

**SILVER MASTER  
CP-414V**

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**SERVICE MANUAL**

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**DAINIPPON SCREEN MFG. CO., LTD.**

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# 1. INTRODUCTION

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This CP-414V SERVICE MANUAL has been prepared for after-service use. For details regarding the operation of the camera, the master, and the processing fluids, please refer to the CP-414V USER'S MANUAL and the TECHNICAL MANUAL.

The contents of this manual are subject to alteration without notice because of machine improvements or modifications.

When ordering parts, please refer to the CP-414V Parts List and specify the following:

- Machine Name: CP-414V
- Machine No.:
- Part No. and Name:
- Quantity:
- Delivery:

**Duplication or publication of this service manual is forbidden.**

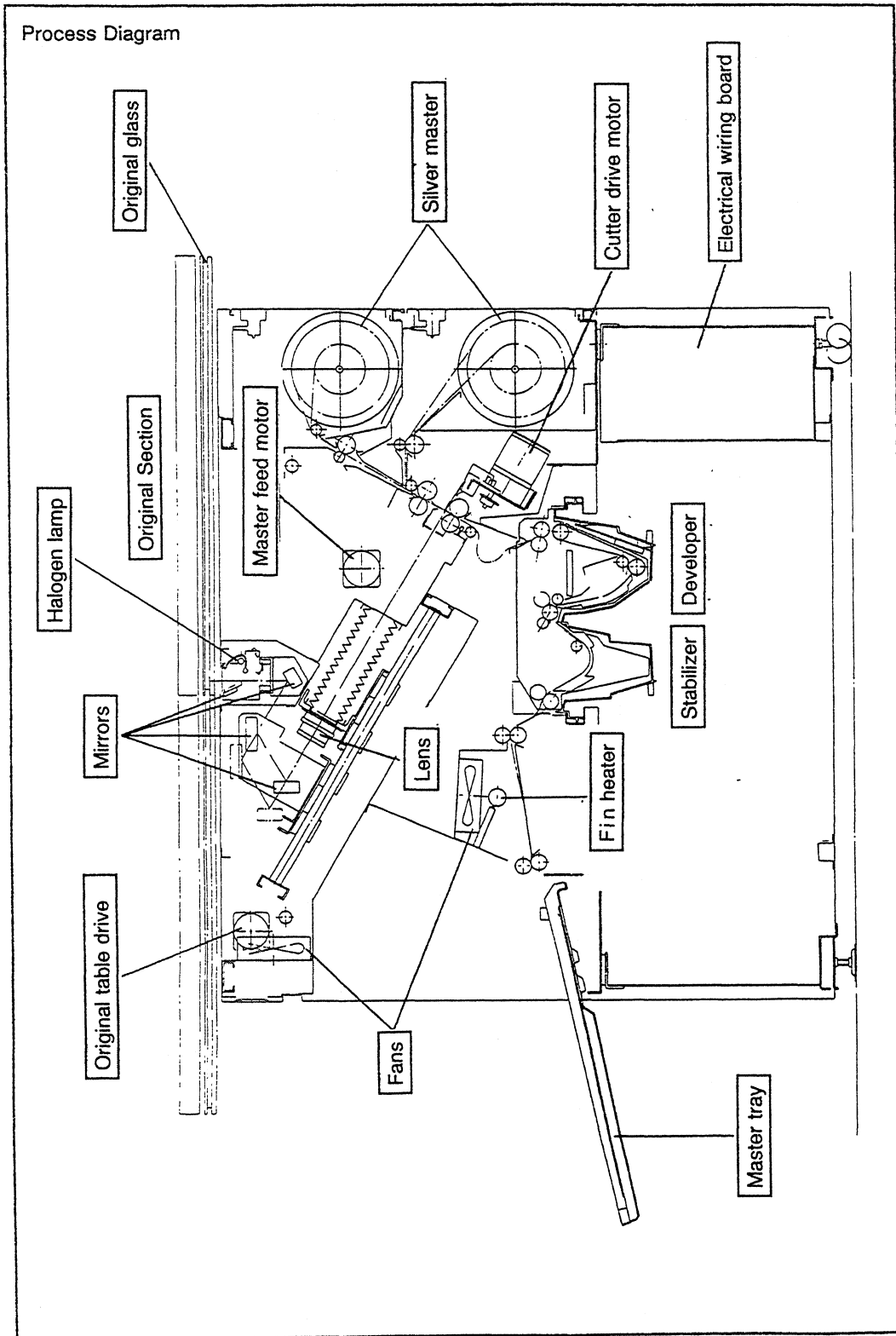
DAINIPPON SCREEN MFG. CO., LTD.  
HIKONE PLANT  
Quality Control Section  
TEL. 0749-24-1167  
Takamiya Cho 480-1 Hikone City 522-02

## 2. SPECIFICATIONS

1	Master	Two rollers; SLM-R11, SLM-F
2	Master width (cm)	22.9(9"), 25.4(10"), 27.9(11"), 30.5(12"), 31.0(12 1/5"), 32.4(12 3/4"), 37.0(14 9/16"), 40.4(15 7/8"), 41.4(16 3/10")
3	Master cut length (cm)	22.5 to 55.0 (set in 1 mm units)
4	Exposure valid size (cm)	40.4×52.4(80 to 105%), 36.1×46.9(71%), 25.4×33.0(50%) [Leading edge 2.3, trailing edge 0.3 exposure valid]
5	Maximum exposure size (cm)	41.4×55.0 (50 to 105%)
6	Effective original size (cm)	40.4×52.4 (100%), 50.5×66.0 (80%), 50.8×66.0 (79% to 50%)
7	Original layout sheet maximum size (cm)	59.5×73.0
8	Lens	Fixed stop f = 210 mm
9	Magnification	50 to 105% automatic focal point
10	Exposure method	Original, master transport slit exposure method
11	Setting originals	Set original face down, 180 m/m attached, automatic centering alignment function.
12	Separation exposure	Automatic two separation exposure, multiple separation exposure
13	Cutter	Uses the slide cut method
14	Exposure adjustment	Digital illumination adjustment, magnification follow-up automatic brightness adjustment.
15	Light source	One 1250 W halogen lamp
16	Operation panel	Front panel conversation type
17	Master join detect device	Display, alarm buzzer, automatic overcut
18	Dehumidifier device	Heater type
19	Processor capacity	Developer 7 l, Fixer 6 l
20	Replenisher fluid capacity	Developer 1 l, Fixer 1 l
21	Initial plate time	1 minute 58 seconds (45.0 cm feed)/60 Hz
22	Cycle time	42 seconds (45.0 cm feed)/60 Hz
23	Original speed	19 to 40 mm/sec
24	Processor speed	12.0 mm/sec/60Hz
25	Fluid temperature adjustment	350 W panel heater (with safety thermo) 29 ± 3°C. The heater is off during exposure.

26	Dryer	400 W fin heater. Two level switch type (H, L) thermocontrol.
27	Safety Standards	Compliance to safety standards
28	Electrical requirements	1 Ø 200 V 2.5 KW 14 A
29	Machine dimensions	115.0×79.5×110.0115.0×79.5×110.0
30	Weight (without processing fluids)	230 Kg
31	Replenishment method	Automatic replenishment of developer and fixer

### 3. PROCESS DIAGRAM



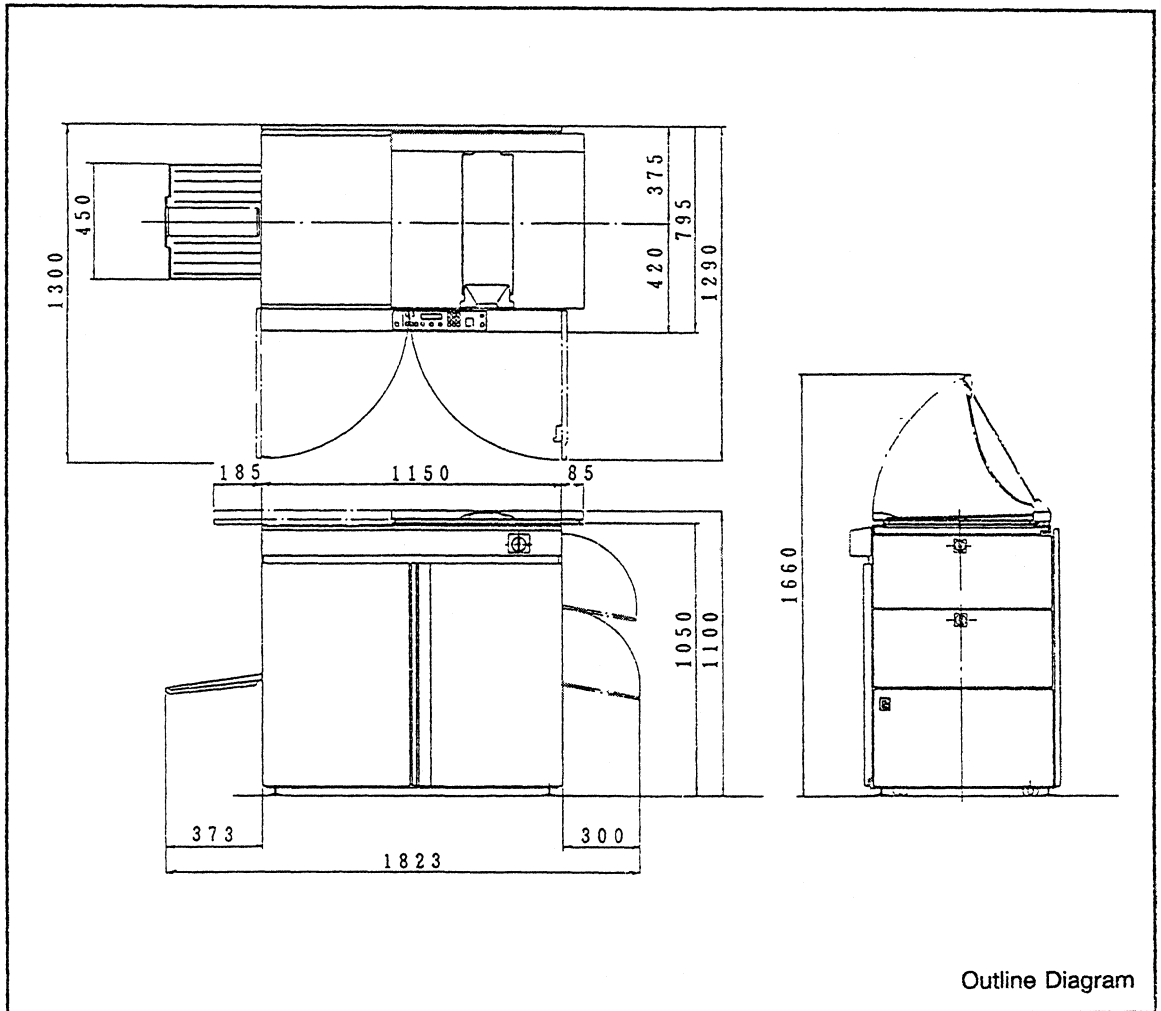
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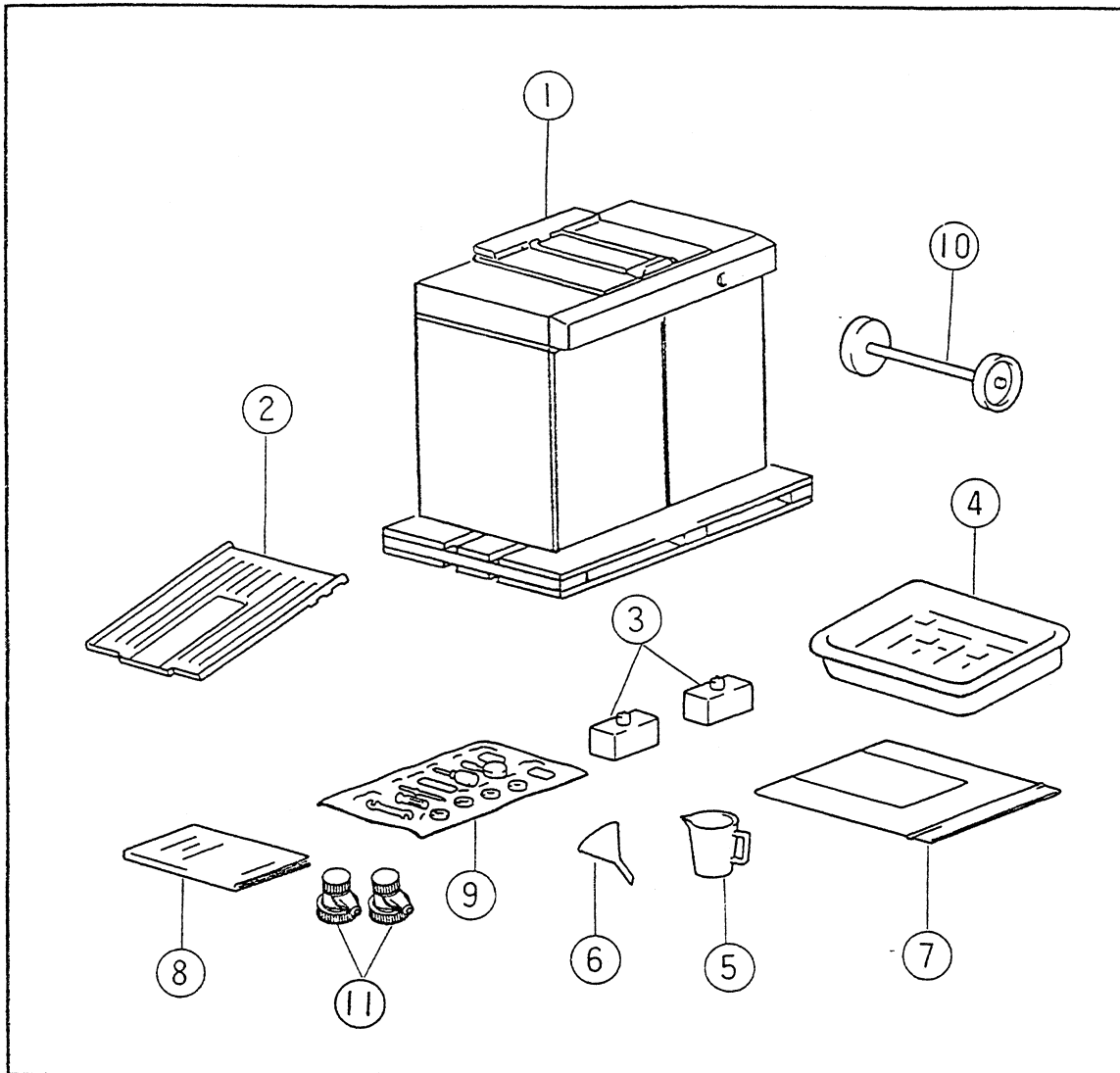
## 4. INSTALLATION PROCEDURES

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### [Installation conditions]

- Install the machine in a place that is well ventilated through all four seasons and where the ambient temperature is 10°C to 30°C and the humidity 40% to 70%.
- Avoid places that are exposed to direct sunlight.
- The supply voltage is  $\varnothing$  200/220/240V, 2.5 KW, 14A. Use sufficiently rated wiring and maintain the supply voltage fluctuations to within  $\pm 10\%$ .
  - \* Connect a earth current leakage circuit breaker to the power supply. Have a suitably qualified electrician perform the power supply wiring.
  - \* As a basic safety requirement, make absolutely certain that the machine is earthed.
- Leave a 40 cm space at the rear of the unit for servicing.
- Install on a level floor that is able to withstand a weight of 230 Kg.
- Do not install the machine in places where it will be subject to vibration.





**[Packing list]** Be certain to check when unpacking.

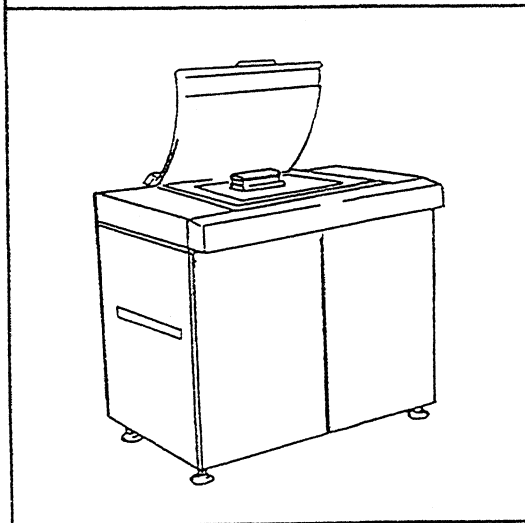
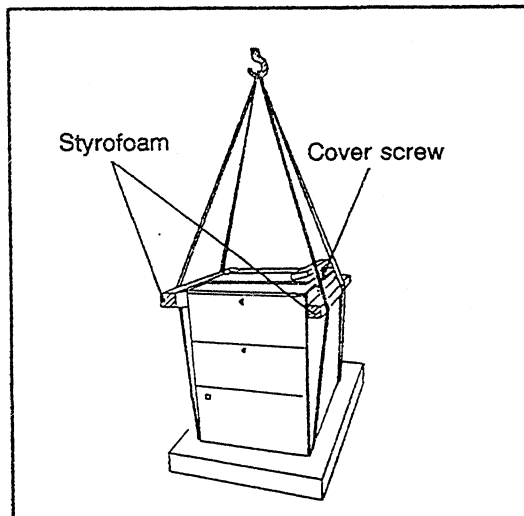
	Name	Quantity		Name	Quantity
1	Main unit	1	7	Test charts, photograph samples	1set
2	Discharge tray	1	8	User's Manual and Technical Guide	1set
3	Replenishment bottles	2	9	Spare parts	1set
4	Vat	1	10	Spools (2), spool shaft	2set
5	Measuring cup	1	11	B cocks	2
6	Funnel	1			



**[Spare Parts List]**

	Name	Quantity		Name	Quantity
1	Screwdriver set	1set	7	Screws and bolts	1set
2	Feet	4	8	Glass fuses 1A - 250V · 2A - 250V 4A - 250V · 6A - 250V	2 each
3	Spanner	1			
4	Cutter blade	1	9	Ceramic fuse 15A - 250V	2
5	Oil can	1	10	Temperature fuse 250V For the dryer (with round tip) For the light source (with connector)	1 each
6	Blower brush	1			

**[Installation]**



**<< Procedure >>**

1. Remove the packaging from the body.
2. Remove the brackets that secure the pallet and the main unit.  
\* There are four brackets.
3. Place Styrofoam blocks on both sides and hoist the main unit using nylon rope.

The rear styrofoam block should be placed about 50 mm below the rear cover screw.

- \* Be sure to use nylon rope that is at least 6 m in length.
- \* Be sure to suspend the outer side by the adjustment bolt

4. Move the unit over to the location of installation and place on the feet provided.

Do not move the original section with your hand. If you do, make sure to loosen the drive belt. See page 10 for loosening the original drive belt.

- \* Caster wheels are provided beneath the unit for easy moving.

5. Place a sheet of clean paper on the copy glass.  
Place a level on the paper and adjust the unit with the adjustment bolts so that it is level.
6. Open the front cover and remove the processor unit.
7. Remove the transfer unit and clean the developing and fixing tanks.
8. Replace the processor unit and place the drip vat under the body.
9. Install the cutter blade.

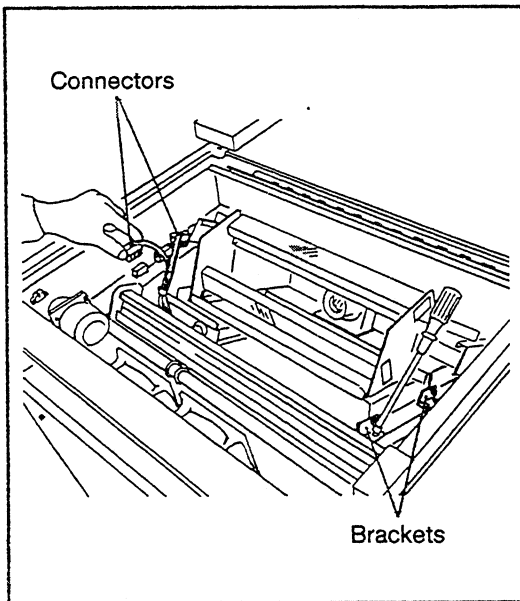
### [Preparing Solutions]

1. Mix the developer and fixer according to the details given in the instruction manual. Pour the solutions into the tanks and replenisher bottles.
2. Place the replenisher bottles containing the prepared solutions in each unit.

### [Connecting the Power Supply]

1. Check that the power switch is off.
2. Connect the input wiring to the power supply. The power supply must have an earth leakage breaker.

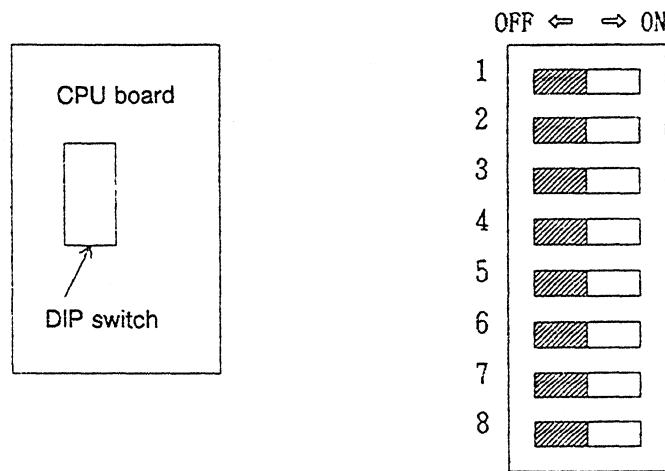
### [Removing the Securing Brackets and Connecting the Connectors]



1. Turn on the power switch and return the copy frame to its specified position.
2. Turn off the power switch.
3. Remove the top cover on the paper discharge side.
4. Remove the lens frame and the mirror frame securing brackets (yellow).  
\* Do not touch the lens or mirror.
5. Connect the connectors (J3 and J4).
6. Remove the lens cap and install the upper cover of the paper discharge side.

## [Inspection and Adjustment]

1. Open the left front door of the body and remove the cover for the CPU board on the right hand side.  
Adjustments are made by the DIP switches on the CPU board.



### < DIP. SW function >

No.	Item	Use	Normal Status
1	Data input	Used with DIP switch 5 for changing data in each compensation mode and for inputting.	OFF
2	Frequency selection	Selects between 50 Hz and 60 Hz. ON: 50 Hz, OFF: 60 Hz	ON/OFF
3	Inch/millimeter selection	Selects the unit system for feeding the master. ON: inch, OFF: millimeter	ON/OFF
4	Repeated running	Used for repeated running of a series of operations. Start by <input type="checkbox"/> key, stop by <input type="checkbox"/> key.	OFF
5	Data display	Used for the display and confirmation of currently input basic data.	OFF
6	English/Japanese selection	Selects display format. ON: English, OFF: Japanese	ON/OFF
7	Replenisher unit	Used when replenisher unit (option) is attached.	OFF
8	Initial reset	<ul style="list-style-type: none"> <li>· When this is switched ON, the exposure value and exposure length are initialized when power is turned on.</li> <li>· When this is switched ON together with DIP 1, the compensation value is also initialized when the power is turned on.</li> </ul>	OFF

2. Select the frequency so that it matches the local frequency.

50 Hz: set DIP switch 2 to ON.

60 Hz: set DIP switch 2 to OFF.

3. Select the system of measurement (inches or millimeters).

Inch: set DIP switch 3 to ON.

Millimeter: set DIP switch 3 to OFF.

4. Turn on the power switch.

5. Set the master plate as instructed in the instruction manual.

6. Carry out final assembly and checks.

a) Attach the covers.

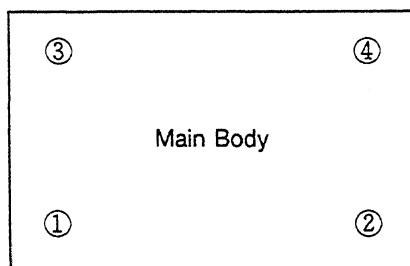
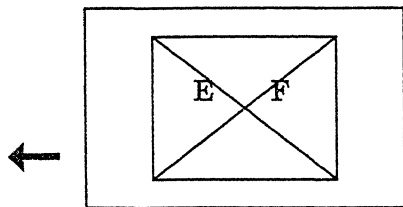
b) Check the series of operations described in the instruction manual.

c) Do a test exposure using the test chart.

d) Check the distance between the diagonally opposite corners.

7. Check and adjust the distance between diagonally opposite corners.

This adjustment is done thoroughly before shipping. However, if one of the distances between diagonally opposite corners is greater, check and make adjustments according to the following procedure.



Operating side

< <Procedure> >

1. Place a suitable original such as a test chart (drawn with grid lines) or a scale on the copy glass.

2. Expose and measure the distances E and F between the diagonally opposite corners. The tolerance should be within 0.5 mm.

If E is greater than F:

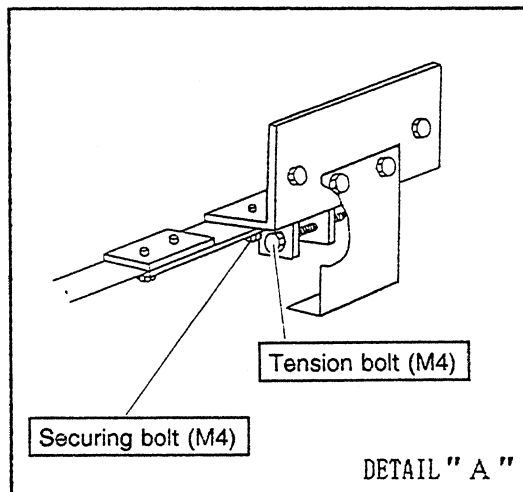
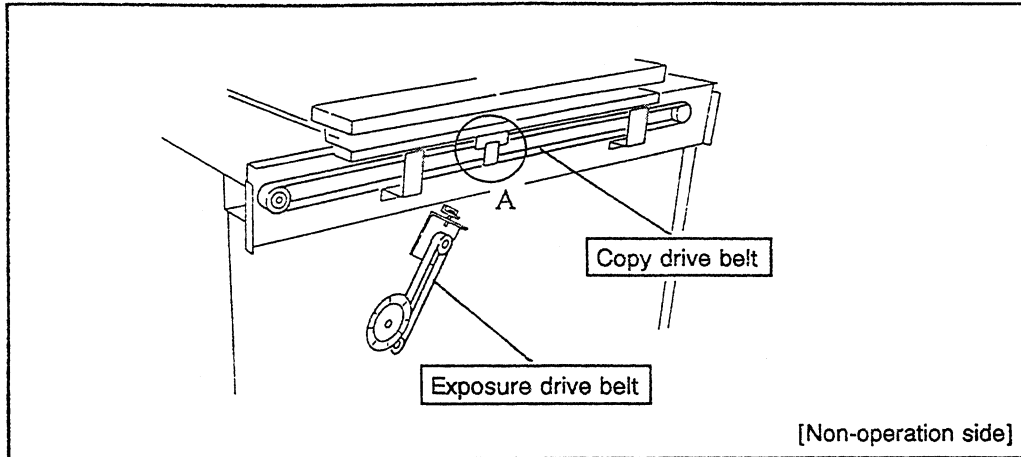
- Either lower adjusting bolt ① at the base of the body, or raise adjusting bolt ②.

If F is less than E:

- Either raise adjusting bolt ① at the base of the body, or lower adjusting bolt ②.

\* The height of the body can be increased or decreased by about 1 mm with one full turn of the adjusting bolt.



## [Loosening the Copy Drive Belt]



### [Loosening]



1. Remove the rear cover from the body.
2. Loosen the securing bolt (M4).
3. Loosen the tension bolt (M4) until the copy frame moves slightly.

### [Tightening]

1. Move the copy frame toward the paper discharge side until it stops.
2. Turn on the power switch and press  + .
3. Tighten the tension bolt until the copy frame begins to move. From this position, tighten the bolt rotating it 1.5 turns
4. Secure with the securing bolt.
  - \* If the belt tension becomes uneven, loosen the belt presser securing bolt and secure again.

## 5. COMPENSATION MODE TYPES

There are 12 compensation mode types. Follow the procedure below when inputting compensation values.

1. Set DIP switches 1 and 5 on the CPU board to on.
2. Press the dehumidifier key,  to select each compensation mode.
3. Change the data using the numeric keypad keys "0" to "9".
4. Press the dehumidifier key,  to input.
5. Set DIP switches 1 and 5 to OFF.

	Compensation mode	Use	Initial Value	Units
1	Master length	Master transfer length compensation	1.0000	
2	Leading edge compensation 1	This compensates the transport distance for the master leading edge up to the cut position after join sensor operates.	24.0	mm
3	Leading edge compensation 2	Compensates the distance from the master leading edge up to exposure valid.	20.0	mm
4	Leading edge compensation 3	Compensates the position of the reference line based on the magnification.	0.0	mm
5	Lens Compensation	Magnification compensation in the master width direction.	100	pulse
6	Mirror compensation	Focus adjustment	100	pulse
7	Lens f	Lens focal point distance	210.0	mm
8	Mirror f	Mirror focal point distance	210.0	mm
9	Exposure length	Master feed direction magnification compensation	1.0000	
10	LED ONTM	Exposure compensation for outside exposure valid region	2.00	sec
11	LED OFFTM	Exposure compensation for outside exposure valid region	0.00	sec
12	Processor speed	Processor speed compensation	10.0(50hz) 12.0(60hz)	mm/sec

**Note:**

· When changing the CPU board input all the data again. (A memo with all of the data is pasted on the back of the CPU board)

· Lens and mirror compensation.

1 As it is the follow up type, be certain to perform the compensation with the cover and door closed.

2 After compensation, be sure to reset to 100%.

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## 6. CHECKING AND ADJUSTING

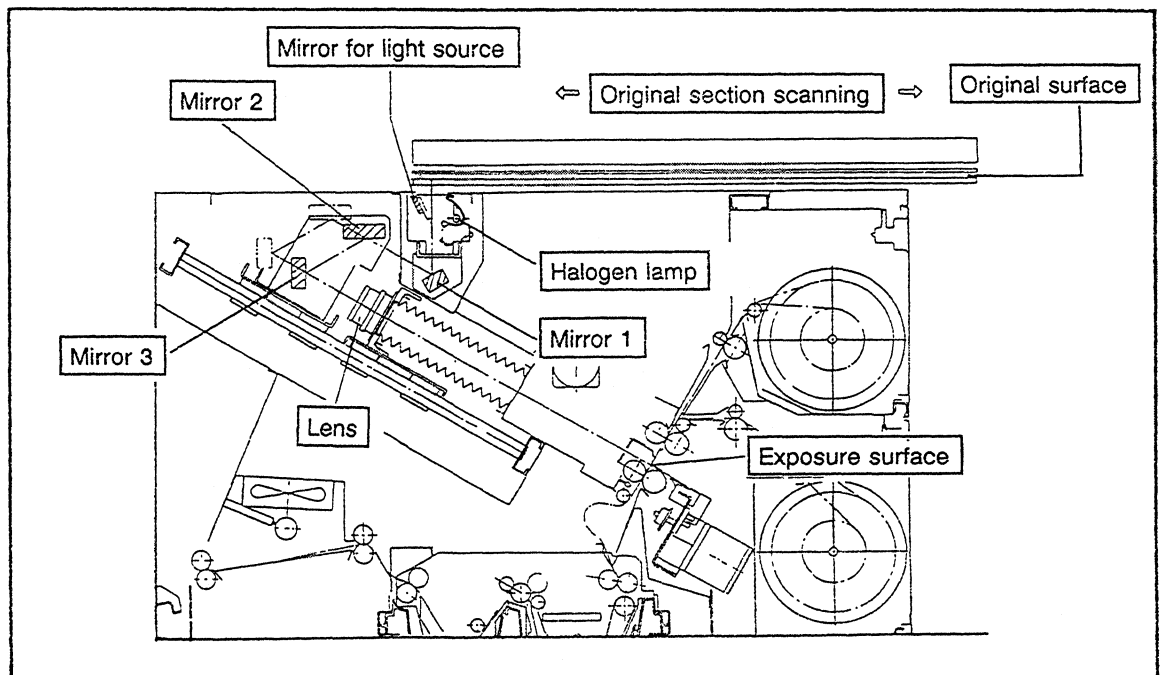
### THE OPTICAL SYSTEM

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The focus and magnification are checked and adjusted carefully at the factory before delivery, but if you think that it is faulty perform the following checks and adjustments.

**[Check and adjustment procedure]**

1. Distortion adjustment
  - left and right movement (incline) of the optical system mirrors (2 and 3).
2. Focus adjustment
  - compensation value alteration of the optical system mirror (2 and 3).
3. Magnification adjustment
  - lens compensation value alteration and exposure length compensation value alteration



Distance from original surface (C) to lens (L) . . . . .  $A = f (1 + 1/m)$   
 Distance from lens (L) to exposure surface (P) . . . . .  $B = f (1 + m)$   
 $f$  : lens focal distance  
 $m$  : magnification

**<< Normal focus (at magnification of 100%) >>**

Theoretical original surface - lens - exposure surface position relationship.

$$A = B \quad (\text{ex}) \quad f:210\text{mm} \quad m:1(100\%)$$

$$f(1 + 1/m) = f(1 + m)$$

$$210 \times (1 + 1/1) = 210(1 + 1)$$

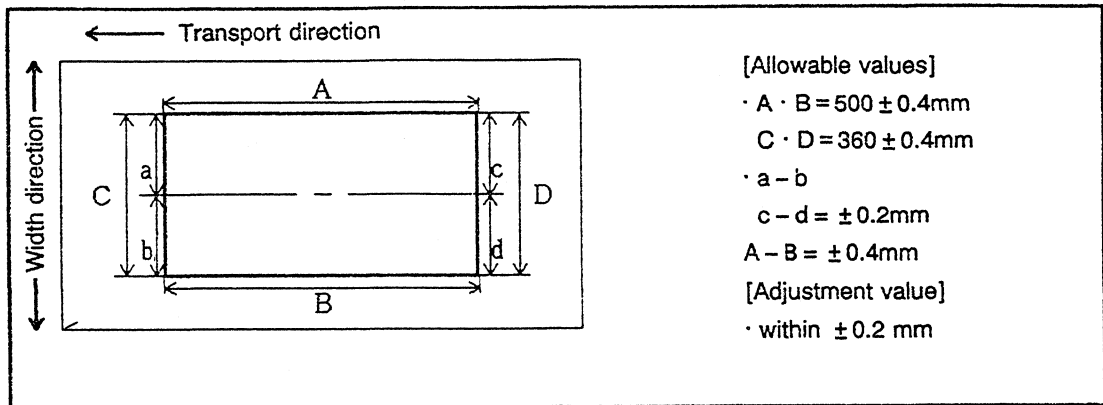
$$\therefore A = B = 420$$

Actual lenses are all slightly different and the  $f$  value is not always 420.



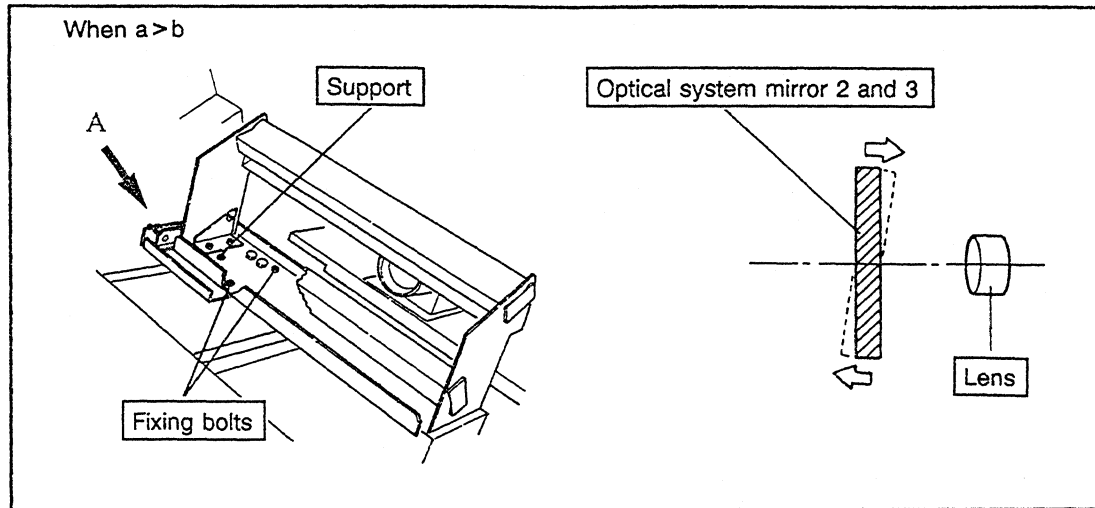
## 6.1 Checking and Adjusting Distortion and Magnification

- Set an original suitable for checking distortion and magnification such as the test chart (drawn with grid lines) or a scale.
- Expose with the master transport length  $l = 550$  mm, and check the difference between the dimensions A, B, C, D, and a, b, c, and d as illustrated in the diagram below.

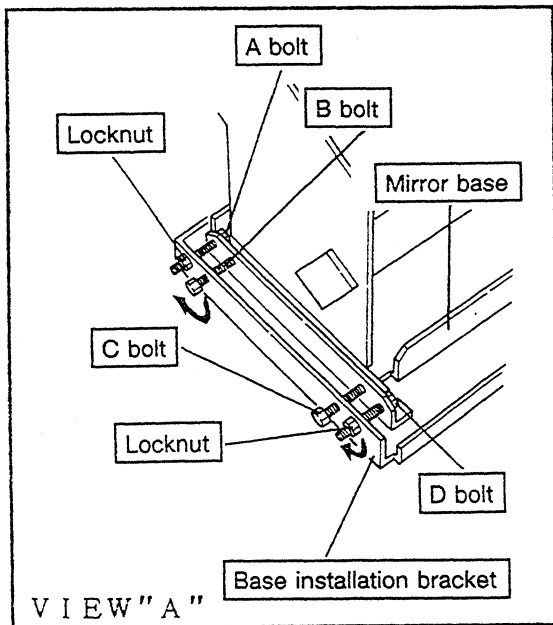


\* A-B are maintained by the machine accuracy and cannot be adjusted.

## 6.1.1 Adjusting Distortion



\*Adjustment via left and right movement (incline) of the optical system mirrors (2 and 3).



### [Adjustment Outline]

1. Loosen the mirror base fixing bolts (M4) and support bolts (M4).
2. Loosen the A bolt locknut.
3. Loosen bolt C.
4. Tighten D bolt locknut by one half turn (turn to the right).  
\* To ensure position reproduction, mark the adjustment bolts before moving them.

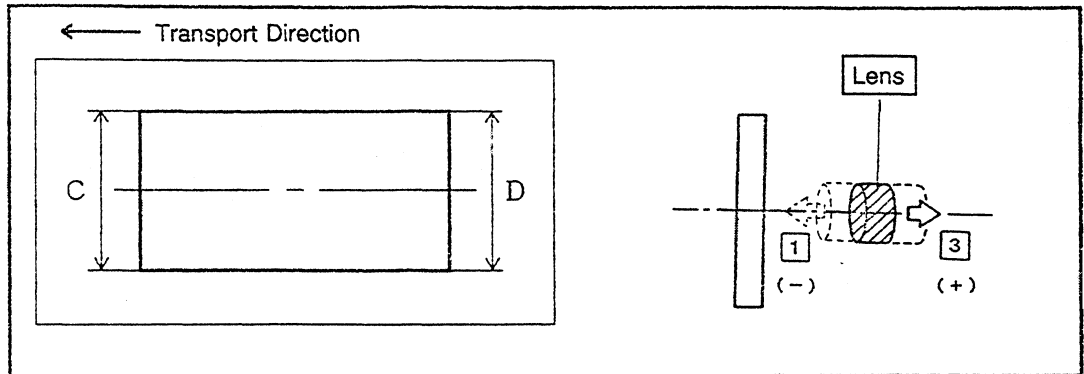
#### < Adjustment Standard >

A half turn of the adjustment bolt produces a change of 1.5 mm.

5. Tighten the B bolt by a half turn (turn to the right).
6. Tighten the C bolt until it touches the mirror base.
7. Tighten the A bolt locknut until it touches the base installation bracket.
8. Tighten the support bolt and the fixing bolt.
9. Perform and confirm the exposure.

## 6.1.2 Adjusting Magnification


### <C and D Magnification Adjustment>

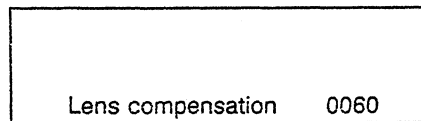


\* Adjust by moving the lens (increasing and decreasing the compensation).

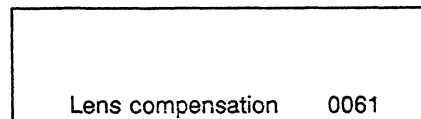
### [Adjustment Outline]

= When the magnification of C and D are large =

1. Switch the DIP switches 1 and 5 on the CPU board on.
2. Press the dehumidifier key , and select "Lens Compensation".




3. Press "3" on the numeric keypad once.



\* When "3" is pressed, the gap between the lens and mirror widens and the magnification (dimension) becomes smaller.

\* When "1" is pressed, the gap between the lens and mirror narrows and the magnification (dimension) becomes greater.

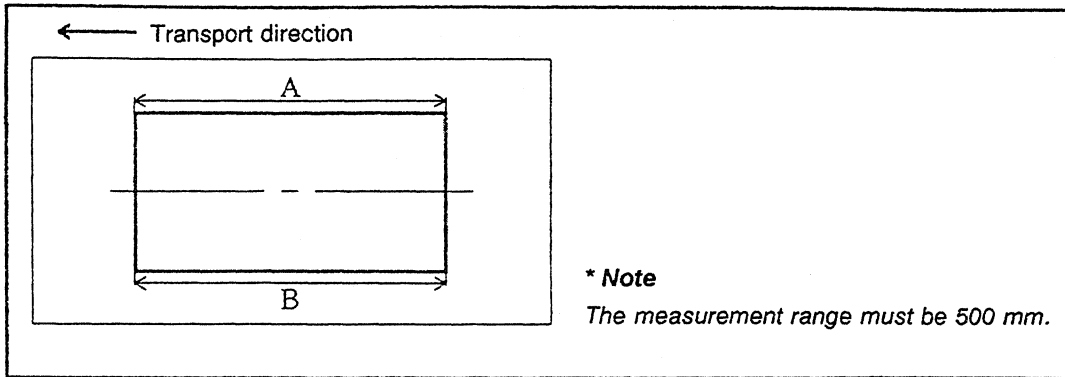
\* To change the magnification quickly, hold down the count key , while pressing "1" or "3".

<< Adjustment Standard >>

Each time "1" or "3" is pressed results in a change of about 0.1 mm.

4. Press the dehumidifier key and switch the DIP switches 1 and 5 on the CPU board off.
5. Perform an exposure and check the C and D magnification.


<A (B) magnification adjustment>

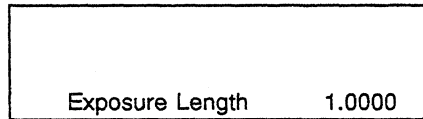



**[Adjustment Outline]**

1. Measure the A (B) dimensions (the measurement range is 500 mm).

[EXAMPLE] Actual measured value: 499.4 mm

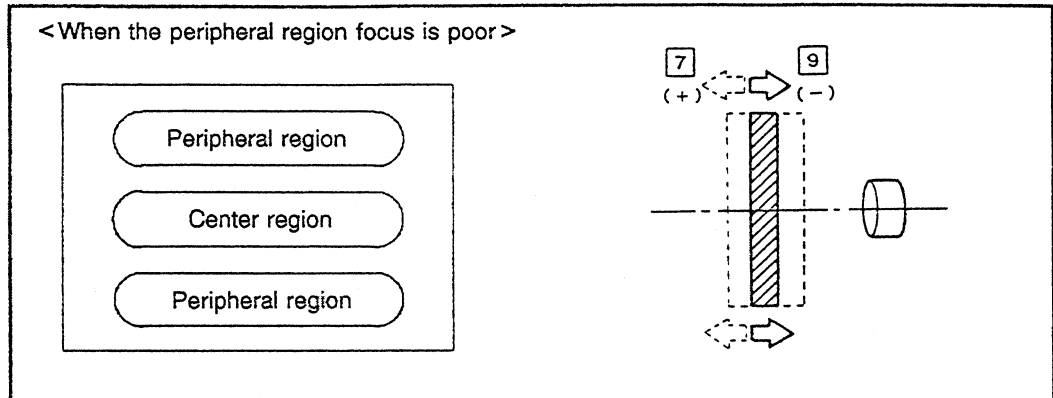
2. Switch the DIP switches 1 and 5 on the CPU board on.
3. Press the dehumidifier key , and select "Exposure Length".



4. Using the keypad input the actual measured value 499.4 mm, and press the dehumidifier key .  
\* Check that the compensation coefficient has changed.
5. Switch the DIP switches 1 and 5 off and perform an exposure.
6. Measure the A dimension and perform steps 1 to 5 if the value is outside the adjustment value.


## 6.2 Checking and Adjusting Focus

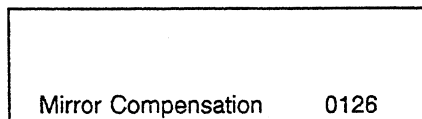
- Expose a test chart (resolution power test chart) or a Mitsubishi reference chart at two levels above the normal exposure.
- If a resolution power of 10 or above is achieved, the focus is correct, and if it is not, perform focus adjustment.



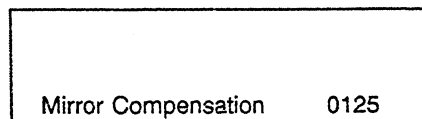
\* Adjustment by movement of the optical system mirrors 2 and 3 (increasing and decreasing the compensation value).

### [Adjustment Outline]

1. Switch the DIP switches 1 and 5 on the CPU board on.
2. Press the dehumidifier key , and select "Mirror Compensation".



3. Press "9" on the numeric keypad once.



\* When "9" is pressed, the gap between the lens and mirror narrows and the peripheral region focus improves.

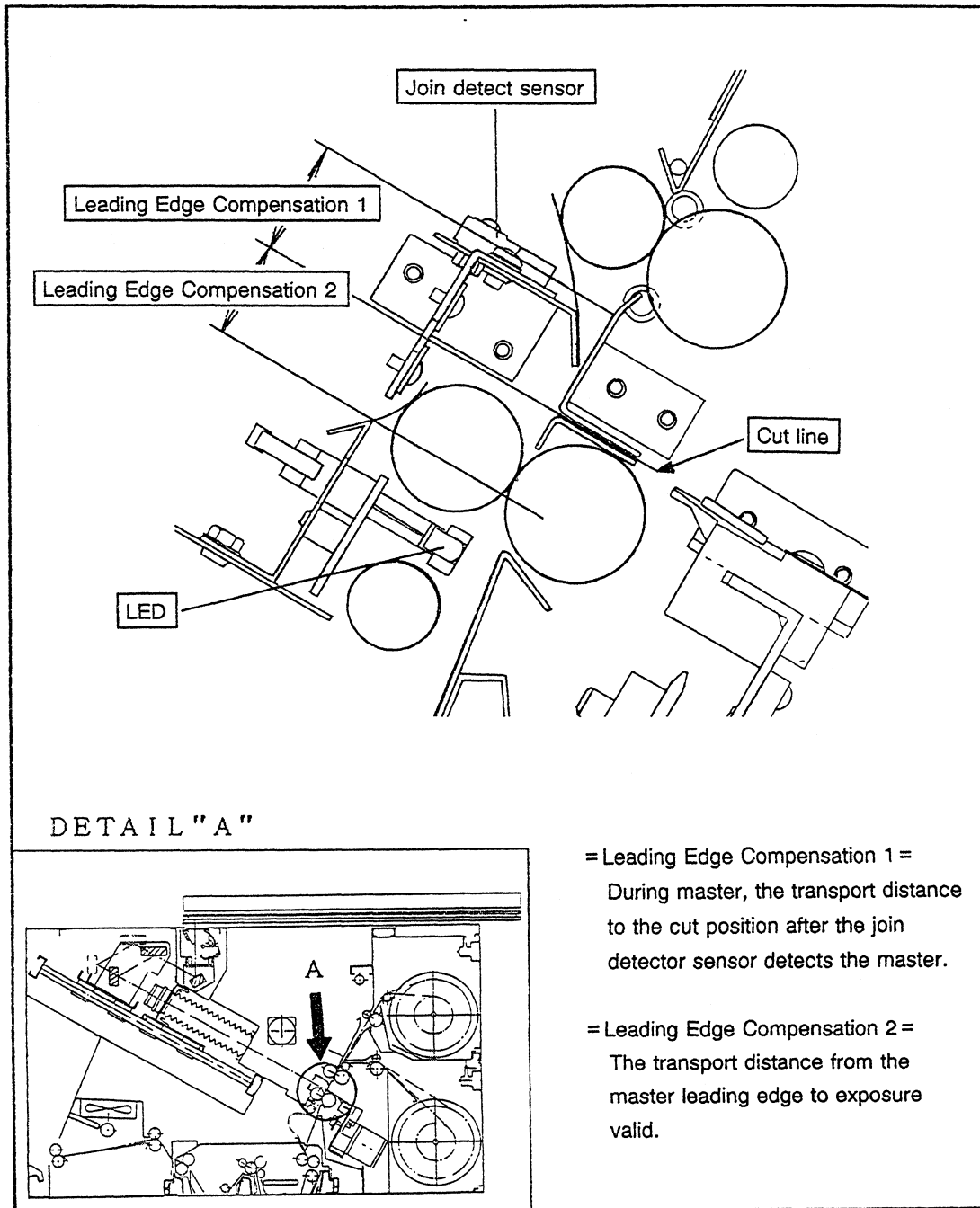
\* When "7" is pressed, the gap between the lens and mirror widens and the peripheral region focus deteriorates.

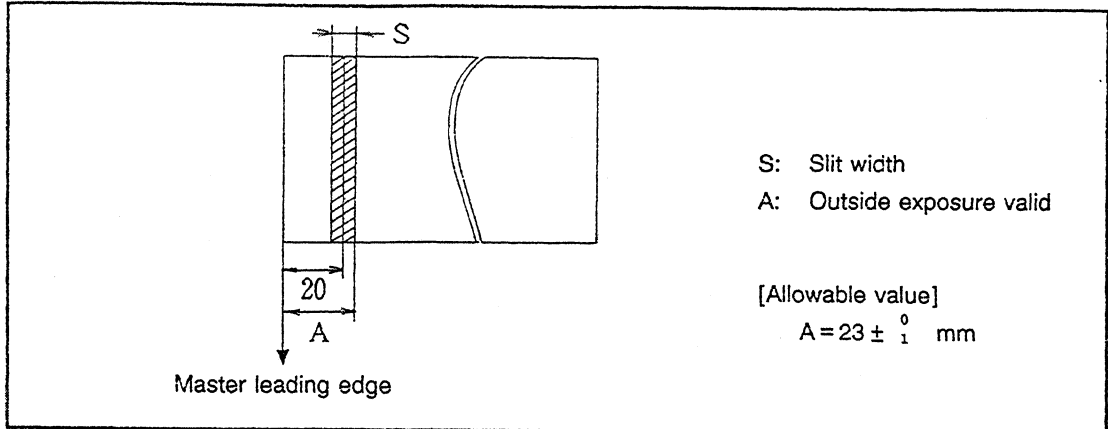
\* To change the magnification quickly, hold down the count key , while pressing "7" or "9".

4. Press the dehumidifier key and switch the DIP switches 1 and 5 on the CPU board off.
5. Perform an exposure and check the focus.

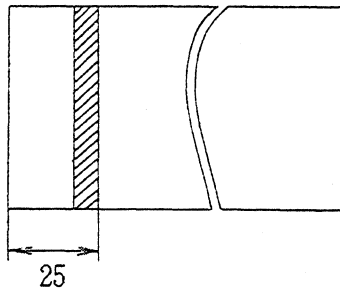
### 6.3 Leading Edge Compensation 1 and Leading Edge Compensation 2

Perform leading edge compensation 1 or leading edge compensation 2 when a new master has been set or the upper or lower master has been switched and the master leading edge is not set correctly in the cutting position or the exposure valid external dimensions exceed the allowed value.





< First plate exposure >



● Check outline

1. Set the master, and perform an exposure of the first plate with the plate with the solid silver patch out.
2. Measure the outside exposure valid (A) and check the difference.

\* If it is outside the allowed value, perform the "Leading edge compensation 2 adjustment".

[EXAMPLE]

Actual measured value 25 mm,

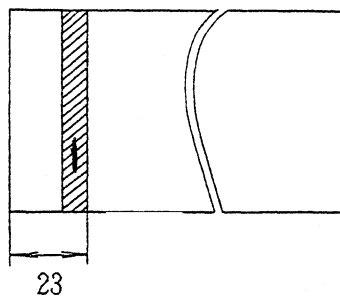
Error = 2 mm

\* It is more accurate to measure the distance from the master leading edge to the slit width center.

[Adjustment value]

Within  $20 \pm 0.3 \text{ mm}$

< Second plate exposure >



[Adjustment Outline]

= Leading Edge Compensation 2 =

- a) Switch the DIP switches 1 and 5 on and select "Center Compensation 2" with the dehumidifier key.

Leading Edge Compensation 1	20.0
-----------------------------	------

- b) Input the new compensation value (18mm) using the numeric keypad.

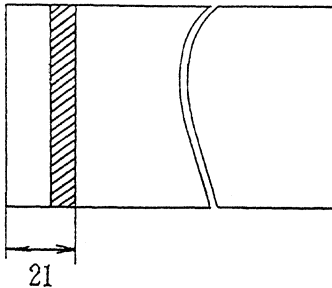
Leading Edge Compensation 1	18.0
-----------------------------	------

\* The new compensation value (18mm) = the existing compensation value (20) - the error (2).

- c) Press the defumidifer key and switch the DIP switches 1 and 5 off.

3. Expose (the second plate) and check.

< Third exposure >



4. Press the master select key [⊞], windup the master being used and reset it.  
5. Perform the third exposure and measure the external exposure valid (A).

[EXAMPLE]

Actual measured value 21 mm,

Error = 2 mm

**[Adjustment Outline]**

= Leading Edge Compensation 1 =

- a) Switch the DIP switches 1 and 5 on and select "Leading edge Compensation 1" with the dehumidifier key.

Leading Edge Compensation 1	24.0
-----------------------------	------

- b) Input the new compensation value (26 mm) using the numeric keypad.

Leading Edge Compensation 1	26.0
-----------------------------	------

\* The new compensation value (26 mm) = the existing compensation value (24) - the error (2).

- c) Press the dehumidifier key and switch the DIP switches 1 and 5 off.

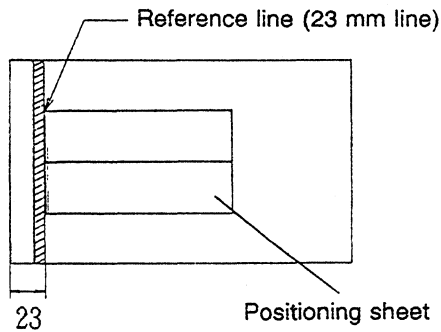
6. Carry out 4 and 5 and check.



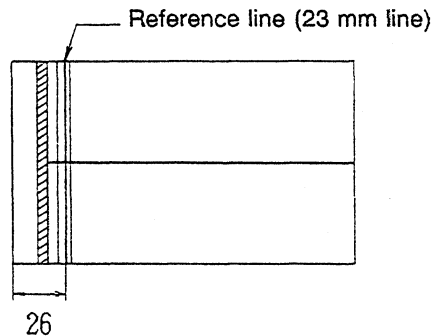
## 6.4 Leading Edge Compensation 3

When the magnification has been changed and the reference line is misaligned (23 mm line), perform leading edge compensation 3.

<50% exposure >



<100% exposure >



### ● Check Outline

1. Expose the positioning sheet at 50% or 100%.
2. Measure the 50% or 100% reference keyline position.

[EXAMPLE]

Actual measured value 50% = 23 mm,

100% = 26 mm

Error (3 mm) = 26-23

\* 50% is the reference

### [Adjustment Outline]

= Leading Edge Compensation 3 =

- a) Switch the DIP switches 1 and 5 on and select "Leading Edge Compensation 3" with the dehumidifier key.

Leading Edge Compensation 3	2.0
-----------------------------	-----

- b) Input the new compensation value (5 mm) using the numeric keypad.

Leading Edge Compensation 3	5.0
-----------------------------	-----

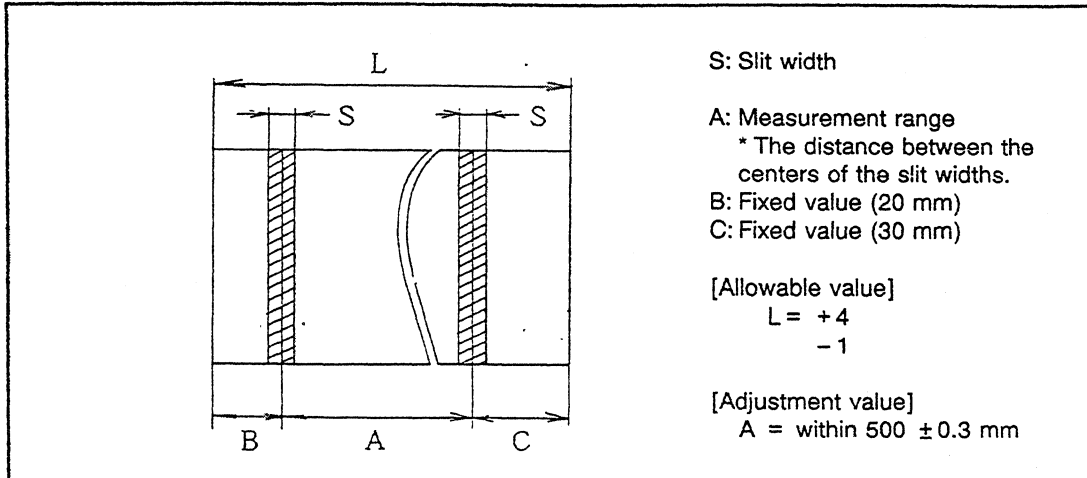
\* The new compensation value (5 mm) =  
the existing compensation value (2)  
+ the error (3).

- c) Press the dehumidifier key and switch the DIP switches 1 and 5 off.

3. Perform an exposure and check.

## 6.5 Master Length

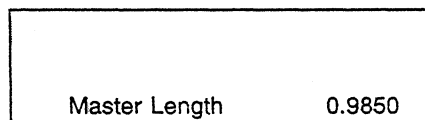
When the master feed length exceeds the adjustment value, it affects the accuracy of two separation and multiple separation exposures, so perform master length compensation when the master feed length exceeds the adjustment value.



\* Leading edge compensation 2 must have been performed correctly.

### ● Compensation Outline

1. Set the master length to 550 mm and make a multiple separation exposure (exposure length 500 mm).
2. Measure the length of the exposed plate (A).  
Actual value 492.5 mm
3. Switch the DIP switches 1 and 5 on and select "Master Length" with the dehumidifier key.
- 3 Switch the DIP switches 1 and 5 on and select "Master Length" with the dehumidifier key.



4. Add the current measured value (492.5 mm) to the fixed value (50), and input the result (542.5 mm) using the numeric keypad.  
\* The fixed value (50) = fixed value B (20 mm) + fixed value C (30 mm)
5. Press the dehumidifier key and switch the DIP switches 1 and 5 off.  
\* Confirm that the compensation coefficient has changed.
6. Perform an exposure and check.

## 6.6 Lens F and Mirror F

Except when the lens is changed, this compensation mode will normally not be changed.

### • Compensation Outline

1. Switch the DIP switches 1 and 5 on and select each compensation mode with the dehumidifier key.

Lens f	210.0
--------	-------

Mirror f	210.0
----------	-------

2. Input the lens focal distance (f value) via the numeric keypad.

[EXAMPLE]

Lens f value = 210.2

Lens f	210.2
--------	-------

Mirror f	210.2
----------	-------

\* Normally the value input for the mirror f is the same as the lens f value.

## 6.7 LED On Time and Off Time

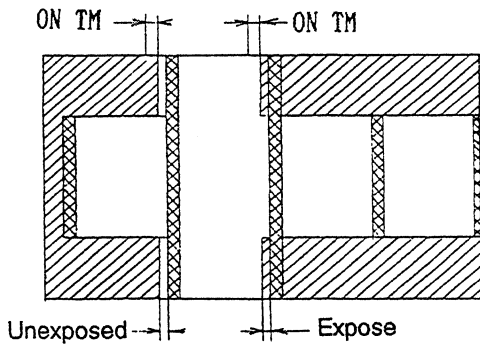
If the LED illumination timing is poor, there will be flares or unexposed sections in the exposure valid section. Please follow the compensation outline below.

<Correctly Set LED On and Off Time>

Exposure mode: vertical multiple separation exposure  
 Master feed length: 500 mm  
 Gripper length: 23 mm  
 Exposure: 120 mm  
 \* Expose the halftone chart in order at magnifications of 50%, 100%, 50%, and 50%.  
 \* After adjusting (compensating) the ON time, adjust (compensate) the OFF time.

S: slit width

<When the LED ON time is short>



### ● Compensation Outline

= Lengthening the LED ON time =

1. Switch the DIP switches 1 and 5 on and select "LED ONTM" with the dehumidifier key.

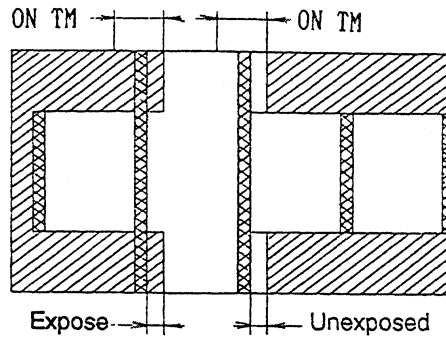
LED ONTM	2.00
----------	------

2. Input the LED ONTM (2.05) via the numeric keypad.

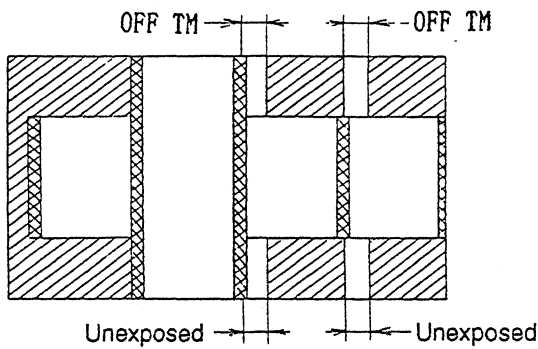
LED ONTM	2.05
----------	------

3. Press the dehumidifier key and switch the DIP switches 1 and 5 off.
4. Perform an exposure and check.

<When the LED ON time is long >



<When the LED OFF time is long >



● **Compensation Outline**

= Shortening the LED ON time =

1. Switch the DIP switches 1 and 5 on and select "LED ONTM" with the dehumidifier key.

LED ONTM	2.00
----------	------

2. Input the LED ONTM (1.95) via the numeric keypad.

LED ONTM	2.00
----------	------

3. Press the dehumidifier key and switch the DIP switches 1 and 5 off.
4. Perform an exposure and check.

● **Compensation Outline**

= Shortening the LED OFF time =

1. Switch the DIP switches 1 and 5 on and select "LED OFFTM" with the dehumidifier key.

LED OFFTM	0.50
-----------	------

2. Input the LED ONTM (0.05) via the numeric keypad.

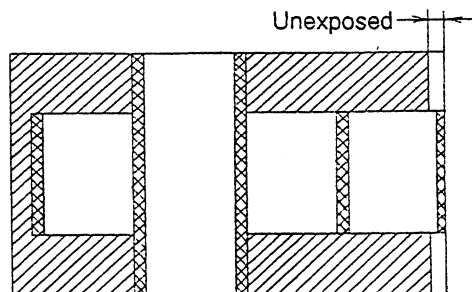
LED OFFTM	0.05
-----------	------

3. Press the dehumidifier key and switch the DIP switches 1 and 5 off.
4. Perform an exposure and check.

## 6.8 Processor Speed

If the processor speed and the LED illumination timing are not matched there will be flares or unexposed sections in the trailing edge section of the master. Please follow the compensation outline below.

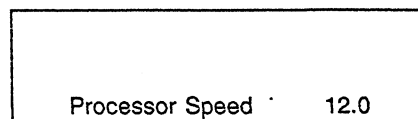
<When the LED ON time is long >



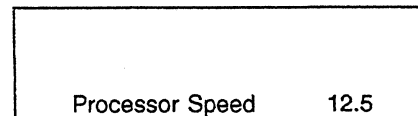
### ● Compensation Outline

= Speeding up (making bigger) the processor speed =

1. Switch the DIP switches 1 and 5 on and select "Processor Speed" with the dehumidifier key.

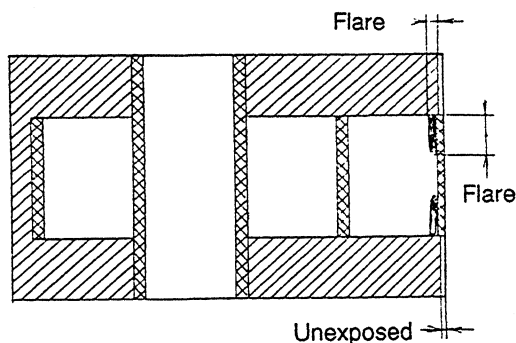


2. Input the Processor Speed (12.5) via the numeric keypad.



3. Press the dehumidifier key and switch the DIP switches 1 and 5 off.
4. Perform an exposure and check.

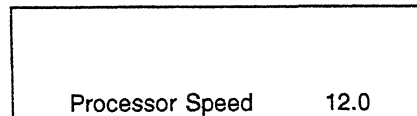
<Unexposed parts appear in the trailing edge section of the master >



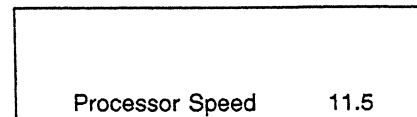
### ● Compensation Outline

= Slowing down (making smaller) the processor speed =

1. Switch the DIP switches 1 and 5 on and select "Processor Speed" with the dehumidifier key.



2. Input the Processor Speed (11.5) via the numeric keypad.



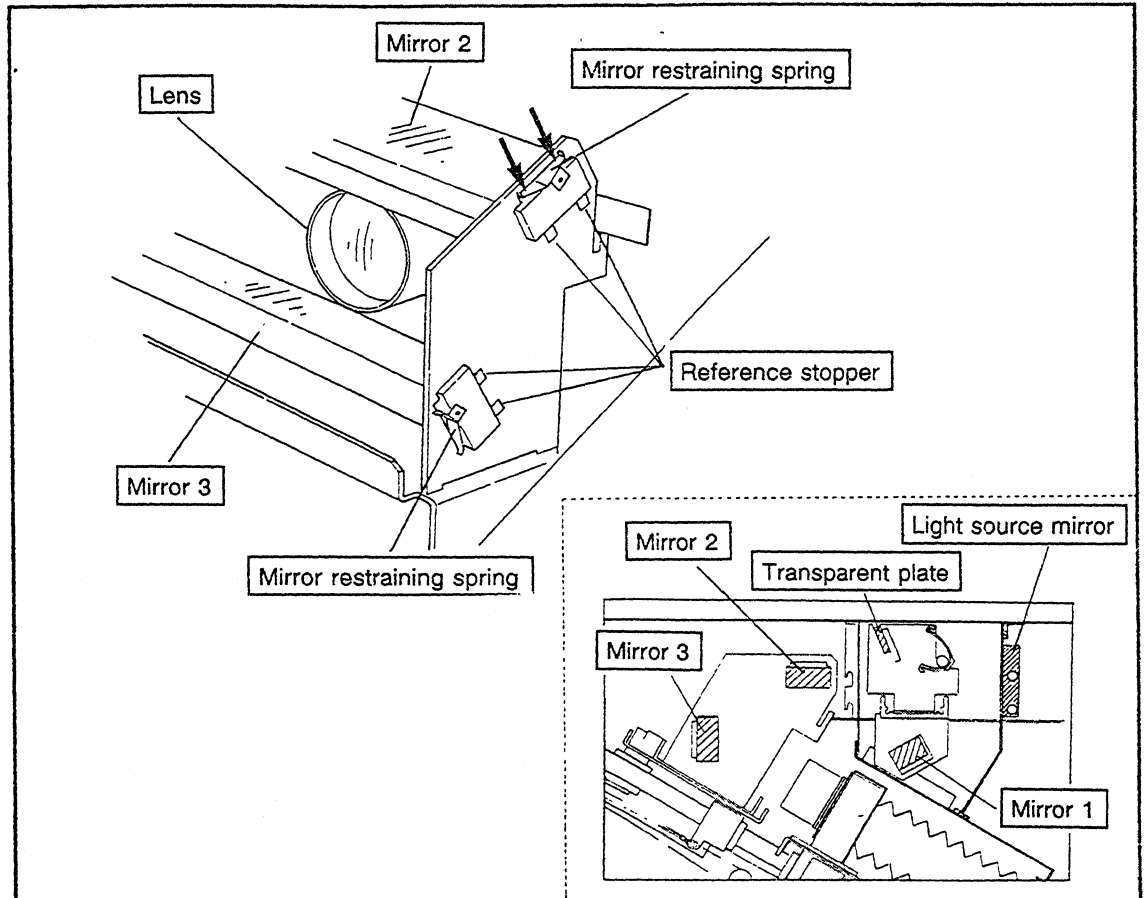
3. Press the dehumidifier key and switch the DIP switches 1 and 5 off.
4. Perform an exposure and check.

---

## 7. CHANGING THE MIRRORS

---

If the mirrors become scratched or damaged they will adversely effect exposure and must be replaced.



\* Stick reference stoppers in two places on the reflection surface side and one place on the opposite side to prevent the optical system mirror installation section from twisting.

### [Removal Method]

1. Turn the POWER switch off.
2. Remove the main unit paper discharge upper cover.
3. Install the lens cap to protect the lens.
4. Push the mirror restraining spring from the direction of the arrow and remove the mirror restraining spring. (Shift it from the outside and it will come off)
5. Remove the mirror.

\* Mirror 1 will be easier to remove if the transparent plate is removed first.

\* A restraining spring is installed on the reflection surface side for the light source mirror.

### **[Installation Method]**

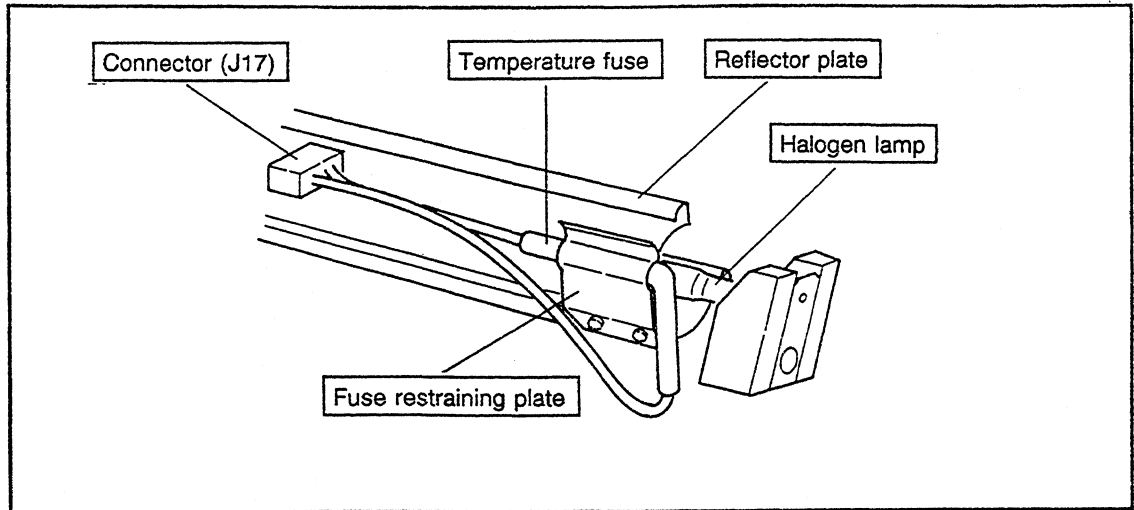
1. Install the new mirror.
  - \* Take care not to dirty or scratch the mirror.
  - \* Carefully check that the restraining spring is working correctly.
2. Follow the removal procedure in reverse.
3. Perform an exposure and check the magnification and focus.





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## 8. CHANGING THE TEMPERATURE FUSE



---



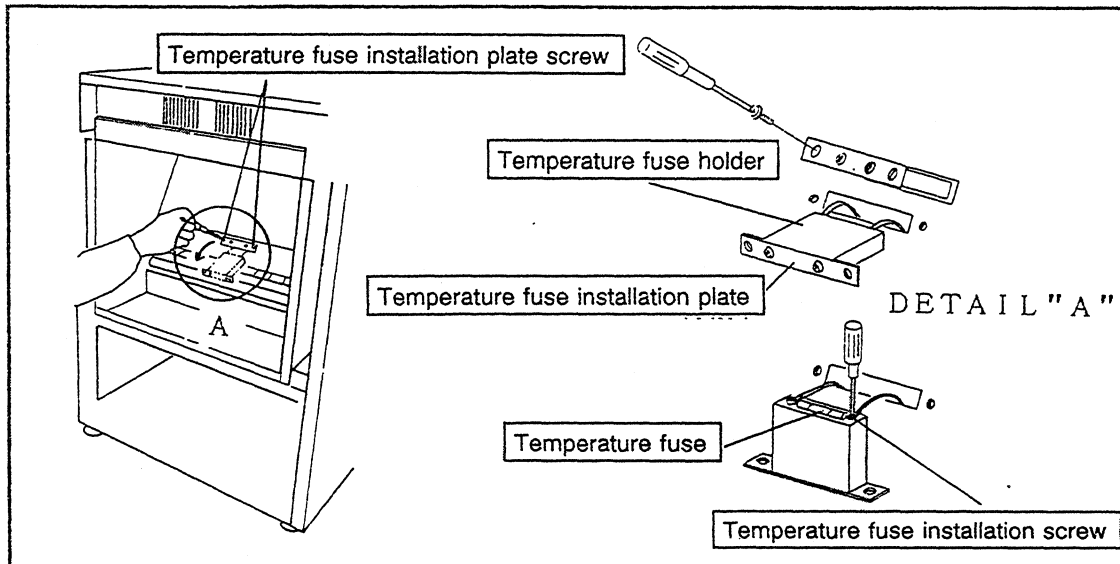
### [Removal Method]

1. Move the original table to the left side.  
In the "Power Save" condition, press  +  to move the original table.
2. Turn the POWER switch off.
3. Remove the main unit right upper cover.
4. Remove the temperature fuse connector (J17).
5. Remove the temperature fuse from the fuse restraining plate.

### [Installation Method]

1. Install the new temperature fuse.
2. Follow the removal procedure in reverse to install.
3. Turn the POWER switch on.
4. In the "Power Save" condition, press  +  to move the original table to the right side.

<< Dryer Section >>



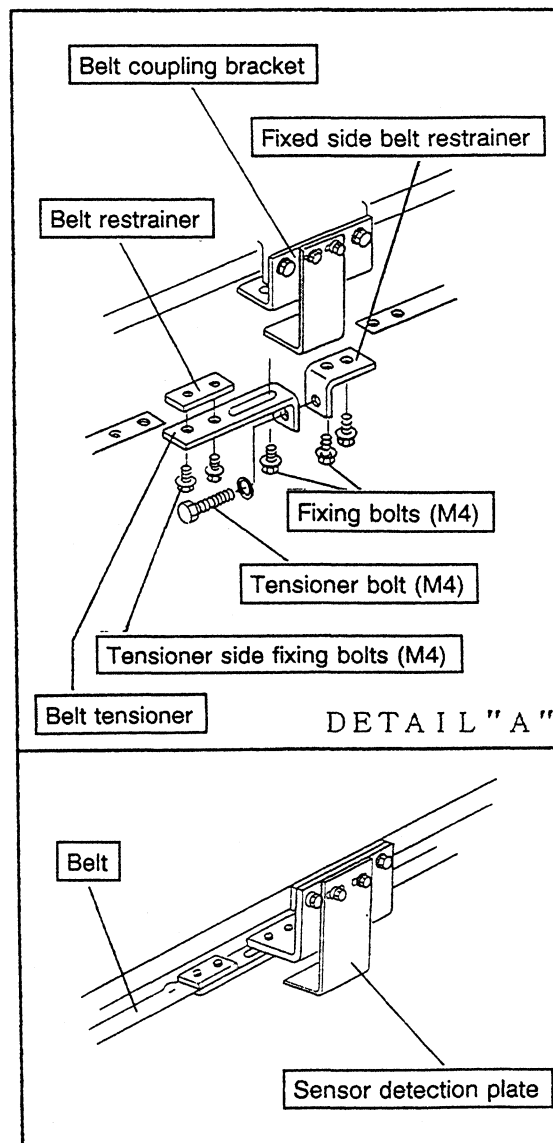
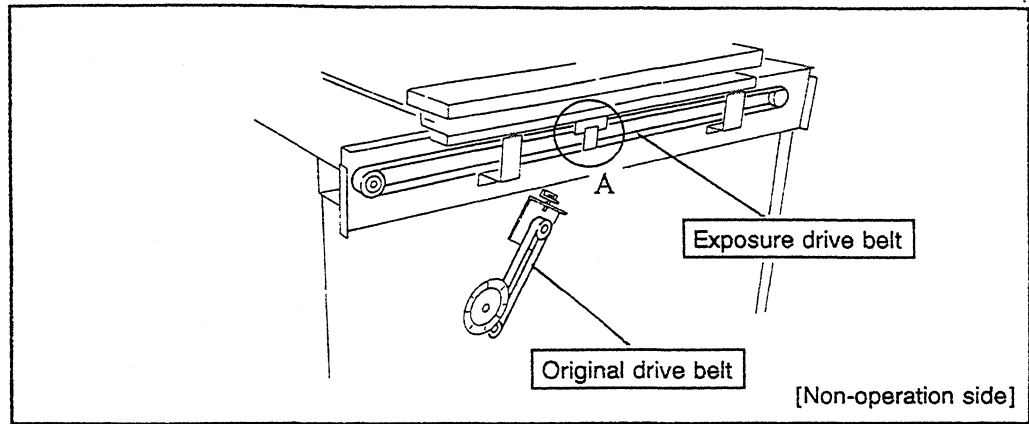
**[Removal Method]**

1. Turn the POWER switch off.
2. Remove the main unit left cover.
3. Remove the temperature fuse installation plate screw.
4. Pull out the temperature fuse holder in the direction of the arrow.
5. Loosen the temperature fuse installation screw and remove the temperature fuse.

**[Installation Method]**

1. Install the new temperature fuse.
2. Follow the removal procedure in reverse.

## 9. REPLACING THE DRIVE BELTS





= Original drive belt =

### [Removal Method]

1. In the "Power Save" condition, press + to move the original table to the center.
2. Turn the POWER switch off.
3. Remove the main unit back cover.
4. Remove the belt tensioner fixing bolts and tensioner bolts.
5. Remove the fixing bolts from fixed side belt restrainer and belt restrainer.

### [Installation Method]

1. Install the new drive belt to the belt coupling bracket following the removal procedure in reverse.
  - \* Remove grease from both sides of the belt using alcohol.
  - \* Move the table to the discharge side stoppers.
  - \* Set the drive belt to the center of the pulley.
  - \* Install so that the end surface of the drive belt is parallel to the end surfaces of the belt restrainer, belt tensioner and fixed side belt restrainer.
  - \* Temporarily fix the tension side fixing bolt.

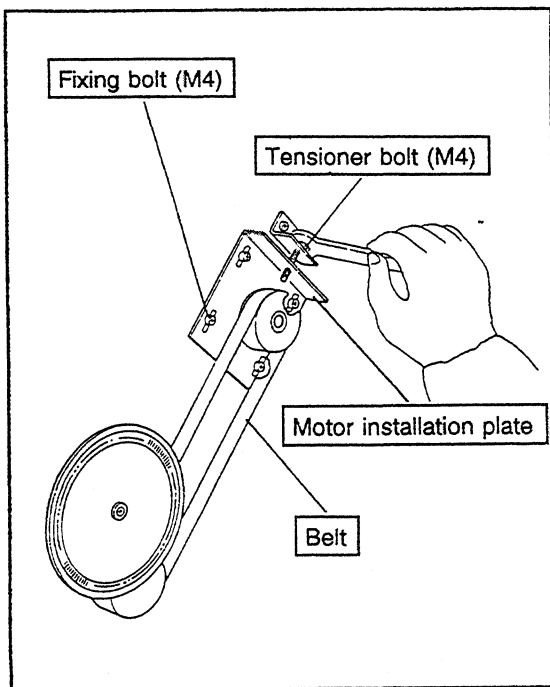
- Turn the POWER switch on,  
and press  +  .

\* Tighten the tensioner bolt until the original table begins to move, and then tighten it from this position by a further 1.5 turns.

- Fasten the tensioner side fixing bolts.

\* To prevent lopsided tension, loosen the belt restrainer fixing bolt then retighten it.




### = Exposure drive belt =



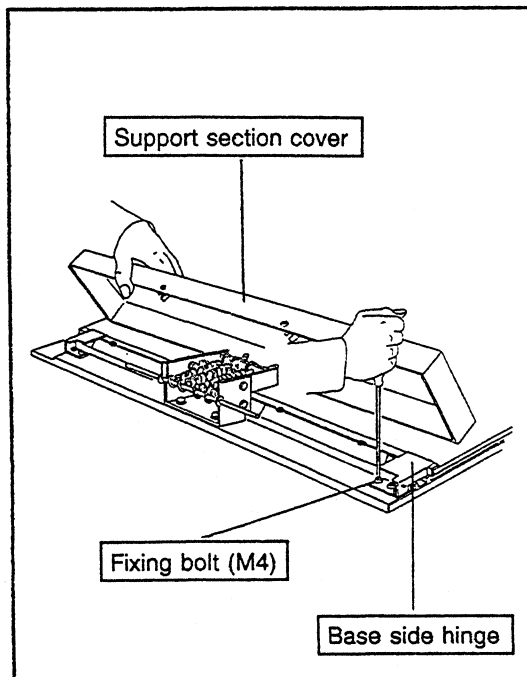
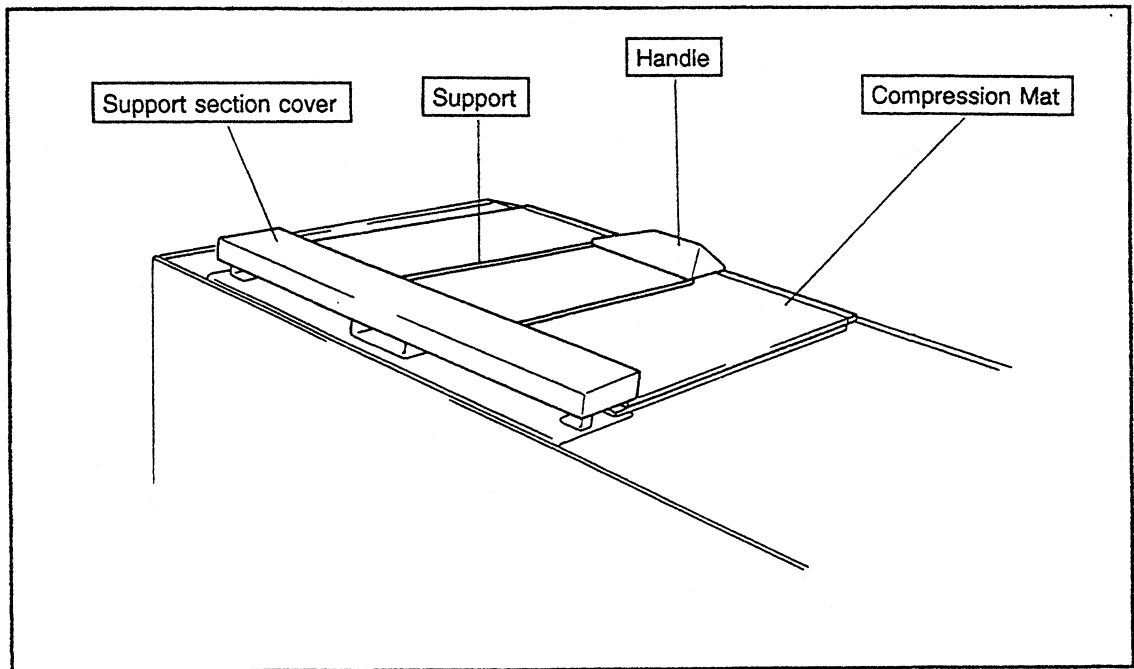
#### [Removal Method]

- Turn the POWER switch off.
- Remove the main unit back cover.
- Loosen the motor installation plate fixing bolt.
- Loosen the tensioner bolt.
- Remove the drive belt from the pulley.

#### [Installation Method]

- Install the new drive belt.
  - \* Remove grease from both sides of the belt using alcohol.
  - \* Leave the motor installation plate fixing bolt temporarily fastened.
- Turn the POWER switch on.
- In the "Power Save" condition, press  +  to rotate the drive motor.
- Tighten the tensioner bolt until the exit roller begins to move.
  - \* Tighten it from this position by a further 1/2 to 2/3 turns.
- Press the  key to stop it rotating.
- Fasten the motor installation plate fixing bolt.

## 10. REPLACING THE ORIGINAL COMPRESSION MAT



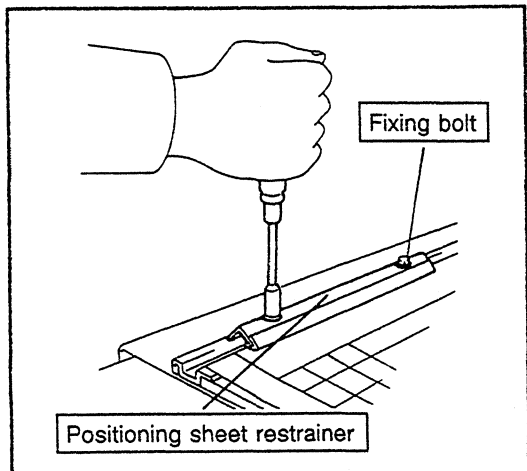
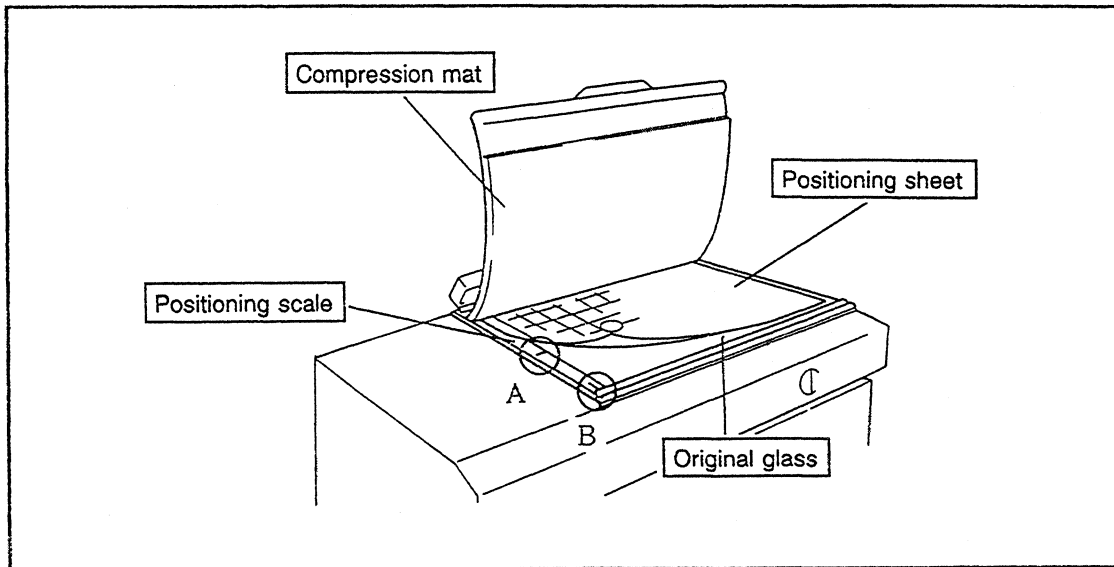
### [Removal Method]

1. Turn the POWER switch off.
2. Gently raise the support section cover, and loosen the base side hinge fixing bolt (M4) (one side only).
3. Remove the hinge and then the compression mat.

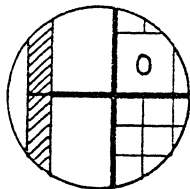
### [Installation Method]

1. Install the new compression mat.
2. Install following the removal procedure in reverse.

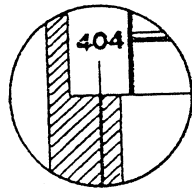
## 11. REPLACING THE POSITIONING SHEET



<< The position relationship between the positioning sheet and scale >>



DETAIL "A"



DETAIL "B"

### [Removal Method]

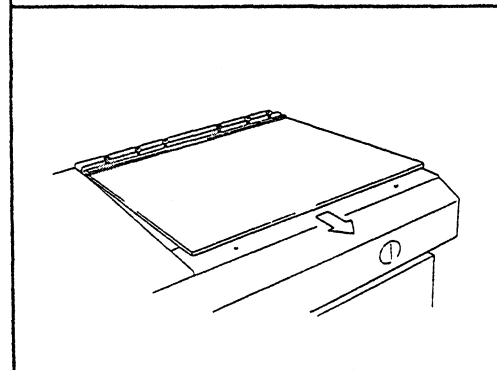
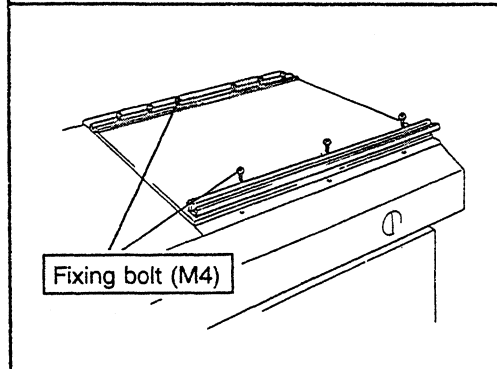
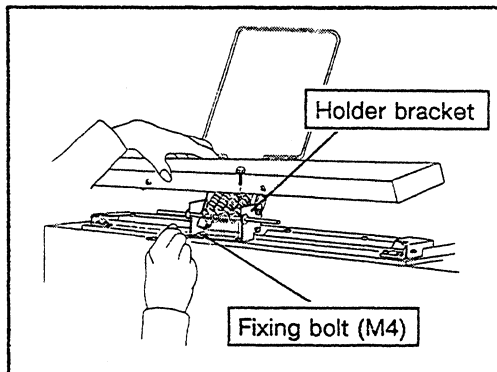
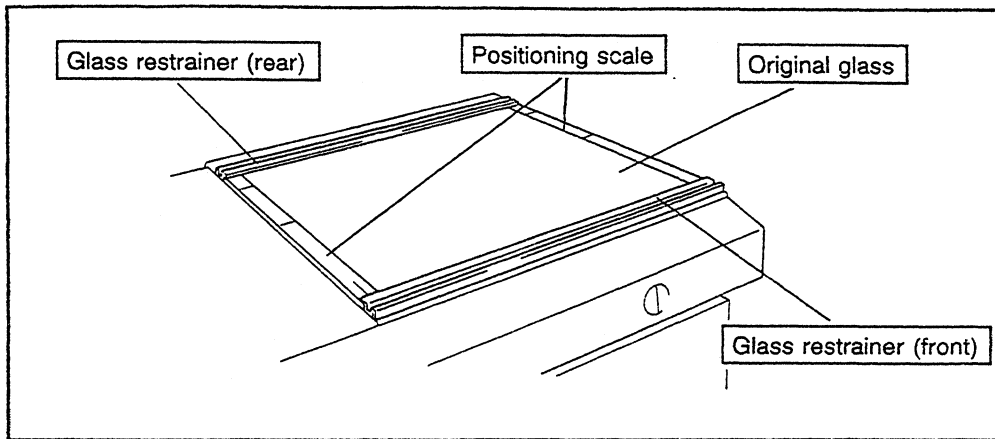
1. Turn the POWER switch off.
2. Remove the compression mat.(Refer to "Replacing the Compression Mat".)
3. Loosen the positioning sheet restrainer fixing bolt and remove sheet restrainer.
4. Remove the positioning sheet.

\* When removing the positioning sheet, check the position relationship between the positioning sheet and positioning scale and make a mark to allow reproduction.

### [Installation Method]

1. Install the new positioning sheet and align it with the positioning scale.
2. Restrain the sheet with the positioning sheet restrainer, and fasten the fixing bolt.(The prevent lopsided tension on the sheet, loosen the fixing bolt, remove and uneven tension and then refasten it.)
3. Set a piece of black paper and perform an exposure.
4. When the position is reproduced, set the compression mat.

## 12. REPLACING THE ORIGINAL GLASS



### [Removal Method]

1. Turn the POWER switch off.
2. Remove the compression mat and the positioning sheet.
  - \* When removing the positioning sheet, mark the parts that will not be removed to allow repositioning.
3. Remove the support from the handle, and leave it so that the pull spring is not acting (the support raised).
4. With the support cover raised up, remove the holder fixing bolts (M4)
5. Remove the support section.
6. Loosen the glass restrainer (rear) fixing bolts.
7. Loosen the glass restrainer (front) fixing bolts and remove the glass restrainer.
8. Remove the original glass.

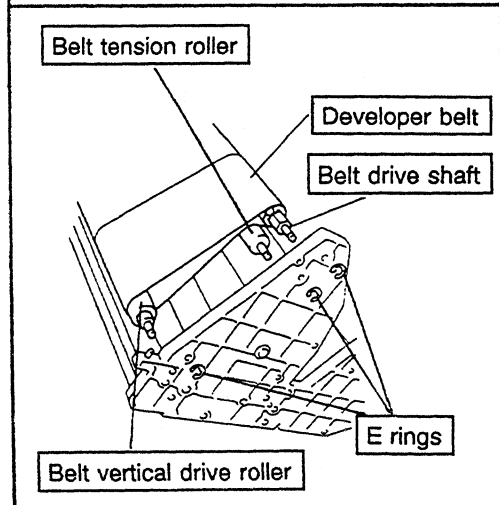
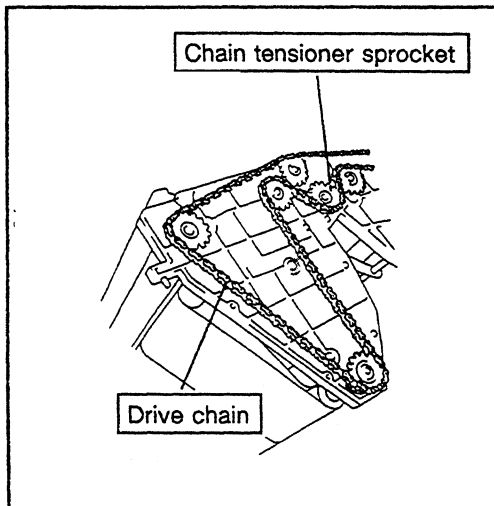
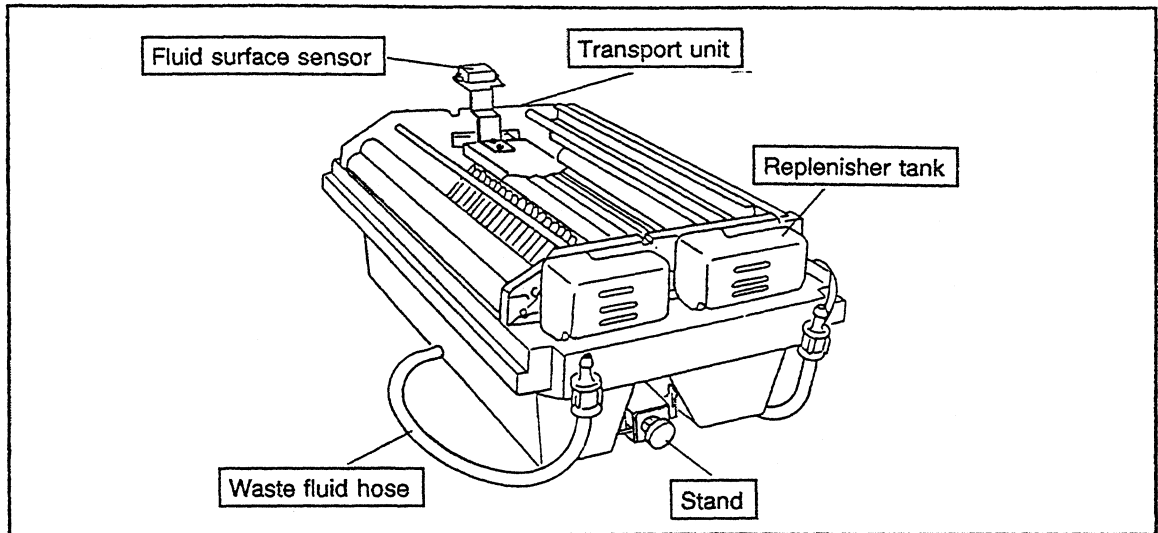
### [Installation Method]

1. Set the new original glass.
2. Fasten the glass restrainer fixing bolts (front and rear).
3. Set the positioning sheet to the marked position and fasten it.
4. Expose the positioning sheet.

5. When it is reproduced, align the positioning scale to the reference line of the sheet and stick is onto the surface of the glass.
6. Install following the removal procedure in reverse.



## 13. REPLACING THE DEVELOPER BELT



### [Removal Method]

1. Turn the POWER switch off.
2. Remove the transport unit from the main unit.
3. Loosen the unit drive chain's chain tensioner sprocket.
4. Remove the chain.
5. Remove the belt vertical roller, belt tensioner roller, and belt drive shaft E rings.
6. Shift the roller to the drive chain side to allow removal of the developer belt.

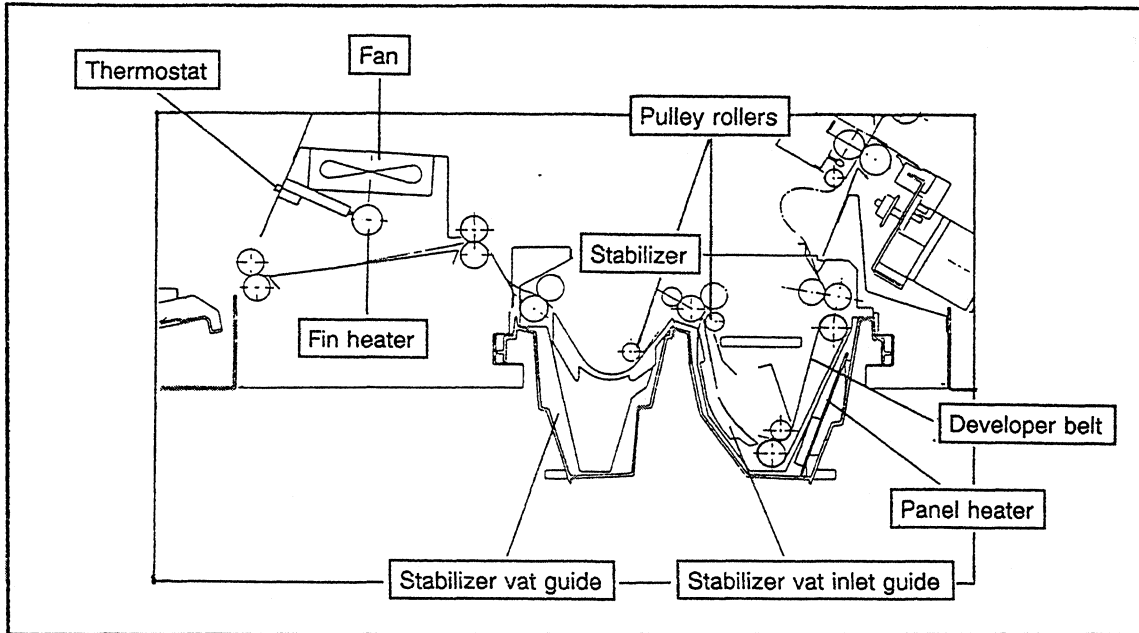
### [Installation Method]

1. Set the new developer belt.
2. Install following the removal procedure in reverse.
3. Confirm the operation of the unit.

---

## 14. PROCESSOR DRYER

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### [When the processor dryer section causes scratches to appear in the master]

= In general the cause of the problem will be one of the following =

- There is foreign matter or contaminates in the inlet guide.  
→ Wash with water and clean
- The pulley rollers are dirty and do not rotate smoothly.  
→ Wash with water and clean -
- The dryer fan does not rotate.  
→ Check the electrics

### [When the processor dryer section causes wrinkles]

= In general the cause of the problem will be one of the following =

- Snaking is occurring because the master has been set poorly.  
→ Set the master correctly
- Cutter sharpness is poor.  
→ Replace the cutter
- Glue used for holding the master is stuck to parts (rollers etc.) in the exposure section and transport section causing snaking.  
→ Clean
- The processor inlet guide is bent or contaminated with foreign matter.  
→ Adjust and clean.
- The dryer inlet/outlet nip pressure spring has come off.  
→ Nip it

---

· The dryer temperature is too high.

→ Adjust the thermostat (rotate counter-clockwise to lower the temperature)

\* Attempt to correct problems only after careful checking of each process to determine which section is causing the problem.

# 15. GRIPPING MARGIN AND MAGNIFICATION RELATIONSHIP TABLE

