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SHUR/MountTM Robotic Glass Coverslipper

Catalog # SMRGC-2
Operations Manual

Aug 2006

www.trianglebiomedical.com
INNOVATIONS FOR SCIENCETM

Designation for safety

For safety operation.

Safety mark.

We are describing items & marks which users must keep so that users can operate this machine safe and properly, and which prevent personal injury and infringement to property. Please read and realize the followings, and read instructions for operation of the machine before operation.



HAZARDOUS: denotes a serious, imminent hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal die and personal injury. Do not proceed beyond a DANGER sign until the indicated condition are fully understood and met.



WARNING denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal die and personal injury. Do not proceed beyond a WARNING sign until the indicated condition are fully understood and met.



CAUTION is denoting a hazard. It calls attention to an operating procedure, practice, to the like, which, if not correctly performed or adhered to, could result in personal injury and damages to or destruction of part or all products. Do not proceed beyond a CAUTION sign until the indicated condition are fully understood and met.

Example of mark



denoting caution (including Danger & Warning).

In the mark, instruction of caution is described.

The example is meaning Electric shock.



denoting hold the action. In the mark, instruction of action which must be held is described. The example is meaning “Hold disassembly.”



denoting the action should be done. In the mark, instruction is described. Left side example is meaning “Hold disassembly.”

For safety operation.

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HAZARDOUS

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A xylene, which is used for coverslipping machine is hazardous and harmful as follows: -

1. Flammable liquid and vapor. Vapor may form an explosive mixture with air.
2. It may be harmful when if absorbed through skin or if inhaled.

To reduce the risk of fire and explosion, and absorb of vapor, please keep the following instruction.

1. Be sure to connect machine to a user's compulsive exhausting system or to use fan duct hose for exhaust in order to prevent vapor from confine in machine and/or around machine.
2. Only fill slide basket and bottle and bottles outside the unit. Insert the slide basket carefully to avoid spillage. If spillage should occur, immediately unplug unit from the mains outlet and contact authorized service person.
3. **Do read safety instruction MSDS for xylene, which is used.**

(1) First aid measure in case of inhalation and contact to skin.

In case of absorb and contact to skin, eye, take the following first aid measure and keep body temperature by blanket. Get medical aid by physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration.

If breathing is difficult give oxygen. (Open the respiratory tract)

In case of skin-contact, flush skin with plenty of water. Remove contaminated clothing and shoes.

In case of eyes-contact, immediately flush eyes with plenty of water for at least 15 minutes. Flush eyeball and eyelid carefully. Flush eye-contact-lens if it is not stuck to eyeball.

Ingestion: Do not induce vomiting unless directed to do so buy medical personnel. Never give anything by mouth to an unconscious person.

(2) Fire fighting measures.

In case of fire, please take the following measures.

Extinguishing media: Dry chemical, Carbon dioxide, appropriate form. Dry sand

In case of fire, a dense cloud of black smoke generates. Flammable gas contains carbon monoxide

Extinguish a fire.

Cut off the flammables to source of ignition.

First extinguish: Use Dry chemical, Carbon dioxide, Dry sand

Large scale fire: Use appropriate form to shut air supply.

Use water splay. The fire could easily be spread by the use of water.

Fire area measures.

Keep out fire area without the personnel

- to be continued-



Spray water to cool fire exposed inflammable facility

Move safe area inflammable container, which is movable.

Protection for person who extinguish fire.

Wear a self-contained breathing apparatus in pressure-demand and full protective gear.

(3) Accidental release measures.

Warning to person.

Seek refuge persons from downwind and keep away from source of release.

Rope off and keep out person.

Use proper personal protective equipment.

Warning to environment.

Remove all sources of ignition.

Be sure not to spill to sewers, rivers

Removal.

In case of small volume of release: Absorb spill with inert material (vermiculite, sand or earth) then place in suitable container.

Use equipment not to heat, spark, and ignite for absorbing.

In case of large volume of release Stop release by sandbag (cover the surface by suppressing form.) and place it in airtight container. Then follows in case of small re

In case of release on the water, contain floating material by skimming, adsorption, gel etc.

(4) Handling and storage.

Handling

Use proper personal protective equipment to avoid contacting eye, skin and clothing..

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse.

Avoid spreading of vapor and mist. Keep the density lower the permissible range.

In case of handling in outdoor, work at upwind side and prevent the exposure.

It is highly inflammable, do not use open flames, arc, and high heated items, etc. Keep away from heat, sparks and flame.

Ground and bond container when transferring material. And prevent the exposure with static electricity.

Use conductive clothing and shoes.

Keep used empty container at designated place.

Storage

Store in a cool, dry well ventilated area away from incompatible substances.

Keep away from sources of ignition.

Keep container closed when not in use.

Keep away from strong acids, an oxide.



WARNING denotes a hazard.

It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal die and personal injury. Do not proceed beyond a WARNING sign until the indicated condition are fully understood and met.

1. When smoking from machine, smelling strange, Please turn power switch OFF and plug OFF . (remove power cord from inlet on back panel.)If operation continued in such condition, it may result in fire or electrical shock. Please confirm no smoking, call to local service for repair. Never repair by user since it is very dangerous.
2. If Machine lay down, broken and damaged, turn power switch OFF. And call to service for repair. If this machine is used without repair, it may result in fire or electrical shock.
3. Do not touch machine by wet hand. And do not wet it. It may result in electrical shock
4. If wetted, Plug OFF immediately, call to service. If the machine is operated with wet, it may result in fire or electrical shock. Please pay attention electrical shock when plug OFF.
5. Never use any items without supplying as standard items in standard accessory box. It may result in fire
6. Never put metals, flammable objects into inside machine from open space like air intake exhaust portion. It may result in fire or electrical shock or trouble.
7. Never disassemble and modify. It may result in fire or electrical shock. We do not always accept the repair for disassemble or modified machine.
8. Do not use machine at place with high humidity. It may result in fire or electrical shock.
9. Never user machine other than voltage prescribed. It may result in fire or trouble.
10. Do not place flower cup, Flowerpot, cup, cosmetics, container including liquid like chemicals on machine or beside machine. When it falls into machine, It may result in fire or electrical shock or trouble.
11. Never injure, break, modify, bend strongly, pull, twist power cable. Never place heavy items on power cable or also heat power cable. When power cable is damaged, It may result in fire or electrical shock
12. High power voltage is used for this machine. And Cam and gear is used inside machine. Do not open side cover since it is very dangerous.



CAUTION is denoting a hazard.

It calls attention to an operating procedure, practice, to the like, which, if not correctly performed or adhered to, could result in personal injury and damages to or destruction of part or all products. Do not proceed beyond a CAUTION sign until the indicated condition are fully understood and met.

1. Do not install machine to the place, which is extremely hot by sunlight and heater. Temperature inside machine might increase and it may result in fire.
2. When plug OFF from power source, do hold plug to pull. When pull power cable, it may be damaged and it may result in fire or electrical shock.
3. Do not install machine to the place, which is high humid and dusty. It may result in fire or electrical shock, or malfunction.
4. Machine must be grounded.
5. Do not install machine to the unstable place. Do not place heavy items on machine. If heavy items are placed on machine, machine goes to unstable. Heavy items may fall and it may result in injury.
6. Install machine on flat and level table. It is possible to adjust level of machine by adjustable foot. But adjusting foot height, do not turn over 5mm. Tighten lock for the foot.
7. Do not cover air intake. If covering it, temperature inside machine is goes high and it may result in fire or trouble.
8. Do not touch connector terminal, connector(Metal part) by wet hand. And do not wet it. It may result in malfunction, electrical shock
9. When lighting around there, Plug OFF from power source. Please hold operation. If machine is used under lighting, it may result in fire, electrical shock, & malfunction of machine.



Please do read and realize the followings, and read instructions for operation of the machine before operation.

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Meisei has no responsibility for influences by result of operation

Meisei has not responsibility for DATA. And Meisei also has no responsibility for loss of opportunity by Software & hardware trouble.

Please contact dealer and our distributors for question for this manual.

RECOMMENDATION

We recommend regular maintenance to use machine with proper quality.

Precaution for proper coverslipping

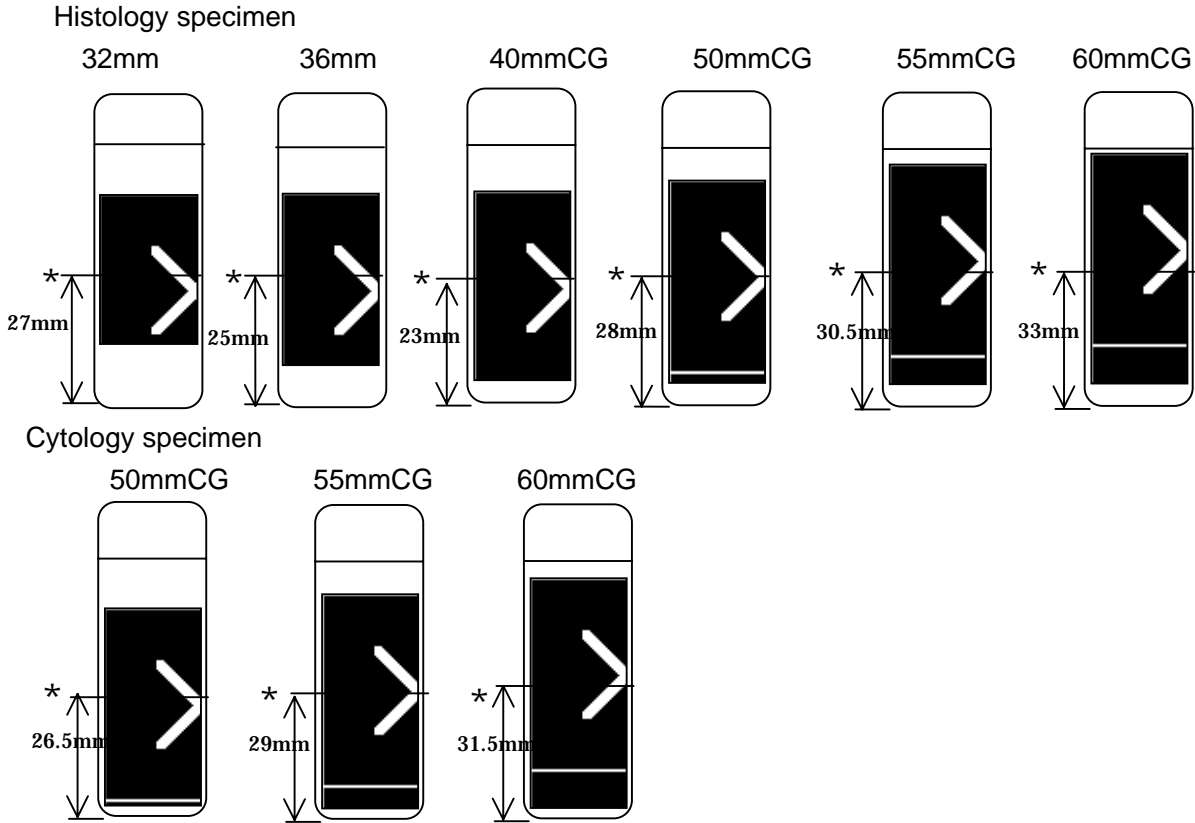


A test coverslipping must be required to determine operation parameters.
Operation parameter is depending on specimen on a coverglass. Execute coverslipping check and set each condition of machine.



Position the specimen at the center of a slideglass.
Operation parameter is depending on specimen on a coverglass.
Execute coverslipping check and set each condition of machine.

Remark; RCM7000 does not have capability to detect the position of a specimen on a slideglass.
Please refer the following drawings for position of specimen on slideglass.



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Chapter 1 About RCM-7000

1. General description

Meisei coverslipping machine PROMOUNTER RCM7000 automatically coverslips coverglass on pathology specimen

2. Features

(1) High speed

Max. 8.5 sec. per Slide, 420 Slides approximately per Hour, Changeable 7-Shift Speed

(2) Slide by Slide process.

Machine coverslips slide by slide.

The next slide is processed after completing the current one. This enables to minimize the damage to specimen at the failure of the machine.

(3) New pump

New pump provides steady dispensing of mountant media.

And also improve initial installation and maintenance.

(4) Easy operation

High Visibility LCD allows setting of operation easily.

Dispenser tip dips in xylene reservoir automatically after operation to prevent from the tip drying up. Commercial available mountant media bottle is used.

*Depending on size of bottle, it can not be set to machine.

Please consult size of bottle to dealer.

(5) Versatility:

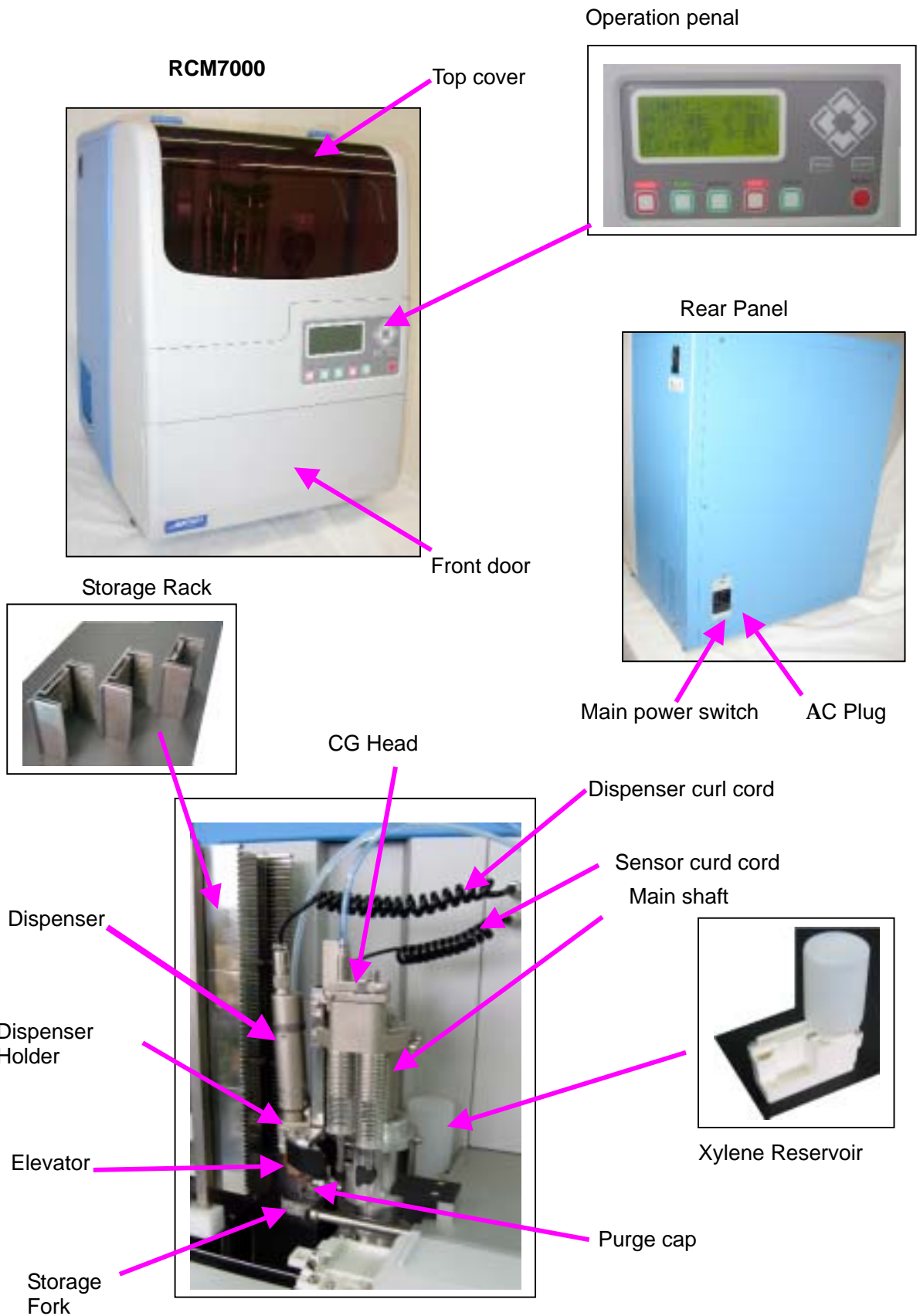
Working on both Histology and cytology due to fine volume adjustment of mountant media and coverslipping speed control.

(6) Programmable coverslipping Pattern

It is possible to program speed, pressure, dispensing volume, size of Coverglass. There are four memory locations for this purpose. The date can be changed at any time.

3 . DESIGNATION OF COMPONENTS

3.1 Main equipment.



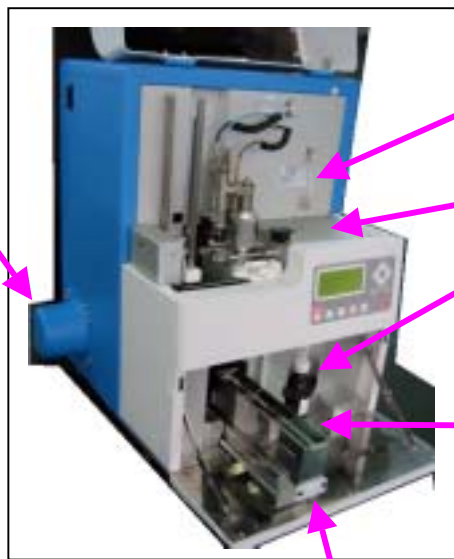


Top cover open

Work bench sheet

Mountant Media bottle

Front door



Exhaust Fan

Sub panel

Xylene level Indicator container

Level indicator label

Work Bench

Mountant media

Basket Container

Conveyor Rail



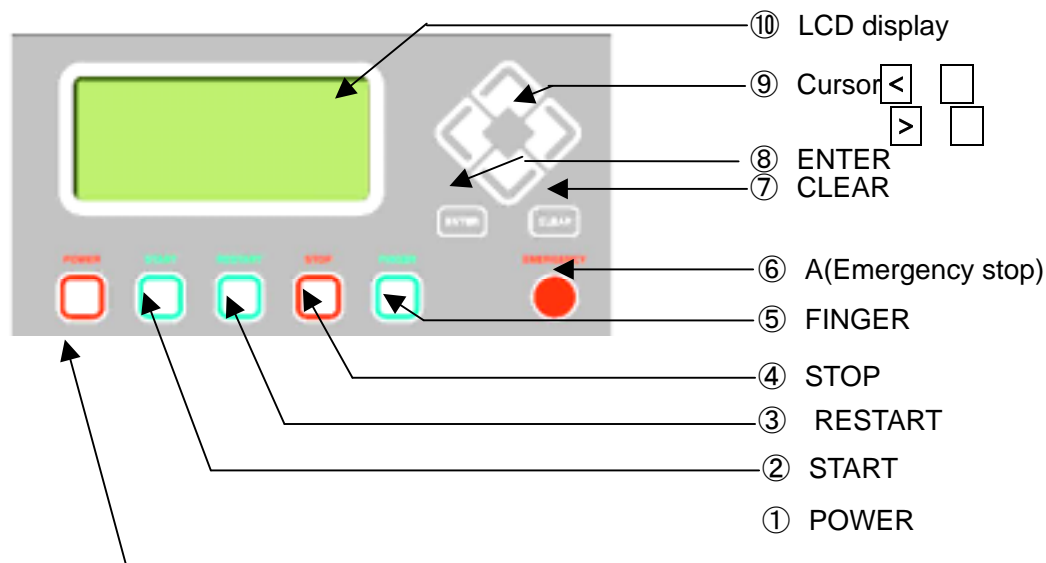
Push Rod

R-Guide

CG Hopper

CG Stand

3.2 Operation Panel



3.3 Designation of operation Panel

① POWER

When pressing MAIN POWER SW on back panel and then pressing **POWER SW** on operation panel, Machine goes to initial set up screen. LCD display shows “READY” on initial setup screen.

CAUTION 1: When pressing **POWER SW**, Finger, storage fork & CG head moves. Please execute the followings before turning POWER SW ON

1. Locate basket container in front of Finger position.
2. Confirm no slide glass in storage rack.

② START

The switch to start coverslipping. Operate it in accordance with instruction displayed in LCD.

Lamp Status:

- a. The lamp is blinking at coverslipping stand-by.
- b. The lamp turns on during coverslipping.

③ RESTART

The switch to re-start machine again after pressing **STOP** during coverslipping. When pressing **RESTART**, Machine starts to continue subsequent operation after machine stops. The switch is also used to re-start machine again after machine automatically stops due to error which can be recovered by **RESTART**. Depending on condition of (open & close) cover/door, Machine works differently after pressing **RESTART**.

- a . The switch lamp is blinking when machine is stopping and when it can start again by

RESTART. Then LCD is in green. When machine cannot start again by **RESTART**, LCD is in red.

b . The switch lamp turns on during auto coverslipping after re-start.

3)-1 Machine re-starting method

3)-1-1 In case of machine stops by **STOP SW** and starts by **RESTART SW**;

3)-1-1-1 When Machine stops by **STOP** and top-cover opens and then **RESTART** is pressed, finger arms back to HP (home position) and basket container is pulled to backward a little(2pcs of Slide glass). And then machine starts operation.

3)-1-1-2 When Machine stops by **STOP** and front-door opens and then **RESTART** is pressed, finger arms back to HP(home position) and basket container is pulled to backend. And then machine starts operation.

3)-1-1-3 When Machine stops by **STOP** and both top-cover & front-door open and then **RESTART** is pressed, finger arms back to HP (home position) and basket container is pulled to backend. And then machine starts operation

3)-1-1-4 When Machine stops by **STOP** and both top-cover & front-door do not open and then **RESTART** is pressed, basket container is pulled to backward a little (2pcs of Slide glass). And then machine starts operation.

3)-1-2. In case of machine automatically stops due to error that can be recovered by **RESTART**. (Shortage of CG, CG vacuum error, CG broken, SG Pick up error, SG Storage error, SG on fork), and start machine by **RESTART**.

3)-1-2-1 When Machine stops by ERROR and top-cover opens and then **RESTART** is pressed, machine back to HP(home position) without rack and container. Basket container is pulled to backward a little (2pcs of Slide glass). And then machine starts operation.

3)-1-2-2 When Machine stops by ERROR and front-door opens and then **RESTART** is pressed, machine back to HP(home position) without rack. Basket container is pulled to backend. And then machine starts operation.

3)-1-2-3 When Machine stops by ERROR and both top-cover & front-door opens and then **RESTART** is pressed, machine back to HP(home position) without rack. Basket container is pulled to backend. And then machine starts operation.

Advice

Press CLEAR to stop alarm. When machine stops by ERROR, it is necessary to open top-cover and/or front door in order to restart.

Caution

When error happens, error message is shown on screen and alarm sounds. Please refer to Chapter 5trouble shooting..

④ STOP

- a . The switch to stop machine during operation. Machine stops after a sequence of operation. And then needle of dispenser is set to xylene reservoir. Please wait for machine stop completely. (Until STOP /RESTART lamp blinks)
- b . In order to re-start machine, Press **RESTART**.
- c . After completing 60 slide glass (or rack reaches to upper end), or basket container reaches front end in case of slide glass less than 60pcs in basket container, Machine automatically stops at home position
- d . When pressing **STOP** again during temporary stop, machine discontinues operation and container is unloaded. When machine automatically stops due to error which can be recovered by **RESTART**, and then press **STOP**, machine also discontinues operation and container is unloaded. Please treat error as chapter 5 trouble shooting before pressing **STOP** .
- e . Lamp Status:
 1. Lamp turns on during stop or completing stop.
 2. Lamp blinks during auto coverslipping and in status of auto coverslipping can stop.

Caution: When the errors, which can be recovered by **RESTART** happens, remove error slideglass from machine, remove broken CG in case and re-start machine.

⑤ FINGER

- a. The Switch to open & close finger arm while machine stops
- b. When it becomes necessary to remove a slide glass from the fingers, the finger can be opened whenever pressing this button.
- c. After finger arms open for 20 seconds, they close automatically.
- d. Lamp turns on during pressing this switch.

⑥A Switch(Emergency Stop)

- a . For stopping coverslipping during any stage of the operation immediately. This button should not be used for any other purpose.
- b . **RESTART** is not available to start machine when machine stops by emergency stop. **Press CLEAR to back machine to home position and start operation again by START. When cover/door opens before pressing STOP, Machine stops in an emergency, execute operation to HP and start machine by START. In machine type IIIA, IIIB When cover/door opens before pressing STOP, machine stop for emergency, and RESTART is available. Before re-start machine, check Slideglass and coverglass, Do remove Slideglass from finger, Storage fork and remove coverglass from vacuum pad. **Please consult machine type to dealer.**

⑦ **CLEAR**

CLEAR is used for returning machine to home position after EMERGENCY stop, and stop alarm etc. Please follow instruction shown on LCD.

⑧ **ENTER**

Please follow instruction shown on LCD.(To set desired machine condition)

⑨ **< > ^ V button**

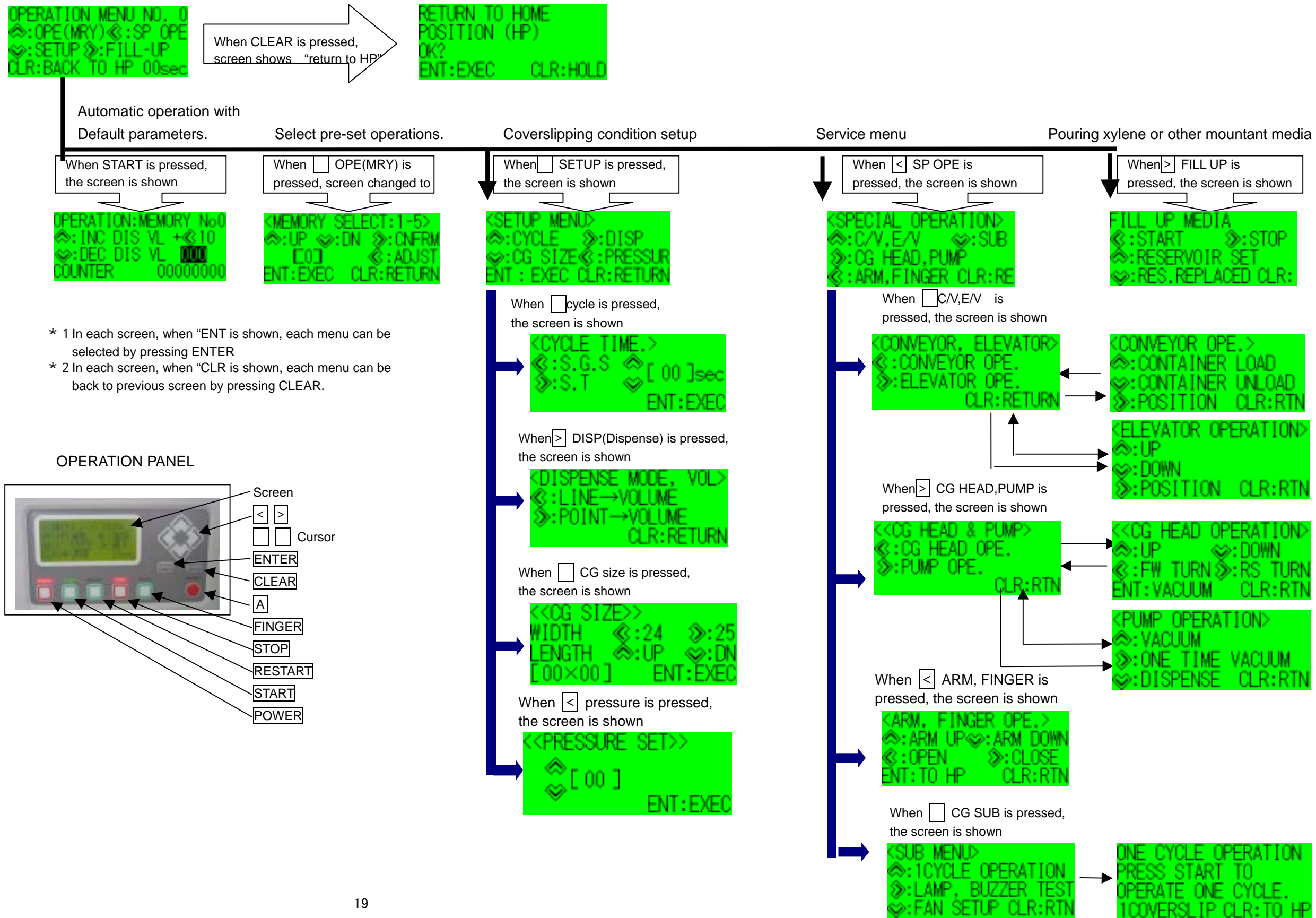
Please follow instruction shown on LCD.(For Fill up media, change screen, changing setting value)

⑩ **LCD**

LCD is showing operation, instruction, setting mode and value.

3.4 Operation panel and its flow chart

Operation menu appears after power-on



4 . Standard accessory

The following accessory is equipped with machine. Please check items and quantity.

1. Basket container 1pc
2. Basket container rid 1pc
3. Basket holder for 20slides 1pc
4. Standard basket for 20slides 3pcs
5. Storage rack 3pcs
6. CG Hopper 24 x 40mm 1pc
CG hopper 24 x 50mm 1pc
7. CG adjustment jig 1pc
Dispenser Equipment to sub panel 1pc
8. Needle 1,5mm 1pc
9. Mountant container cap 1pc
10. Xylene Reservoir 1pc
11. Syringe 1pc
12. Purge cap (20pcs)
13. Exhaust Fan (DC) 1pc
14. Duct hose 1.5m 1pc
15. Hose Clasp 1pc
16. Bracket for duct 1pc
17. Power cable 1pc
18. AC adapter 2pole to 3pole 1 pc
19. Fuse 3.15A 4pcs
20. Hexagon wrench 1pc
21. Operation Manual 1p
22. Work bench sheet 1pc

- Accessory differs among countries.
- Accessory is subject to change without notice.

5 . Specification.

No.	Description.		Specification.
1	Coverslipping speed		8.5 -14 seconds per slides. Changeable 7-Shift Speed
2	Dispensing Method		Feeding by Pump
3	Dispensing mode		Line drop and point drop
4	Dispensing volume		0.04 - 0.2cc adjustable per dispensing.
5	Viscosity of mountant media		80 – 800 CP
6	Mountant container		Commercial available container or our standard container.
7	Display		LCD
8	Slide glass	Dimension	26 x 76 mm
		Thickness	0.9 – 1.2mm
		Capacity to Load	60pcs
9	Coverglass	Dimension-Standard	24 x 40, 50, 55, 60mm
		Dimension-Option	24 x 32, 36mm 25 x 40, 50, 55, 60mm
		Thickness	0.12 – 0.17mm
		Capacity to Load	200pcs
10.	Alarm interface(Future available)		Contact closure to outside device.
11.	Size		500(W) x 540(D) x 640(H)mm
12.	Weight		65Kgs
13.	AC power		Universal 100-240ACV 50/60Hz Consumption Power: 200VA
14.	Temperature	Operating	10°C to 40°C
		Stored	-10°C to 60°C
15.	Humidity	Operating	30% to 90%RH
		Stored	30% to 95% RH
16	Altitude		Under 1500m
17	Over voltage		Category I
18	Over pollution		Category II

This machine has contact closure to outside alarm device and has terminal for outside UPS. This terminal is subject to indoor cables.

Nominal output of terminal :DC24V 1.0A

Nominal Input:DC24V +10%

Input impedance: 5.6ohms

ON Voltage/ON current: over 19V / over 3mA

Specifications subject to change without notice.

Chapter 2 Installation

1 . PRECAUTION

The coverslipping machine RCM-7000 is precision laboratory instrument, must be treated carefully. Rough handling, dropping etc may cause a damage to both the mechanical functions as well as electronic circuitry.

2 . Unpacking

There are two boxes; one contains the main equipment and the other accessories.

3 . Installation

3 . 1 Location of instrument.

- (1) Availability of exhaust connection.
- (2) Locations with least vibrations flat and stable.
- (3) Avoid sunlight, strong wind and rapid temperature change. The coverslipping machine should not be exposed to direct sunlight and/or hot & cold air current such as generated heating and air conditioning systems
- (4) Instrument should be located in a clean, dust free. The instrument is not waterproof and dustproof.
- (5) Coverslipping machine should not be located near instrumentation generating strong magnetic field, and should not be located other high power.
- (6) Install at comfortable height for work.
- (7) Coverslipping machine should not be located place where sun light or other bright light directly come into front left side of machine.

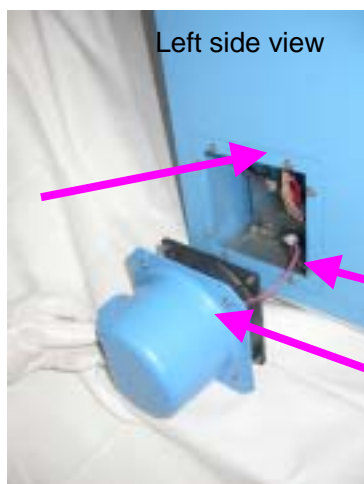
Caution:

The adjustable foot at the bottom of machine is available for leveling off.

Do not make longer them more than 5mm. Please tighten up them with locking nuts, after the adjustment.

3 . 2 Connection of exhaust fan

The exhaust fan in the accessories box is attached either to the lower left of the body or lower right of the body. Remove the cover and attach the cover to opposite side of the body. Attach the exhaust fan to the body by 8 screws. Connect the black cable coming out of the body to the cable from exhaust fan, before screwing the exhaust fan.



Screw x
8pcs

Connector to
power

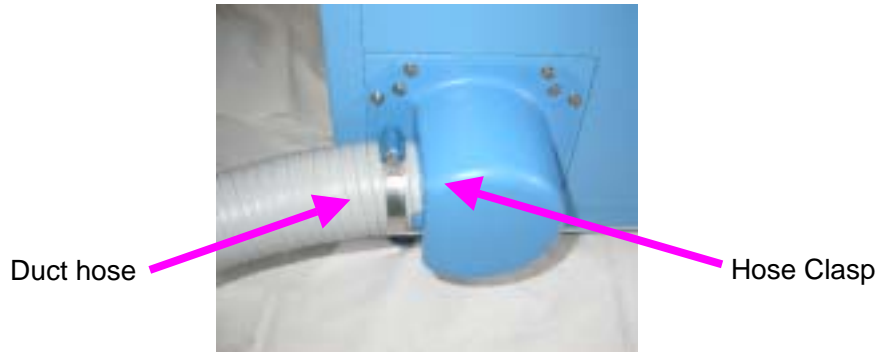
Exhaust fan

Hazardous

A mounting media is harmful by inhalation to the body and the risk of fire and explosion due to flammable liquid. Be sure to connect machine to a user's compulsive exhausting system, or to use fan duct hose for exhaust

3 . 3 Attaching a duct hose

Install the machine where exhaust connection is available. Connect between machine and duct with a duct hose. Connect a duct hose in the exhaust port of machine. Fix the hose by a clasp in the accessories box after the connection. (Please do not forget passing the hose through the clasp beforehand) The other side of the duct must be connected with the exhausting system in the building or outside if available



3 . 4 Connection of a power cables

Insert the power cable socket into the power line receptacle at the rear panel. Insert a plug into a 3 terminal wall outlet with grounding. If a 3-terminal wall socket is not available, please use the 2 pole to 3 pole conversion plug in the accessories box.



Rear Panel
The power line receptacle

Power cable



3 . 5 Connection of ground line

Ground line is automatically connected correctly when the power cable plugs into a 3 terminal wall socket with a ground connection. If the 2 pole to 3 pole conversion plug is used, please connect the grounding wire to ground.

4 . Preparation

4 . 1 Power on/off

Warning: Be sure that all of required components are attached to machine before power on.

(1) Power on

Put power switch ON at the rear panel

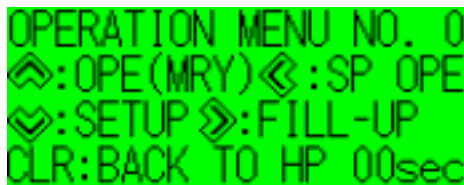


Press "POWER" button at the operation panel. The following warning message appears.



Caution: It may cause serious damage to machine if main power at the rear panel is pressed with pressing the "POWER" on operation panel.

After boot-up, operation menu appears on display.



Lamp status:
POWER Turns on
START Blinks
STOP Turns on

Warning:
Open the door or press A-button, if the message "SG is on fork" is displayed after power on. (CLEAR-button is not available)

(2) Power-off

Put power off when operation menu is displayed on screen after completing a sequence of operation.



OPERATION MENU NO. 0
◀:OPE(MRY)▶:SP OPE
◀:SETUP▶:FILL-UP
CLR:BACK TO HP 00sec

Lamp status:
POWER turns on.
START blinks
STOP turns on

Press **POWER** on the operation panel
(POWER lamp, START lamp and STOP lamp put off.)

The operation is finished and the display turns off.
(When exhaust fan is ON, it continues working.)

Press main power switch OFF at the rear panel.
Then machine stops (exhaust fan also stops).

4.2 Connection of dispenser

Dispenser is connected to sub-panel.



Dispenser

WARNING: Dispenser has needle on the top. A careless handling may cause injury or damage of machine. The tip is weak. Handle with care.

Plug the curl code into the connector on the sub-panel, and tighten up.



Connector on sub-Panel

Close the top cover and the front door .

Put power ON

Operation menu is displayed

```

OPERATION MENU NO. 0
◀: OPE (MRY) ▶: SP OPE
◀: SETUP ▶: FILL-UP
CLR: BACK TO HP 00sec
    
```

Lamp status:
 POWER turns on.
 START blinks
 STOP turns on

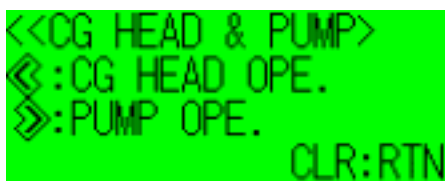
Press ◀ to select "SP OP(Special operation)"

```

<SPECIAL OPERATION>
◀: C/V, E/V ▶: SUB
▶: CG HEAD, PUMP
◀: ARM, FINGER CLR: RE
    
```

When CLEAR is pressed, screen back to operation menu.

Press ▶ to select "CG HEAD, PUMP"



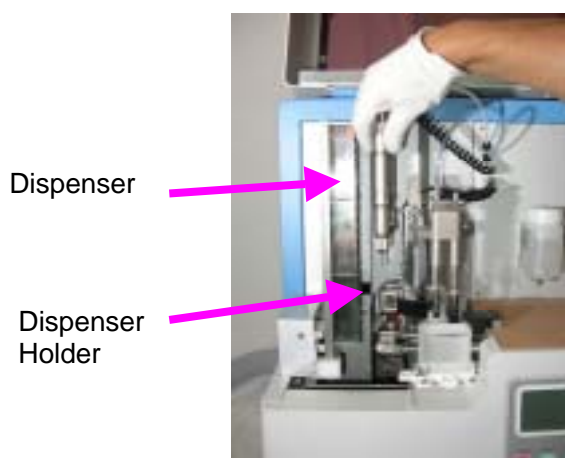
Press to select "CG HEAD OPE."



Press to lift CG head, then Press to turn CG head forward

Open the top cover

Position dispenser into the dispenser holder firmly.



Close the top cover.

Press to select "SP OP(Special operation)"

Press to select "CG HEAD, PUMP"

Press to select "CG HEAD OPE."

Press to turn reverse turn and press down.



Press CLEAR until returning to operation menu.

4.3 Fill up xylene into pump

This machine has unique high performance mountant pump (patent). In order to keep high performance, carry out FILL UP by xylene for flushing inside pump and dispenser. Fill up by xylene or replace it regularly. Pour xylene (about 30 cc) to container by syringe.

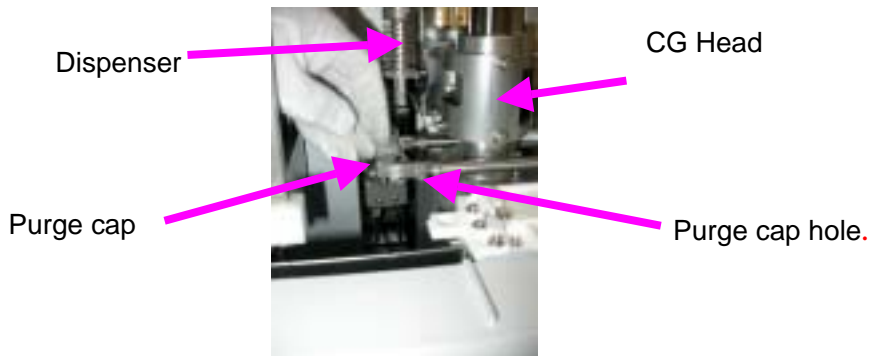


Risk of fire and explosion if flammable liquid is spilled into machine. To reduce the risk of fire and explosion, only fill slide basket and bottle and bottles outside the unit. Insert the slide basket carefully to avoid spillage. If spillage should occur, immediately unplug unit from the mains outlet and contact authorized service person.

4.4 Attachment of purge cap and work bench sheet

(1) Attachment of purge cap

Set purge cap into the hole on the end of fork.



(2) Put the sheet on the workbench.



4.5 Attachment of xylene reservoir

Xylene is used for cleaning the tip of dispenser. Pour xylene into the xylene reservoir, and then set the reservoir to the machine. Please take care of volume in the reservoir. When the volume is shorting in the reservoir, It causes dry up of needle tip and needle tip is stuck by mounting media. It also causes no mountant dispensing due to valve malfunction. Do fill reservoir with xylene.

Remove immersion container. Fill xylene into reservoir and screw the bottle up to immersion reservoir that is up side down. At this time, the opening (the side where the hole is open) of xylene reservoir must always be kept upwards. Turn-up reservoir carefully.



Remove immersion container. Fill xylene into reservoir and screw the bottle up to immersion reservoir that is up side down



Place reservoir on clasp behind CG head. And close cover.
Turn power on and show operation menu.
! Do close cover for operation.

```
OPERATION MENU NO. 0
◀: OPE (MRY) ▶: SP OPE
◀: SETUP ▶: FILL-UP
CLR: BACK TO HP 00sec
```

Press ▶ FILL-UP

```
FILL UP MEDIA
◀: START ▶: STOP
◀: RESERVOIR SET
▶: RES. REPLACED CLR:
```

Keep pressing ▶ button, RESERVOIR SET until CG head turns to forward and stops. Open top cover.
Error message "Door open" appears.

```
FRONT DOOR OPEN!!
(OOPERATION HOLD)
CLR : OPERATION MENU
```



The clasp for fixing xylene reservoir is seen from an elevator side. Set reservoir straight from top. When xylene reservoir is removed, pull it upward after swaying lightly with holding the container of xylene reservoir.

! Close the cover.

Screen returns to OPERATION MENU

```
OPERATION MENU NO. 0
⤵:OPE(MRY)⤵:SP OPE
⤵:SETUP ⤵:FILL-UP
CLR:BACK TO HP 00sec
```

Press ⤵ FILL-UP

```
FILL UP MEDIA
⤵:START ⤵:STOP
⤵:RESERVOIR SET
⤵:RES.REPLACED CLR:
```

Keep pressing ⤵ RES.REPLACED until dispenser needle puts into reservoir.

Press CLEAR button,
Screen returns to OPERATION

```
OPERATION MENU NO. 0
⤵:OPE(MRY)⤵:SP OPE
⤵:SETUP ⤵:FILL-UP
CLR:BACK TO HP 00sec
```

4.6 Setup of Exhaust fan and dry fan.

When exhaust fan is attached to machine, set Exhaust Fan "ON". Set Dry Fan ON in order to dry mounting media on slideglass quickly

Caution!
Operate machine with closing cover

OPERATION MENU NO. 0
 ⏏: OPE(MRY) ⏏: SP OPE
 ⏏: SETUP ⏏: FILL-UP
 CLR: BACK TO HP 00sec

Press OPE(MRY) to select memory number and setup Fan operation.

<MEMORY SELECT: 1-5>
 ⏏: UP ⏏: DN ⏏: CNFRM
 [0] ⏏: ADJUST
 ENT: EXEC CLR: RETURN

Press ⏏ SP OPE



<SPECIAL OPERATION>
 ⏏: C/V, E/V ⏏: SUB
 ⏏: CG HEAD, PUMP
 ⏏: ARM, FINGER CLR: RE

Press ⏏ SUB MENU



<SUB MENU>
 ⏏: 1CYCLE OPERATION
 ⏏: LAMP, BUZZER TEST
 ⏏: FAN SETUP CLR: RTN

Press ⏏ FAN SETUP



FAN: EXHAUST (0) DRY (0)
 ⏏: ON (1) ⏏: ON (1)
 ⏏: OFF (0) ⏏: OFF (0)
 CLR: RTN

Press ⏏ to use exhaust fan and press ⏏ when it is not used
 Press ⏏ to use dry fan and press ⏏ when it is not used.
 When Fan is ON, 1 is shown on screen, When it is OFF, 0 is shown.
 Press CLEAR to return screen of SPECIAL OPERATION MENU



<SPECIAL OPERATION>
 ⏏: C/V, E/V ⏏: SUB
 ⏏: CG HEAD, PUMP
 ⏏: ARM, FINGER CLR: RE

Press ⏏ to ⏏
 Select preset memory number then press ENTER

MEMORY NO. 0
 SELECTED
 ENT: OPERATION MENU
 CLR: MEMORY SELECTION

4.7 Positioning of separate guide and swinging plate

Adjust separate guide and swing plate depending the size of slide glass


Separate guide & Swing plate


Advice: To move to adjustment point.


Refer to 4.2 Dispenser connection


Press  to select "SP

OP(Special operation)"

Press  to select "CG HEAD, PUMP"

Press  to select "CG HEAD OPE."


Press  to lift CG head, then


Press  to turn CG head forward


Open the top cover



Adjustment

Close the top cover.

Press  to select "SP OP(Special operation)"

Press  to select "CG HEAD, PUMP"

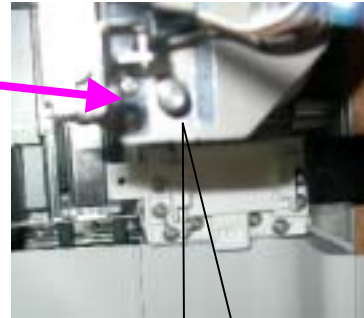
Press  to select "CG HEAD OPE."

Press  to turn reverse turn and press  down until needle tip dip into reservoir.

Press CLEAR until returning to operation menu.



Adjustment knob



Divisions of Scale

Loosen the knob to adjust. Select correct position for "cover glass size selection slide" corresponding the coverglass to be used.

Position selection slide as follows:

For 32-40mm slide glass, 0mm

For 50-55mm slide glass, 5mm backward

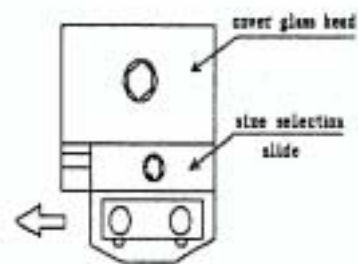
For 60mm slide glass, 10mm backward



Backward(-)



Forward(+)

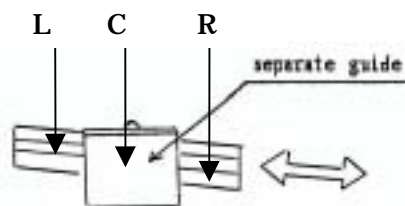


Please adjust the separate guide depending on size of coverglass:

Coverslip 24 x 32,40mm : Right

Coverslip 24 x 50mm : Center

Coverslip 24 x 55,60mm : Left



Caution: When CG 24 x 40 is used and the separate guide is set to left side, sensor beam is not reflected on CG. And machine sometimes shows error message "CG broken" despite no CG broken. Please set it to proper position.

4.8 Adjustment of CG hopper stand

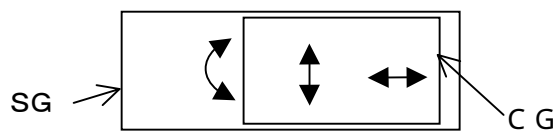
Loosen the screw of CG hopper stand to adjust a coverglass (CG) position on the slideglass (SG). The procedure is described below.

CG case hopper is set to default position at factory. The position is, however, adjustable by a jig in the accessory box.

The process:

Remove CG hopper and loosen M5 screws 1 set (two pieces) 1, 2, 3 of and then adjust the position with the adjustment jig. Be careful not to loosen a screw too much.

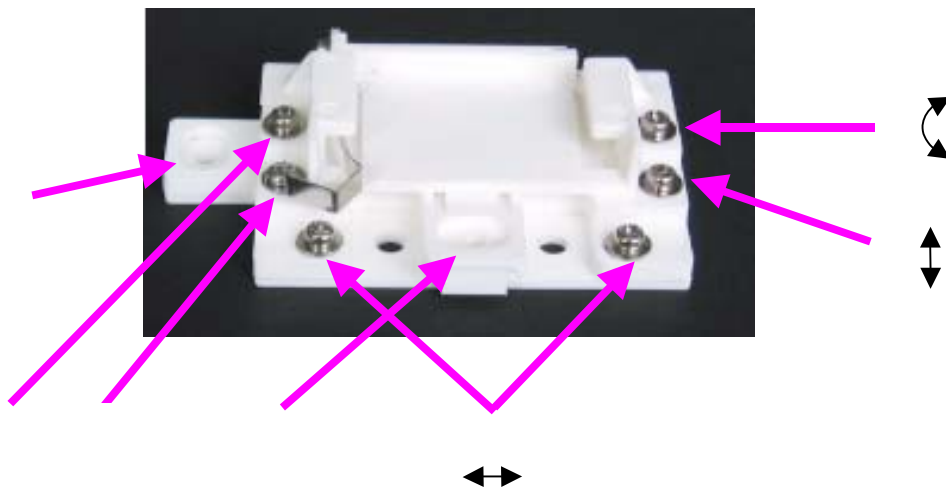
Since the adjustment jig is very small, the user should prepare a bag for store.



is used when tuning a coverglass to be parallel to a slideglass. This adjustment should be done by hand, not jig. Please hold right & left edge of upper holder by hand and then turn slowly.

is used for fine tuning the width direction of a coverglass on a slideglass (Front and back space of CG hopper). Please insert the jig into the implemented hole and turn slowly.

is used for fine tuning the length direction of a coverglass on a slideglass (Left & right side for CG hopper stand). Please insert the jig into the implemented hole and turn slowly.



4.9 FLUSH by xylene & FILL-UP by mountant media.

Execute FLUSH by xylene in pump for first operation of machine. When machine is not used for a long time, execute FLUSH by xylene in pump. And then pour a mountant media into it.

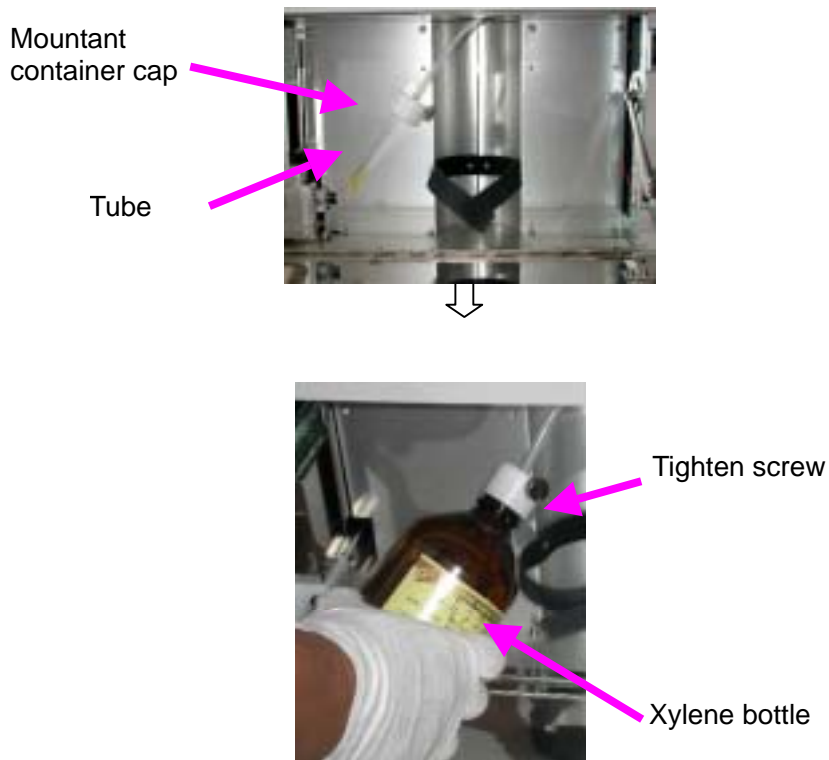
4.9.1 Flush by xylene in pump and tube

Open top-cover and front door.

Set xylene bottle of which cork fits to cap of accessory to holder.

Mountant container 3650-71 also can be used

Open a xylene bottle. Put tube through the cap and screw bottle into the cap.



Place a waste fluid jar on the conveyer, exactly under the dispenser.
The waste fluid jar should be stable on a conveyer.

Close top cover and front door.

Turn Power-ON

Flush inside pump as the instructions on the screen

```
OPERATION MENU NO. 0
◀: OPE (MRY) ▶: SP OPE
◀: SETUP ▶: FILL-UP
CLR: BACK TO HP 00sec
```

Press: ▶ Fill-up on OPERATION MENU



```
FILL UP MEDIA
◀: START ▶: STOP
◀: RESERVOIR SET
▶: RES. REPLACED CLR:
```

Press ▶ START



```
IS JAR FOR WASTE
FLUID READY ?
ENT: OK
CLR: FINISH
```

Caution “JAR FOR WASTE FLUID IS READY” appears. Pressing **ENTER**, machine starts fill-up xylene into tube and dispenser. For first installation, It will take about 10 minutes approx. to dispense xylene since air remains in pump and tube. After 10 minutes later, fill-up stops automatically. After completing FILL UP, Press **CLEAR** and screen back to OPERATION MENU



```
OPERATION MENU NO. 0
◀: OPE (MRY) ▶: SP OPE
◀: SETUP ▶: FILL-UP
CLR: BACK TO HP 00sec
```

4.9.2 FILL-UP of mountant media.

Fill up mountant media into pump instead of xylene bottle

Replace the xylene bottle by mountant media bottle..

Turn the bottle (NOT the cap) to remove the tube out of the bottle.

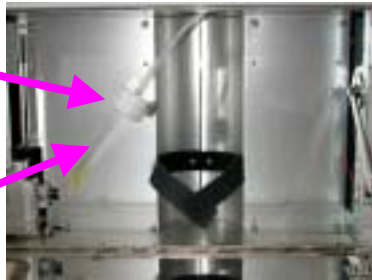
Put tube through cap. Do not shake the tube when tube puts into mountant media bottle through cap, which may cause air bubbles in the tube. Tighten cap firmly.

Place the bottle to machine.

Execute FILL UP of mountant media as describe in section 4.9.1 Dispense mountant media more than twice. Do execute air elimination in dispenser for stable coverslipping without air bubble

Mountant media cap

Tube



Tighten screw firmly.

Mountant media



Fix bottle by belt.

Air elimination in Dispenser

Open top cover and the following message comes up



TOP COVER OPEN!!
(OPERATION HOLD)
CLR : OPERATION MENU

Press CLEAR and screen changes to OPERATION MENU



OPERATION MENU NO. 0
◀: OPE (MRY) ▶: SP OPE
◀: SETUP ▶: FILL-UP
CLR: BACK TO HP 00sec

Press ⏏ SP OPE(Special Operation)



```
<SPECIAL OPERATION>
⏏: C/V, E/V    ⏏: SUB
⏏: CG HEAD, PUMP
⏏: ARM, FINGER CLR: RE
```

Press ⏏ CG HEAD, PUMP



```
<<CG HEAD & PUMP>
⏏: CG HEAD OPE.
⏏: PUMP OPE.
CLR: RTN
```

Press ⏏ PUMP OPERATION

Pump operation should be done with cover open



```
<PUMP OPERATION>
⏏: VACUUM
⏏: ONE TIME VACUUM
⏏: DISPENSE CLR: RTN
```

Hold dispenser up side down.

Dispense xylene more than twice to push out air bubbles as follows:-

- Press ⏏ one time vacuum and then vacuum volume of xylene for one time dispense.
- Press ⏏ DISPENSE.

Hold dispenser to down and

Dispense xylene more than twice on SG to push out air bubbles as follows:-

- Press ⏏ one time vacuum and then vacuum volume of xylene for one time dispense.
- Press ⏏ DISPENSE.

WARNING!:

- Xylene is dispensed from needle tip. Wrap a piece of cloth around the tip of dispenser to absorb xylene
- The dispenser is hot after FILL UP. Wrap the dispenser with cloths not to get your skin burned.

After completing air elimination, Close top cover and press CLEAR. Screen returns to SP



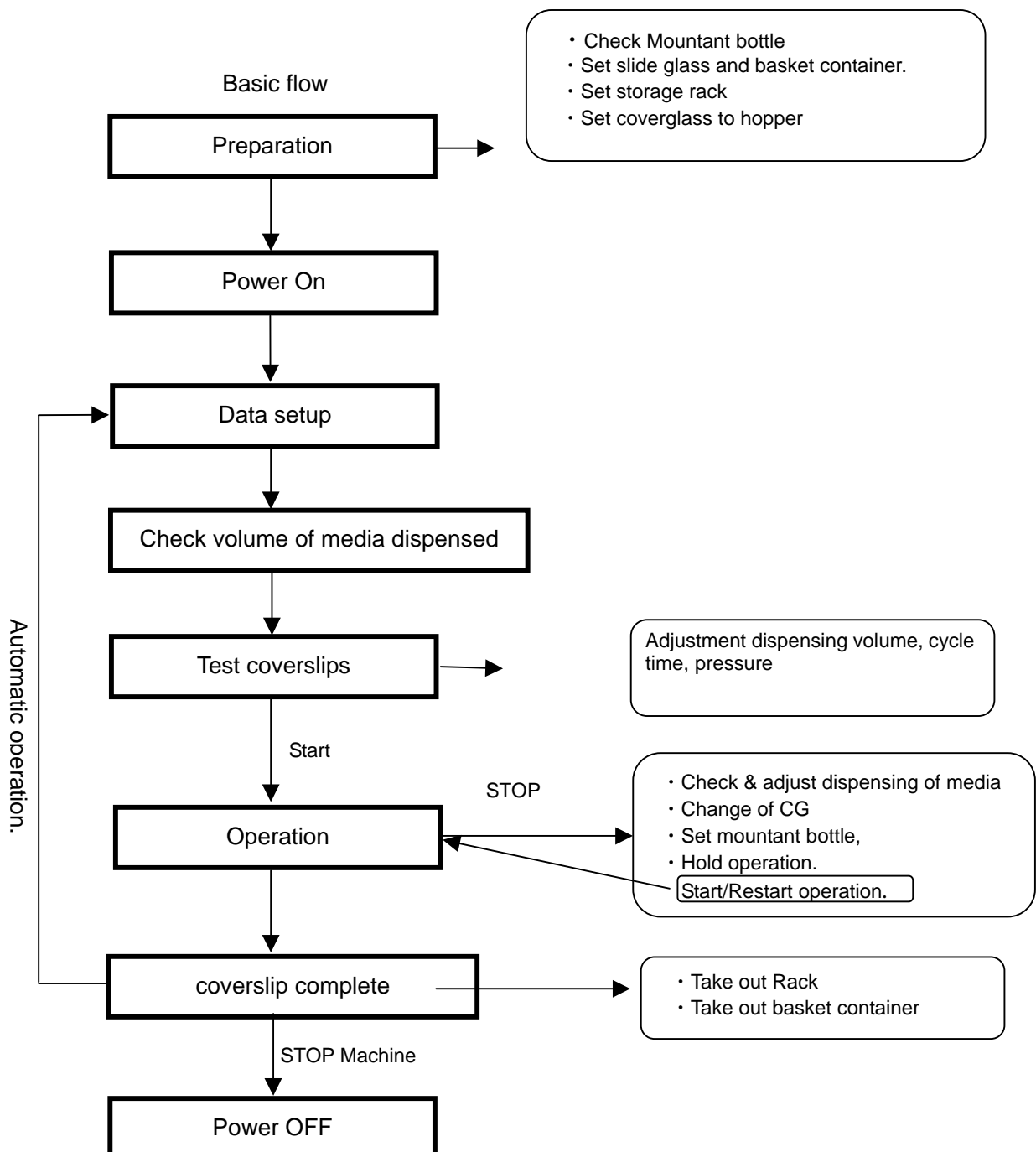
```
<SPECIAL OPERATION>
⏏: C/V, E/V    ⏏: SUB
⏏: CG HEAD, PUMP
⏏: ARM, FINGER CLR: RE
```

Chapter 3 Operation

1 . Basic

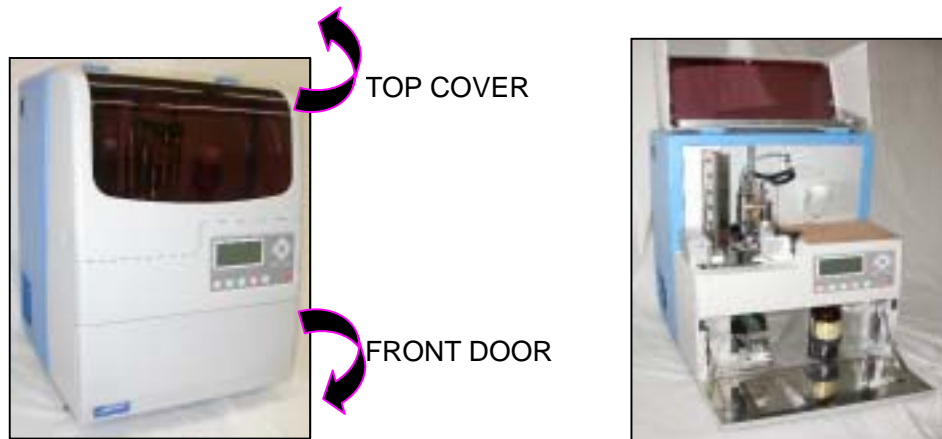
In this section, basic, standard operation is described

1 . 1 Operation flow



1.2 Preparation

(1) Open top cover and front door.



(2) Check inside machine

- No glass particles etc around the CG-head.
- The purge cap should be set.

ADVICE: When it put power on, and first coverslipping starts, the mountant media which is thinned by xylene in needle tip is dispensed twice automatically. Please check level of mounting media in purge cap before operation.

(3) Check if mountant bottle set to machine and media is remaining in the bottle.



The mountant media bottle should be exchanged by new one when media decreases. The machine continues to operate, even if the bottle is empty. It, however, does not dispense mountant media. It will damage to specimen and machine.

(4) Setting slideglass and basket container

(a) Pour xylene into basket container upto the two lines(fill mark) inside of container

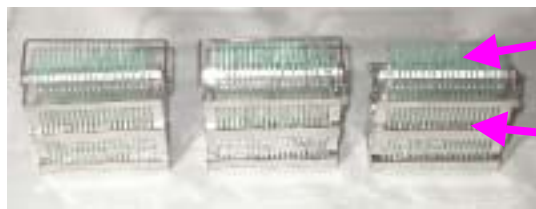


Basket Container



Risk of fire and explosion if flammable liquid is spilled into machine. To reduce the risk of fire and explosion, only fill xylene to basket container outside the unit. Insert the basket container carefully to avoid spillage. If spillage should occur, immediately unplug unit from the mains outlet and contact authorized service person.

(b) Set slide glasses into basket. Standard basket can contain up to 20 slide glasses

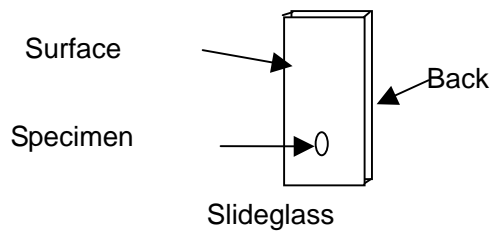


Slideglass

Standard Basket

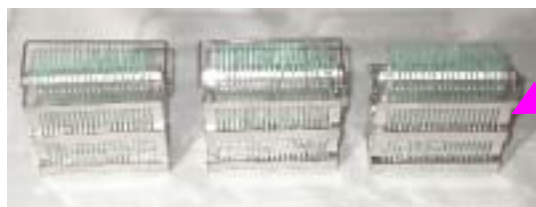
Caution!: Deformed basket causes error of coverslipping. Please use company standard basket. And check shape of basket before operation.

All glass slides must be positioned uniformly in slide basket. Labeled end of slide must be up. Specimen must be at lower half.

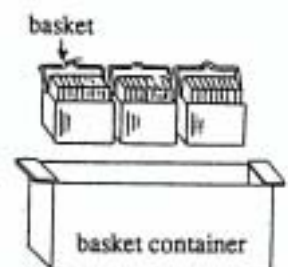


WARNING: Be careful not to be injured by slide glasses.

(c) Position basket into basket container. Be sure all slides face the same direction



Standard Basket



← Basket container

(d) Open front door and pull conveyor rail towards you. Set basket container on conveyor rail in such a manner that the specimen side of slide faces towards the front (operator). Move rail and container back into coverslipping machine



Conveyor rail



Move rail and container back into machine



(5) Setting a storage rack

Set 3 storage racks to elevator guide from top.

The maximum number of the storage rack is 3 in the elevator.



Storage rack

Elevator

(6) Setting coverglass to hopper

Put coverglass into CG case, and the CG case is set to CG stand. There is a fixture spring. Please push to set it.

CAUTION! It is recommended to wear gloves. When loading coverglass into hopper to avoid contaminating coverglass with skin secretions



1.3 Power-On

(1) Press the power switch at the rear panel ON.

Main power switch
at rear panel



OPERATION PANEL



POWER

Press "POWER " at the operation panel. (Warning message appears when the top cover/front door opens)

The message below appears at the display.



READY . . .
OPEN DOOR AFTER
MACHINE STOPS.

After boot-up, operation menu appears on screen



OPERATION MENU NO. 0
◀:OPE(MRY)▶:SP OPE
◀:SETUP ▶:FILL-UP
CLR:BACK TO HP 00sec



In an emergency, when machine can not be stopped by usual operation, unplug from the main outlet at rear panel.

1.4 Home Position

RCM7000 can start proper coverslipping when dispenser is located at the proper position (home position). The dispenser returns to the home position by pressing CLEAR button on operation menu screen. Several remarks are described below when machine **Return to HOME POSITION**.

Please check the following before returning machine to home position.

- ✓ Error Slide glass and Coverglass during previous operation should be removed.
- ✓ If the finger is holding SG, please open finger by pressing finger button on operation panel.
- ✓ Locate basket container in front of Finger position. When finger positions inside of basket container, lift finger up by an instruction of OPERATION MENU(Special Operation).
- ✓ Remove all 3 storage racks to take out slide glass in the rack. Then set 3 empty storage racks.-(When several slide glasses are stored into top rack, remove the slide glasses in the rack and lift lowest rack up & down(by 2-3 cm) .
- ✓ Message is displayed in red color on LCD during initializing

When completing to return to home position, Machine has following home position.

- ✓ Elevator: Top position
- ✓ CG Head: Needle of dispenser put in xylene reservoir
- ✓ Fork: Stage of storage.
- ✓ Arm: Over basket container.
- ✓ Finger : Closed

1.5 Setup parameters for automatic operation

This machine requires setting up parameters in prior to automatic operation (memory operation). There are 5 sets of memory. The No. 1 is, however, for default preset in the factory. User can store own operating condition to No. 2-5.

1.5.1 Set up parameters and ranges

Item		Memory No.1(Default)	Setup range
Cycle		12sec: Standard mode	8 sec to 14 sec SG stand-by mode/Standard mode
CG size		24 x 50mm	24 x 32mm 24 x 36mm 24 x 40mm 24 x 50mm 24 x 55mm 24 x 60mm 25 x 40mm 25 x 50mm 25 x 55mm 25 x 60mm
Dispensing	Mode	Line dispense	Line dispense/Point dispense.
	Volume	50	25(min) ~ 250(max.)
Pressure.		7	1(min.)-9(max.)

(1) Setup for Cycle time (process time per glass)/Select SG stand-by mode or Standard mode

(a) S.G.S:(Slide Glass Stand by in container) When CG pick-up trouble happens and machine automatically stops, a slide glass stand by in container. The damage to specimen on slide glass is less. When S.G.S. is selected, "+" is shown on OPERATION SCREEN. The cycle time is slower than S.T.(Standard time.)

(b) S.T(Standard time) When CG pick-up trouble happens and machine automatically stops, slide glass is placed on fork. When S.T. is selected, "-" is shown on OPERATION SCREEN.

(2) Setup for CG SIZE: Select required CG size on screen.

Dispensing line changes depending on selected size of CG

Size of CG	Length of Dispensing
32mm, 36mm	15mm
40mm, 50mm	25mm
55mm, 60mm	35mm

(3) Setup for Dispense of media.

(a) Select line or point dispense a on screen.

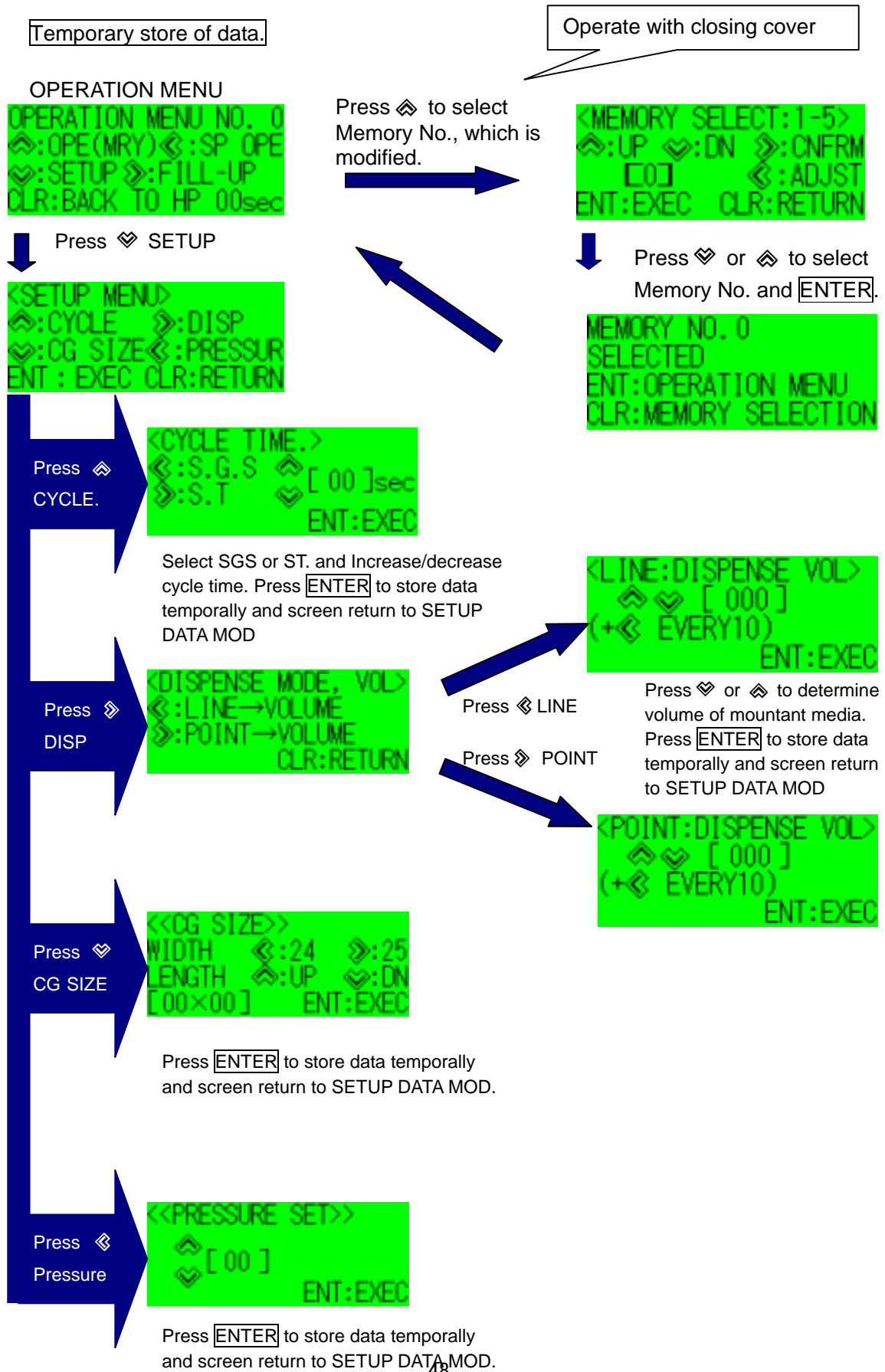
(b) Select dispensing volume between 25(min) –250(Max) units.

(4) Setup for Pressure.

Select the pressure, which put coverglass (CG) onto a slide glass (SG) in the range of 1(Min)-9(Max) units. This is important parameter for the removal of air bubbles during coverslipping. It is determined, corresponding to condition (thickness) of specimen, viscosity of mountant media, and overflow out of the CG etc

1.5.2 Sequence of set-up

Temporarily store the set up data and then store it formally.



STORE DATA

After entering all 4 data, store data.

Operate with closing cover

```
<SETUP MENU>
⤵:CYCLE ⤴:DISP
⤵:CG SIZE⤴:PRESSUR
ENT:EXEC CLR:RETURN
```

Press **ENTER**

```
STORE TO MEMORY?
ENT:STORE
CLR:ONE TIME SETUP
(TO OPERATION MENU)
```

Press **ENTER**

```
MEMORY NO. SELECT 2-5
⤵⤵ [ 00 ]ENT:STORE
CLR:BACK
(NO. 1:DEFAULT)
```

Press **ENTER**

```
STORED ON
MEMORY NO. 0
```

Screen back to
OPERATION MENU after
3 seconds.

```
OPERATION MENU NO. 0
⤵:OPE(MRY)⤴:SP OPE
⤵:SETUP ⤴:FILL-UP
CLR:BACK TO HP 00sec
```

If all DATA is not
input, it is shown.

```
NO DATA ENTRY !!
SETUP EACH DATA
FIELD
CLR:RETURN
```

Press **CLEAR** for one time
setup and then screen
returns to SETUP MENU.
Machine operates with this
parameter until turning
power off.

Select Number by pressing
⤵ or ⤴ and press **ENTER** to
memorize.
Memory No. 1 is default data.
It can not be selectable.

If data has been stored on the
selected number, the following
message comes up

```
SELECTED NO. 0
HAS BEEN STORED.
REWRITE ?
ENT:REWRITE CLR:BACK
```

Pressing **ENTER**, screen
for memory is comes up

1.5.3 CONFIRMATION & MODIFICATION OF SETUP DATA

Setup data can be confirmed and modified.
The setup data in memory No. 2-5 can be modified.

Operate with closing cover

Start confirmation & modification on
OPERATION MENU

```
OPERATION MENU NO. 0
^:OPE(MRY) <:SP OPE
v:SETUP >:FILL-UP
CLR:BACK TO HP 00sec
```

Press **^** to select
Memory No. which is
modified

```
<MEMORY SELECT:1-5>
^:UP v:DN >:CNFRM
[0] <:ADJUST
ENT:EXEC CLR:RETURN
```

Press **v** or **^** to select
Memory No. And **ENTER**.

Press **^**: OPE(MRY):
Operation Memory

```
MEMORY NO. 0
SELECTED
ENT:OPERATION MENU
CLR:MEMORY SELECTION
```

CYCLE: XX+:SGS Mode
CYCLE: XX-ST Mode

Press **>** CNFRM:

```
<MEMORY SELECT:1-5>
^:UP v:DN >:CNFRM
[0] <:ADJUST
ENT:EXEC CLR:RETURN
```

```
CYCLE:000SEC CG SIZE
DISP MODE:LIN[ 00000]
DISP VL000
PRES VL00 CLR:RETURN
```

Current SETUP DATA
Press **CLEAR**, screen back to
Memory Select.

Press **<**: Adjust, SETUP
DATA MOD. comes to modify
memory data.

```
<SETUP DATA MOD.>
^:CYCLE >:DISP VL
v:CG SIZE <:PRES VL
ENT:MOD. CLR:RETURN
```

Refer modification to 1.5.2

Press **CLEAR** after
modification, the following
screen is coming up for alert.

Press **ENTER** after modification When
no modification, screen is not changed.

```
SETUP DATA WAS
MODIFIED.
PRESS
ENT:MOD. CLR:CANCEL
```

When **ENTER** pressed, screen
back to "SETUP DATA MOD."
When **CLEAR** pressed, screen
back to OPERATION MENU

```
DATA MODIFICATION
COMPLETED
```

Screen back to OPERATION
MENU after 3 seconds.

```
OPERATION MENU NO. 0
^:OPE(MRY) <:SP OPE
v:SETUP >:FILL-UP
CLR:BACK TO HP 00sec
```

1.6 Check dispensing volume.

The dispensing volume must be checked before operation.

Open Top cover and the screen is changed for alert

```
TOP COVER OPEN!!
(OPERATION HOLD)
CLR: OPERATION MENU
```

↓ Press CLEAR and screen changes to OPERATION MENU
Operate with top cover open

```
OPERATION MENU NO. 0
⤵: OPE (MRY) ⤴: SP OPE
⤶: SETUP ⤷: FILL-UP
CLR: BACK TO HP 00sec
```

Press ⤵ to select
Memory No. which
is modified.

```
<MEMORY SELECT: 1-5>
⤵: UP ⤶: DN ⤷: CNFRM
[0] ⤴: ADJUST
ENT: EXEC CLR: RETURN
```

↓ Press ⤴ SP OPE

Press ⤶ or ⤵ to
select Memory No. and
press ENTER.

```
<SPECIAL OPERATION>
⤵: C/V, E/V ⤶: SUB
⤷: CG HEAD, PUMP
⤴: ARM, FINGER CLR: RE
```

Press CLEAR and
screen back to
OPERATION
MENU

```
MEMORY NO. 0
SELECTED
ENT: OPERATION MENU
CLR: MEMORY SELECTION
```

↓ Pressing ⤷ CG HEAD & PUMP

```
<<CG HEAD & PUMP>
⤵: CG HEAD OPE.
⤷: PUMP OPE.
CLR: RTN
```

↓ Press ⤷ to operate Pump

```
<PUMP OPERATION>
⤵: VACUUM
⤷: ONE TIME VACUUM
⤶: DISPENSE CLR: RTN
```

ADVICE:
When operate pump in special
operation, It is possible to operate
machine with opening cover

Hold dispenser.
↓ Press ⤷ ONE TIME VACUUM to vacuum media per
dispense
Press ⤶ dispense.
Dispense mounting media on slideglass and check volume.

↓ After check volume, press
CLEAR until back to
OPERATION MENU.

ADVICE:
After check volume, close Cover,
Screen back to Operation MENU.

```
OPERATION MENU NO. 0
⤵: OPE (MRY) ⤴: SP OPE
⤶: SETUP ⤷: FILL-UP
CLR: BACK TO HP 00sec
```

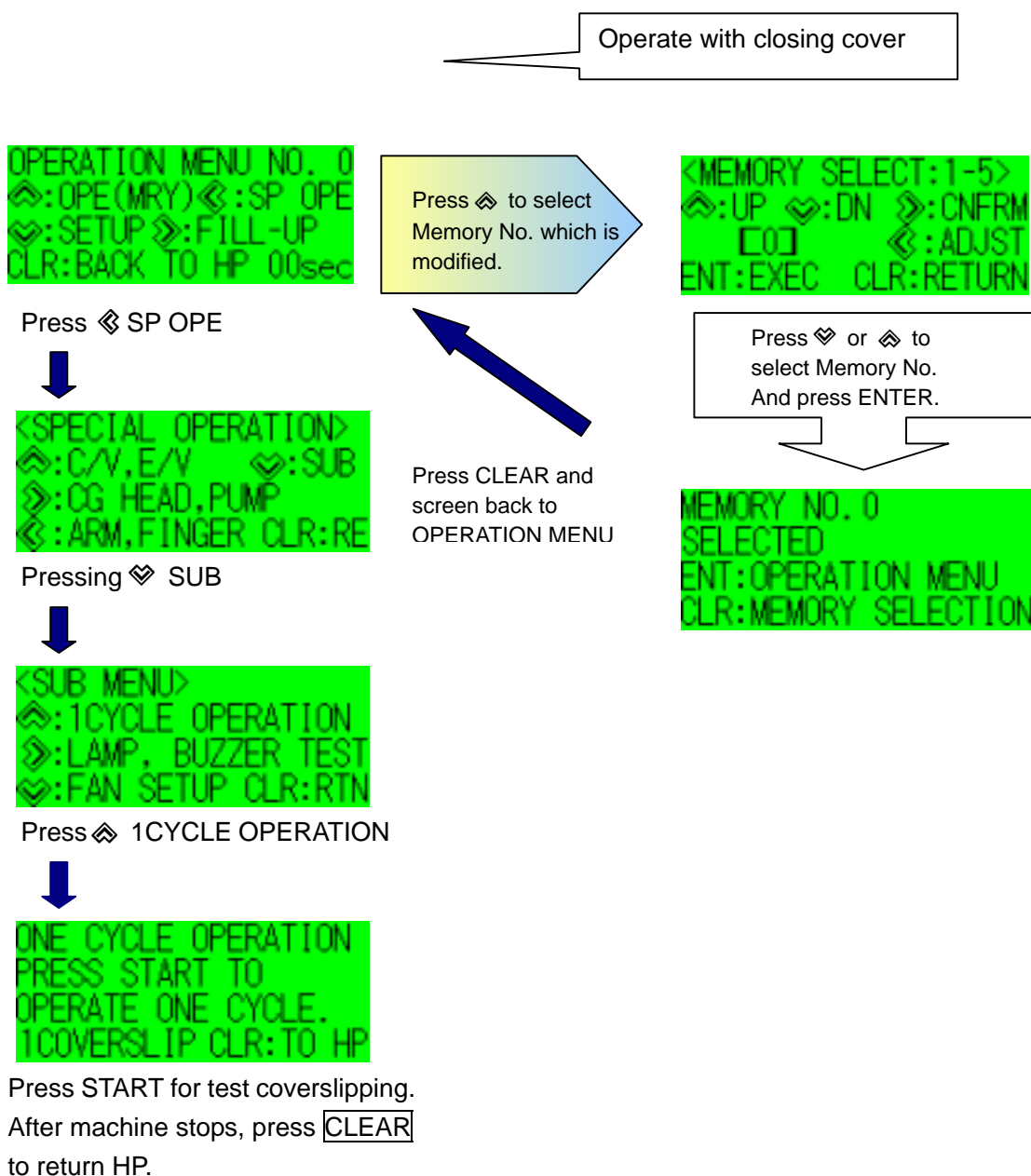
1.7 Test coverslipping

1.7.1 What is test coverslipping?

Auto coverslipping can not always provide same coverslipping result since it is affected by kind of specimen, shape of specimen environmental condition (temperature, humidity etc) Viscosity depends on brands and its duration of use. In the result, It is essential to check coverslipping quality in preparation phase.

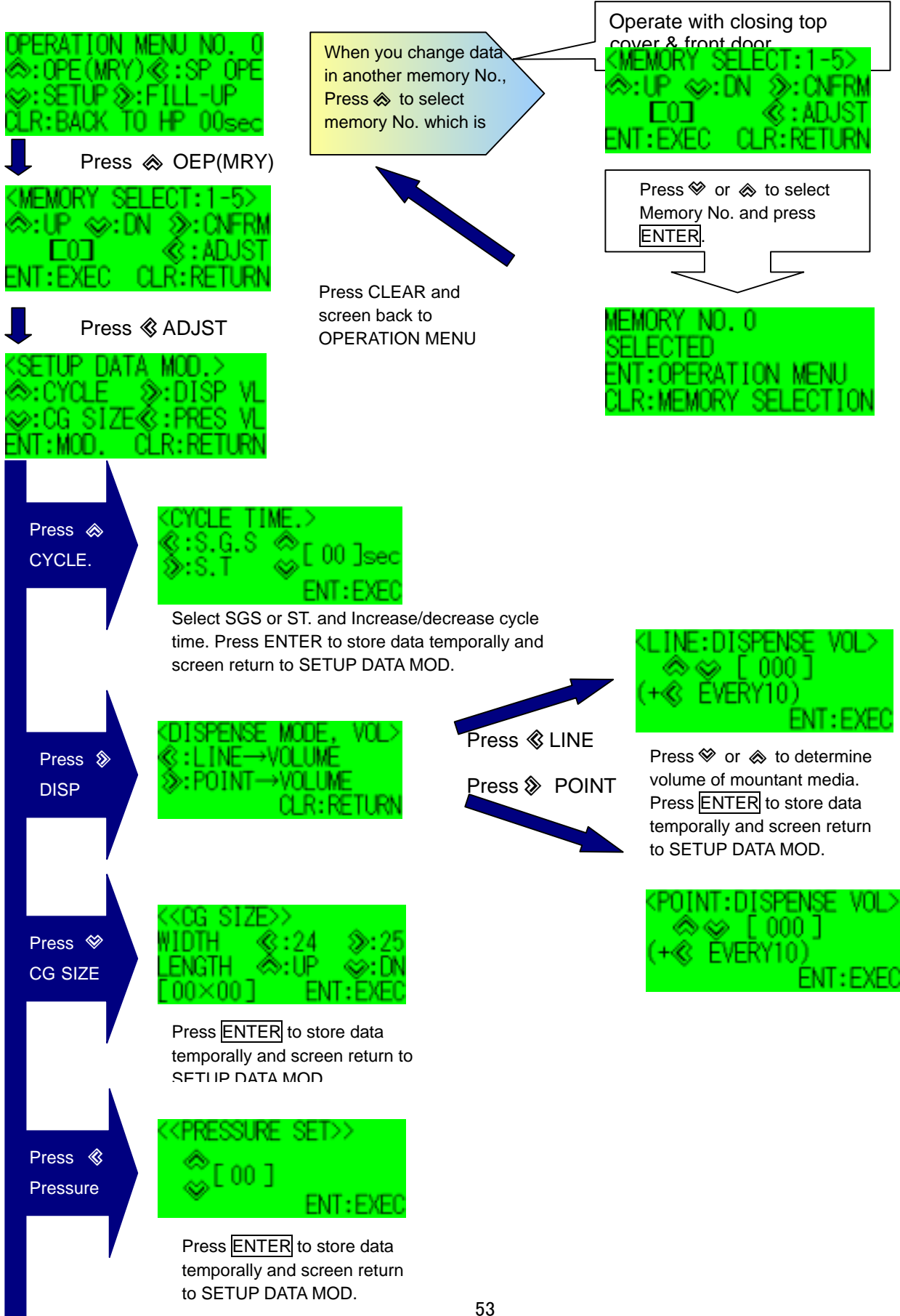
1.7.2 Procedure of test

Be sure power OFF. Open the cover, prepare as "Preparation" described in section 3.1.2. Then set slide glass and coverglass to hopper. Shut the cover and power ON.



1.7.3 Check test coverslipping result.

Check coverslipping result. Further adjustments are required as follows, if the result is not satisfactory.



```
<SETUP DATA MOD.>
<:CYCLE >:DISP VL
<:CG SIZE<:PRES VL
ENT:MOD. CLR:RETURN
```

Press ENTER to store data finally and screen shows "modification completed"



```
DATA MODIFICATION
COMPLETED
```

3 minutes later, screen changed to OPERATION MENU



```
OPERATION MENU NO. 0
<:OPE(MRY)<:SP OPE
<:SETUP >:FILL-UP
CLR:BACK TO HP 00sec
```

Check test result after adjustment

Press **CLEAR** after modification, the following screen is coming up for alert.

```
SETUP DATA WAS
MODIFIED.
PRESS
ENT:MOD. CLR:CANCEL
```

When **ENTER** pressed, screen back to "SETUP DATA MOD."
When **CLEAR** pressed, screen back to OPERATION MENU

2 . Operation.

After test coverslips, start actual coverslipping.
Machine operates under set up data.
Operation procedure is as follows:-

CAUTION!: This machine does not work with open of top-cover and/or front door for safety. Top-cover and/or front-door must be shut during auto operation. Use proper personal portative equipment to avoid contacting eye skin and clothing

Start from OPERATION MENU

```
OPERATION MENU NO. 0
^:OPE(MRY) <:SP OPE
v:SETUP >:FILL-UP
CLR:BACK TO HP 00sec
```

Press **^** to select Memory No. which is modified.

```
<MEMORY SELECT:1-5>
^:UP v:DN >:CNFRM
[0] <:ADJST
ENT:EXEC CLR:RETURN
```

↓ Press START.
When START lamp does not blink, press CLEAR to return machine HP

Press **v** or **^** to select Memory No. and press ENTER.

↓ START lamp turns on and operation screen is coming up.
Dispensing volume can be adjustable durina operation.

```
MEMORY NO. 0
SELECTED
ENT:OPERATION MENU
CLR:MEMORY SELECTION
```

```
OPERATION:MEMORY No0
^:INC DIS VL +<10
v:DEC DIS VL 000
COUNTER 00000000
```

↓ After finishing coverslipping of slide glass in basket and storage rack reaches to upper end position, machine automatically stops at home position after 5 times beep tone. Counter is showing coverslipping number after installation.

```
COVERSLIPPING
COMPLETED
CLR:RTN
```

↓ Open cover and take out all racks with slide glass carefully.
Press CLEAR, screen back to OPERATION MENU

```
OPERATION MENU NO. 0
^:OPE(MRY) <:SP OPE
v:SETUP >:FILL-UP
CLR:BACK TO HP 00sec
```

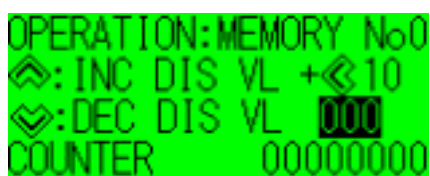
3 . Other Operation.

Operations temporarily pause and the following operation is available.

- Supply coverglass to hopper.
- Take out Rack with slideglass
- Modification of setup data.
- Hold auto coverslipping operation.
- Restart of operation.

3 . 1 Pause of operation.

Operation screen



```
OPERATION:MEMORY No0
^: INC DIS VL +<<10
v: DEC DIS VL 000
COUNTER 00000000
```

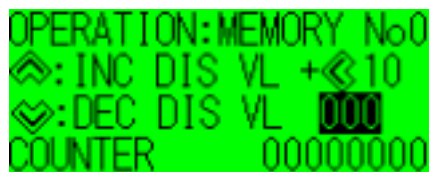
Press **STOP**



STOP lamp turns on and operation stops. RESTART and STOP lamp blinks alternately.



Above operation can be available.



```
OPERATION:MEMORY No0
^: INC DIS VL +<<10
v: DEC DIS VL 000
COUNTER 00000000
```

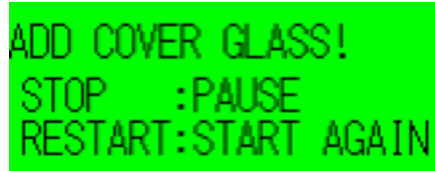
ADVICE!: When **STOP** is pressed, machine stops after a sequence and needle of dispenser stops in xylene reservoir.

3.2 Supply coverglass.

When coverglass consumed, the following message is coming up.

Note: When SGS mode is selected in Version No 23421, the message is not shown.

Please consult Version No to your dealer.



ADD COVER GLASS!
STOP : PAUSE
RESTART: START AGAIN

Press **STOP**.



STOP Lamp turns on and machine stops. RESTART and STOP lamp blinks alternately.

ADVICE! When **STOP** is pressed, machine stops after a sequence and needle of dispenser stops in xylene reservoir.



OPERATION: MEMORY No 0
◀: INC DIS VL +10
▶: DEC DIS VL 000
COUNTER 00000000



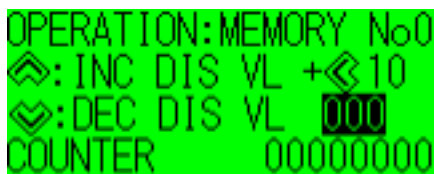
Open top cover and take out CG hopper. Add coverglass to CG hopper. Set CG hopper and close top cover.



Press **RESTART**.
Operation starts.

3.3 Take out rack with slideglass

Rack, which is full of slideglass after coverslipping, can be took out from rail.



OPERATION: MEMORY No0
^: INC DIS VL +10
v: DEC DIS VL 000
COUNTER 00000000

STOP lamp blinks.
RESTART lamp turns on.

Press **STOP**. STOP Lamp turns on and machine stops. RESTART and STOP lamp blinks alternately.



ADVICE!: When STOP is pressed, machine stops after a sequence and needle of dispenser stops in xylene reservoir.



OPERATION: MEMORY No0
^: INC DIS VL +10
v: DEC DIS VL 000
COUNTER 00000000

Note!: Rack can be took out after it gets full of SG and it passes by rack sensor.

Open top cover and take out rack with slideglass. Close top cover.



When **RESTART** is pressed, machine starts again.

3.4 Modification setup data

Setup data is temporarily modified during operation. When operations stop, the data clears. When modifying setup data of another memory, hold automatic operation and modify it. On automatic operation

```
OPERATION:MEMORY No0
^:INC DIS VL +<10
v:DEC DIS VL 000
COUNTER 00000000
```

STOP lamp blinks.
RESTART lamp turns on.

Press **STOP** and Press **CLEAR** and OPERATION MENU

```
OPERATION MENU NO. 0
^:OPE(MRY)<:SP OPE
v:SETUP>:FILL-UP
CLR:BACK TO HP 00sec
```

CAUTION!:
When <:SP OPE is pressed, Auto coverslipping holds. Please press **CLEAR** and operate to HP.

Press ^ OPE(MRY)

```
<MEMORY SELECT:1-5>
^:UP v:DN >:CNFRM
[0] <:ADJST
ENT:EXEC CLR:RETURN
```

Press ^ ADJST

```
<SETUP DATA MOD.>
^:CYCLE >:DISP VL
v:CG SIZE<:PRES VL
ENT:MOD. CLR:RETURN
```

Note!:
Press CLEAR and screen back to MEMORY SELECT MENU

Press ^ CYCLE. Select SGS or ST. and Increase/decrease cycle time

```
<CYCLE TIME.>
^:S.G.S ^ [ 00 ]sec
v:S.T v
ENT:EXEC
```

Press **ENTER** to store data temporarily and screen return to SETUP DATA MOD

Press ^ DISP

```
<DISPENSE MODE, VOL>
^:LINE→VOLUME
v:POINT→VOLUME
CLR:RETURN
```

Press ^ LINE

```
<LINE:DISPENSE VOL>
^ [ 000 ]
(+< EVERY10)
ENT:EXEC
```

Press ^ POINT

```
<POINT:DISPENSE VOL>
^ [ 000 ]
(+< EVERY10)
ENT:EXEC
```

Press ^ CG SIZE

```
<<CG SIZE>>
WIDTH ^:24 >:25
LENGTH ^:UP v:DN
[00×00] ENT:EXEC
```

Press **ENTER** to store data temporarily and screen return to SETUP DATA MOD.

Press ^ Pressure

```
<<PRESSURE SET>>
^ [ 00 ]
v
ENT:EXEC
```

Press **ENTER** to store data temporarily and screen return to SETUP DATA MOD.

Press ^ or ^ to determine volume of mountant media. Press **ENTER** to store data temporarily and screen return to SETUP DATA MOD

```

<SETUP DATA MOD.>
<◇>:CYCLE <◇>:DISP VL
<◇>:CG SIZE<◇>:PRES VL
ENT:MOD. CLR:RETURN
  
```

Press **ENTER** to store data finally and screen announces "modification completed"



```

DATA MODIFICATION
COMPLETED
  
```

3 minutes later, screen changed to OPERATION MENU



```

OPERATION MENU NO. 0
<◇>:OPE(MRY)<◇>:SP OPE
<◇>:SETUP <◇>:FILL-UP
CLR:BACK TO HP 00sec
  
```



```

TOP COVER OPEN!!
(OPERATION HOLD)
CLR : OPERATION MENU
  
```

When CG is changed to another size, open top cover, and replace to other size of CG. Close top cover



Press **RESTART**

```

OPERATION:MEMORY No0
<◇>:INC DIS VL +<◇>10
<◇>:DEC DIS VL 000
COUNTER 00000000
  
```

Press **RESTART**

3.5 STOP Auto coverslipping

When press **STOP**, Machine stops temporarily.

```

OPERATION:MEMORY No0
<◇>:INC DIS VL +<◇>10
<◇>:DEC DIS VL 000
COUNTER 00000000
  
```

STOP lamp blinks.
RESTART lamp turns on.



When **STOP** is pressed again. Machine hold auto coverslipping. Screen is changed to **BACK TO HP**". *Advice:!! If STOP and RESTART lamp does not turn on, please **A** button. Then press **CLEAR** to return machine to HP.*

```

BACK TO HP.
OPERATE MACHINE
AFTER UNIT IN HP
  
```



When machine back to HP,
OPERATION MENU comes up on

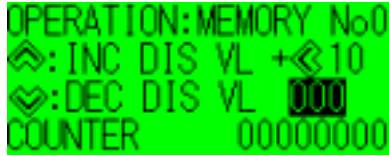
```

OPERATION MENU NO. 0
<◇>:OPE(MRY)<◇>:SP OPE
<◇>:SETUP <◇>:FILL-UP
CLR:BACK TO HP 00sec
  
```

STOP turn on and
RESTART lamp turns off

3.6 RESTART AUTO COVERSLIPPING

When press STOP, Machine stops temporarily. When RESTART is pressed, machine start again.



OPERATION: MEMORY No0
INC DIS VL +10
DEC DIS VL 000
COUNTER 00000000

STOP lamp blinks.
RESTART lamp turns on.

When **RESTART** is pressed,
machine starts again.

Chapter 4 Daily cares

General

Please bear in mind that the coverslipping is a precision laboratory instrument containing precise mechanical movements controlled by delicate electronic controls. Rough and/or careless handling may result in damage to both the mechanical functions and electronic circuitry.

Please check the following items.

1. Check point.

	Check point & Treatment	Trouble
1	Deformation of Basket, storage rack. ➔Changed to new one.	Slide basket pick up-error. Storage error to rack
2	Expansion of basket container. ➔Change to new one.	Slow or no movement of container.
3	Drops of Mountant media on conveyor. ➔Remove drop by xylene carefully.	Slow or no movement of container.
4	Drops of xylene on conveyor. ➔Remove xylene drops.	Damage to sensor, other parts.
5	Purge cup over flow ➔Dispose media in cup	Mountant media drops on conveyor, fork.
6	Drop of glass tip on conveyor. ➔Remove glass tip carefully.	Slow or no movement of container
7	Drop of slide glass on base under elevator. ➔Remove slide glass carefully	Trouble in Operation. Storage error to rack.
8	Stick of Mountant media to Rack. ➔Remove Mountant media stick to rack by xylene carefully.	Storage error to rack
9	Volume of xylene in reservoir. ➔Add xylene to reservoir carefully.	Dry out of needle tip & No dispensing of media.
10	Volume of xylene level container. ➔Add xylene to container over minimum line.	Damage to pump
11	Qty of Coverglass in CG case. ➔Add CG to case.	Machine automatically stop in case of no CG in case.
12	Volume of mountant media in bottle. ➔Replace to new one when volume left 1cm from bottom ➔Replacement per month. ➔ Keep it at ordinary temperature.(Refer instruction of media.)	Bubble problem.
13	Manual dispensing of media before operation.	Bubble problem.
14	Vacuum pad is worn or deformed ➔Replacement.	CG vacuum error.
15	Extraordinary generation of heat. Bending, deformation, broken of devise & parts. ➔Call to service. ➔Cut power.	Operation stops. Damage to parts.

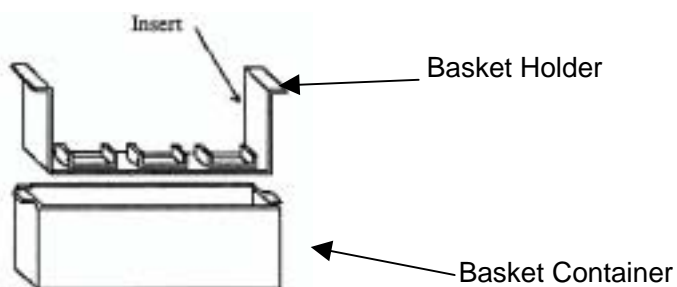
Regular maintenance per 100,000 coverslips or per year (earliest.) is recommended.

2. Cleaning each component

Check and remove glass fragment, glass tip, mountant media and/ or solution in machine. Also, clean up inside containers.

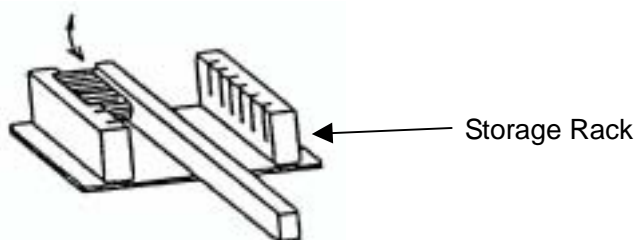
2.1 Cleaning basket containers

Basket Container – Empty container and remove basket insert. Remove any broken glass slides and debris from container and basket insert, wipe clean.



2.2 Cleaning storage shelf

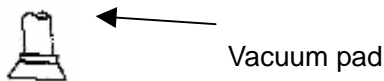
Storage rack- Clean off any accumulation of mountant media with brush dipped in Xylene. (Brush must have wood or metal Handle-not plastic) Wipe storage rack clean



2.3 Cleaning a vacuum pad

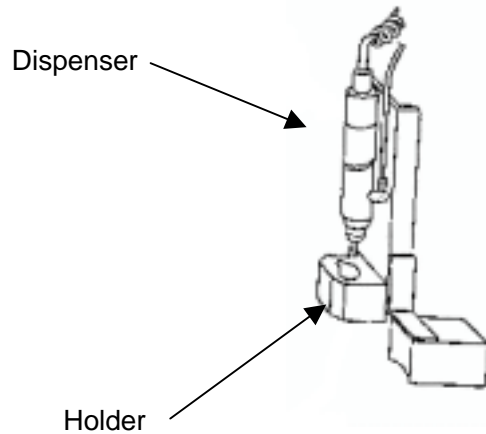
Should the pad leave circular stains on the coverglass,
Carefully clean pad with gauze moistened with alcohol, xylene.
When attaching pad to rod, fit projection of pad to dent of rod

If pick up error of cover glass often happens, vacuum pad should be also replaced.



2.4 Cleaning dispenser holder

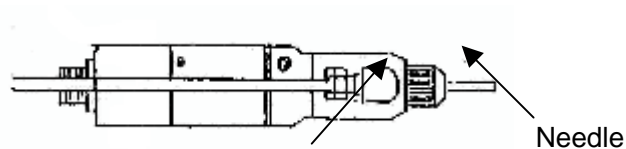
If holder and/or dispenser become contaminated with mountant media, clean with gauze moistened with xylene to assure proper seating of dispenser in holder..



3. Dispenser.

If needle tip does not dip into xylene reservoir, the tip dry out and it would cause trouble. Be sure that xylene reservoir should be filled up by xylene. If the troubles like "no mountant media dispensed" or bubble is dispensed etc happen, please execute fill up by xylene.

If trouble is not solved, repair, replacement is required. Please contact to service.



4 . In case of no use for long time.

Please carry out the following items when machine is not used for long time.

Turn Power off on the operation panel.

Turn main power off at the rear panel

Unplug the main cable

Open top cover and take out CG hopper, and store coverglasses in a dry place

Take out basket container and put the lid on

Add xylene in the reservoir if the volume is little.

Close the top cover and the under door


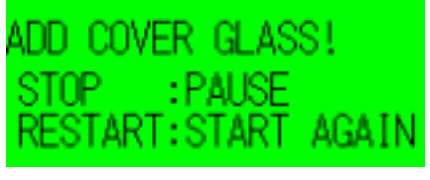
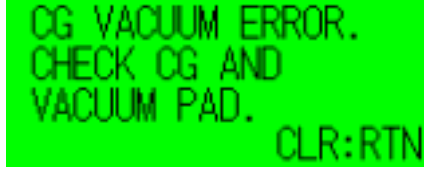

Chapter 5 Troubleshooting

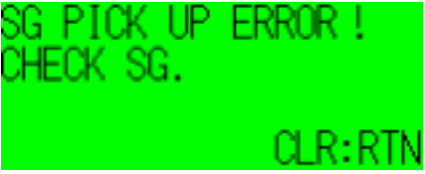

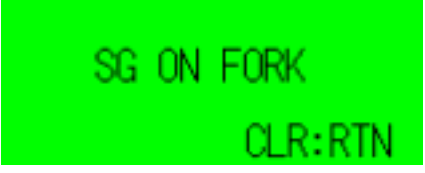
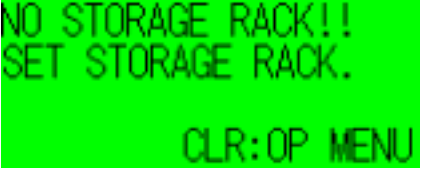
This machine alerts the faulty operation by color screen and alarms when faulty operation is detected.


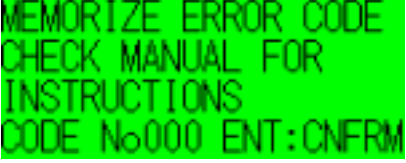
1. Display

When problem detected, it is shown on screen. Please take care as the following instructions.

Advice!: Press **CLEAR** to stop alarm.
 When restart is not available (restart lamp & stop lamp does not blink, press **CLEAR** to return to operation menu screen. Then press **CLEAR** to return HP.

Screen.	Description
	<ul style="list-style-type: none"> • Sequence of automatic coverslipping has completed. This is normal. • Open cover and take out all racks with slideglass carefully. • Press CLEAR • 3. Error code & troubleshooting/Treatment.
	<p>Coverglass is shorting in CG case during automatic operation. When CG is less than 70pcs approx. this message appears.</p> <ul style="list-style-type: none"> • Add CG before next sequence of coverslipping. • Press STOP. After machine stops, add more coverglass. <ol style="list-style-type: none"> 1. Press STOP. 2. Open cover and add new coverglass to CG case. 3. Close cover and press RESTART. <p>Refer 3. Error code & troubleshooting/Treatment.</p>
	<p>No coverglass remains in Case or failed CG vacuum 3 times during automatic operation.</p> <ol style="list-style-type: none"> 1. Press CLEAR to stop alarm 2. Open cover and remove SG from finger by pressing FINGER 3. Add new CG to CG case. 4. Close cover and press RESTART. <p>Check contamination, Injury of vacuum pad 3. Error code & troubleshooting/Treatment.</p>
	<p>A coverglass is broken. Remove the broken glasses carefully.</p> <ol style="list-style-type: none"> 1. Press CLEAR to stop alarm 2. Open cover. 3. Remove broken CG carefully and remove SG on fork.(If SG is not removed on fork, "SG ON FORK" is appears. After remove SG, Restart is available.) 4. Close cover and press RESTART. <p>Refer 3. Error code & troubleshooting/Treatment</p>

Screen.	Description
	<p>A slide glass can not be picked up by finger correctly. Remove slideglass from finger, Slideglass on Basket, conveyer carefully etc.</p> <ol style="list-style-type: none"> 1. Press CLEAR to stop alarm. 2. Open cover or door. 3. Remove SG carefully from finger, on Basket, conveyer etc. 4. Close cover or door and press RESTART. <p>Check basket deformation. Refer 3. Error code & troubleshooting/Treatment.</p>
	<p>A slide glass has not been correctly set to storage rack.</p> <ol style="list-style-type: none"> 1. Press CLEAR to stop alarm. 2. Open cover. 3. Remove SG from rack or fork carefully. 4. Remove next SG from finger carefully by FINGER 5. Close cover and press RESTART. <p>If SG is inserted to rack, Error message “SG ON FORK” appears. Remover SG on fork and operate HP.</p> <ul style="list-style-type: none"> ● Check rack deformation. ● Check rack contamination. ● Refer 3. Error code & troubleshooting/Treatment.
	<p>A slide glass remains on the fork.</p> <ol style="list-style-type: none"> 1. Press CLEAR to stop alarm 2. Open cover and remove Slide glass on fork 3. Return machine to HP and start again. <ul style="list-style-type: none"> ● Press CLEAR; Screen changes to operation menu. ● Press CLEAR: Message “return to HP” is shown on screen <p>When machine operates with under door open, Sensor detects refracted light and screen might show this message. Close under door.</p> <p>Refer 3. Error code & troubleshooting/Treatment</p>
	<p>All of three storage rack are not set to elevator.</p> <ol style="list-style-type: none"> 1. Press CLEAR to stop alarm. 2. Open cover 3. Set racks to elevator. 4. Return machine to HP and start again. <ul style="list-style-type: none"> ● Press CLEAR; Screen changes to operation menu. ● Press CLEAR: Message “return to HP” is shown on screen <p>Refer 3. Error code & troubleshooting/Treatment</p>

Screen.	Description
	<ul style="list-style-type: none"> ● Error occurred. ● Note error-code. ● Push CLEAR button to stop alarm. ● Remove slide glass from finger when it is holding slideglass. ● Remove slide glass on fork, in rack. ● Turn power off and turn on. ● Refer 3. Error code & troubleshooting/Treatment
	

2. Error code

When machine stops by error, please check error code and return machine to HP (home position)

1. Press **CLEAR** to stop alarm.
2. Press **CLEAR** to return screen to operation menu.
3. Remove slide glass, coverglass carefully
4. Press **CLEAR** to return HP.
5. Refer 3. Error code & troubleshooting/Treatment

- If machine does not return to HP, open & close top/lower cover. And operate returning HP
- If machine does not return to HP, Turn power off and on.
- If machine does not return to HP and error message is shown on screen, please contact to authorized dealer
- If screen does not change due noise, static electricity, press CLEAR to return operation menu screen. And try again.

ERROR CODE	POSITION TROUBLED	DESCRIPTION.
101	CONVEYOR	When loading basket container, It takes over one minute to reach to back end(home position). Check basket container deformed to be caught.
102	CONVEYOR	When conveyor stops over home position.
103	CONVEYOR	Basket container detected but slide glass is not detected. Basket container is not loaded but Slide glass detected.
201	ELEVATOR	Upper end and/or lower end sensor has problem
202	ELEVATOR	When elevator descending, time out happens.
203	ELEVATOR	Sensor detects Storage rack position error.
301	Main shaft	Error.
302	Main shaft	Sensor detects Storage rack position.
303	Main shaft	Time out error
401	CG head and folk	Error
402	CG head and folk	Sensor for CG head detect error
403	CG head and folk	Storage folk sensor detects error
404	CG head and folk	Time out error
501	Dispenser pump	Error
502	Dispenser pump	Vacuum & dispense sensor detects error.
601	Arm	Error
602	Arm	Sensor detects error.
603	Arm	Time out error
701	Finger	Finger arm movement error.

Error code & troubleshooting/Treatment

ERROR CODE	POSITION TROUBLED	CHECK POINTS	TROUBLESHOOTING
101	CONVEYOR : CONTAINER LOADING TIME OVER	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. </div> <ul style="list-style-type: none"> - 1 Deformation or expand of container. - 2 Mountant media drops on conveyor and it stands - 3 Distance between side-wall is less than 49mm+ - 4 Chain cut or slack 	<ul style="list-style-type: none"> - 1 Change container. - 2 Clean on conveyor by xylene carefully. - 3 Please contact authorized service. - 4 Please contact authorized service
102	CONVEYOR: CONTAINER-DETECT SENSOR TROUBLE.	<div style="border: 1px solid black; padding: 5px;"> <ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. </div>	Please contact authorized service
103	CONVEYOR: SG DETECT SENSOR TROUBLE.		

ERROR CODE	POSITION TROUBLED	CHECK POINTS	TROUBLESHOOTING
201	ELEVATOR: ELEVATOR SENSOR TROUBLE.	<ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. 	Please contact authorized service
202	ELEVATOR: ELEVATOR UP/DOWN TIME OVER	<ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. <p>- 1 Deformation of rack - 2 Mountant media drop on rail and it stand</p>	<p>- 1 Change rack - 2 Clean on rail by xylene carefully.</p> <p>Please contact authorized service</p>
203	ELEVATOR: ELEVATOR POSITIONING SENSOR TROUBLE.	<ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. 	Please contact authorized service

ERROR CODE	POSITION TROUBLED	CHECK POINTS	TROUBLESHOOTING
301	MAIN SHAFT (CG HEAD) MAIN SHAFT MOTOR TROUBLE.	<div style="border: 1px solid black; padding: 5px;"> <ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. </div>	
302	MAIN SHAFT (CG HEAD) MAIN SHAFT SENSOR TROUBLE.	<ol style="list-style-type: none"> 1. Less grease on main shaft. 2. Safely switch for motor does not activate. 	<ol style="list-style-type: none"> 1. Put grease on main shaft Please contact authorized service 2. If paper etc is put into safety switch hole, please stop it. Close cover/door and operate.
303	MAIN SHAFT (CG HEAD) TIME OVER		

ERROR CODE	POSITION TROUBLED	CHECK POINTS	TROUBLESHOOTING
401	CG HEAD AND FORK: CONTROL TROUBLE OF CG HEAD TURN & MOTOR.	<div style="border: 1px solid black; padding: 5px;"> <ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. </div>	Please contact authorized service
402	CG HEAD AND FORK: TROUBLE OF CG HEAD TURN.	1. Mountant media drops on forks?	1. Clean mountant media on forks by xylene
403	FORK: SENSOR TROUBLE OF FORK.		
404	CG HEAD AND FORK: TIME OVER OF CG HEAD TURN AND FORK		

ERROR CODE	POSITION TROUBLED	CHECK POINTS	TROUBLESHOOTING
501	DISPENSER PUMP CONTROL TROUBLE	<div style="border: 1px solid black; padding: 5px;"> <ol style="list-style-type: none"> 1. Press CLR to return screen to Operation menu. **Remove slide glass from finger. Press CLR to return HP. And check the followings carefully. 2. If machine does not return to HP, open & close top/lower cover. And operate returning HP 3. If machine does not return to HP, Turn power off and on. 4. If machine does not return to HP and error message is shown on screen, please contact to authorized dealer. </div>	Please contact authorized service
502	DISPENSER PUMP PUMP SENSOR PROBLEM		
601	ARM ARM MOTOR CONTROL TROUBLE		
602	ARM ARM POSITION SENSOR TROUBLE		
603	ARM ARM UP/DOWN TIME OVER		
701	FINGER FINGER OPEN TIME OVER		
901	UNIDENTIFIED TROUBLE		

ERROR message	POSITION TROUBLED	CHECK POINTS	TREATMENT
ADD COVER-GLASS.	<p>Coverglass is shorting in CG case during automatic operation.</p> <p>When CG is less than 70pcs approx. this message appears.</p>	Check Coverglass in Case.	<p>⇒ Press CLEAR to mute</p> <ul style="list-style-type: none"> ● Add CG before next sequence of coverslipping. ● Press STOP. After machine stops, add more coverglass. <ol style="list-style-type: none"> 1. Press STOP. Hold on until Machine stops. 2. Open cover and add new coverglass to CG case. 3. Close cover and press RESTART. <p>Noted. If cover opens before pressing STOP, Machine stops in emergency. Then return machine Home Position (HP) and start.</p> <ol style="list-style-type: none"> 1. Press CLR; Screen changes to operation menu. 2. Press CLR: Message “return to HP” is shown on screen 3. Release Slideglass from finger.
CG VACUUM ERROR	<p>No Coverglass in CG case.</p> <p>Vacuum pad failed CG vacuum 3 times during automatic operation.</p>	<p>Check Coverglass in Case.</p> <p>-----</p> <p>Check Pad injured ,weaken, contamination</p> <p>-----</p> <p>If this message appears though CG is vacuumed, it is suspected that filter disk inside machine is stuck.</p>	<ol style="list-style-type: none"> 1. Press CLEAR to stop alarm 2. Open cover and remove SG from finger by pressing FINGER 3. Add new CG to CG case. 4. Close cover and press RESTART. <p>-----</p> <p>Replace the old pad with a new one. Clean vacuum pad by alcohol.</p> <p>-----</p> <p>Please contact authorized service</p>

ERROR message	POSITION TROUBLED	CHECK POINTS	TREATMENT
CG BROKEN	Broken CG is detected..	<p>Check coverglass vacuumed by pad.</p> <p>-----</p> <p>If this message appears though CG is not broken, it is suspected that improper Separate guide position, CG head height, sensor trouble etc.</p>	<ol style="list-style-type: none"> 1. Press CLEAR to stop alarm 2. Open cover. 3. Remove broken CG carefully and remove SG on fork.(If SG is not removed on fork, "SG ON FORK" is appears. After remove SG, Restart is available.) 4. Close cover and press RESTART. <p>-----</p> <p>Please see 4.7 Positioning of separate guide and swinging plate</p> <p>Please contact authorized service</p>
SG PICK UP ERROR	A slide glass can not be picked up by Finger correctly.	<p>Open cover & door and check slideglass in finger.</p> <p>-----</p> <p>Basket is deformed. Basket hanger is obstruction sensor beam Slideglasses form in a line ?</p>	<ol style="list-style-type: none"> 1. Press CLEAR to stop alarm. 2. Open cover or door. 3. Remove SG carefully from finger, on Basket, conveyer etc. 4. Close cover or door and press RESTART. <p>-----</p> <p>Replace to new basket. Lay down hanger correctly Form SG in a line in basket.</p>

ERROR message	POSITION TROUBLED	CHECK POINTS	TREATMENT
SG STORAGE ERROR	<p>A slide glass has not been correctly set to storage rack.</p> <p>Slideglass is jammed</p>	<p>Storage rack deformation.</p> <p>-----</p> <p>Check rack contamination</p> <p>-----</p> <p>Mounting media is stuck to rack.</p>	<ol style="list-style-type: none"> 1. Press CLEAR to stop alarm. 2. Open cover. 3. Remove SG from rack or fork carefully. 4. Remove next SG from finger carefully by FINGER 5. Close cover and press RESTART. <p>If SG is inserted to rack, Error message "SG ON FORK" appears. Remove SG on fork and operate HP.</p> <p>-----</p> <p>Change to new rack</p> <p>-----</p> <p>Clean rack by xylene</p>
No STORAGE RACK	All of three storage racks are not set to elevator.	Elevator rail	<ol style="list-style-type: none"> 1. Press CLEAR to stop alarm. 2. Open cover 3. Set racks to elevator. 4. Return machine to HP and start again. <ul style="list-style-type: none"> • Press CLEAR; Screen changes to operation menu. • Press CLEAR; Message "return to HP" is shown on screen

ERROR message	POSITION TROUBLED	CHECK POINTS	TREATMENT
SG ON FORK	<p>Slideglass is left on fork.</p> <p>Sensor reacts to outside light.</p>	<p>-----</p> <p>When machine operates with under door open, Sensor detects refracted light and screen might show this message. Close under door.</p>	<ol style="list-style-type: none"> 1. Press CLEAR to stop alarm 2. Open cover and remove Slide glass on fork 3. Return machine to HP and start again. <ul style="list-style-type: none"> • Press CLR; Screen changes to operation menu. • Press CLR: Message “return to HP” is shown on screen <p>-----</p> <p>Close cover and door during operation.</p>

4. Color of display and alarm sound at the time of error

Coverslipping complete

description	Screen Color	Alarm(*1)	Duration of alarm.
Coverslipping complete	Green	Continuously	5 times.

Alert

description	Screen Color	Alarm(*2)	Duration of alarm.
Less CG in Hopper	Green	Intermittent	By pressing CLEAR

Error

description	Screen Color	Alarm(*3)	Duration of alarm.
CG/CG vacuum error	Green	Continuously	By pressing CLEAR
CG broken	Green	Continuously	By pressing CLEAR
SG Pick up error	Green	Continuously	By pressing CLEAR
SG Storage error	Green	Continuously	By pressing CLEAR
SG on Folk	Green	Continuously	By pressing CLEAR
SG Storage error	Green	Continuously	By pressing CLEAR
No battery power	Red	Continuously	By pressing CLEAR
Error cord	Red	Continuously	By pressing CLEAR

Chapter 6 Regular Maintenance

We recommend regular maintenance as follows in order to keep machine good condition. Please consult dealer or service.

Over a year or 100,000 coverslipping.

Over 2years or 200,000 coverslipping

Over 3years or 300,000 coverslipping

Over 4years or 400,000 coverslipping

Check point

- (1) CG head
- (2) Grease up
- (3) Finger
- (4) Elevator
- (5) Dispenser
- (6) Vacuum pad
- (7) Check valve
- (8) Filter disk.
- (9) Conveyor rail.
- (1 0) Safety switch
- (1 1) CG Stand
- (1 2) Xylene reservoir
- (1 3) Purge cup
- (1 4) SG receiver nail
- (1 5) Storage fork.