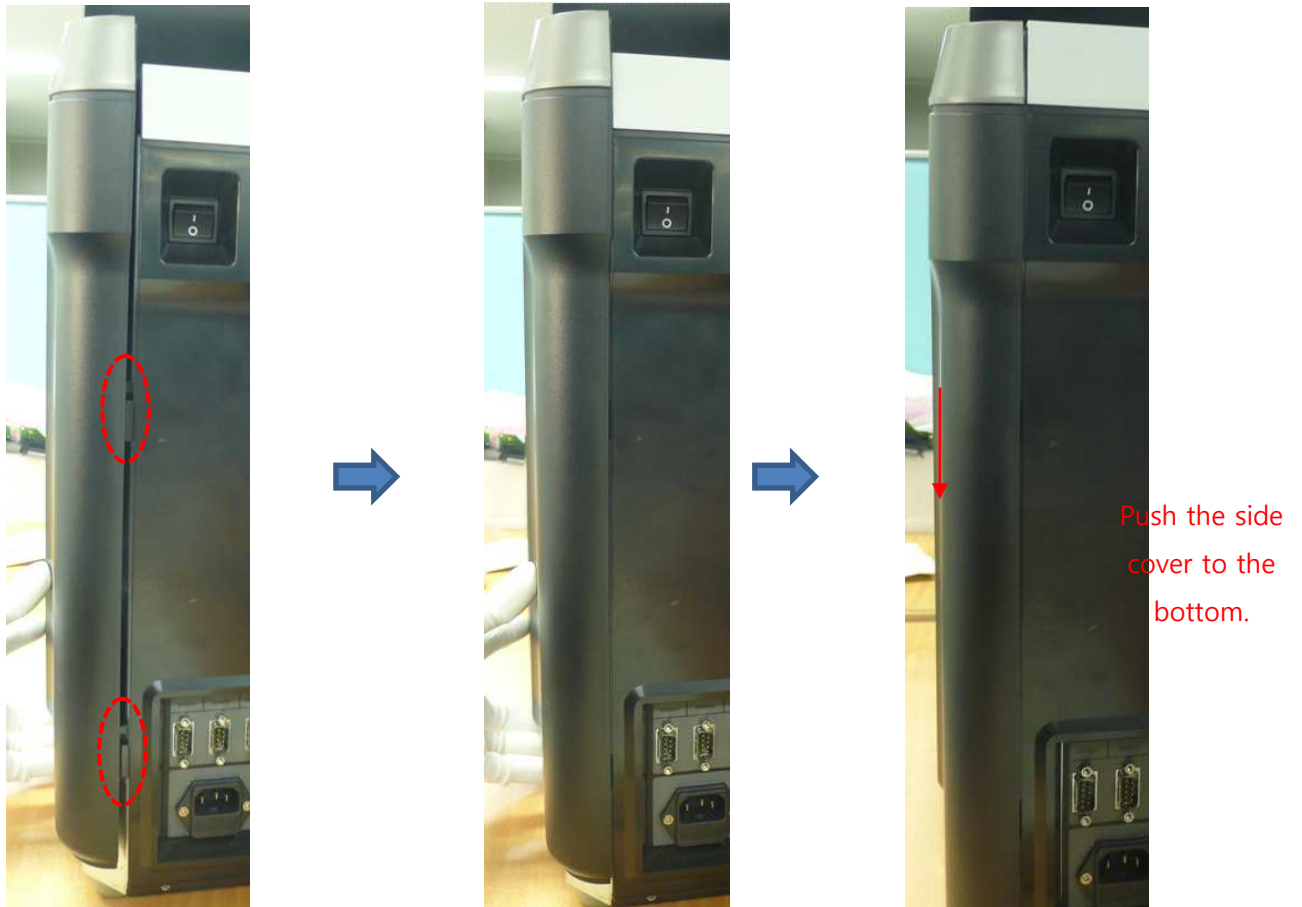


5. Align the hole of the bracket with the tap at the frame reader body and then fasten the four screws (2 on the left, 2 on the right) with the screwdriver. (Refer to the picture of step 4)
6. Fasten two screws at the bottom of the front cover with the 2.5mm hexagonal wrench.
7. Fasten two screws at the upper side of the front cover with the screwdriver.
8. Close the drawer.
9. Connect the cable connector of the shutter PI to the socket (J5) of the motor board (left side).

### 3.2.3 Closing the side(left & right) cover

1. Put six hooks of the side cover to the each groove of the front and top and back covers.



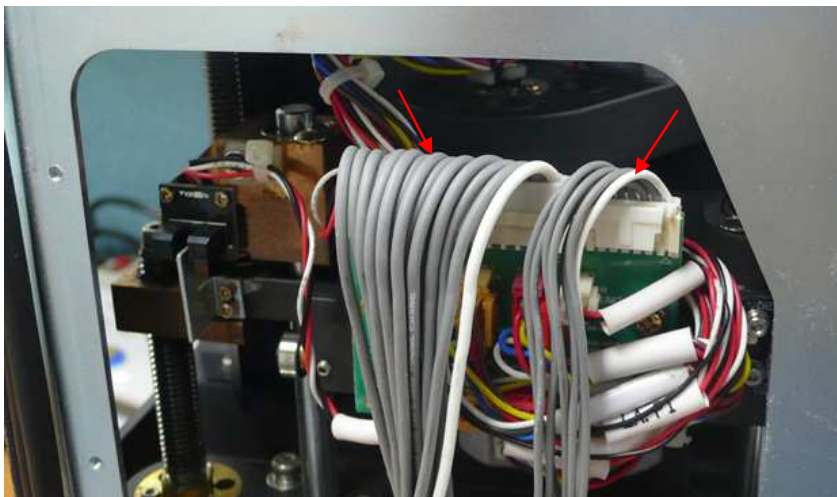


2. Fasten two screws at the bottom of the side cover with the 2.5mm hexagonal wrench.

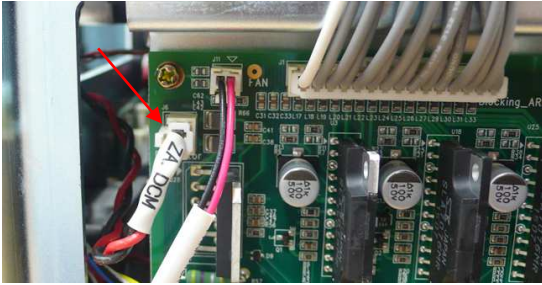
**⚠ Caution:** The side cover can be closed after the front & back covers are closed.

### 3.3. Replacement of the blocking arm module

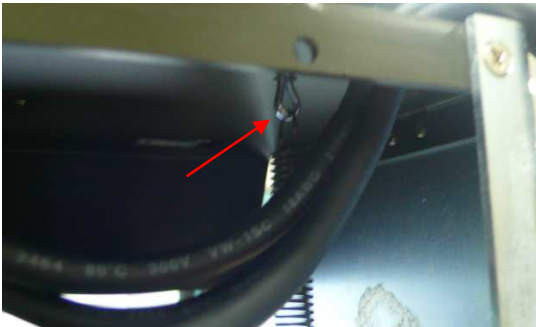
1. Open all covers according to '3.1. Opening the cover'.
2. Disconnect the two cable connectors at the blocking arm interface board.



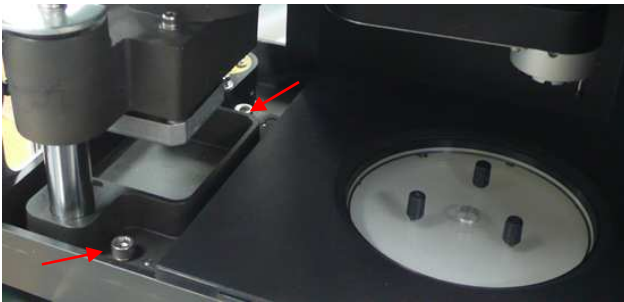
3. Disconnect the connector of the DC Motor (J6) at the motor board of the auto blocker.



4. Pull out the hook of the spring fixed at the upper frame.



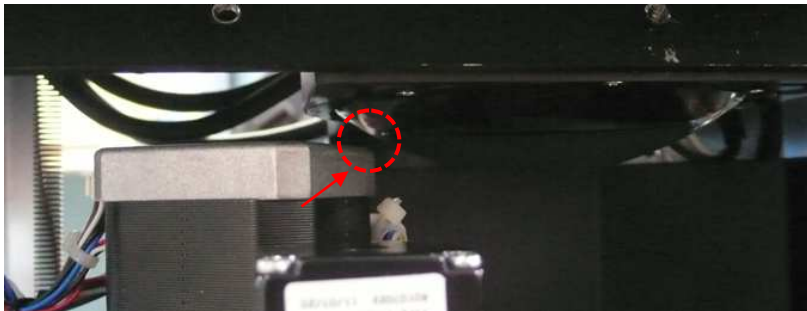
5. Unscrew the two screws fixing the blocking arm with the 4mm hexagonal wrench.



6. Replace the blocking arm with a new one. Align position guide pins of the blocking arm to alignment holes of the base frame.



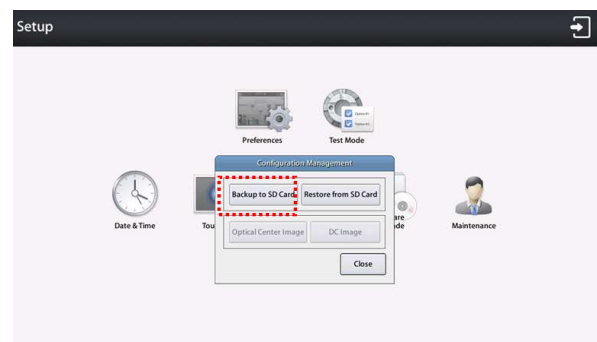
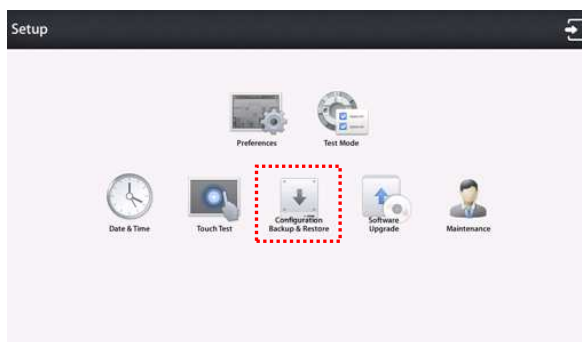
**Caution: Be careful to harm the light source lens during the removing.**



7. Assemble all disconnected parts in reverse order.
8. Close all covers according to '3.2. Closing the cover'.
9. Carry out the blocking calibration certainly according to page 8 ~ page12.

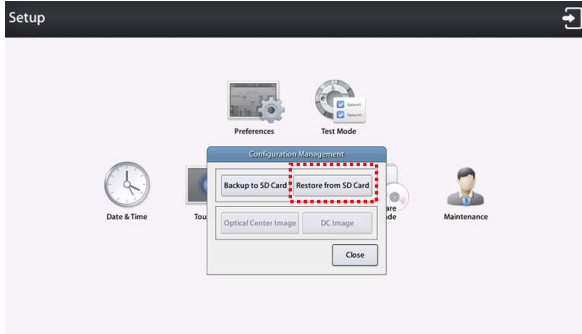
### 3.4. Replacement of the GUI board.

1. Backup the configuration data to the SD card.
  - Insert the SD card to the SD card slot.
  - Get into the 'Configuration Backup' window. (Setup>>Configuration Back & Restore)
  - Click the 'Backup to SD Card' button.



2. Turn off the power.
3. Open the right cover according to '3.1.1 Opening the side (left & right) cover'.
4. Separating the GUI board.
  - Disconnect all cable connectors of GUI board.
  - Unscrew the four support screws.
  - Separate the GUI board.
5. Replacing the 'GUI board' with a new one.
  - Fix the GUI board by for support screws.
  - Connect all cables.
6. Close the right cover and turn on the power.

7. Restore the configuration data from SD card.
  - Get into the 'Configuration Backup' window.
  - Click the 'Restore from SD Card' button.



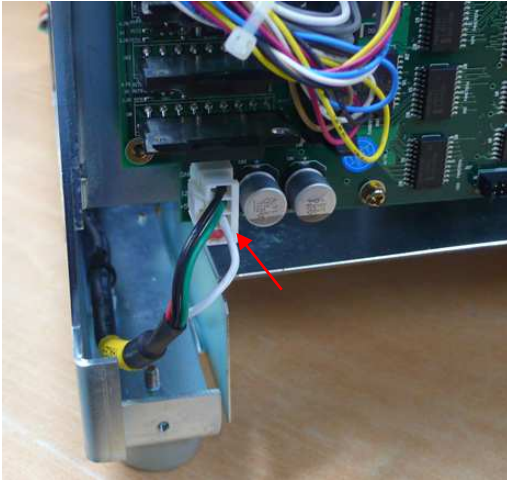
8. If need be, upgrade the 'GUI S/W' by the newest version.

### 3.5. Replacement of the motor board.

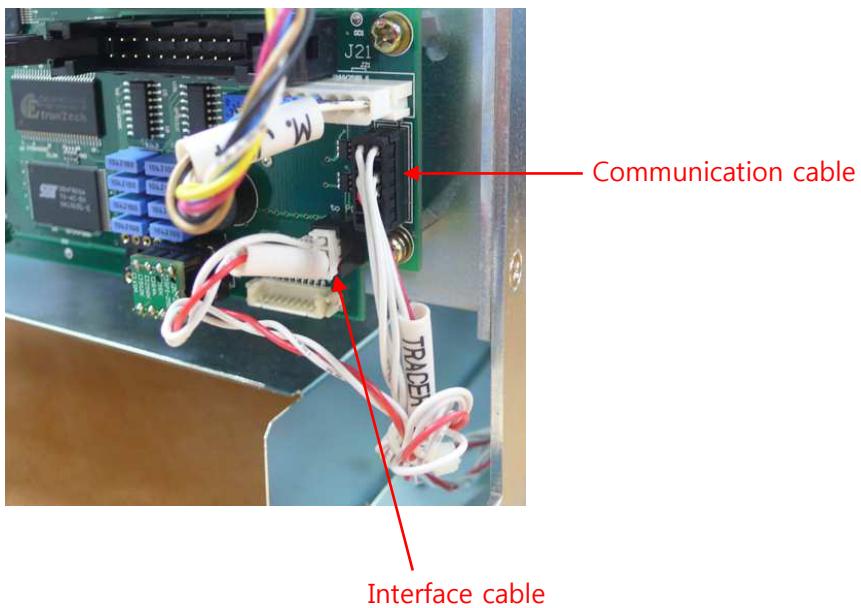
1. Turn off the power.
2. Open the left cover according to '3.1.1 Opening the side (left & right) cover'.
3. Separating the motor board.
  - Disconnect all cable connectors from the motor board.
  - Unscrew the four screws fixing the motor board.
  - Separate the motor board.
4. Replace the motor board with a new one.
  - Fix the new motor board by four screws.
  - Connect the all cables.
5. Close the left cover according to '3.2.3 Closing the side(left & right) cover'.
6. If need be, upgrade the motor S/W by the newest version.

### 3.6. Replacement of the frame reader.

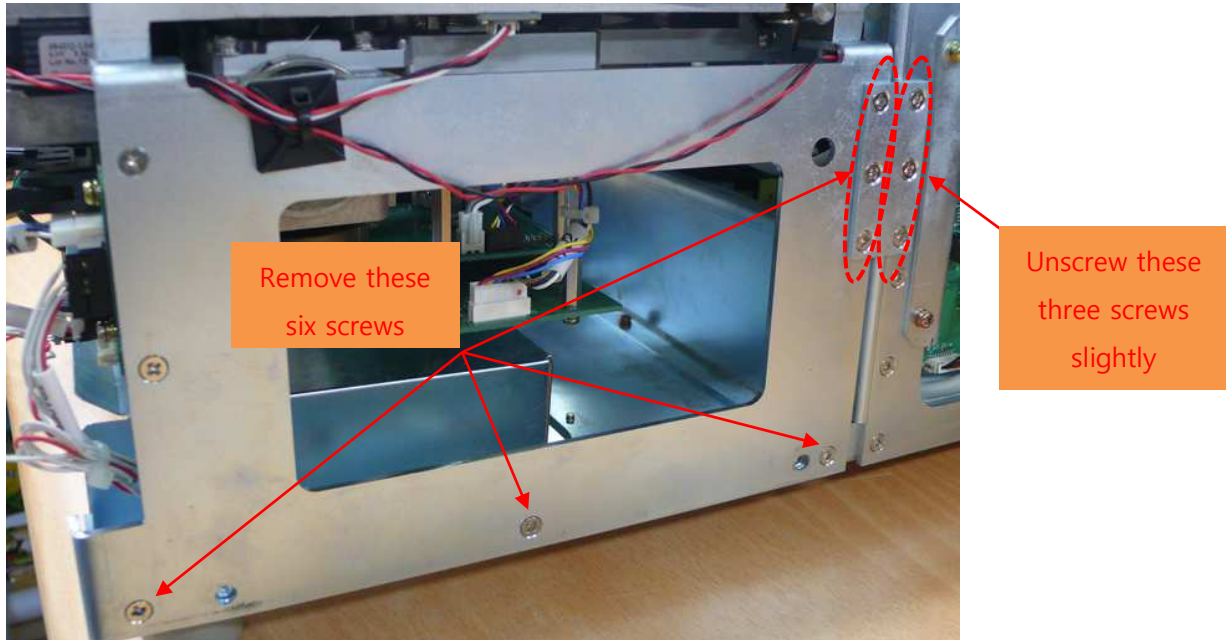
1. Turn off the power.
2. Open the left and right covers and the front cover according to '3.1 Opening the cover'
3. Disconnect the power cable at the left side of the frame reader main board.



4. Disconnect the communication cable connector and the interface cable connector at the right side of the main board.



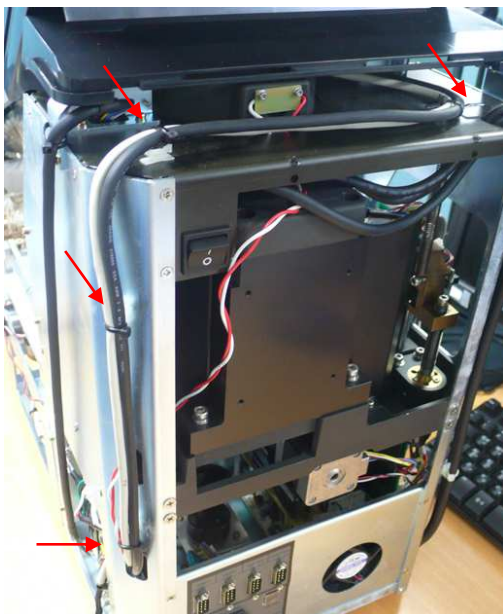
5. Remove the three screws at the bottom side and the three screws at the frame reader side of the link bracket. Unscrew the three screws at the auto blocker side of the link bracket slightly. Carry out this procedure again on the opposite side.



6. Separate the frame reader body.
7. Assemble the new frame reader body in reverse order.

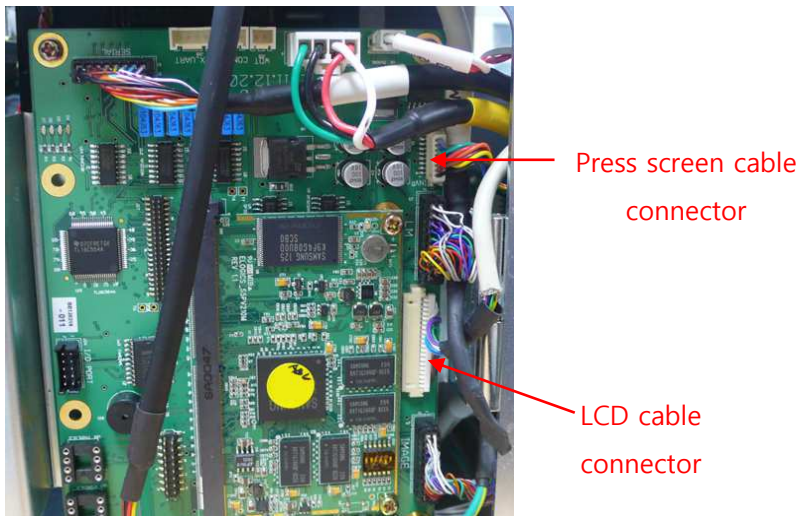
### 3.7. Replacement of the LCD module.

1. Turn off the power.
2. Open the side (left & right) covers and the back cover according to '3.1 Opening the cover'.
3. Cut the cable ties fixing the LCD and touch screen cables.

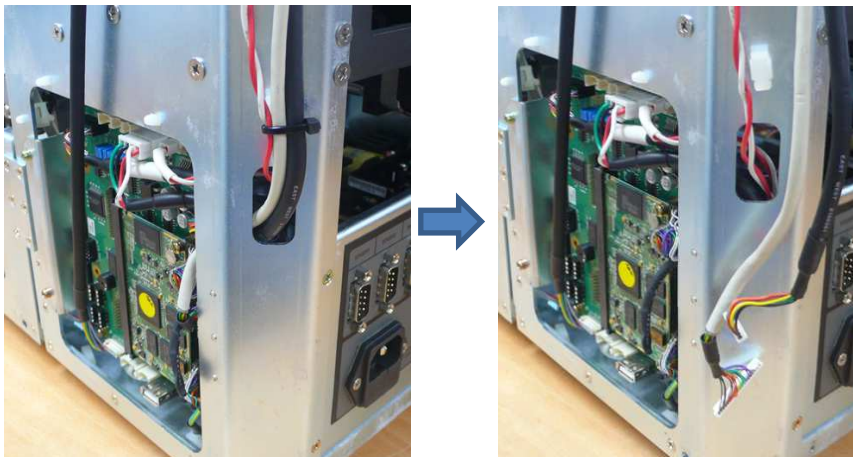




4. Disconnect the LCD and touch screen cable connectors.



5. Take out the LCD and touch screen cables from the hole of the frame.



6. Unscrew the four screws fixing the two LCD hinge brackets.

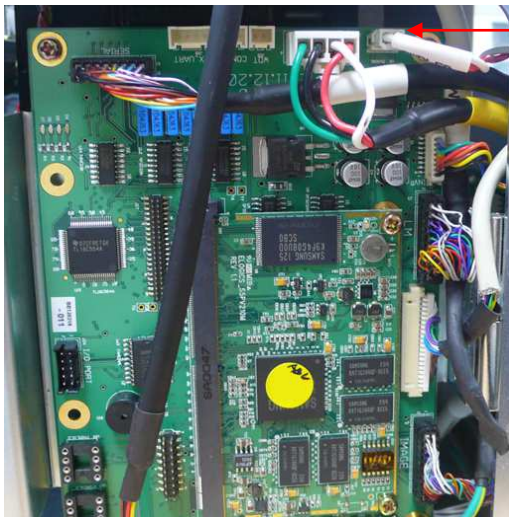


7. Replace the LCD module with a new one.
8. Assemble the all disconnected and removed parts in reverse order.

### 3.8. Replacement of the LED board

#### 3.8.1 Replacing the LED board

1. Turn off the power.
2. Open the side (left & right) covers and the back cover according to '3.1 Opening the cover'.
3. Disconnect the LED cable connector from the GUI board.



LED board cable connector

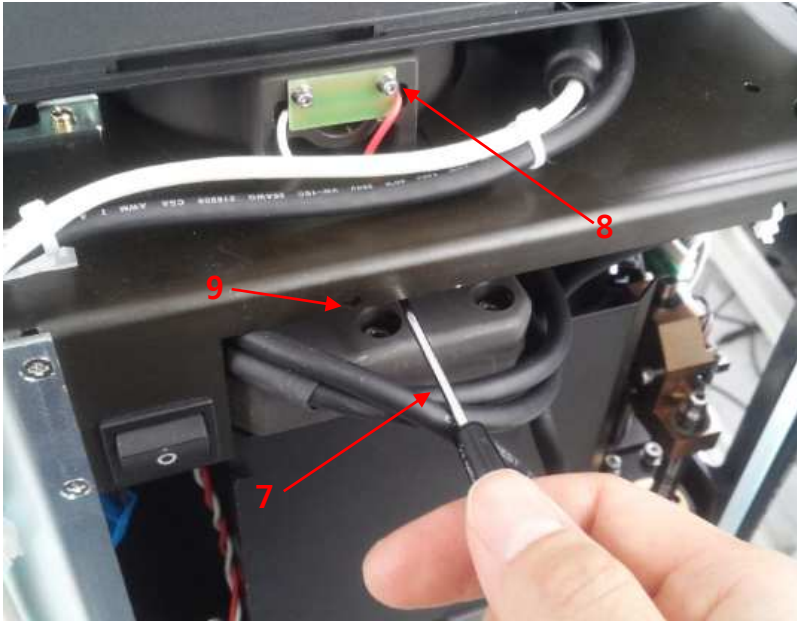
4. Cut the cable tie fixing the power cable.



LED board

5. Unscrew the two screws fixing the LED board with 1.5mm hexagonal wrench.

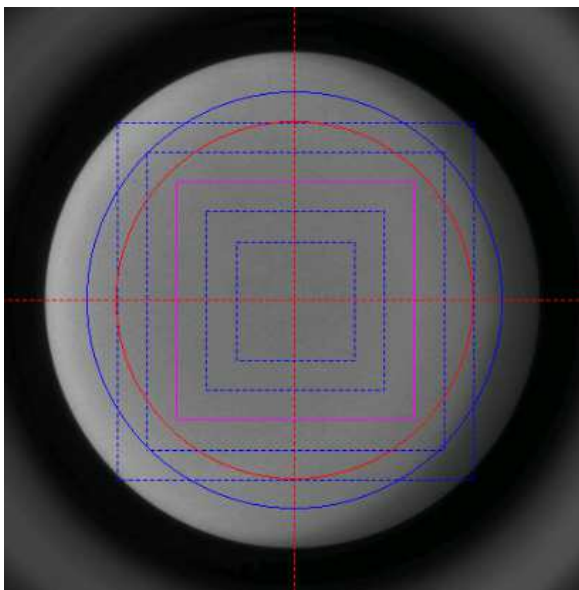
6. Unscrew the screw fixing the cable mount with small + screw driver.



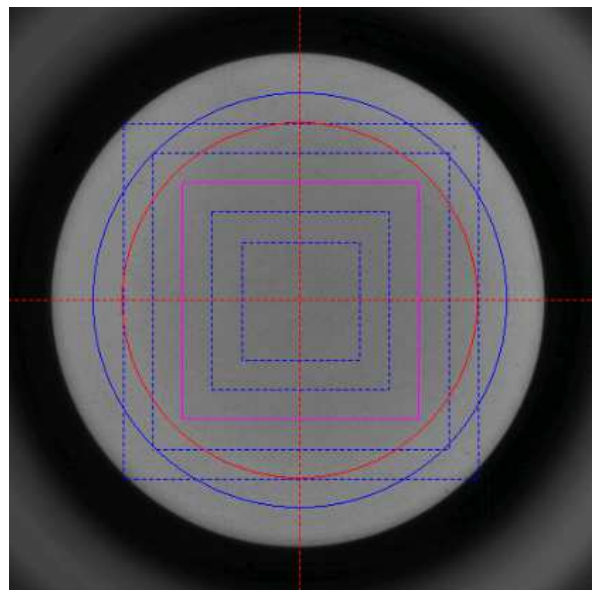
7. Replace the LED board with a new one.
8. Fasten the two screws slightly for the alignment of the LED board.
9. Bind the power cable with the cable tie.

### 3.8.2 Alignment of the LED board

1. Turn off the light and darkened the room.
2. Turn on the power.
3. Get into the Setup >> Calibration (Engineer Mode).
4. Check the uniformity of the brightness in the circle. Move the LED board to the position where there is no shadow in the circle.



**Misalignment Setting**

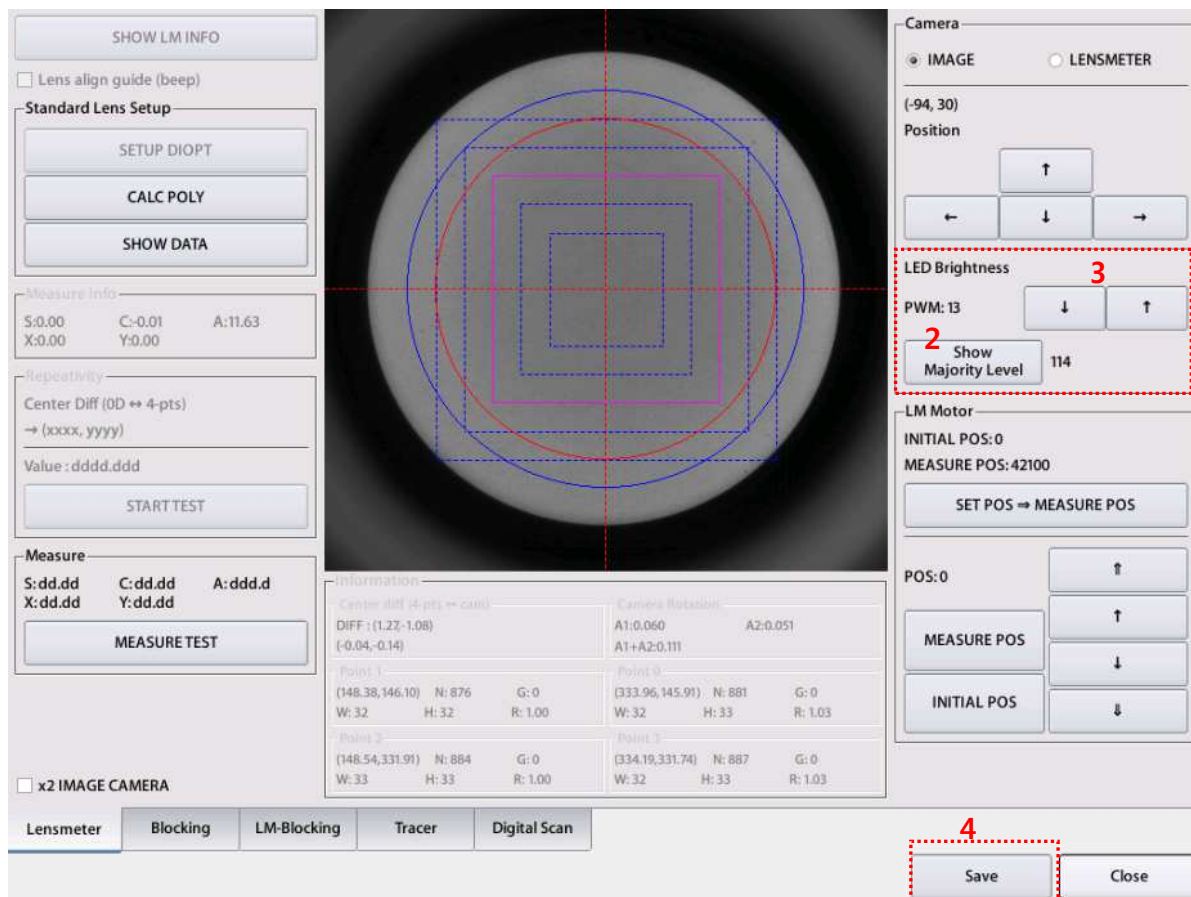


**Normal Setting**

5. Fasten two screws fixing the LED board tightly.
6. **Close all covers according to '3.2 Closing the cover'.**

### 3.8.3 Check the Majority Level

1. Turn on the light of the room and place the auto blocker in the general environment for using the auto blocker.
2. Press the 'Show Majority Level' button in the 'LED Brightness' Menu.
3. Check the 'Majority Level' Value.
  - Standard value: (120 ~ 125)
  - If the value is out of range, adjust the PWM value with the arrow buttons at the 'LED Brightness menu'.
4. Press the save button to save the change



### 3.8.4 Check the 'N' value of the lensmeter

1. Select the 'LENSMETER' in the 'Camera' menu.
2. Press the 'MEASURE POS' button in the 'LM Motor' box. 4 Pin hole will be displayed.
3. Press the 'SHOW LM INFO' button to activate the lensmeter calculation.
4. Check the N Value of the Point 0, 1, 2, 3.
  - ➔ Standard value: (870~900)
  - ➔ If the value is out of range, adjust the PWM value with the arrow buttons at the 'LED Brightness menu'.

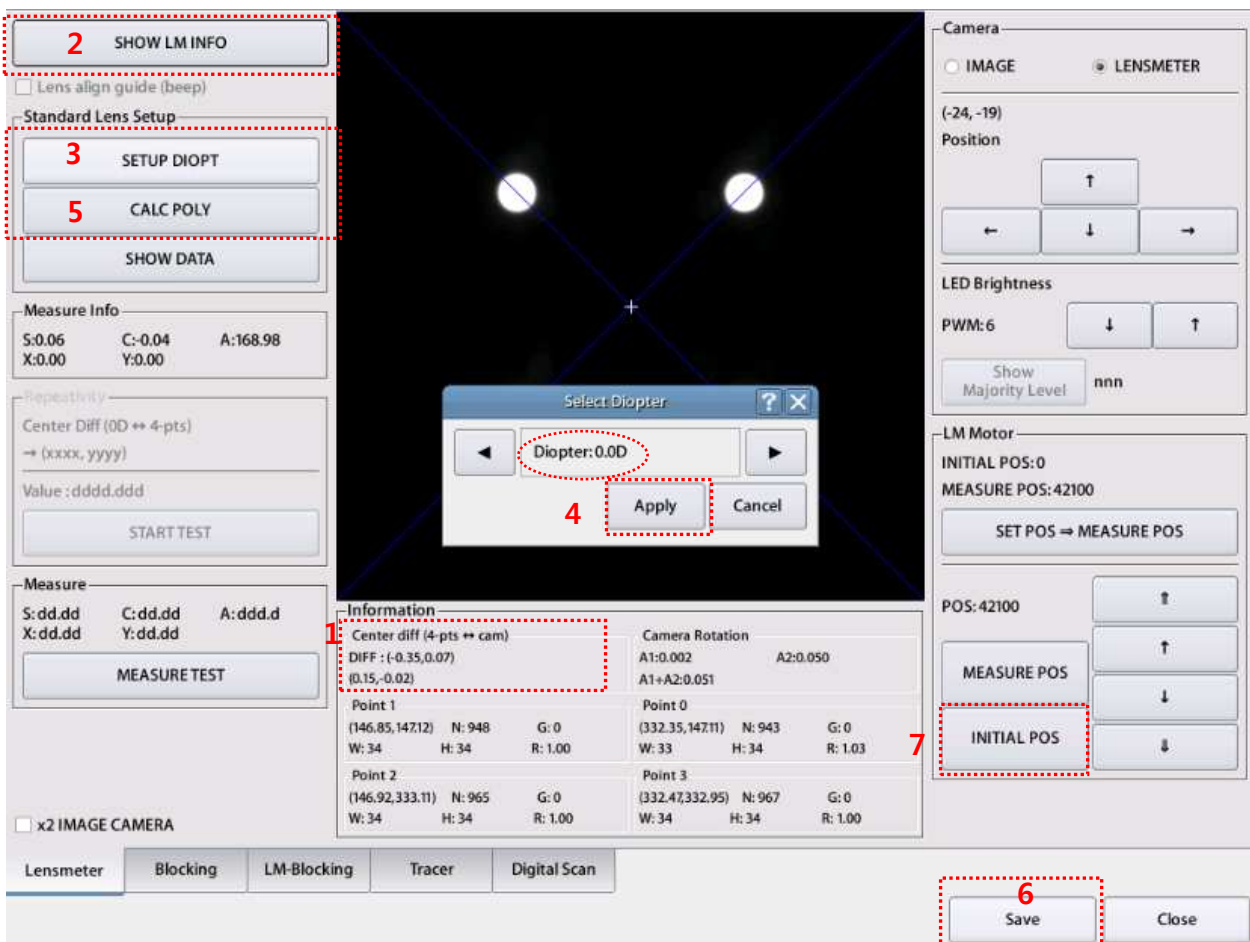
The screenshot displays the 'SHOW LM INFO' screen of the lensmeter software. The interface is divided into several sections:

- Left Sidebar:** Contains buttons for 'SHOW LM INFO', 'Lens align guide (beep)', 'Standard Lens Setup' (SETUP DIOPT, CALC POLY, SHOW DATA), 'Measure Info' (S:0.00, C:-0.01, A:37.86, X:0.00, Y:0.00), 'Repeatability' (Center Diff (0D ↔ 4-pts), Value: dddd.ddd, START TEST), and 'Measure' (S:dd.dd, C:dd.dd, A:ddd.d, X:dd.dd, Y:dd.dd, MEASURE TEST).
- Center View:** A camera feed showing four pinholes arranged in a square pattern, with a blue crosshair overlay.
- Right Sidebar:** Contains 'Camera' settings (IMAGE, LENS METER), 'Position' (8, 7), 'LED Brightness' (PWM: 4, Show Majority Level: 114), and 'LM Motor' settings (INITIAL POS: 0, MEASURE POS: 42100, SET POS ⇒ MEASURE POS, POS: 42100, MEASURE POS, INITIAL POS).
- Bottom Information Panel:** Displays 'Center diff (4-pts ↔ cam)' (DIFF: (-0.24, -0.17), (-0.04, -0.14)), 'Camera Rotation' (A1:0.061, A2:0.054, A1+A2:0.115), and a table of point data.
 

Point	X	Y	N	G	W	H	R
Point 1	146.87	147.02	875	0	32	32	1.00
Point 0	332.46	146.82	887	0	33	33	1.00
Point 2	147.02	332.83	884	0	32	33	1.03
Point 3	332.72	332.65	886	0	32	33	1.03
- Bottom Navigation:** Includes tabs for 'Lensmeter', 'Blocking', 'LM-Blocking', 'Tracer', and 'Digital Scan', along with 'Save' and 'Close' buttons.

### 3.8.5 Lensmeter Center Difference Setup (OD Setup)

1. Check the 'Center diff(4-pts ↔ cam)' in the "Information" box.
  - Standard value is DIFF:  $(0.0 \pm 0.5, 0.0 \pm 0.5)$ , most close to 0
  - If the value is out of range, adjust the value with arrow buttons at the "Position" box.
2. Press the 'SHOW LM INFO' button to deactivate the lensmeter calculation.
3. Press the 'SETUP DIOPT' BUTTON' in the 'Standard Lens Setup' menu. (It will take 5~6 seconds to open the 'Select Diopter' pop-up window.)
4. Press 'Apply' button in the 'Select Diopter' pop-up window. This will set the 'OD'
5. Press the 'CALC POLY' button.
6. Press the 'Save' button to save the change.
7. Press the 'INITIAL POS' button in the 'LM Motor' box.



### 3.8.6 LM-blocking center calibration

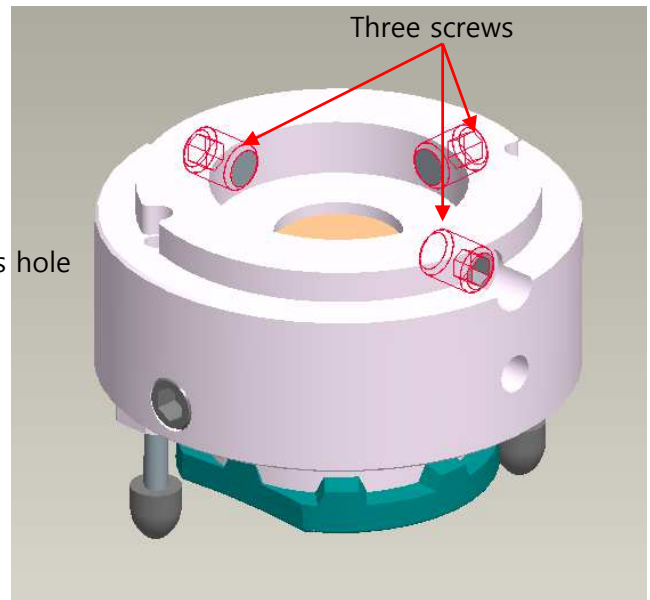
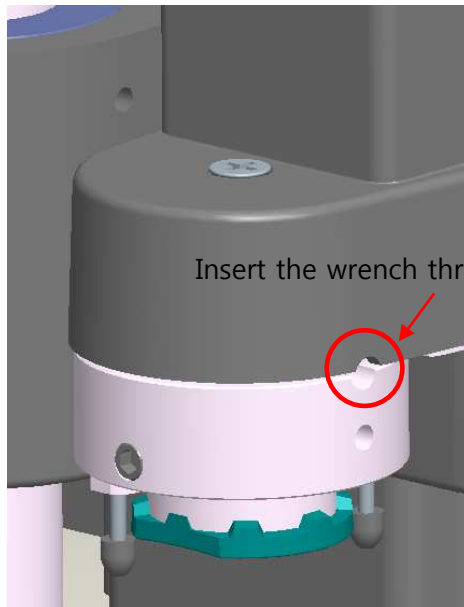
1. Carry out the procedure of **2.5.1 Checking LM Blocking center and calibration**(page 13)

☞ If the OD setup value is changed, the LM-blocking center calibration must be performed.

### 3.9. Replacement of the leap block adapter (b grip assy)

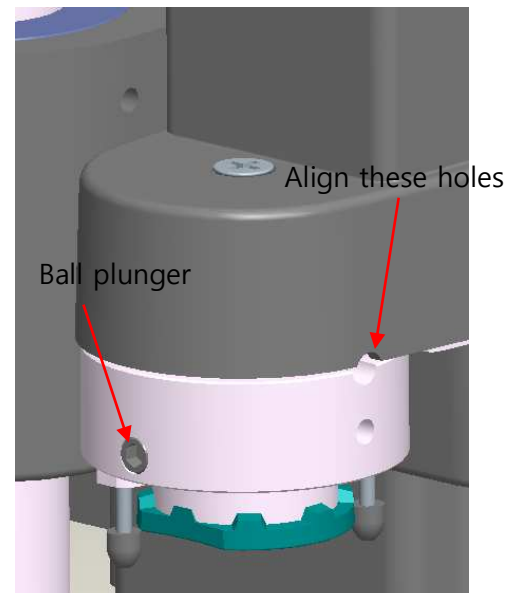
#### 3.9.1 Detaching the adapter

1. Turn off the auto blocker and open the shutter.
2. Loosen three screws that fixing the adapter by using the 1.5mm wrench.
3. Detach the adapter



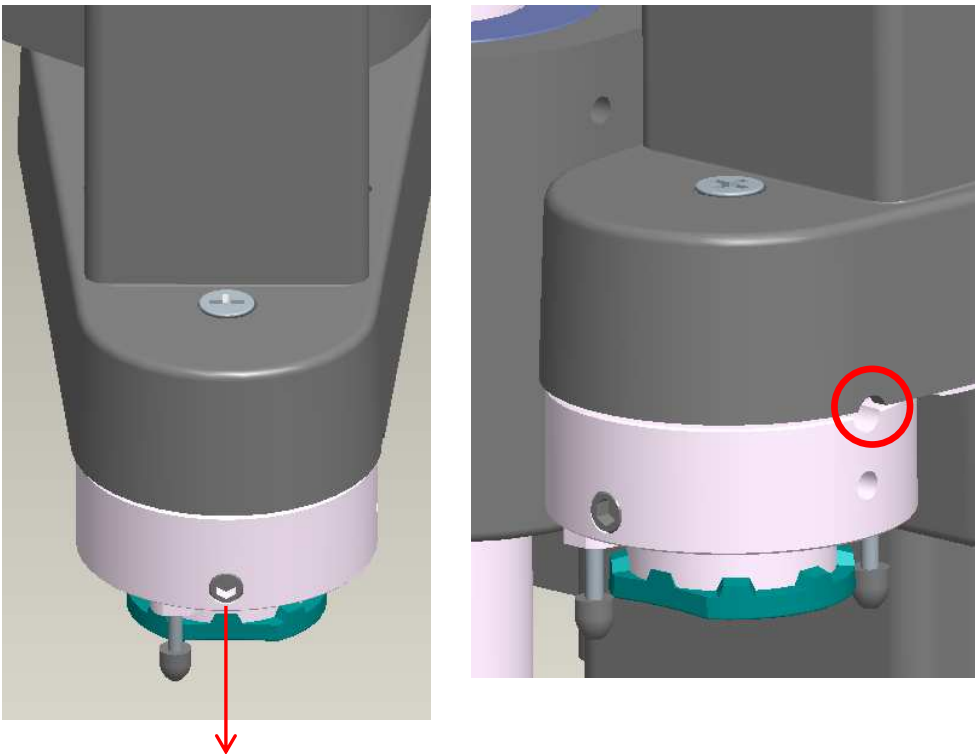
#### 3.9.2 Attaching the adapter

1. Close the shutter
2. Turn on the auto blocker. Confirm that the blocking arm is normally initialized.
3. Open the shutter.
4. Align the adapter to the blocking arm. The ball plunger should be towards the front direction. While inserting the adapter, align two holes at the right side of the arm properly
5. After inserting the adapter normally, fasten the screw through the hole with 1.5mm wrench.
6. Fasten two another screws by rotating the adapter forcibly.
7. While inserting the adapter, the theta axis motor should not be rotated. If the theta axis motor rotates, there will be sound of 'tick'. If the theta axis is rotated, close the shutter and then go into the test mode screen and press the 'close' button. (It will initialize the blocking arm.) After the blocking arm is initialized, restart attaching the adapter.



### 3.9.3 Confirming the direction of the adapter.

1. After the assembly, close the shutter and go into the test mode screen and press the 'close' button.
2. After the arm is initialized, check that the hole of the adapter and the hole of the small arm are aligned, and check the direction of ball plunger.
3. If these two holes are not matched, perform the assembly procedure again.



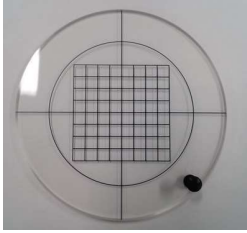
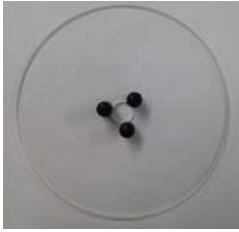
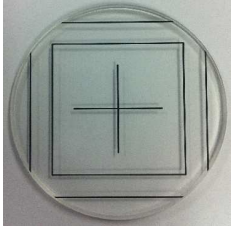
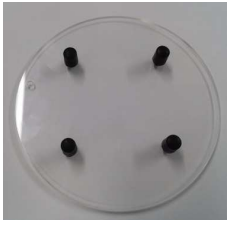
### 3.9.4 Performing blocking calibration.

1. After replacing the leap block adapter, you have to perform 'Checking the blocking condition / Blocking calibration' (page 8~12).



## 4. Calibration Tools

### 4.1. Calibration tools for engineer

	Item	Purpose	Picture
1	Lattice pattern jig plate	-Image camera alignment (compatible with CAB-4000)	
2	HAB-8000 Trial Lens Support Plate	-Trial Lens Setup (not compatible with CAB-4000)	
3	Digital Scan calibration jig	-Digital scan calibration	
4	Blocking calibration plate	- Blocking calibration (compatible with CAB-4000)	
5	Jig Leap Block (Red Color)	- Blocking Calibration (compatible with CAB-4000)	