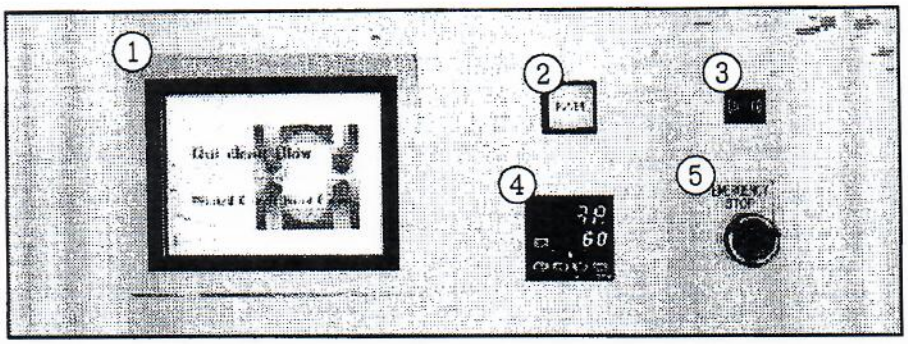
4 . How to operate

4 - 1 . Operation panel



① Liquid crystal touch panel
[Function]
Starts and stops the device. and displays an alarm message. etc.
[Supplementary remarks]
Refer to "Operation of touch panel" for the operation method.

② Power supply lamp
[Function]
Illuminates when three-phase 200V is applied.

③ Buzzer
[Function]
It sounds when the confirmation of this device is necessary in case of an emergency stop. a device failure. etc.
Push the buzzer reset button of the touch panel to stop the buzzer.

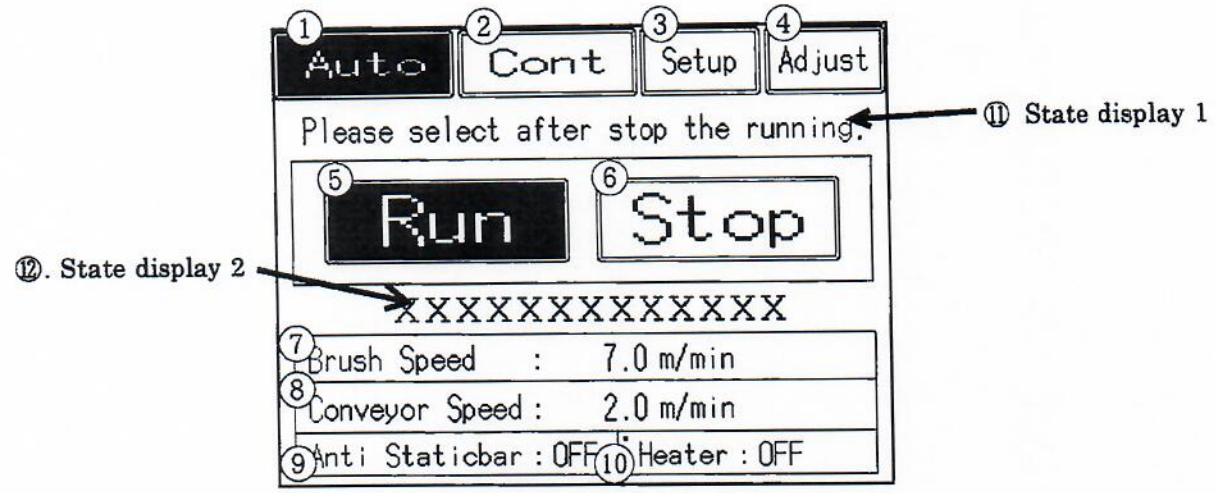
④ Digital thermometer (Effective for QCB-3EX only)
[Function]
The temperature of the blow air is controlled. (Upper setting limit: MAX 60 ℃)

⑤ Emergency stop switch
[Function]
It is a switch for the emergency stop of the system.
[Supplementary remarks]
Refer to "Dealing with the emergency stop" for measures.

4 - 2. Operation of touch panel

If the touch panel is not operated for ten minutes or more, the screen is automatically turned off for protection of the display device. The screen displays again by touching it.

(1) Operation screen (initial screen)



①. Automatic operation mode selection button

[Function]

Operates automatically.

[Supplementary remarks]

- The operation of the blower and conveyor is started when the board is fed (entrance sensor ON).
- Even if this button is pushed while operating, it is disregarded. Push the button after stopping the operation.

②. Continuous operation mode selection button

[Function]

Operates continuously.

[Supplementary remarks]

- Operation continues regardless of the insertion or not of the board.
- Even if this button is pushed while operating, it is disregarded. Push the button after stopping the operation.

③. Setting button

[Function]

Switches to the setting screen.

[Supplementary remarks]

- Even if this button is pushed while operating, it is disregarded. Push the button after stopping the operation.

④. Maintenance button

[Function]

Switches to the maintenance screen.

[Supplementary remarks]

- Even if this button is pushed while operating, it is disregarded. Push the button after stopping the operation.

⑤. Operation button

[Function]

Operation is started.

⑥. Stop button

[Function]

Operation is stopped.

⑦. Brush speed display (m/min)

[Function]

The brush speed is displayed.

[Supplementary remarks]

Refer to "Various setting methods" for the method of changing the brush speed.

⑧. Conveyor speed display (m/min)

[Function]

Conveyor speed is displayed.

[Supplementary remarks]

Refer to "Various setting methods" for the method of changing the conveyor speed.

⑨. Anti-static bar set state

[Function]

The set condition of the anti-static bar is displayed.

[Supplementary remarks]

The anti-static bar does not operate even if the device is started to operate when it is set to OFF.

Refer to "Various set methods" for the setting method.

⑩. Heater set state (Effective for QCB-3EX only).

[Function]

Setting of the heater is displayed.

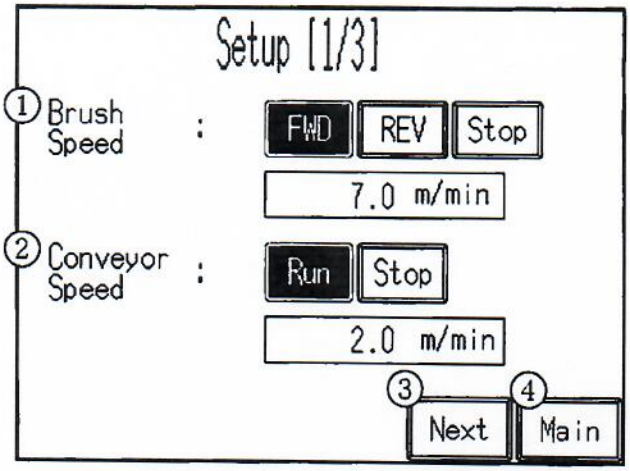
Symbol is displayed on the upper right in the frame during the heater out.

[Supplementary remarks]

The heater does not operate even if the device is started to operate when it is set to OFF.

Refer to "Various setting methods" for the setting method.

(2) Setup screen [1/3]



①. Brush forward and reverse operation

[Function]

Brush is rotated forward or reverse.

The rotational speed of the brush is displayed in the frame while operating.

Mainly used for adjustment of the rotational speed of the brush.

[Supplementary remarks]

Refer to "Various setting methods" for the method of adjusting rotational speed of brush.

②. Conveyor operation

[Function]

The conveyor is driven.

The speed of the conveyor is displayed in the frame while operating.

Mainly used for adjustment of the conveyor speed.

[Supplementary remarks]

Refer to "Various setting methods" for the method of adjusting the conveyor speed.

③. Next page button

[Function]

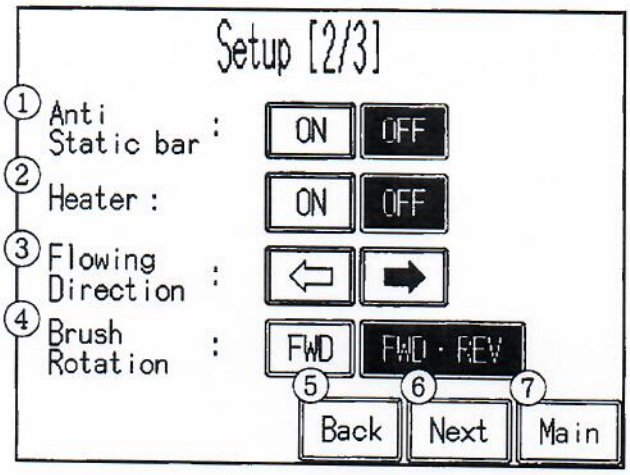
Changes to the setting screen [2/3].

④. Return button

[Function]

Returns to the operation screen.

(3) Setup screen [2/3]



①. Anti-static bar setting

[Function]

The state of anti-static bar at operating is set.

②. Heater setting (Effective for QCB-3EX only).

[Function]

The state of the heater when operating is set.

③. Setting of board flow direction

[Function]

The direction of the board flow is selected.
A black arrow indicates a flow direction of the board.
(The above figure shows that the board is conveyed from left to right when viewed from the operation board side.)

④. Selection of cleaning brush rotation

[Function]

The rotation of the cleaning brush is set.

[Supplementary remarks]

The forward-reverse mode prevents the rear end of the thin board from being bent by the cleaning rollers.
Moreover, the brushing effect is improved by the reverse rotation.
Select the rotation depending on the board thickness.

⑤ Previous page button

[Function]

Changes to the setup screen [1/3].

⑥ Next page button

[Function]

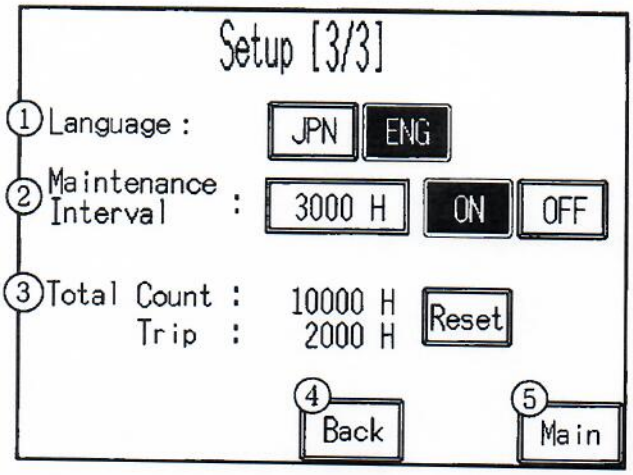
Changes to the setup screen [3/3].

⑦ Return button

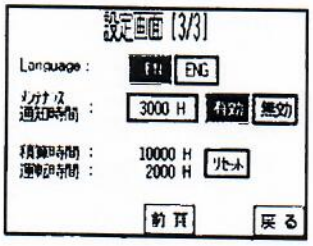
[Function]

Returns to the operation screen.

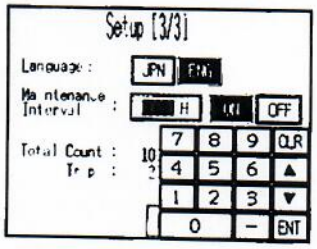
(4) Setup screen [3/3]



※ 1 Screen after JPN button is pushed



※ 2 When ten keys are displayed.



①. Language setting

[Function]

The display language is set to Japanese or English.

Switches immediately by pressing JPN or ENG button.

※ 1) Screen display when JPN button is selected.

②. Maintenance interval setting

[Function]

Time until notifying the check time of this device and the presence or not of the notification are set.

The notification or non-notification is selected by ON or OFF button.

When 3000H (in the frame) is pushed, ten keys are displayed. Input the notification time.

※ 2) State that ten keys are displayed.

[Supplementary remarks]

Refer to "Method of setting the maintenance interval" for details.

③. Total time and operation time

[Function]

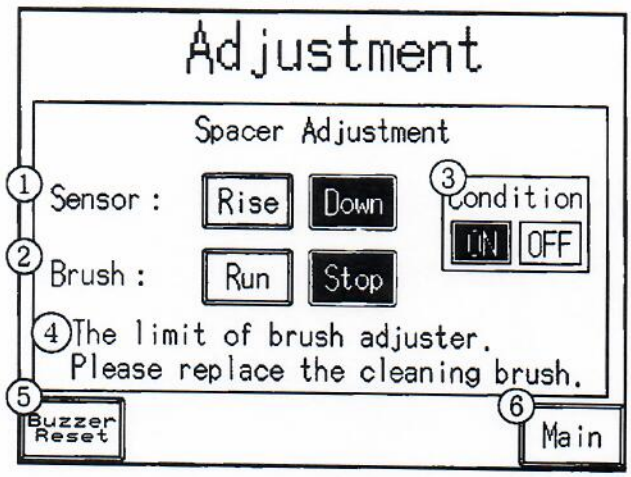
Total time : Operation time is displayed in total. This time cannot be reset.

Operation time : Operation time is displayed. It can be reset as desired by the [Reset] button. Use it for the control or the like of the operation time.

④. Former page button
[Function]
Changes to the setup screen [2/3].

⑤. Return button
[Function]
Returns to the operation screen.

(5) Maintenance screen



①. Sensor rise and down buttons
[Function]
Rises or lowers the brush abrasion sensor.

②. Cleaning brush run and stop buttons
[Function]
The cleaning brush is driven or stopped.

③. Brush space condition
[Function]
The brush space is displayed in the state of ON/OFF of the sensor.

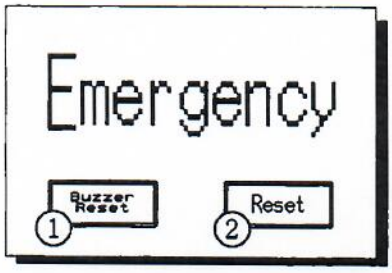
④. Cleaning brush replacement message
[Function]
When the space adjustment of the upper and lower cleaning brushes becomes a limit. the message of replacement is displayed.

⑤. Buzzer reset button
[Function]
Stops the buzzer sound generated when the cleaning brush replacement message is displayed.

⑥. Return button
[Function]
Returns to the operation screen.

(6) Emergency stop screen

When the emergency stop switch is pushed, the following screen is displayed and the operation is paused.



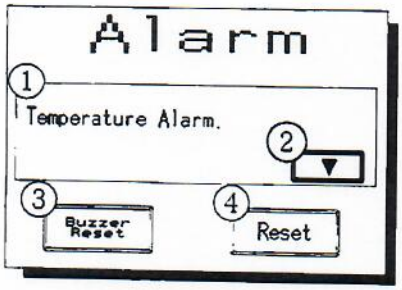
①. Buzzer reset button
[Function]
The buzzer sound is stopped.

②. Emergency stop reset button
[Function]
The emergency stop is released, and the former screen is resumed.
Check whether the emergency stop switch has been released if the emergency stop screen remains.

※ Refer to "Dealing with the emergency stop" for the method of releasing the emergency stop.

(7) Device trouble screen

The following screen is displays when the alarm is issued. And the operation is paused.



①. Content of the alarm is displayed.

②. Multiple alarm check button
[Function] The contents of other alarms are displayed.

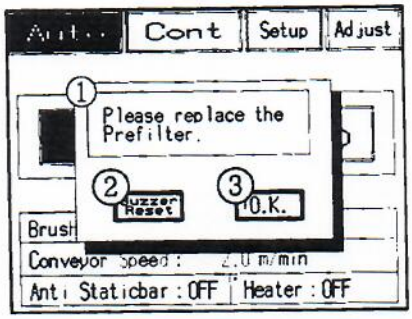
③. Buzzer reset button
[Function] The buzzer sound is stopped.

④. Device problem reset button
[Function] A device problem is released, and the former screen is resumed.
Check that the content of the alarm is removed if the device problem screen remains.

※ 1 Refer to "Dealing with device problem" for the releasing method.
※ 2 Refer to "Dealing with alarm" for the content of alarm.

(8) Check window

The following window is displayed to check the operation. the completion of processing, etc.Operate according to the message.



①. Content of message is displayed.

②. Buzzer reset button
[Function] The buzzer sound is stopped.

③. Check button
[Function] The check window is deleted.

※ Refer to "Dealing with message" for the content of the message.

4－3. Operation procedure

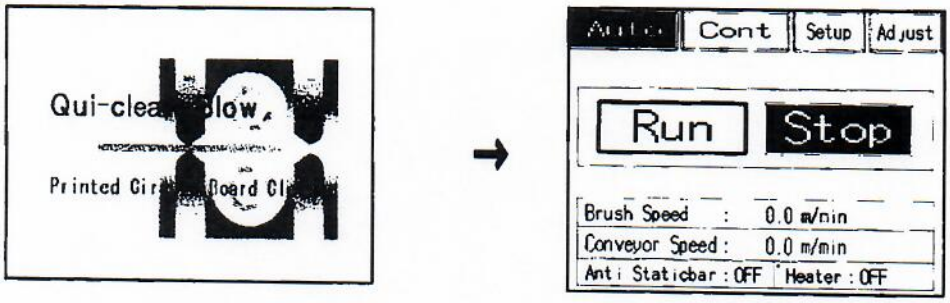
1. Preparation

(1) Turn on the power supply breaker. The title screen is displayed.

[CAUTION!]

After the power supply is turned on. the operation is not accepted for ten seconds because the device is under preparation. The operation screen is displayed in ten seconds.

Moreover, the next operation is not accepted while the device is operating. Operate after stopping the operation.



(2) Set the operation.

Each setting is made on the setting screen.

To set the operation. push the Setup button to switch to the setting screen.

※ Refer to "Various setting methods" for details.

(3) Select the operation mode.

[Automatic operation] : When the board is fed into the device, the entrance sensor detects the board and the operation is started. The operation stops in 60 seconds after the board is fed.

[Continuous operation] : Operation continues regardless of the presence or not of the board.

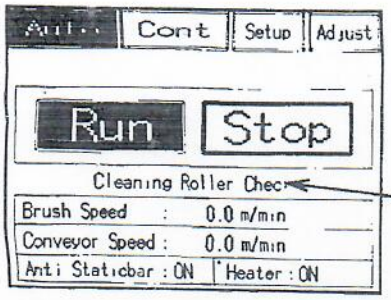
(4) To adjust the brush space beforehand, push the maintenance button to switch to the maintenance screen.

※ Refer to "Method of adjusting cleaning brush space" for the adjusting method.

2 . Operation

(1) Push the Run button to start the operation.

(2) The space of the cleaning rollers (non-woven cloth, brushes) is checked automatically. ("Cleaning Roller Check" is displayed on the screen while checking.)

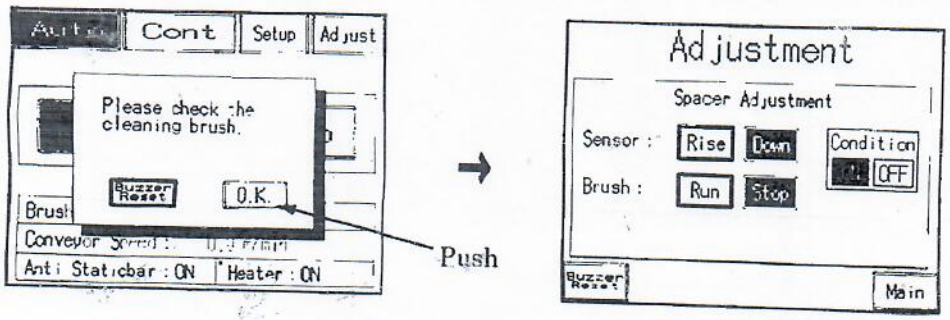


Blinking display

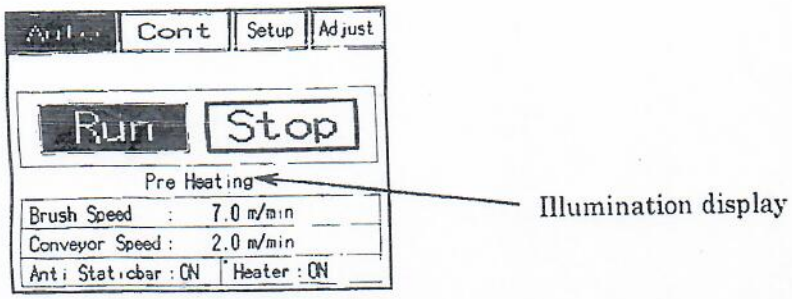
(3) After checking the cleaning rollers, the following check window may be shown occasionally.
It is shown when the function as the cleaner cannot be exhibited fully because the space of the cleaning rollers is large.

When the O.K. button is pushed, the operation is stopped and the maintenance screen is displayed. Adjust the cleaning brush space. And restart the operation after adjusting.

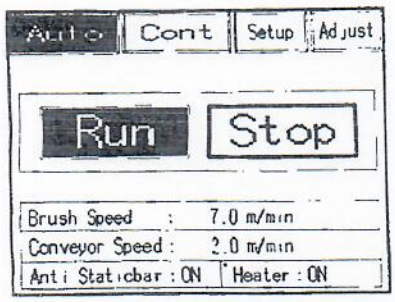
※ Refer to "Method of adjusting cleaning brush space" for the adjusting method.



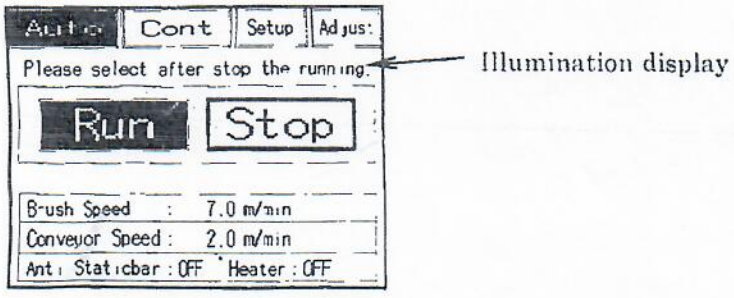
(4) When the heater operation is on, it operates after the cleaning rollers are checked. (Until the set temperature is attained, "Pre Heating" is shown on the screen.)
The preheating time is about 30 minutes.



(5) "Pre Heating" disappears after reaching a set temperature. Start the cleaning operation.



(6) The selection of the operation mode and the change of the screen cannot be made while operating.
Even if the button is pushed, it is invalid and the following state message blinks.
Select the operation mode or switch the screen after stopping the operation.



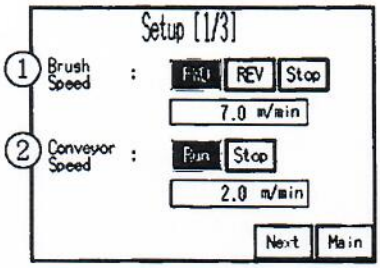
(7) Push the Stop button when the operation is stopped.

(8) Turn off the power supply breaker after completing the operation.

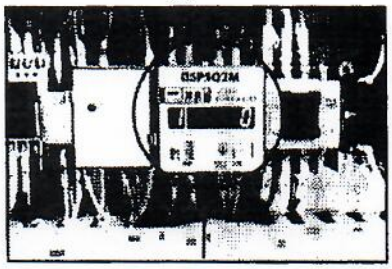
[CAUTION]
Allow a time interval of ten seconds or more when the power supply is turned on again.

4－4. Various setting methods

Each setting is made on the setup screen. Setting procedure is shown below.

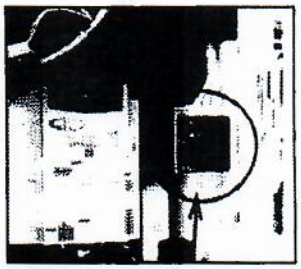


A



Brush speed controller

B



Conveyor speed dial

① Setting of brush rotation speed

Turn ON the FWD or REV button to rotate the brushes, and adjust the speed by the controller (shown in Figure A above) in the switchboard while seeing the speed displayed on the screen. When rotating forward or reverse, each set speed can be changed.
(Refer to the setting method given on the nextpage.)

② Conveyor speed setting

Turn ON the Run button to operate the conveyor, and adjust its speed by the speed dial (shown in Figure B above) in the switchboard while seeing the speed displayed on the screen.

[Supplementary remarks] Standard set values of the conveyor speed are shown below.

- When the dust removal is not satisfactory, adjust the brush speed to a level faster than the standard value.
- When the board surface is scratched, adjust the brush speed to a level slower than the standard value.

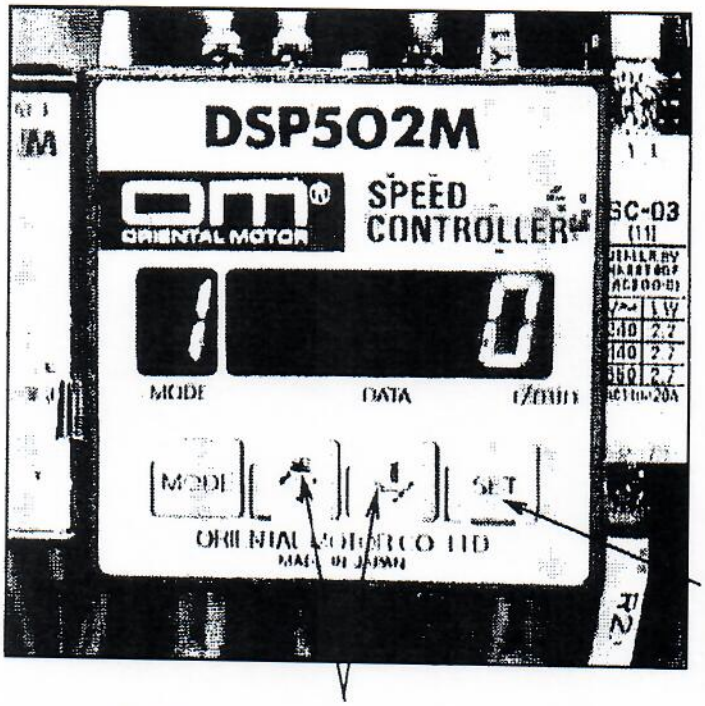
Selection of FWD mode

Conveyor speed (m/min)	2	3	4	5	6	7	8	9
FWD brush speed (m/min)	6~7	7~8	8~9	9~10	10~11	11~12	12~13	13~14

Selection of FWD-REV mode

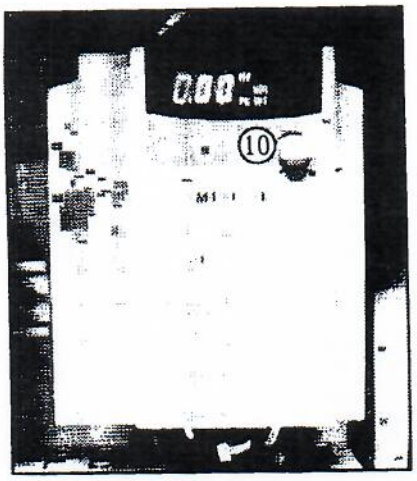
Conveyor speed (m/min)	2	3	4	5	6	7	8	9
FWD brush speed (m/min)	6~7	7~8	8~9	9~10	10~11	11~12	12~13	13~14
REV brush speed (m/min)	3~4	3~4	2~3	2~3	2~3	2~3	2~3	2~3

· Method of setting brush rotation speed



1 . Adjust the speed by the up and down arrow buttons while seeing the speed displayed on the touch panel screen. (every 10 r/min)

2 . Push the SET button after a target numerical value is indicated. Then, the target value is fixed after blinking.



⑩ Adjustment of the blower inverter frequency (measures against peeling off of Mylar).

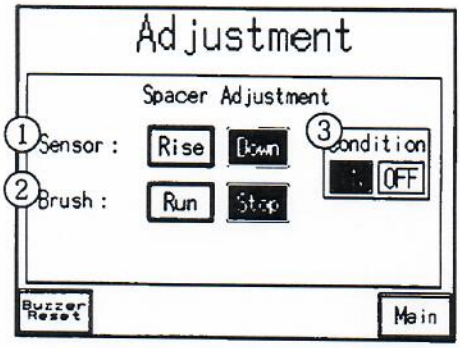
· When Mylar is peeled due to the air blow pressure. lower the frequency of the inverter to decrease the blowing pressure.

The inverter frequency setting dial in the switchboard can be adjusted continuously in a range of 10Hz to 60 Hz. As the dust removing effect, 40Hz is a limit. Do not adjust the frequency to a level lower than 40 Hz. A Dust trouble may be caused.

4-5. Adjustment of cleaning brush space

When the Maintenance button on the operation screen is pushed or when it is found necessary by the inspection of the cleaning roller at the start of operation to make adjustment, the maintenance screen is displayed.
The adjustment procedure is shown as follows.

1.

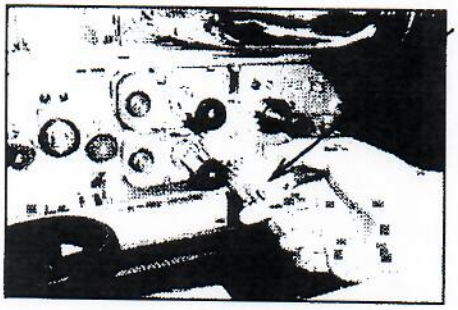


① Raise the abrasion sensor.

② Operate the brush.

※ Adjustment can be made without operating the brush, but do not fail to operate the brush because the hair tips of the brush are delicately variable.

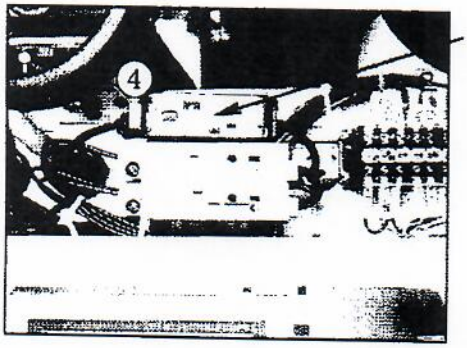
2.



Spacer (Turn in the direction of DOWN)

③ Decrease the brush space until the sensor's condition lamp OFF illuminates.
(Turn the spacer in the direction of DOWN.)

3.

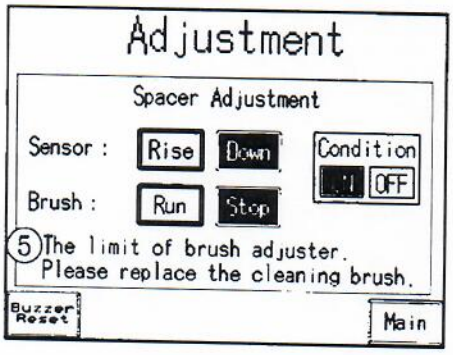


Sensor amplifier

④ For fine adjustment, adjust while seeing the sensor amplifier until the numerical value stabilizes in a green area.

Display numerical value
Red: Sensor ON → There is a space.
Green: Sensor OFF → There is no space.

4.



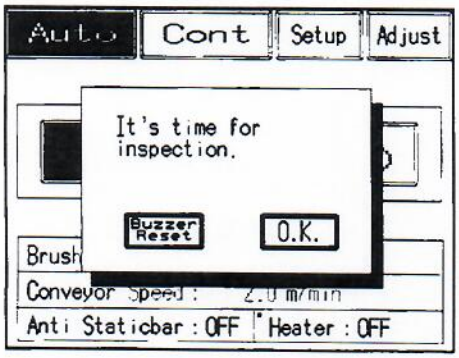
⑤ When the brush space adjustment becomes a limit, a message which urges the replace ment of the cleaning brush is displayed. Replace the brush.

4 - 6. Setting of maintenance interval

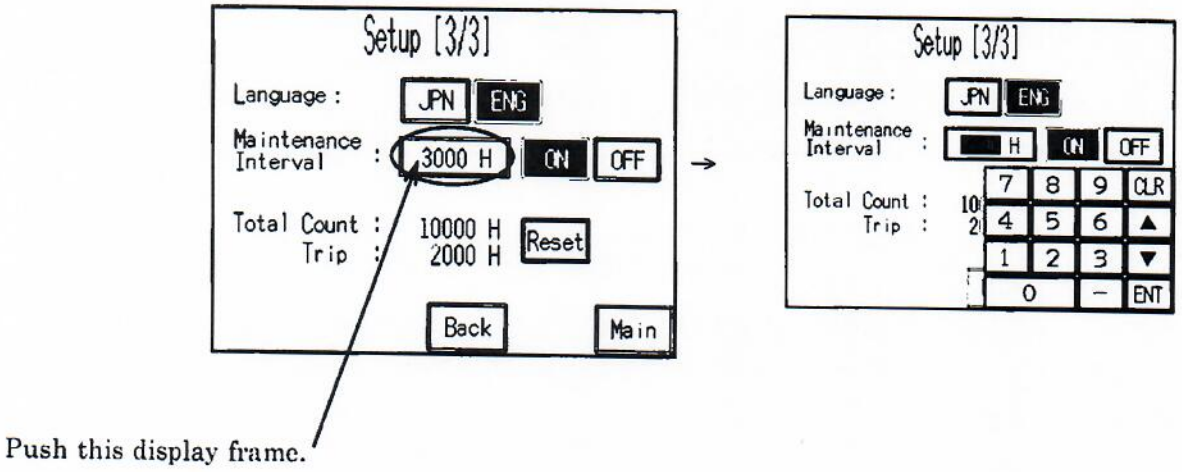
A machine trouble can be prevented by periodically inspecting the machine.
It is recommended to enable the inspection notification.

Time of the periodical inspection of this device is notified.
Notification or non-notification is selected by ON or OFF button.

At the time of shipping the device, it is set to 3000 hours as the recommended time.
The notification is displayed in the confirmation window on the operation screen when the device is operating.



※ When the set notification time comes, this message is displayed only one time. When O.K. button is pushed, the message disappears, and it is not displayed until the next setting notification time comes. When this message is displayed, make the periodical inspection immediately after the operation is completed.

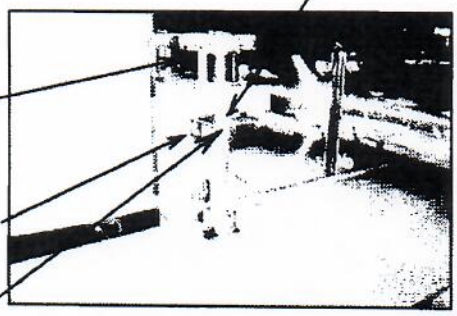


To change the maintenance interval, push the time display area on the setup screen [3/3] to display ten keys. Input a desired time (up to 3000 hours), and push ENT button. Push the CLR button when canceling.

4 - 7 . Special adjustment

1 . Adjustment of height of nozzle

To remove dust from the surface of the board effectively, it is necessary to adjust so to have an optimum nozzle space from the surface of board.
The factory-shipped device is adjusted so to comply with boards of up to 2.0 (mm) in thickness. Adjust the nozzle height when boards having a larger thickness or largely warped are flown.
The procedure of the adjustment of the height of the nozzle is as follows.



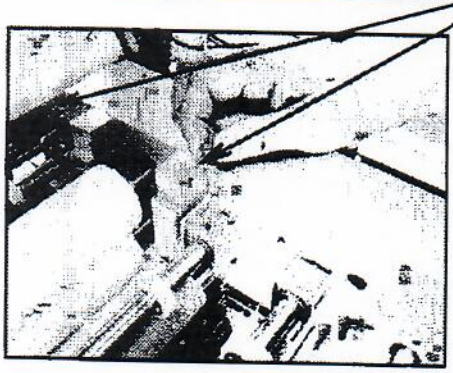
① Loosen all knurling nuts which fix the upper nozzle at four corners and insert a single shim (accessory) between two washers held between the upper nozzle fixing stand and the double nut. Repeat the same procedure at all the four corners.

※ Four shims are stored as accessories within the switchboard.

After the insertion of the shims at the four corners, securely fix the knurling nuts at the four corners.

2 . Removal of pinch roller spring

② Turn the upper nozzle up and down handle to open the upper nozzle.



③ The cleaning roller rotates at a relative speed corresponding to the board conveying speed. Therefore, the pinch rollers at the front and rear of the cleaning roller are provided with springs in order to securely hold the board. If the thin board being cleaned is damaged by the pinch rollers, remove the springs and hold the board by only the dead weight of the pinch roller shaft.

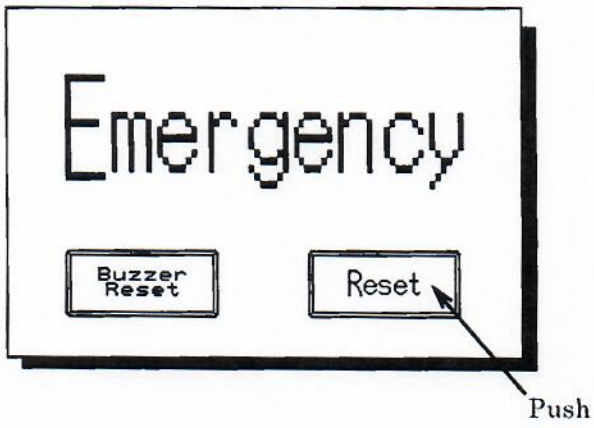
4 - 8. Dealing with emergency stop

When the emergency stop switch is pushed, the emergency stop screen is displayed and the buzzer is sounded. Measures are as follows.

(1) Push the Buzzer-reset button to stop the buzzer sound.

(2) Turn the emergency stop switch in the direction of the arrow to release the switch.

(3) Push the Reset button on the screen. The operation screen is displayed.



4 - 9 . Dealing with machine trouble

The machine trouble screen is displayed and the buzzer is sounded when a machine trouble is caused. Measures are as follows.

(1) Push the Buzzer-reset button to stop the buzzer sound.

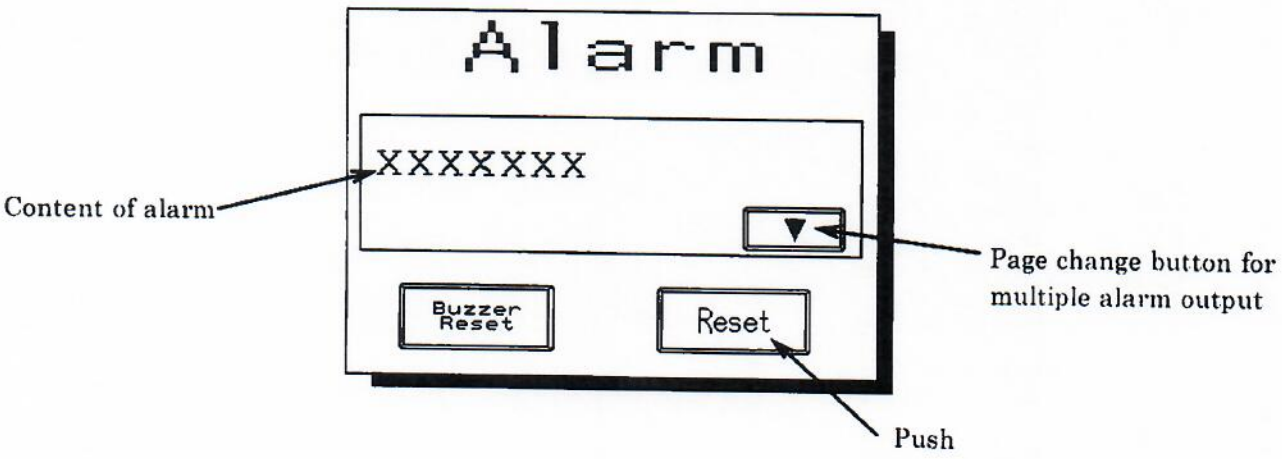
(2) The content of the alarm is displayed on the screen. Find and remove the cause of the alarm.

[Supplementary remarks]
Refer to " Dealing with alarm" for details.

(3) Push the Reset button on the screen. The original screen is resumed.

(4) Notes

If the alarm is not reset by pushing the Reset button on the screen. the operation may not be continued. In such a case, turn off the power.



4-10. Dealing with alarm

Content of message

■ 0 0 1 Door is open.

[Cause]

- The HEPA check door is not closed.

[Action]

- Close the door.

■ 0 0 2 Heater temperature is abnormal.

[Cause]

- When the present value changes by ± 6 ℃ or more from the set value, it is abnormal.
- Air leakage.
- Temperature sensor is defective.
- Heater is defective.

[Action]

- Heater check and replacement.
- Temperature sensor check and replacement.

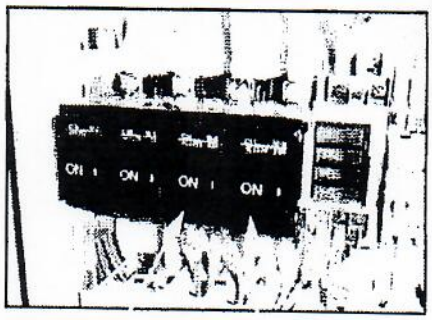
■ 0 0 3 Conveyor motor is abnormal.

[Cause]

- Motor overload.
- Motor service lifetime expires.
- Belt check.

[Action]

- Motor and controller check and replacement



For conveyer motor For brush motor

※ Back to ON when tripped.

■ 0 0 4 Cleaning brush motor is abnormal.

[Cause]

- Motor overload.
- Motor service lifetime expires.

[Action]

- Motor and controller check and replacement.
- Belt check.

■ 0 0 5 Inverter is abnormal.

[Cause]

- Blower motor lock.
- Blower flowing current

[Action]

- Blower inspection and replacement

■ 0 0 6 Temperatures are abnormal.

[Cause]

- Thermal lead switch trips.

(The contact opens when the air temperature becomes 90 ℃) Recover cannot be made until the contact is closed.

[Action]

- Temperature sensor check and replacement.
- Heater check and replacement.

4－11. Dealing with message

When a message is displayed in the check window at the time the device is turned on or the operation is started, follow the following procedure.

(1) Please replace the prefilter.

This message is displayed when the filter pressure loss exceeds a specified value while operating. Replace the filter immediately though the operation can be continued by pressing the O.K. button.

(2) Please check the cleaning brush.

This message is displayed if the abrasion of the brush is found when the cleaning roller is checked at the start of operation. Push the O.K. button to switch to the maintenance screen. Adjust the brush space.
※ Refer to "Method of adjusting cleaning brush space" for the adjusting method.

(3) The limit of brush adjuster. Please replace the cleaning brush.

This message is displayed when no more adjustment can be made at the start of operation or while adjusting the cleaning roller space. Replace the brush and adjust the brush space on the maintenance screen.
※ Refer to "Method of adjusting cleaning brush space" for the adjusting method.

(4) It's time for inspection.

This message notifies that it is necessary to make the periodical inspection.
Make the periodical inspection immediately though the drive can be continued pushing the O.K. button.
※ Refer to "Setting of the maintenance notification time" for details and a set change.