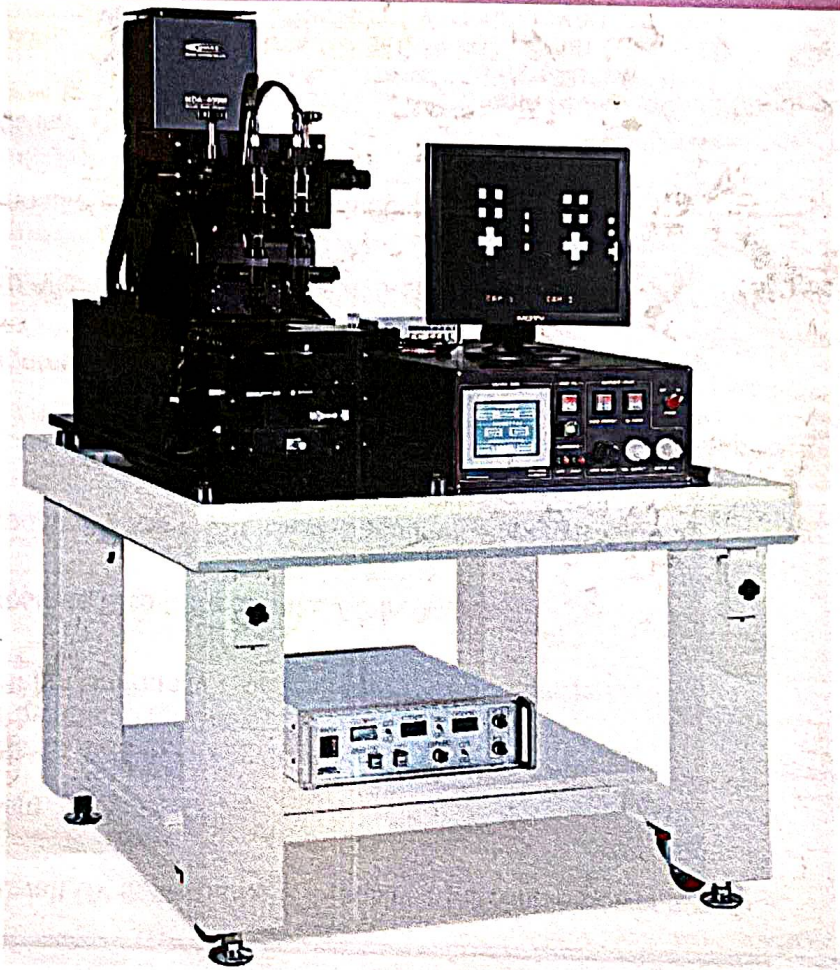
MASK ALIGNMENT SYSTEM MDA-400M USER'S MANUAL



MIDAS

MIDAS SYSTEM

WWW.ALIGNER.CO.KR

SPECIFICATION

1. 350watt UV light source & Intensity controllable power supply

2. Beam

   1) Size : 4.25 in. x 4.25in. / 6.25in. x 6.25in.
   2) Power:≥20 mW/㎠
   2) Beam Uniformity : <±3% (4in.) / <±5% (6in.)

4. Substrate Size : Piece/ 4in. / 6 in.(Max.)

5. Exposure Mode : Soft, Hard ,Vacuum & Proximity Contact

6. Exposure Optics : I,G,H-line

7. Alignment : Top Side and Back Side Alignment

8. Top Alignment Stage : X, Y : ± 5 mm, Theta : ± 4° , Z : 5 mm over

9. Exposure time : : 0.1 sec to 6000sec

10. Utilities Requirement
   - Electric Power : 220V, 15A, Single Phase With Ground, 60 Hz
   - Nitrogen : >40 psi (3㎏/㎠), 6 mm Tube(PU)
   - CDA : >85.5 psi (Over 6 ㎏/㎠) , 6mm Tube (PU)
   - Vacuum : < -200 mbar (Vacuum Pump Include)
   - Exhaust : No

11. Need work table, size 1000mmx1000mm over

INDEX

Chapter 1 Warnings, Safety Hazards

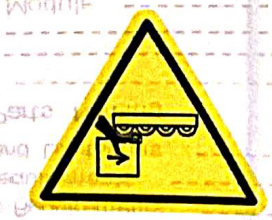
1. General regulations for the Safe Handling of Machine

Before using the product, make sure to read and follow the safety guidelines. These safety guidelines provided contain important information regarding Safe proper operation of the unit. The manufacturer is not liable for any injury, accident, or product damage resulting from operation not in accordance with these safety guidelines.

- The machine has been built in accordance with standard and recognized safety rules.
- Please read the entire Operation Manual carefully before starting the machine.
- Industrial accidents are avoidable and continuous effort should be made to prevent them by training the operator and service personnel.

2. Possible Injures Related to Improper Operation of the Machine

(1) Physical Hazards



When the movement of Light Source Unit

- Do not touch the machine when the movement of Light Source Unit.
- Please keep your fingers during the movement of Light Source Unit.

WARNING

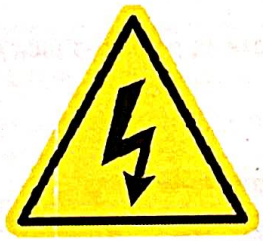
DO NOT RUN THE MACHINE BEFORE THE TRAINING FOR THE OPERATING AND MAINTERANCE.

Chapter 1 Warnings, Safety Hazards

(2) Thermal Hazards

- If It is necessary to exchange the Lamp of the UV Light Source, it should be cool down more than 30 minutes.
- Please do not open the Lamp housing before complete cool down of Lamp.

(3) Electrical Hazards



- Should checked all electricity such as control box, UV Lamp, Power supply before connect of main electric power.
- As a rwsult of missing machine cover. With covers removed hazardous voltage may be exposed.
- Please do not plug in/out the power cable with a wet hand.

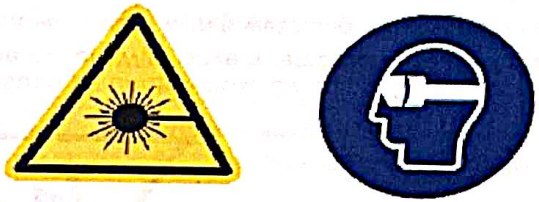
Especially, please do not touch the igniter box with a wet hand.

It may have a risk of electric shock if the inside or outside of the product gets wet.

WARNING

When you replace a used lamp with a new lamp, please refer 41~44 page.

(4) Radiation Hazards of UV



The high energy of UV light produced by exposure lamp can cause eye damage and skin burns.

(5) Contamination Hazards after lamp explosion

※Do not open cover of lamp housing

- May occur after lamp explosion, the lamp contains mercury.
- The greatest source of danger after the explosion of the high-pressure short-arc mercury lamp lies in the inhalation of mercury vapor released into the surrounding environment.

CAUTION

To minimize the health risks after a lamp explosion.

1. All personnel should leave the contaminated room immediately
2. Ventilation the room air more than 30minutes
3. Should be running of cooling fan on Light Source continuously
4. Do not open the lamp housing, It will be take more than one hour until cool down of all lamp units
5. If you have any other questions, please call to us immediately

3. Operation of MDA-400M

CAUTION of the safe handling of machine

Service of the machine should be performed by qualified personnel only.

If any problems occur with the power supply, turn the machine off and notify maintenance immediately.

When performing any maintenance on the power supply, lamp housing or the UV lamp itself,

make sure that the power line to the power supply is disconnected.

Because UV Lamp Power Supply uses high pressure power, use after grounding under the earth's surface or under a building.

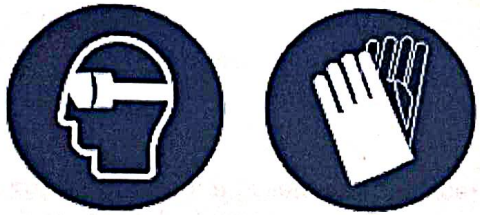
The UV lamp operates at extremely high pressure. The UV lamp may fail as a result of improper cooling,

improper setting of the power supply and so on.

If UV lamp should break, avoid touching the fragments and breathing the mercury vapor.

(2) Replacement of the Exposure Lamp

- The high UV light energy produced by the exposure lamp can cause eye damage and skin burn.
- Personnel entrusted with the adjustment of the exposure lamp should ware eye and skin protection against UV radiation.
- MIDAS SYSTEM will not be responsible for injuries from incorrect or unprotected work with there systems.



CAUTION

- Should be take a glasses for the protection eye from UV light and do not exposure of skin when replacement of lamp.
- Keep attention of polarity of Lamp.
- Do not disassemble a lamp cover until enough cool down of Light source.
- Should be take a vinyl or silicon gloves when you touch a lamp.

Chapter 2 Installation

1. Environmental Requirements

1. The machine should be protected from vibration or located on vibration free table. We can deliver the Anti-Vibration table optionally.
2. The room should be free from dust, less than class 1,000 and acid fumes.
3. The room temperature should be between 20℃(68°F) and 23℃(73°F) and The relative humidity of room should be 45~55%.
4. The distance between wall and rear of the machine must be enough for the service.

2. Electric power Requirements

1. Main Input Option : 220VAC 50/60 Hz
2. Power cord –grounded 3-wire cable : 2 m for corresponding voltage
3. Power : Max 5KW(using Ignition),100W~350W(normally)
   (System and power supply with a 350W UV Lamp, a private Light source)

3. Pneumatic Requirements

Nitrogen, Vacuum and compressed Air:

1. Nitrogen : 3~4bar, 30~40psi, 3~4kgf Consumption : 0.5 ㎥/㎏
2. Vacuum : more than 610 mmHg, 24inchHg
3. Compressed air : 5~7bar, 75~105 psi, 7~ 10kgf

4. Exhaust Requirements

100 mm outside diameter

1. For 1000 Watt : 160 l/min lamp cooling
2. For 350/500 Watt : No exhaust required

CAUTION

An Engineer of this company should install Mask Aligner, MDA-400M or The Representative who is educated in installation should install it.
The Machine installation or modification by customer is dangerous and you can not receive After-sales service.

5. WARRANTY AND LIMITATIONS
- The warranty period will be 12 months after installation of machine with following scopes.

※This warranty is limited to

1. Equipment unpacked and installed by MIDAS SYSTEM representatives.
2. Equipment that is used and operated in accordance with the Operation Manual.
3. Equipment that is properly maintained on regular basis.

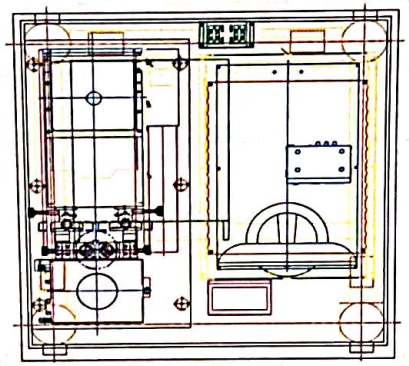
※This warranty excludes

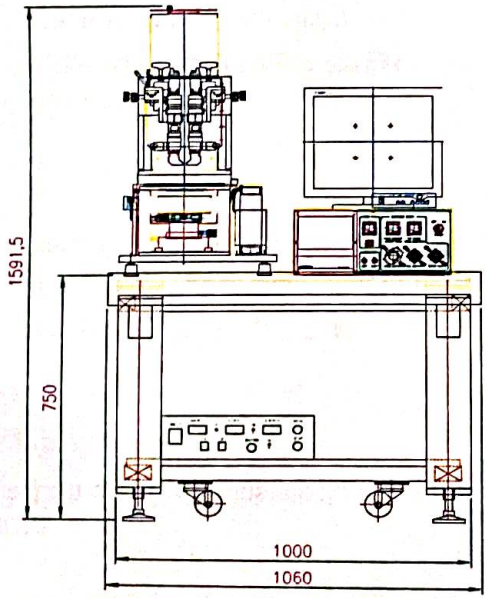
1. Equipment modification by customer.
2. Re-installation without any information to MIDAS SYSTEM.
3. The machine should be connected with correct Utility.
4. Any items that are subject to wear during operation of the equipment, such as UV lamps, Illuminator lamp and Vacuum.

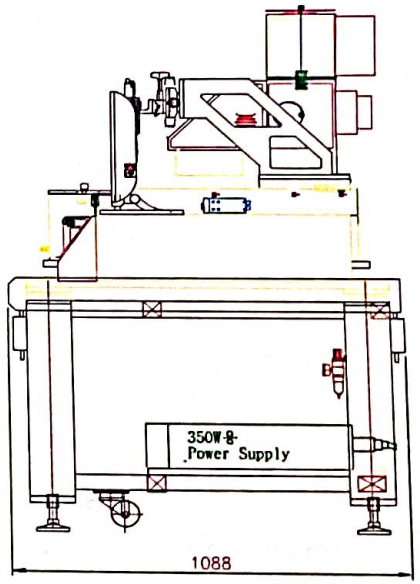
※Note
Consumable Parts: UV Lamp(600 hours), Illuminator Lamp(2000 hours), Primary COLD MIRROR(3 year)
Ellipsoidal Mirror(3 years), Vacuum seal

Chapter 3 Parts Naming

1.Lay out





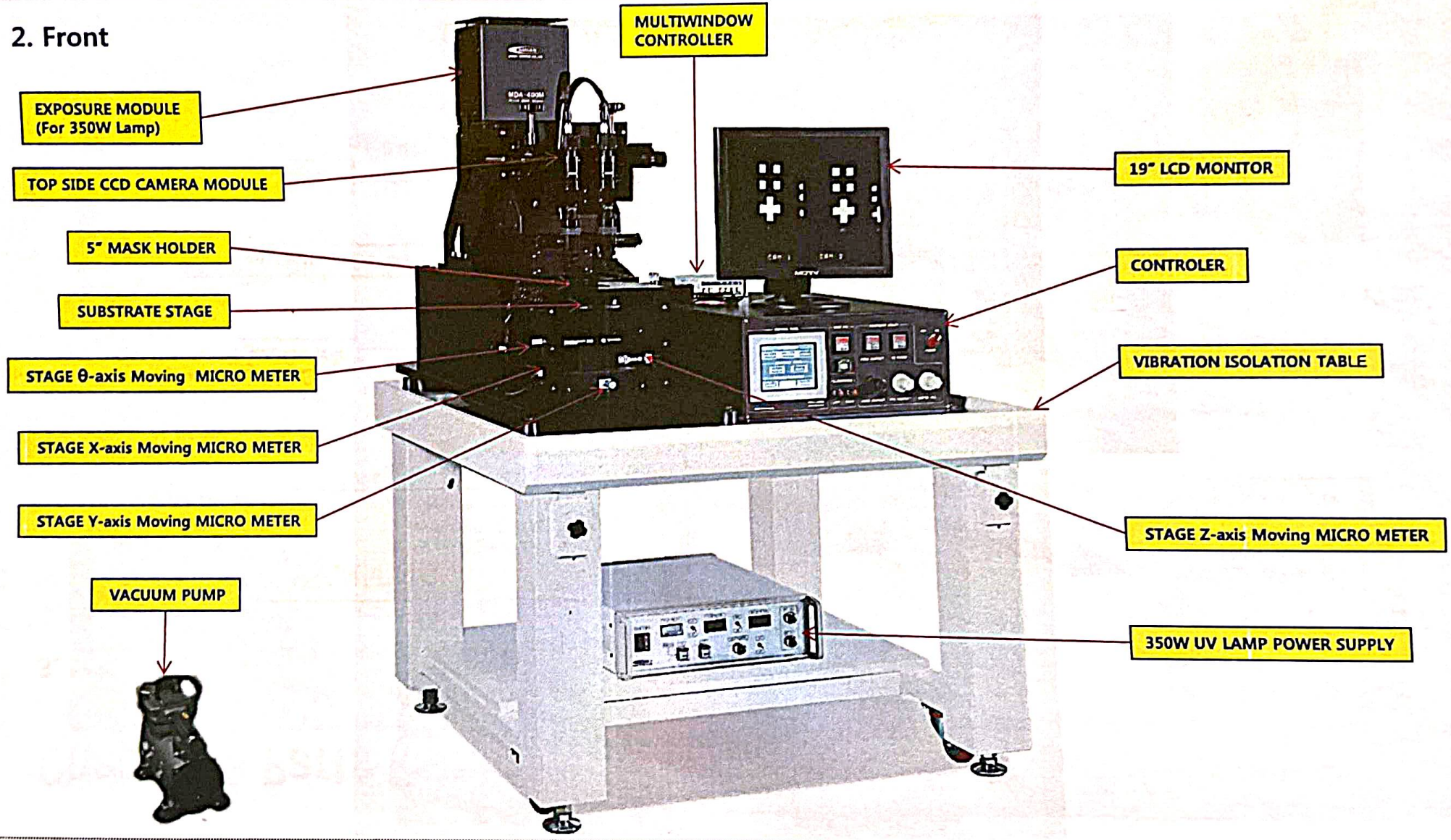


REVISIONS					
ZONE	REV.	DESCRIPTION	REC. BY	CHECK	APPD	DATE

MIDAS SYSTEM TEL : 042-936-7620 FAX : 042-936-7623 web : www.aidas-system.com www.aligner.co.kr	TOLERANCES 2 PL DECIMALS ± 01 3 PL DECIMALS ± 005 4 PL DECIMALS ± 00010 ANGLES ± 0°	Surface Finish	Title: MDA-400M-6	System: Lay-Out
			Drawing No: MDA4M6-A010	Drawing Name: Total Assembly Lay-Out	Drawn: Kyung Suk
			Material: -	Q'ty: 1	Scale: 1 : 1
	Surface Treatment		Date 2009年 11月 03日	A4 Sheet 00 OF 00	Rev

Chapter 3 Parts Naming

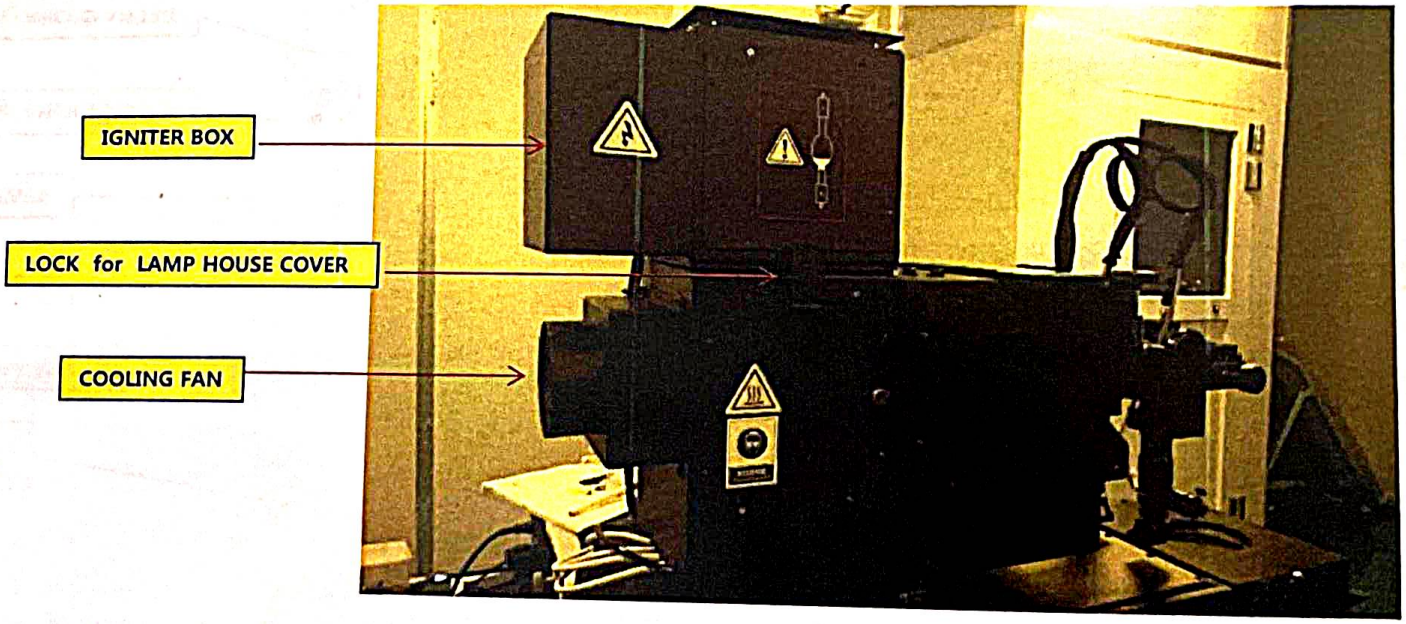
2. Front



Chapter 3 Parts Naming

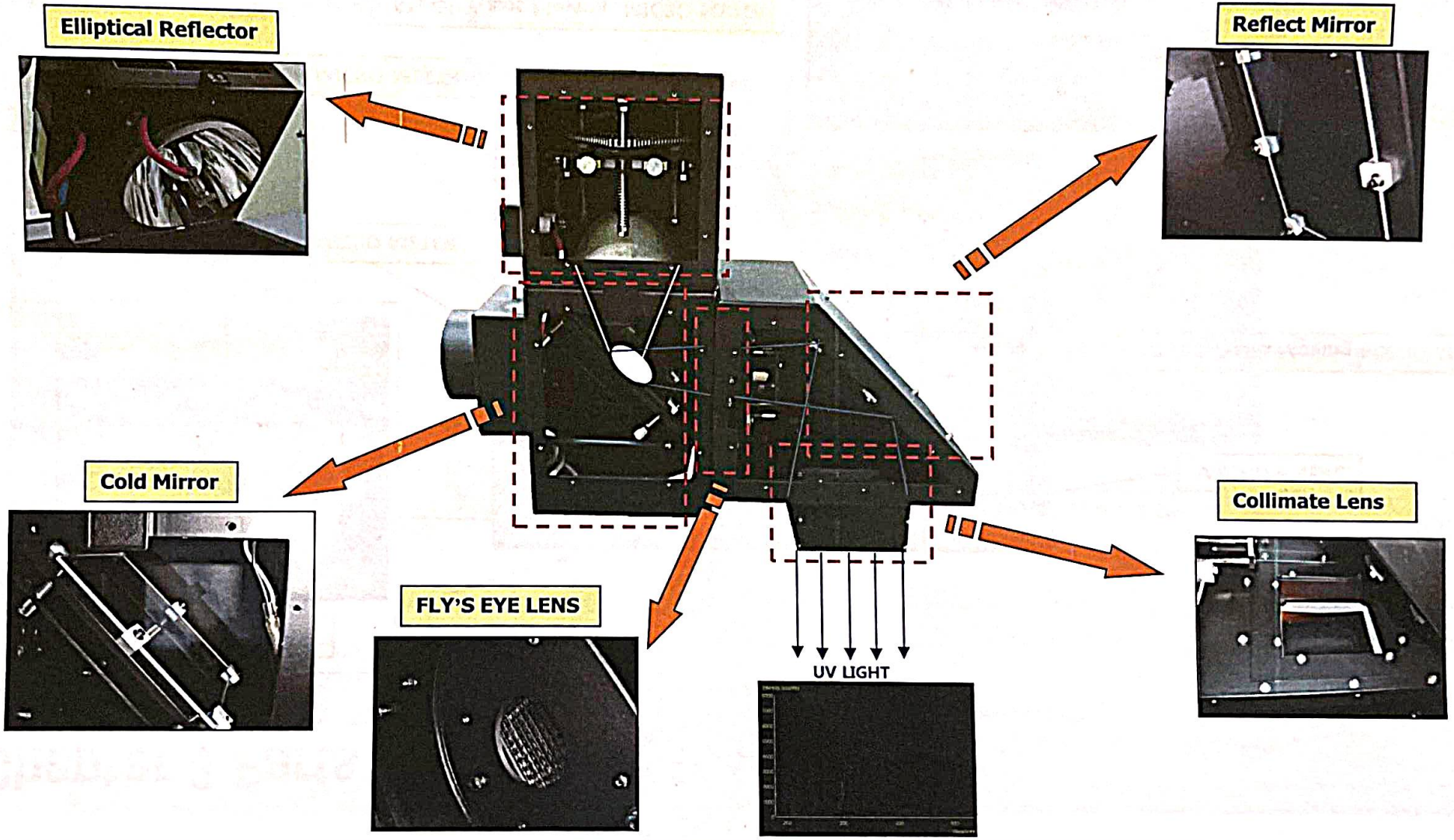
3. Left

WARNING
When you turn a lamp on,
Do not touch **IGNITER BOX.**
You can get shocked.



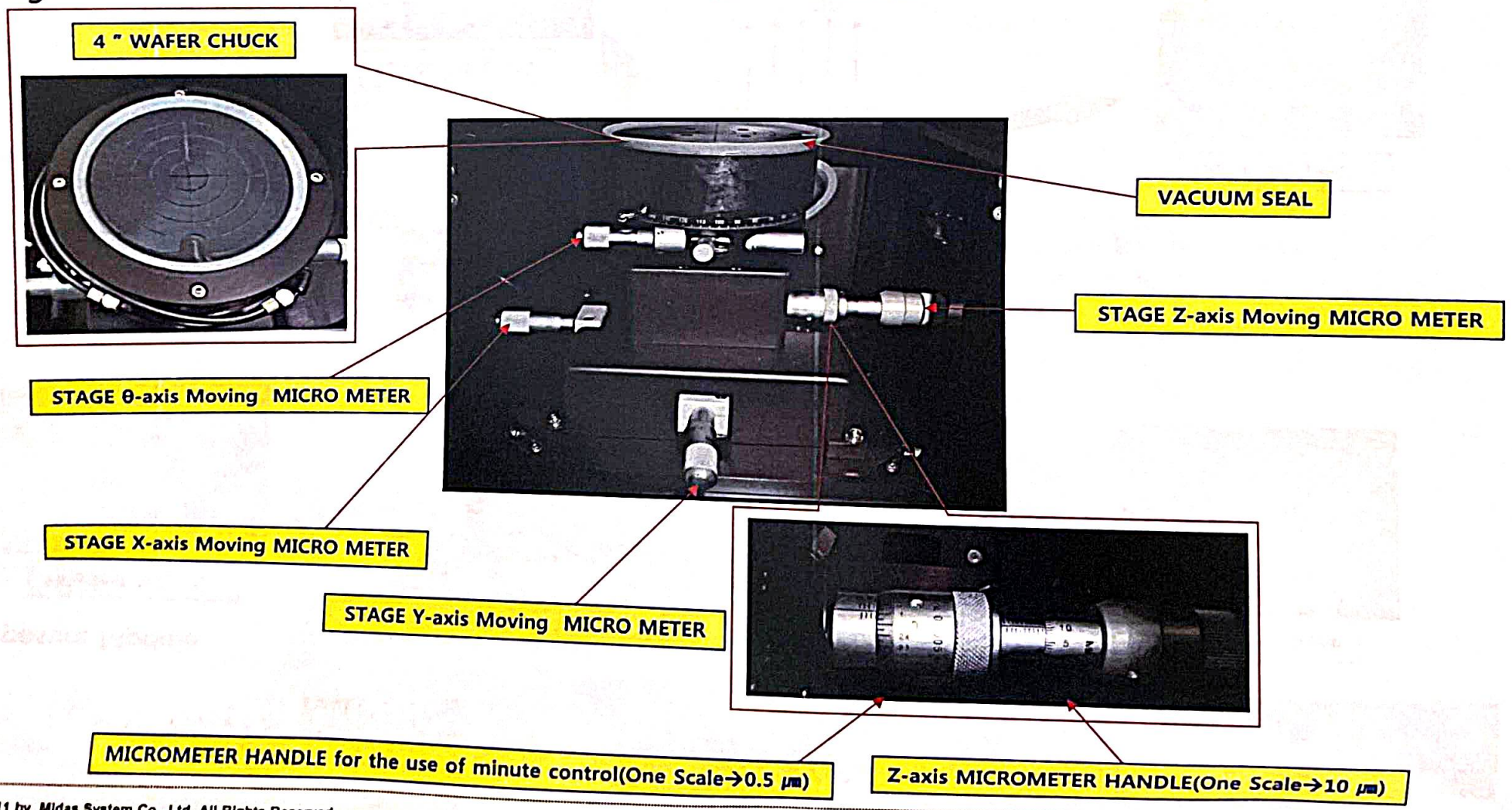
Chapter 3 Parts Naming

4. Exposure Module

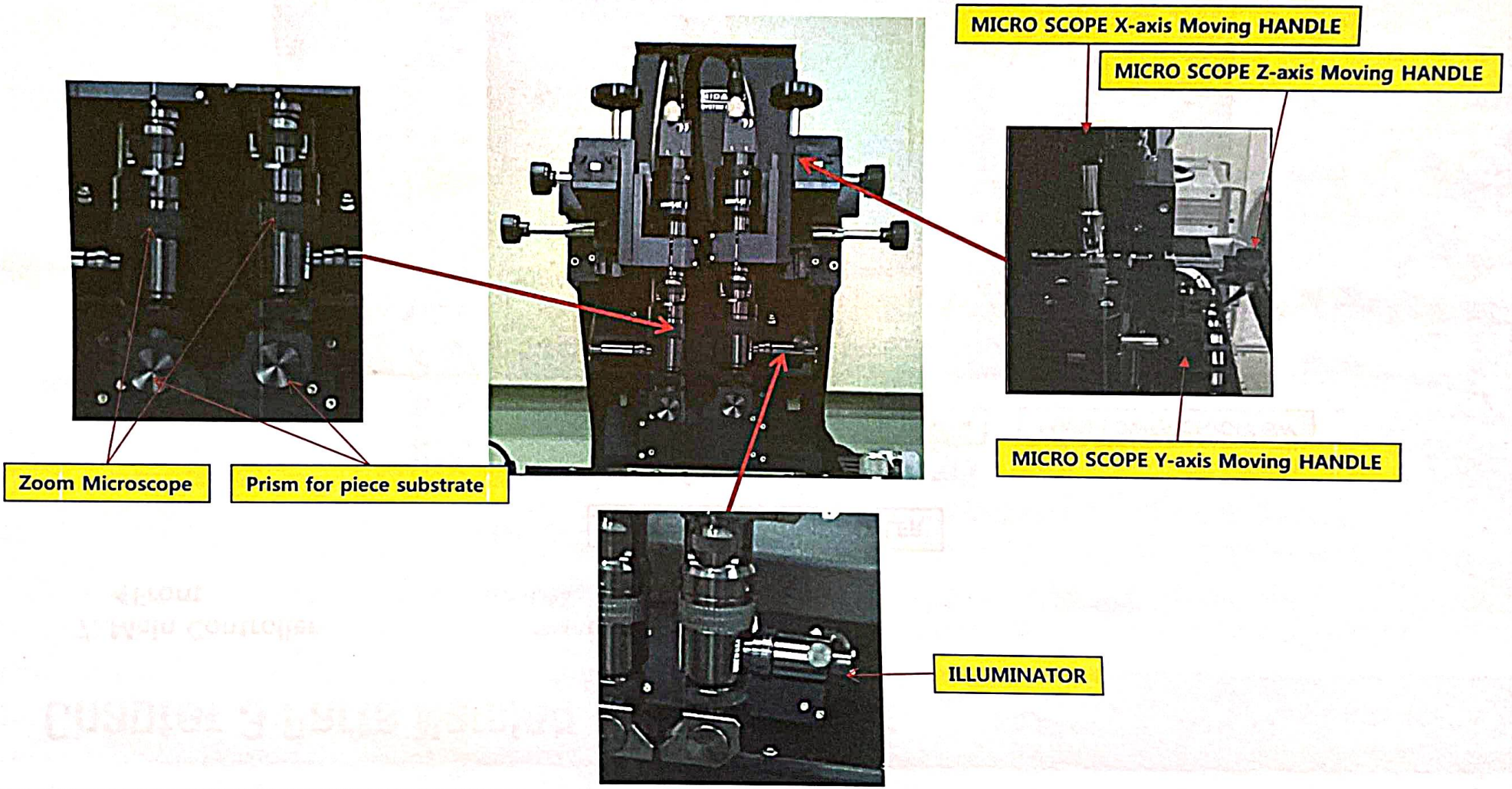


Chapter 3 Parts Naming

5. Stage



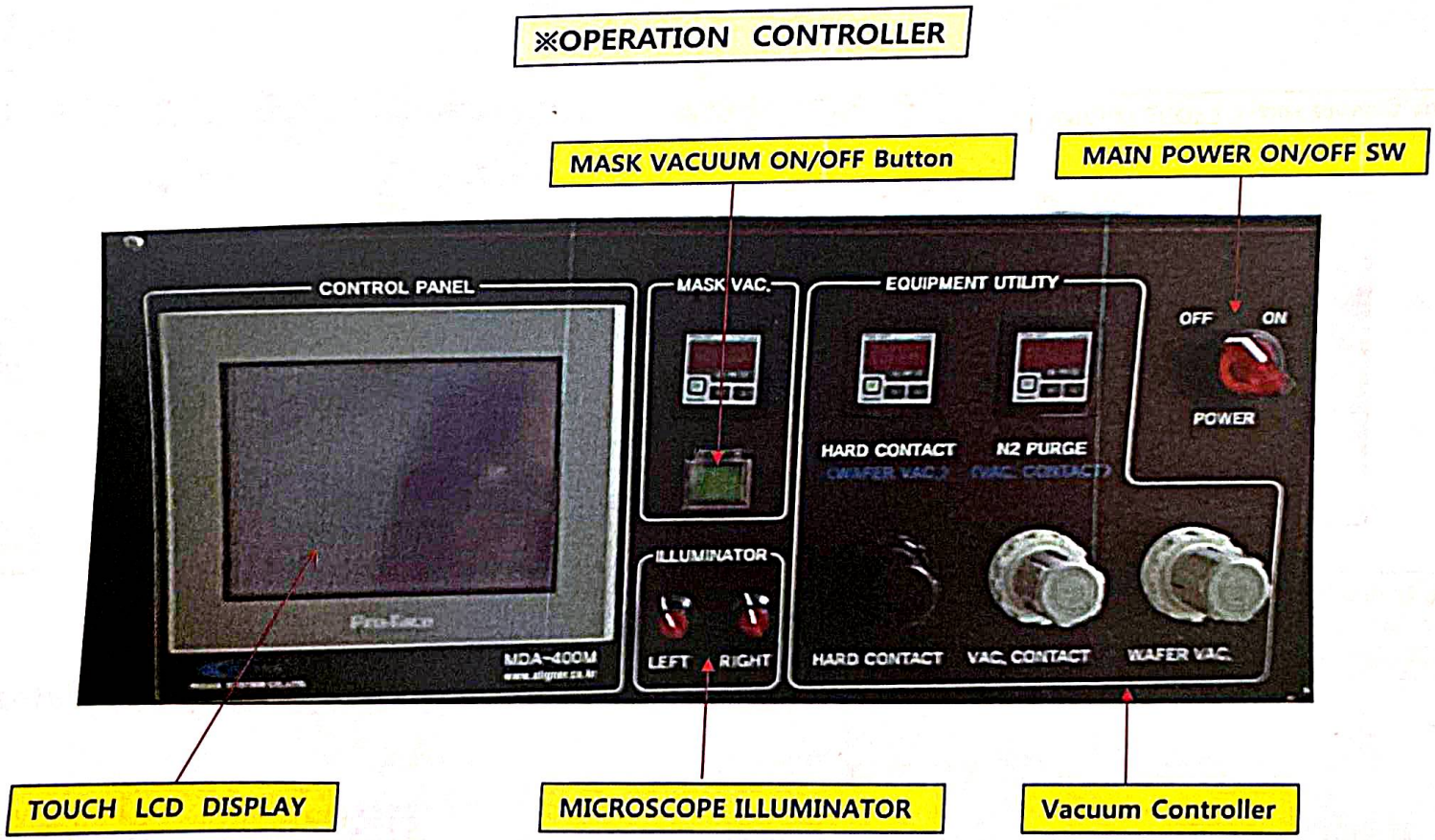
6. Dual Microscope Module



Chapter 3 Parts Naming

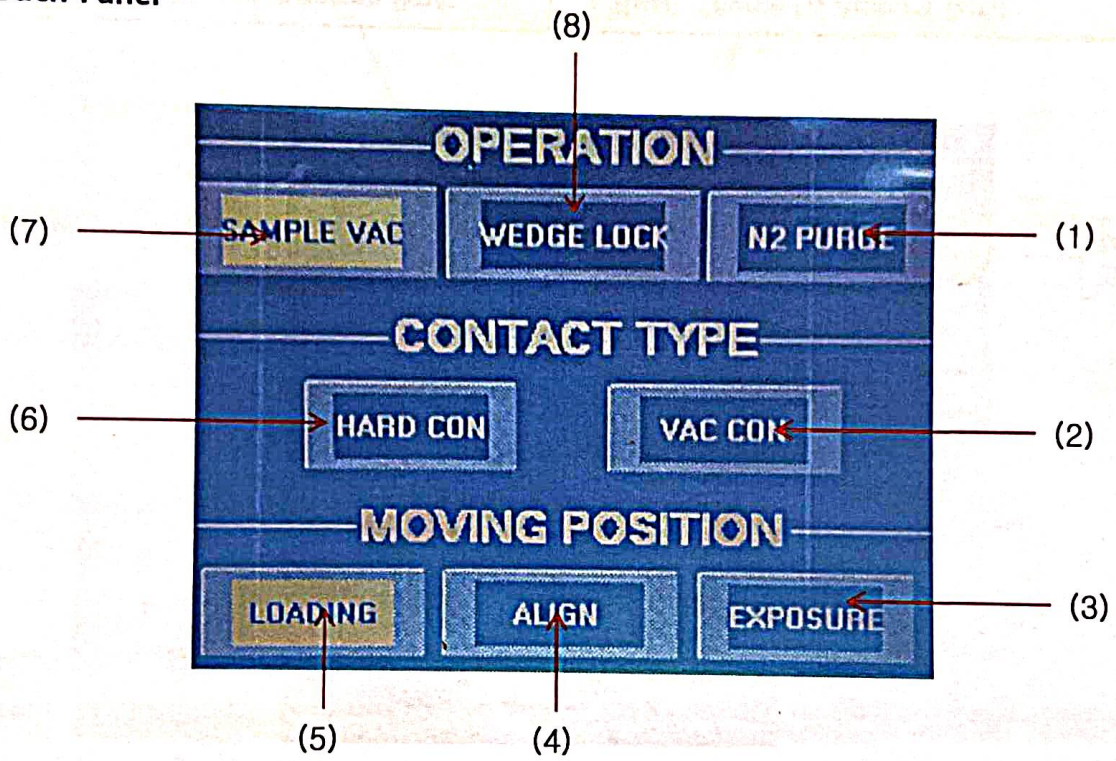
7. Main Controller

◀Front



Chapter 3 Parts Naming

- Controller Touch Panel



(1) N2 Gas **ON/OFF**
(2) Vacuum Contact **ON/OFF**
(3) Exposure Position
(4) Alignment Position
(5) Exposure Module **Initialization**
(6) Hard Contact **ON/OFF**
(7) Sample Vacuum **ON/OFF**
(8) Chuck leveling **ON/OFF**

Chapter 3 Parts Naming

- Pressure Controller

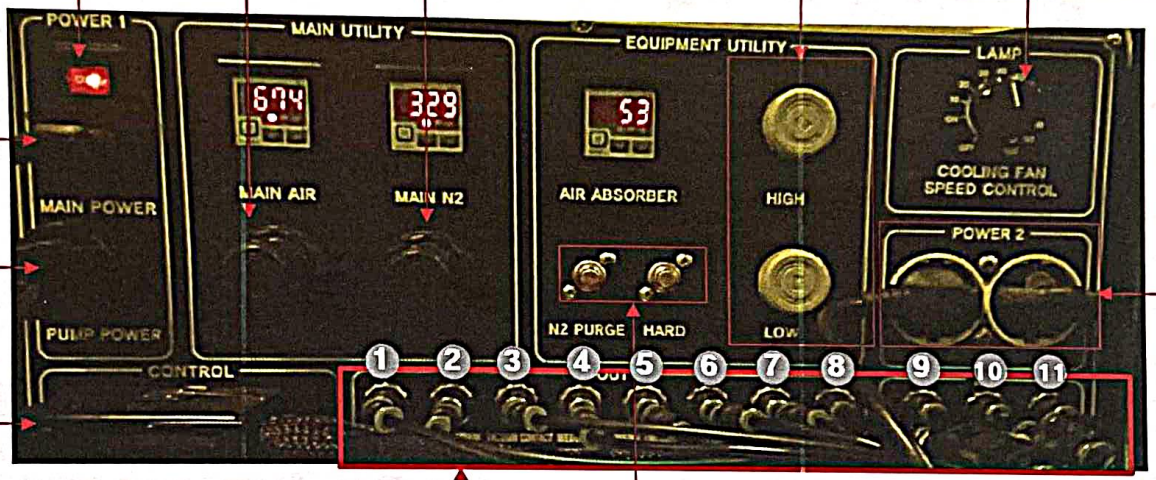
Sample Vacuum pressure (mmHg)/VOL

Usual : Wafer Vacuum Pressure (kpa)
Hard Contact ON : N_2 Pressure (kpa)/VOL

Usual : Purge N_2 Amount (kpa)
Vacuum Contact ON : Vacuum pressure (mmHg)/VOL

Chapter 3 Parts Naming

◀Rear



Main Power On/Off Switch

MAIN AIR Pressure (MPA)/ VOL.

MAIN N_2 Pressure (MPA)/VOL

AIR ABSORBER Pressure (kpa)/VOL

LAMP COOLING FAN SPEED Control VOL.

Main Power Connect Port

Vacuum Pump Power Connect Port

Main Control Connect Port

Outlet For Monitor and Multi Window Controller

Pressure Control VOL. for N_2 Purge and Hard Contact

◀OUT Line Port

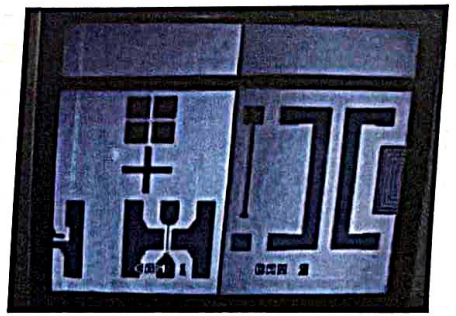
(1) Mask Vacuum
(2) Wafer Vacuum
(3) Vacuum Contact
(4) Wedge Lock
(5) Wedge Unlock
(6) Main Air
(7) Air Absorber
(8) Shutter Cooling

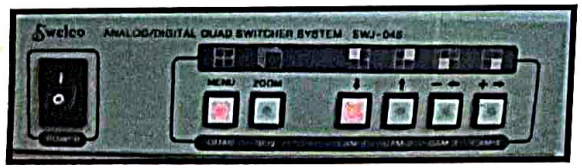
◀IN Line Port

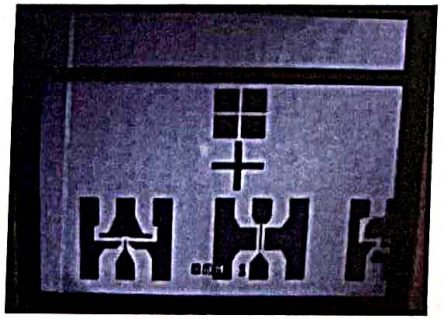
(9) Air
(10)N2
(11)Vacuum

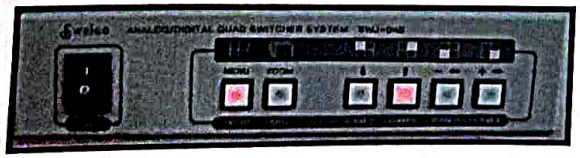
Chapter 3 Parts Naming

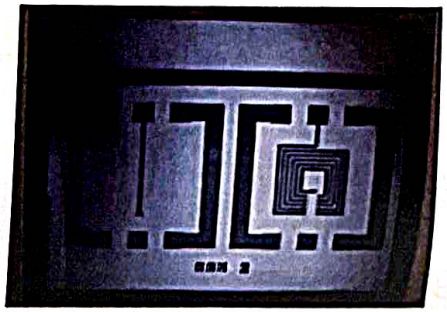
◀Multiwindow Controller





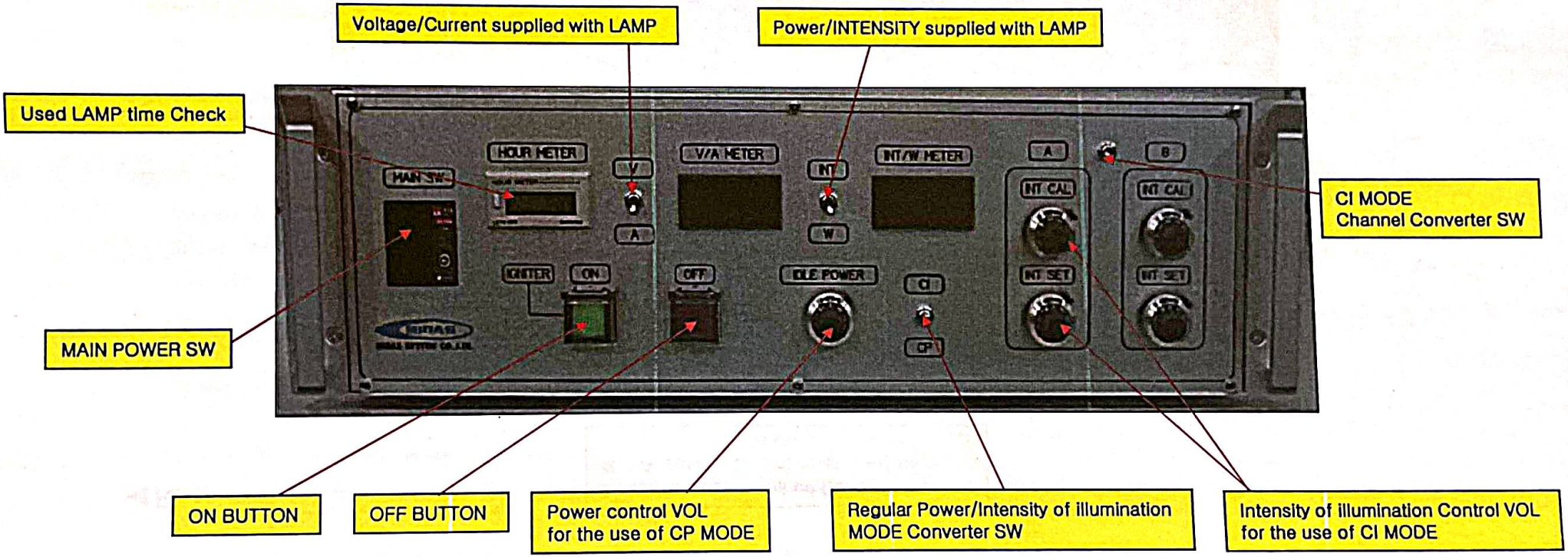




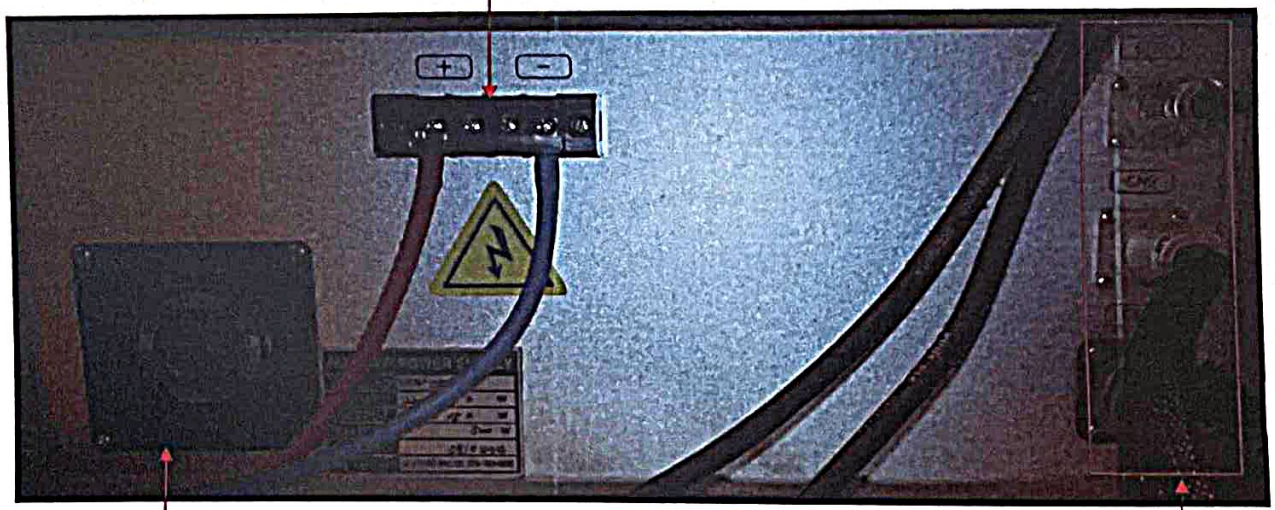


Chapter 3 Parts Naming

Power Supply



◀Rear



Chapter 4 POWER SUPPLY

1. Installation

(1) General remarks

The precision machine should be protected from the vibration, humidity and particles

(2) Installation of Power Supply

1) Ventilation Space

Cooling fan in the power supply device was installed for the cool down of the electronic parts
It needs space minimum 10cm from the wall

2) Connecting to Power Supply

Required electric power is AC 220V 1PH 60Hz with ground
Plug in to the power position

3) Connecting Power Cable to Lamp

Connecting electric cable to the "output" terminal, CN1 Connector

When moving, use Protection CAP to prevent the influx of a foreign substance

The machine can connect Uninterrupted Power Supply, Shutter, Interlock signal

and the cooling fan for the lamp to the Plug of the rear

2. Functions

(1) POWER SW : Electric power "on" and "off"

(2) LAMP ON/OFF SW : DC electric power will be delivered to the lamp through inverter when switched "on".
This will be operated after closed interlock sensor.

(3) HOUR METER : It will be display hours for the lamp consumption.
Switch should be push to the reset after exchange the lamp.

(4) VOLT/AMP METER DISPLAY: It will be display voltage and current.

(5) WATT/INT METER DISPLAY : It will be display current(wattage) for lamp or intensity for photo sensor.

(6) V/A METER SWITCH : It can be selected voltage/current or wattage/intensity.

(7) CI/CP SWITCH : It can be selectable between CP mode and CI mode in control mode.

(8) IDLE POWER KNOB : It can be set of current by knob in CP mode.

(9) CAL KNOB : It can be set between actual intensity and standard intensity by knob in CI mode.

(10) SET KNOB : It can be control of actual intensity by knob in CI mode.

(11) CONTROL CONNECTOR : Refer to the installation information.

(12) FALSE : It will be RED LED "on" when supplied current was limited.

3. OPERATION

(1) Confirmation before lamp "on"

1) Check the polarity (+, −) of lamp.

2) Check the connection of signal. The lamp is not turn on if interlock sensor was not connected.

WARNING

- You should certainly turn on the Lamp from CP MODE condition.
- In order to maintain the intensity of lamp at a point that the efficiency of lamp was reduced when using the CI mode, it is recommended to use the CP mode since this can cause explosion or injury by inducing the current excessively beyond the lamp specification.

Chapter 4 POWER SUPPLY

(2) Electric power "on" and lamp "on"

①switched on of 'MAIN SW'

※ After MAIN SW of POWER SUPPLY is turned on, it should appear like the picture.

WARNING

-Please do not touch the 'Igniter' box under the 'On' state of green ignition button. Or it may have a risk of electric shock.
-When the lamp is not turned-on within 5 seconds after turning on the green ignition button, please push the red 'Off' button immediately. Or it may shorten the life of lamp and/or the lamp will not operate normally. When trying to turn on the lamp again, please try to do so only after waiting for 20 or more minutes.
-When the green ignition button is kept on without having the lamp turned on, it may have a risk of equipment damage, electric shock or fire.

② convert CP MODE

③ push the 'IGNITER ON' Button lightly within one second.

Do not push Button over two seconds.

④ After electric current rises in 10A, operator checks the fact that it falls.

If it does not fall, turn off MAIN POWER and please call to tech support.

⑦Until The Electric current become stable, please wait within 20 minutes.

WARNING

- You should certainly turn on the Lamp from CP MODE condition.
- In order to maintain the intensity of lamp at a point that the efficiency of lamp was reduced when using the CI mode, it is recommended to use the CP mode since this can cause explosion or injury by inducing the current excessively beyond the lamp specification.

Chapter 4 POWER SUPPLY

(3) Turn "off" the lamp and turn "on" again
1) Switched "off" of lamp
2) Cooling down of lamp and switch "on"

WARNING

In order to maintain the intensity of lamp at a point that the efficiency of lamp was reduced when using the CI mode, it is recommended to use the CP mode since this can cause explosion or injury by inducing the current excessively beyond the lamp specification.

(4) CP/CI MODE
1) CP (CONSTANT POWER) MODE :
This is the mode that maintains the lamp power uniformly. While the power of lamp is kept at a fixed level, the illumination of lamp can be changed under the state that is not stabilized.
The power can be controlled with the volume of Idle Power Knob.
This is the mode that can manage the lamp most reliably and efficiently.
2) CI (CONSTANT POWER) MODE : Regularity intensity control
This is the mode that maintains a uniform level of illumination by receiving the illumination value from the photo sensor installed outside.
At this time, the photometer can be stable but the wattmeter can be variable. Since the difference in illumination from a reduction in the lamp life is compensated by using the electric power, the power value is changeable at all times.

※ It will be needed the calibration to use CI mode as following sequence
A. Turn on the lamp at CP mode.
B. Put the intensity meter on the exposure position after open the shutter. The position of channel selection switch is "A" and the W/INT meter is "INT"
C. The knob should be lock after calibration.
D. The SET KNOB of channel "A" control to 0.0. and the switch of CP/CI MODE select to CI position.
The intensity of lamp is met to SET KNOB value at this mount.
E. Get the required intensity after controlled by SET KNOB.
Check the intensity value between machine intensity and measured intensity.
Check the current and intensity after conversion of W/INT SEL switch.
The knob should be locked after setting of intensity.
F. Check the set value of current after closed shutter.
The value of current should meet to IDLE POWER.

NOTE If Energy is supplied with Mercury Lamp, Mercury is evaporated. At this time, If the high voltage is supplied with the evaporated Mercury The Insulation of Mercury is broken and then become electric discharge.
For these reason, It takes a long time to convert the Mercury of the liquid state into gas When the Mercury Lamp is turned on .
Not the more, It takes a long time to convert gas into liquid When the Mercury Lamp is turned off.

CAUTION

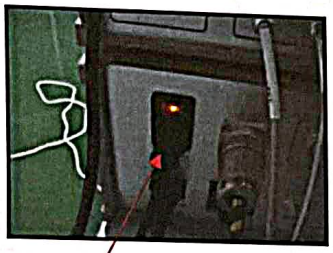
When Using CP or CI MODE, A Breakdown of UV Lamp can be caused if excessive Power is suddenly supplied with UV Lamp.

Chapter 5 OPERATION

1. Main Power On

① Check Supplied Nitrogen and Compressed Air.

② Power ON for Vacuum Pump, Monitor and Controller at rear panel.



Power SW of CONTROLER

Power SW of Multiwindow Controller

Power SW of VACUUM PUMP

Power SW of Monitor

③ Main ON for Controller at front panel.

Chapter 5 OPERATION

2. Power Supply On

① **Main ON for UV Lamp Power Supply <Check Cooling Fan of EXPOSURE MODULE certainly>**

WARNING

-Please do not touch the 'Igniter' box under the 'On' state of green ignition button. Or it may have a risk of electric shock.
-When the lamp is not turned-on within 5 seconds after turning on the green ignition button, please push the red 'Off' button immediately. Or it may shorten the life of lamp and/or the lamp will not operate normally. When trying to turn on the lamp again, please try to do so only after waiting for 20 or more minutes.
-When the green ignition button is kept on without having the lamp turned on, it may have a risk of equipment damage, electric shock or fire.

② **Push green IGNITER ON button of UV Lamp Power Supply.**

※**note.** After electric current rises in about 15A, operator checks the fact that it falls.
Until The Electric current become stable, please wait within 20 minutes.
If it does not fall, push RED 'OFF' button.
Turn off MAIN POWER switch. please call to tech. support Div. +82-1544-7618. or Send us e-mail, peter@aligner.co.kr.

③ **In order to set Power of Lamp and Intensity, control Idle power of Power supply.(CP MODE State)**

NOTE **If Energy is supplied with Mercury Lamp, Mercury is evaporated. At this time, If the high voltage is supplied with the evaporated Mercury The Insulation of Mercury is broken and then become electric discharge.**
For these reason, It takes a long time to convert the Mercury of the liquid state into gas When the Mercury Lamp is turned on .
Not the more, It takes a long time to convert gas into liquid When the Mercury Lamp is turned off.

CAUTION

- **When Using CP or CI MODE, A breakdown of UV Lamp can be caused if excessive Power is suddenly supplied with UV Lamp.**
- **Please do not touch the part with a 'High Voltage' sticker. Or it may have a risk of electric shock.**

- **When you turn on UV Lamp, Do not push the 'IGNITER' for a long time.**

① After Pushing 'IGNITER ON' button only within 1 second, you should identify that about 15A is supplied with UV Lamp.

② Check the surrounding temperature certainly if UV Lamp don't turn on. ※Room temperature 22°~23°

3. Mask Loading

① Open the Mask Holder after loosen the locking bolt and loading the mask to the Mask Holder.

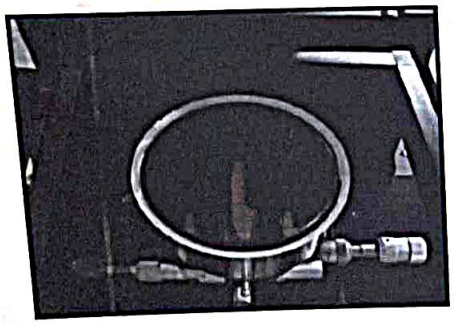
② Push Button for Mask Vacuum at Front CONTROLLER.

Chapter 5 OPERATION

4. Substrate Loading

① Load the Wafer to the Chuck and Click 

on Touch Panel



② Close the Mask Holder to the wafer chuck and Lock certainly

5. Exposure

This can be operated by classifying into two processes such as the exposure process of the 1st layer and the align process of the 2nd layer or above.

▶ In case of the 1st layer exposure process

① Turn the stage Up/Down control volume on the Z-axis manually so that the mask and substrate can be in contact with each other.
At this time, the contact must be checked visually.

② Push the WEDGE LOCK button. To execute the exposure process at this state, jump to the stage '④' .
※ Note: the current contact mode is the soft contact mode.

③ To execute in the vacuum or hard contact mode, either push VAC CON or HARD CON button.

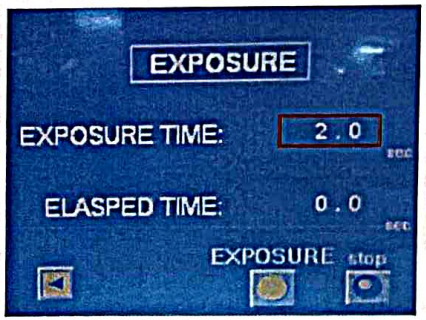
④ To switch to the exposure execution or exposure time setup mode, push the EXPOSURE button.

⑤ To set up the exposure time, press the number 1555.0 from the screen.
A touch keypad will appear.

⑥ To enter the exposure time, select a desired number by pressing the touch keypad.

※ Note: To move to a desired decimal position, either use ◀ or ▶ button.

⑦ To save the exposure time entered, press the 'ENT' button on the touch keypad.



※ Note: To move to the previous screen from the 'Exposure' screen, push the ◀ button.

⑧ To expose the substrate, push the button.

※ Note: After completing the exposure process, it will automatically initialize the exposure module.

Chapter 5 OPERATION

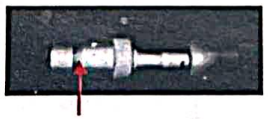
5. Exposure

This can be operated by classifying into two processes such as the exposure process of the 1st layer and the align process of the 2nd layer or above.

▶ **In case of the 2nd layer exposure process**

① Turn the stage Up/Down control volume on the Z-axis manually so that the mask and specimen can be in contact with each other.
At this time, the contact must be checked visually.

② For the leveling of mast and specimen, push the WEDGE LOCK button.



③ After pushing the N2 PURGE button, push the ALIGN button.

④ To get down the Z-axis to the 'Align' position, turn the volume control for moving 'Align' position.
One scale of turn is equivalent to 0.5um.

⑤ Align the mask and specimen by using the volume control for moving X, Y, or θ axis.

⑥ For the re-contact between mask and specimen, slowly turn the volume control for moving 'Align' position.
To execute the exposure process at this state, jump to the stage '⑧'.
※ **Note: the current contact mode is the soft contact mode.**

⑦ To execute in the vacuum or hard contact mode, either push VAC CON or HARD CON button.

⑧ To set the exposure time, perform the stages '⑤~⑧' on the page 29.
※**Note: To move to the previous screen from the 'Exposure' screen, push the** ◀ **button.**

⑨ To expose the specimen, push the ● button.

※ **Note: After completing the exposure process, it will automatically initialize the exposure module.**

6. Unloading

1) Mask Unloading

※ CAUTION Make sure that the mask is not damaged.

① Separate the 'Mask' and 'Wafer' by turning and descending the micrometer of moving the stage Z-axis.
② After releasing the lock by turning the volume control of mask holder lock, unload the mask holder.

③ Release the mask lock by pushing the  (Mask vac) button.
④ Unload the mask.
※ Note: Keep the mask in the mask case so that it is not damaged.

2) Substrate Unloading

① Release the specimen lock by pushing the 

button.
② Unload the substrate.

7. Power Off

① Turn off the lamp by pushing the (Off) button on the 'Igniter' of UV power supply.

※ CAUTION After turning off the lamp, please run a cooling-down process for 10 or more minutes before moving to the next stage.

② Turn off the 'Main SW' of UV power supply.

③ Switch off the main power.

④ Close the supply valves of compressed air and nitrogen.

Cautions upon Turning-off the UV Lamp

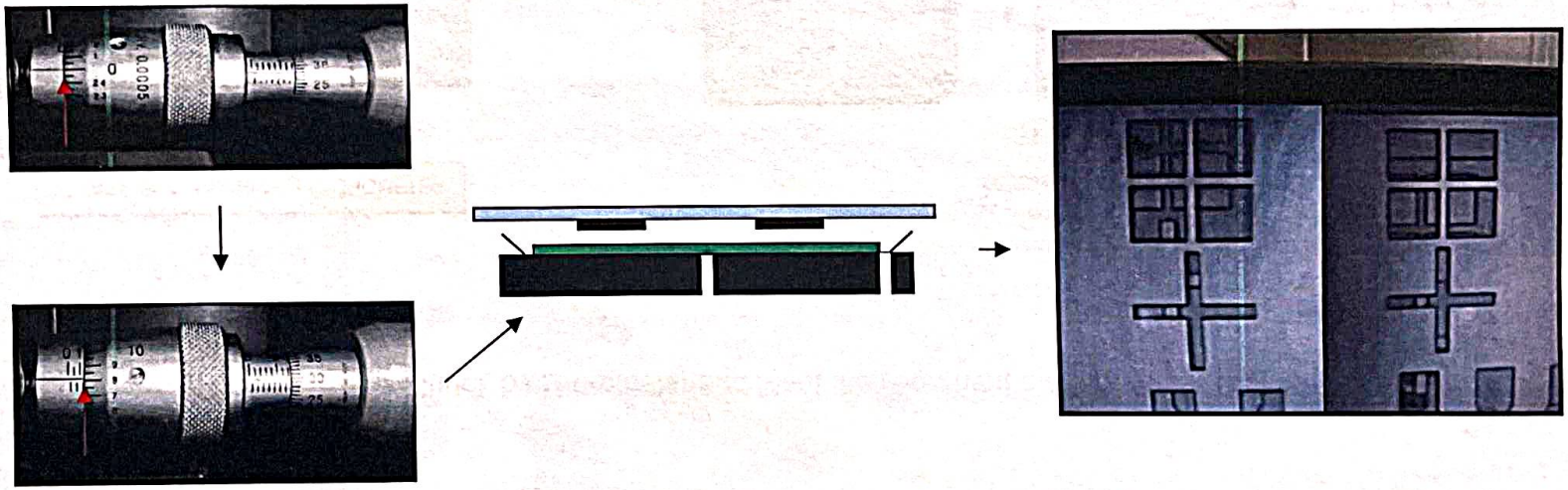
· After turning off the UV lamp, please cooling it for 10 or more minutes before switching off the main power of power supply unit.
At this time, please do not switch off the main power of the equipment.
When turning off the main power, the cooling fan will not work.

Note: When trying to use the mask aligner continuously, it is desirable not to shut off the power for the extension of lamp life and reliable radiation of UV.
However if the interval of equipment use is below 2 hours and the equipment is not used more than 5 times, it may be more economical to turn off the system power.

※ Alignment Procedure

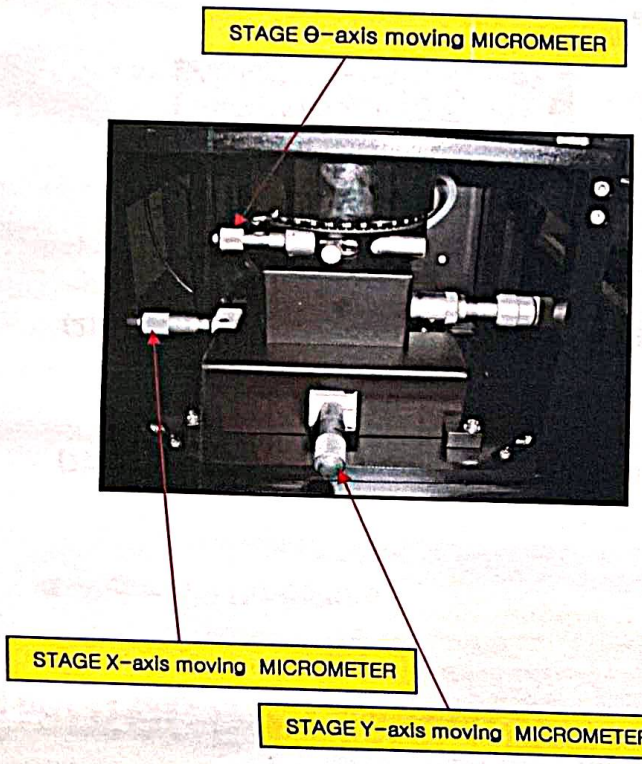
(1) After contacting the Mask and the Wafer, Push 'Wedge Error' Button.

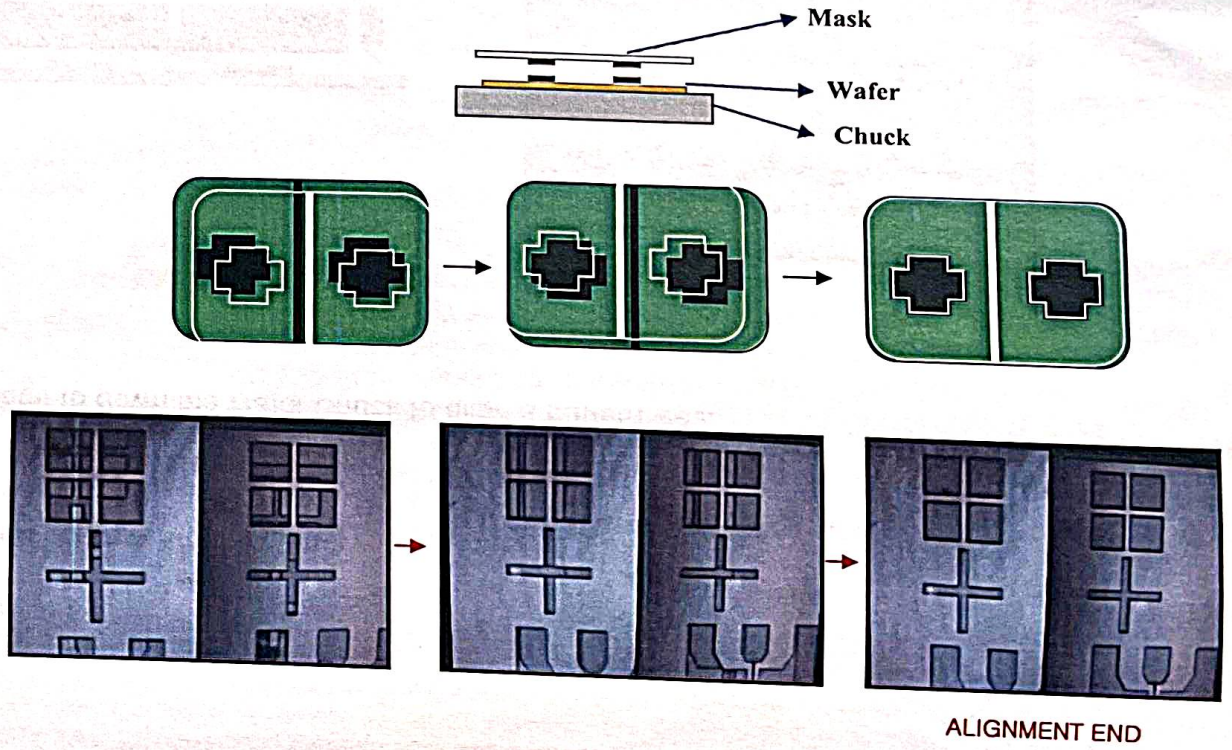
(2) Seeing the Monitor, Turn the Z-axis Micrometer to down the Wafer Chuck to align a pattern well.



※ Alignment Procedure

(3) Control the X, Y, Θ-axis of Wafer Chuck by Micrometer and Meet the alignment mark of wafer to the alignment mark of Mask.



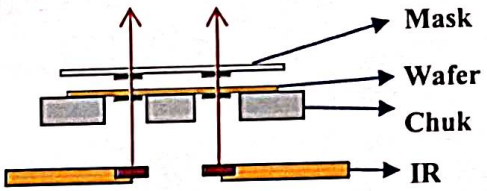


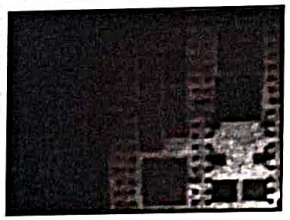
※ Alignment Procedure

(4) After finish the process for the top side, start the process for the back side using the pattern of deposited metal or etched PR. The process is as below.

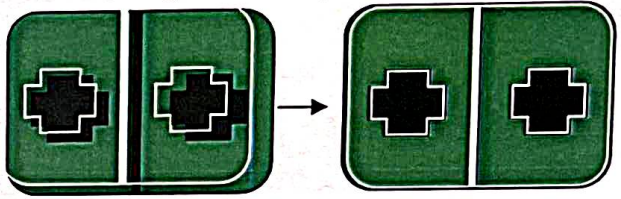
Caution! Don't touch when IR LAMP is on or just off, because surface is very hot. You can be caused skin burns.

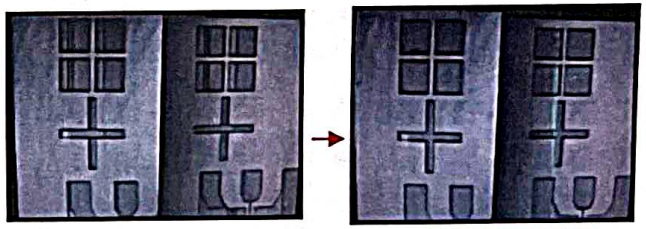
① Find Key of Mask Align after loading Mask on Mask holder
② Turn on IR ramp located below of Chuck. At time, turn down a light source to '0'
③ You can find Aligner key through Hole of Chuck by IR Light Source located below of Chuck.
④ Start loading the wafer after the pattern of deposited metal or etched PR place to face Chuck surface.
⑤ Control amount of IR Light Source after appoint location of IR Lamp, and you have to set to be recognize Mask or Align Key of wafer at that time.
⑥ When you use 2inch sample, x-axis can be moved 45~125mm, When you use 6inch sample, x-axis can be moved 55~129mm.
⑦ Should Align Align Key of Mask and Align Key of wafer using micrometer of x-axis, y-axis, θ-axis in stage while see monitor.

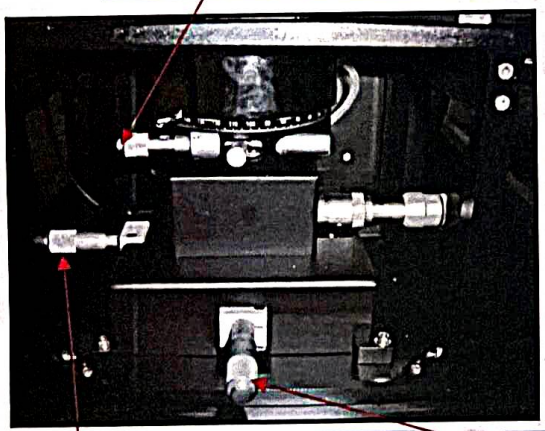


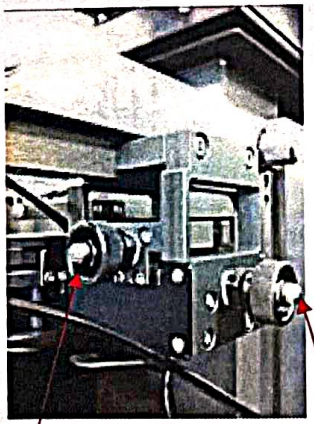


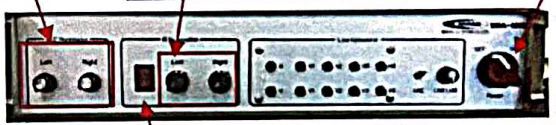
※ The back side of metal pattern through CCD using IR Light source.







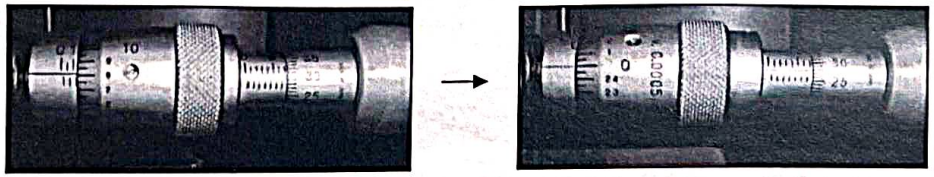


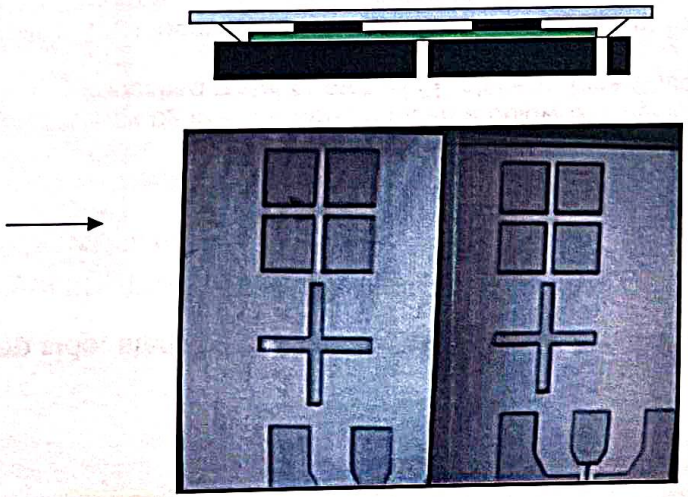


Chapter 5 OPERATION

※ Alignment Procedure

(5) Turn Latch stop of the Z-axis of wafer chuck in original condition until the wafer touches on the mask again after finishing the alignment .



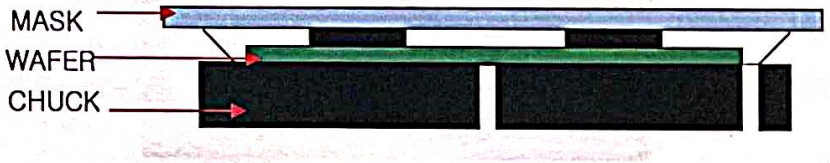


Contact completed

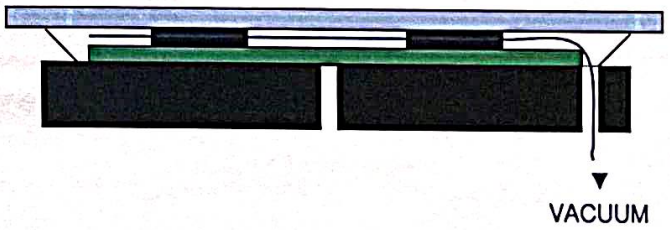
※ Process Mode

Explanation of Process Modes

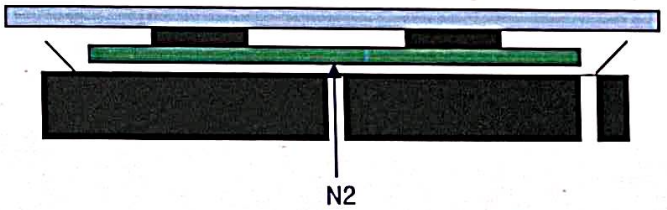
(1) The following Figure is Soft Contact



(2) The following Figure is Vacuum Contact and It is Vacuum Contact that makes vacuum between Wafer and Mask by Pump



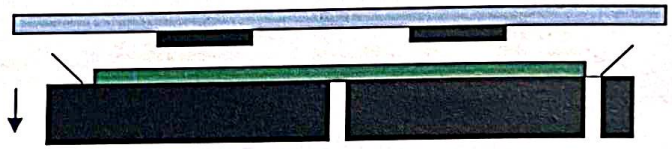
(3) It is Hard Contact that pushes the bottom of the Wafer by pressure of Nitrogen, After certainly confirming VACUUM CONTACT OFF

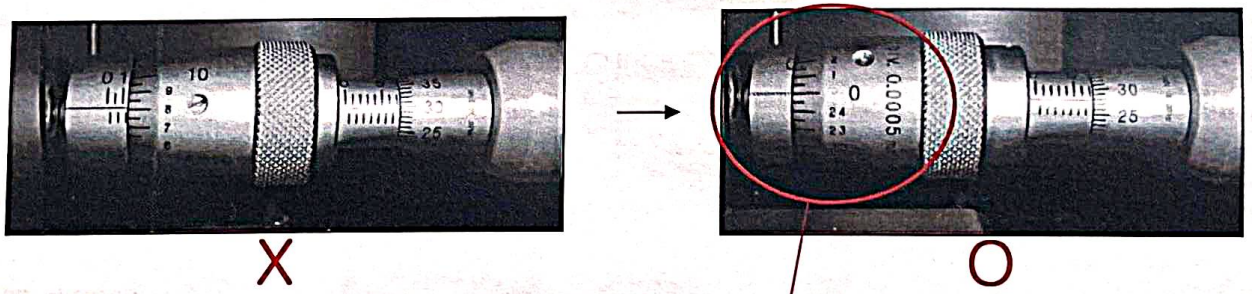


※ Process Mode

(4) The Proximity is the method which gets near the Mask and the Wafer with a regular gap in the objective special

※ Use Micrometer for the use of fine control to control the STAGE





Chapter 6 MAINTENANCE

1. Inspect Pointer

※NOTE : It will be better to contact MIDAS SYSTEM when necessary of service.
Maintenance of equipment should be performed by qualified engineer only.

Regulation check points are as followings

1. Pressure of compressed air and nitrogen gas.
2. Cooling fan for the lamp.
3. Hour meter on the UV power supply, Normal running time is less than 1,000 hours.
4. Calibration of UV intensity per weeks.
5. Cleaning the surface of mask holder and wafer chuck by IPA, Do not make a scratch on the surface.
6. It is the precision equipment, when handling, it does not inflict a strong force.
7. It should maintain the purity of equipment and circumference always.

WARNING

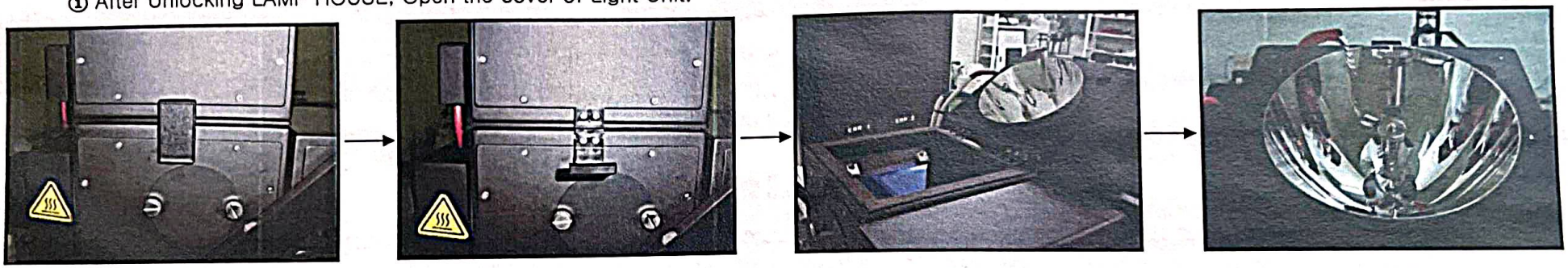
- After switching on of equipment, If it does not operate FAN and If it does not be stable of voltage or electric current of LAMP through several tens, it should switch off of the Power of LAMP. ※FAN operates over 3 minutes.
- Please do not plug in/out the power cable with a wet hand. Especially, please do not touch the igniter box with a wet hand. It may have a risk of electric shock if the inside or outside of the product gets wet.
- Please call to tech support as the following number +82-1544-7618 or send us e-mail, peter@aligner.co.kr

※NOTE : When using UV LAMP from general condition, Lifetime is 600 hours,
Once switching off the POWER of UV LAMP, it exhausts lifetime more than 10 hours.

Chapter 6 MAINTENANCE

2. Replacement of LAMP

① After Unlocking LAMP HOUSE, Open the cover of Light Unit.



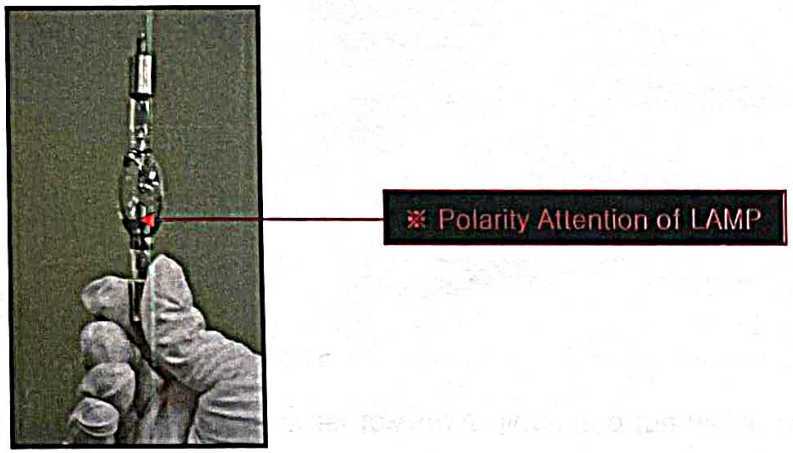
② After Unscrewing the bolt of LAMP Power Cable and separate LAMP Power Cable .

WARNING

1. When trying to open the lamp house, please switch off the main power of UV power supply.
   Or it may have a risk of electric shock due to a high voltage.
2. Please do not open the LAMP housing before completing cool down of Lamp.
   We recommend to make a cool down more than 1 hour.
3. Please take a pair of cleanness gloves during replacement of LAMP certainly and also Do not touch BULB absolutely .

③ Hold the Base of LAMP and turn the LAMP counterclockwise and then separate LAMP.
Please take a pair of cleanness gloves certainly.

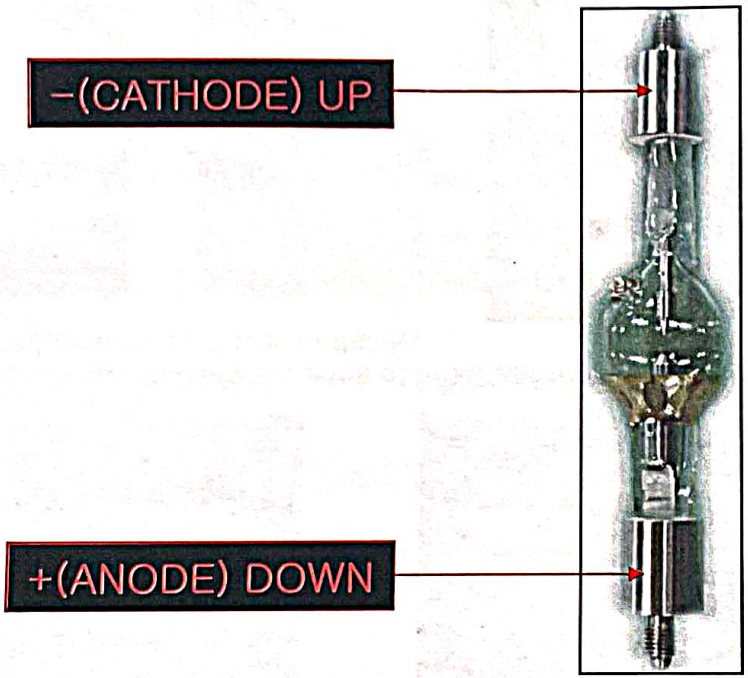
④ As the following figure After holding the edge of LAMP, assemble LAMP in the opposite sequence of the upper.
Please take a pair of cleanness gloves certainly.



CAUTION

Do not overpower LAMP during the replacement of LAMP and LAMP can be broken .

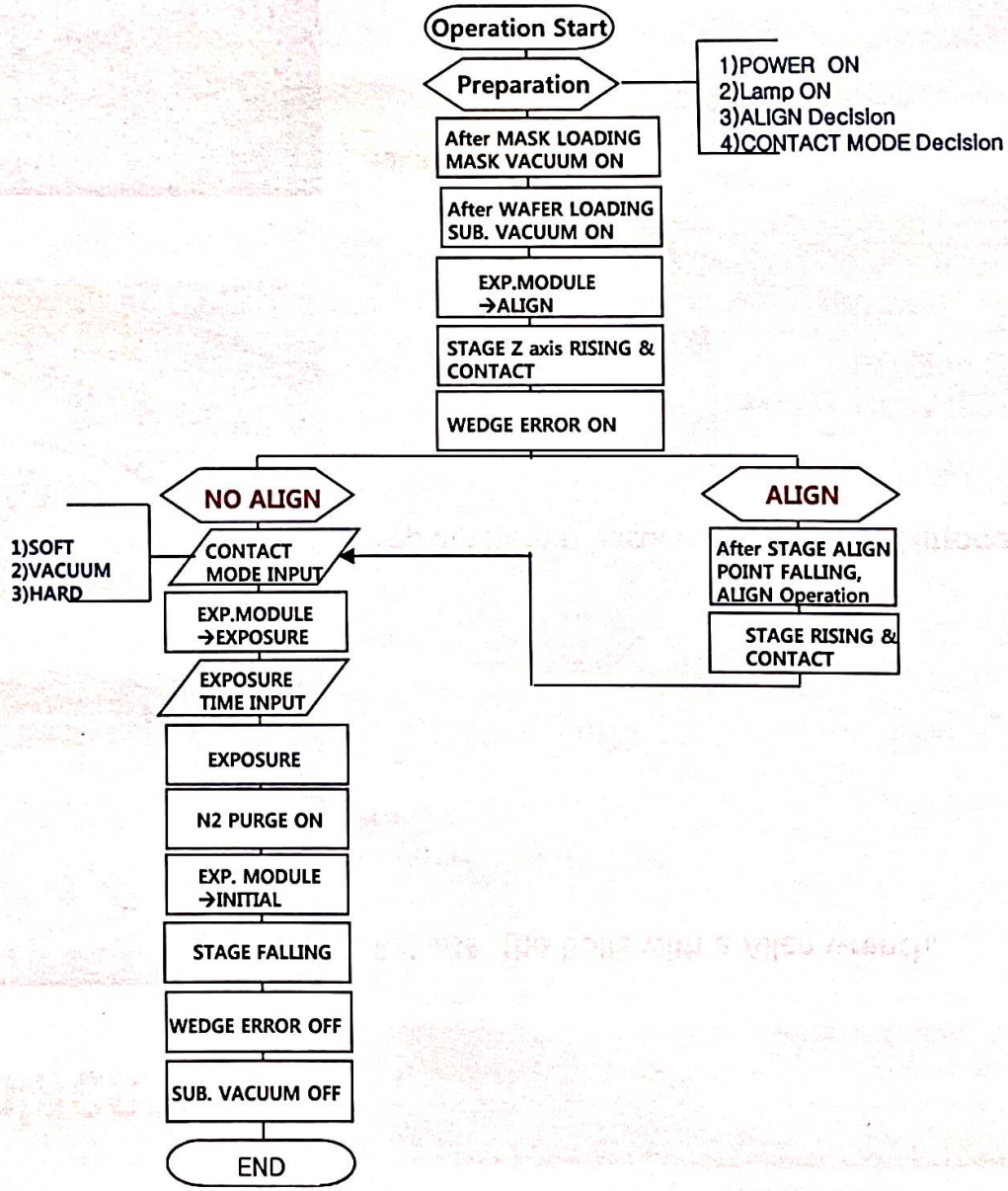
⑤ When assembling LAMP, should assemble the positive pole of LAMP in order toward a down and the negative pole of toward a upper .



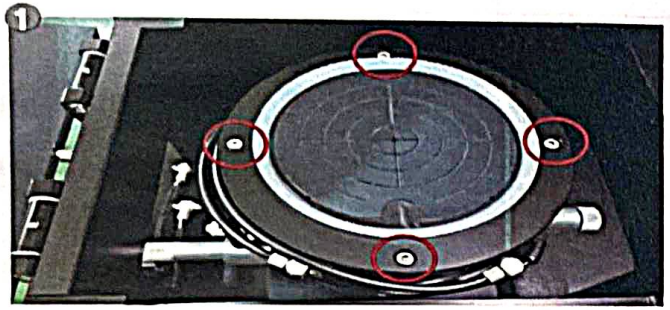
WARNING

If the Polarity be changed by mistake. LAMP can not be turned on or can be broken.
When LAMP assembled. Polarity should be attended.

※OPERATION FLOW CHRT

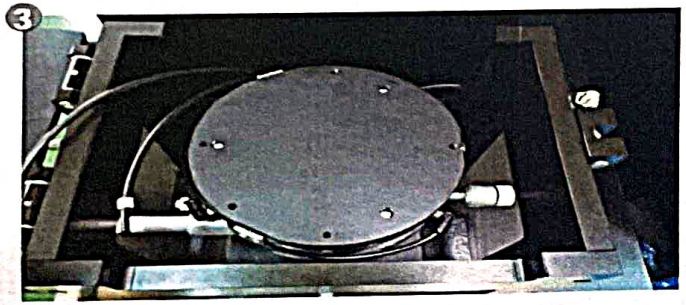


※ Chuck Replacement



Release the Bolts with a Allen wrench.

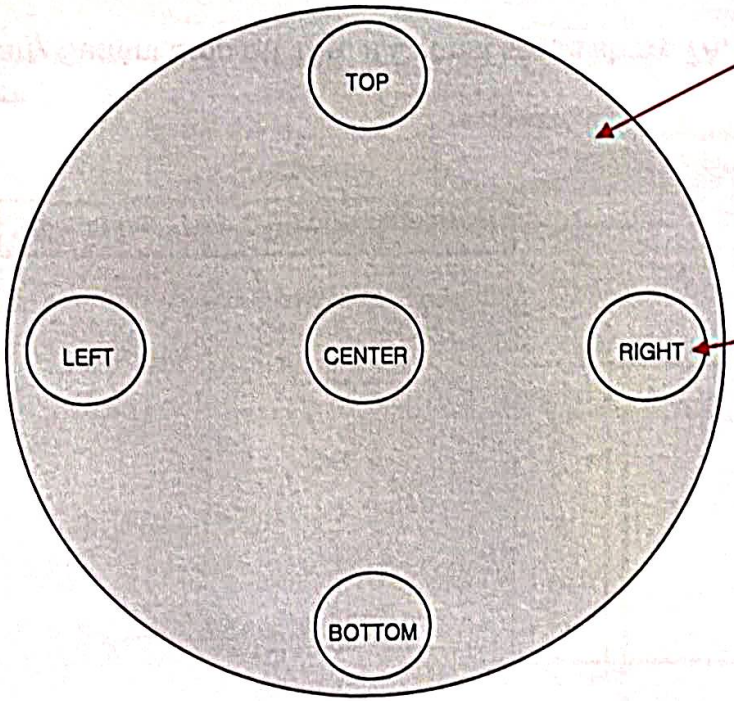
Separate 6mm Vacuum line and N2(Nitrogen) Line from Port.



Take a Chuck out.

※**Note.** If assembling other Chuck, Assemble a Chuck in the opposite sequence of the upper.

※ Mensuration of the Beam Uniformity



WAFER CHUCK

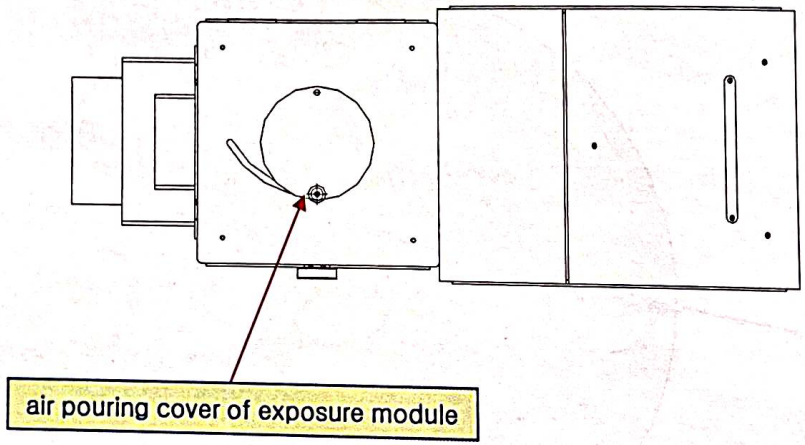
Position Of UV INTENSITY METERD PROBE
(※UV INTENSITY METER : The separate sales)

$$\text{※Uniformity: } \frac{\text{Max} - \text{Min}}{\text{Avg}} \times 50 \leq \pm 5\%$$

※NOTE
If Uniformity falls more than 8%, the correction of Uniformity is required
When correction is required, Please Call to tech support Div..

※ COOLING

After LAMP is turned on, When LAMP does not operate on regular Voltage and Current, When LAMP be unstable Control air pouring cover of exposure module.

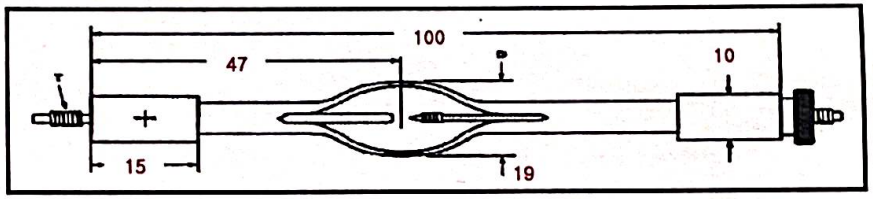


(TOP VIEW)

※NOTE
The early Current drop off 10A, If Current keeps above 7A, Air pouring cover is to open too much.

※LAMP SPECIFICATION

OSRAM HBO 350W/S



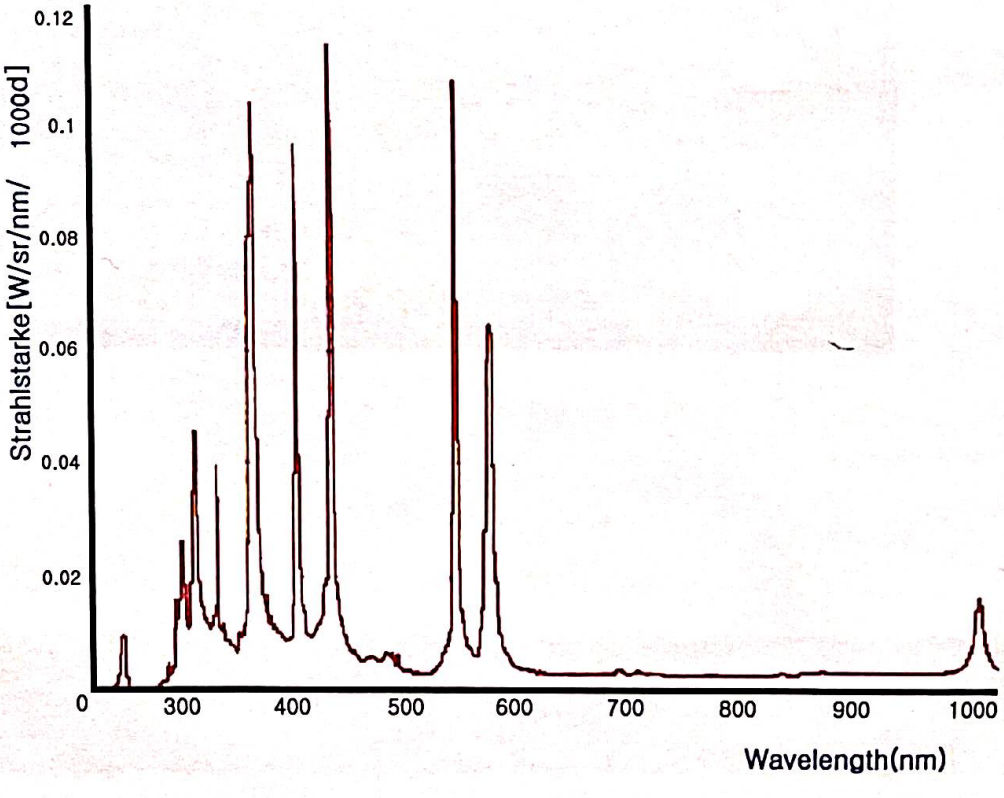
■ Technical data

Order reference :	HBO 350 W/S
Rated lamp wattage :	350W
Rated lamp voltage :	68V
Rated lamp current :	5.15A
Ignition voltage :	max 15kVs
Radiant power :	50W
(Wave length:350~450nm)	
Radiant intensity :	4,700mW/sr
(Wave length:350~450nm)	
Average luminance :	53,000 cd/㎠
Guaranteed life :	600h

■ lamp operation

Maximum permissible	
Base temperature :	230℃
Cooling :	Convection and cooling fins
Burning position	vertical,Anode(+) underneath

WAVE LENGTH SPECTRUM



Thank you for using Equipment of our company

If having any question Please call to tech support

☎ 82-42-936-7620~1
FAX : 82-42-936-7623
589, Yongsan-dong, Yoosung-gu, Daejeon, 305-500, South Korea

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