

SILVER MASTER PLATEMAKER

CP-800S

SERVICE MANUAL

SCREEN DAINIPPON SCREEN MFG. CO., LTD.

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* For other items, refer to the appropriate instruction manual, parts list, etc.

* When ordering parts, specify the model number (CP-800S), part number, part name and quantity (refer to the parts list) and the date desired.

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1. INTRODUCTION

This Manual is intended to be used for after-sale service on CP-800S. For operation of the machine and other details, refer to "CP-800S OPERATION MANUAL", "TECHNICAL GUIDE" and other related documents. Bear in mind that the machine structure and specifications are subject to change without notice.

For parts ordering or consultation, let us know the following information, referring to "CP-800S PARTS LIST".

- ° model (CP-800S)
- ° serial number
- ° reference numbers and descriptions of parts
- ° required quantities
- ° date of delivery

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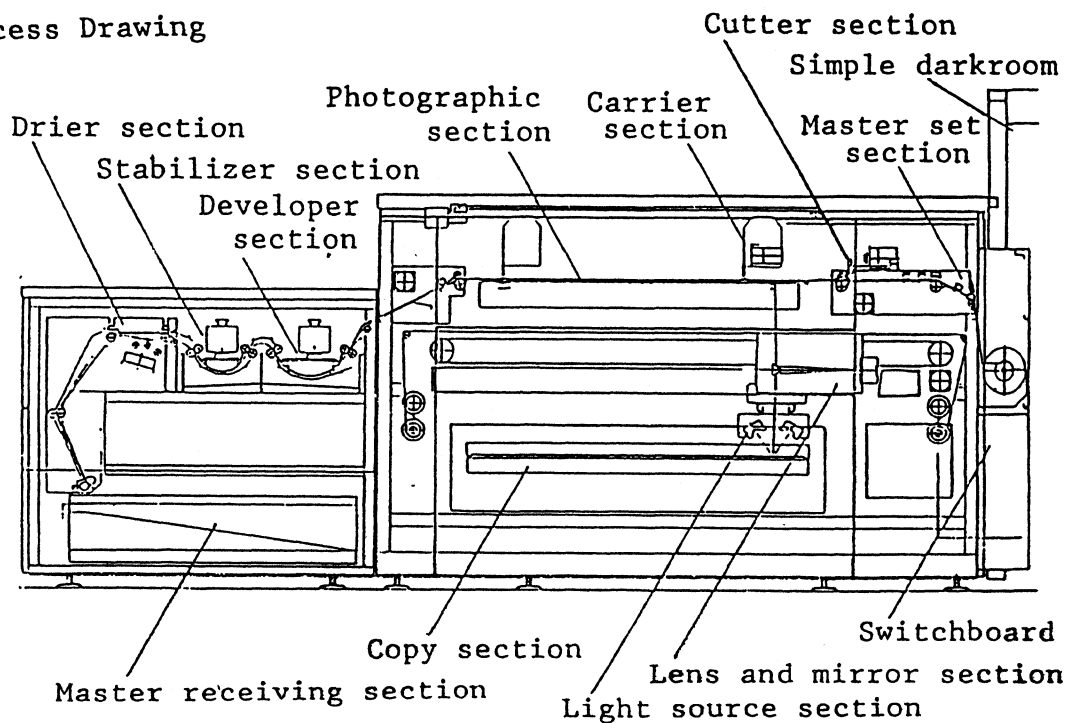
2. Specifications

Item	Specification
Master width	508 mm (20") -- 820 mm (32.3")
Master	SLM-RII SLP-F roll, with emulsion side out
Master feed length	60.0 -- 106.0 cm (23.5" -- 42.0")
Effective photographic dimensions	820 x 1060 mm
Exposure dimensions	820 x 1060 mm
Effective copy dimensions	820 x 1060 mm
Copy set	Vacuum type, copy frame drawer, copy upward set
Exposure method	Slit exposure (lens, mirror, moveable light source)
Lens	f:360 mm, in-mirror type
Scaling	100%
Light source	Halogen lamp, 150 V, 1.5 kW 2 lamps
Exposure adjustment	Power supply thyristor type (with exposure adjustment dial)
Drier	Heater with hot air blower, 1Ø, 200 V, 2.8 kW
Simple darkroom	Part of the master set section
Master joint detection	Buzzer, automatic overcutter
Processor capacity	Developer: 34 l, stabilizer: 24 l
Replacement fluid capacity	Developer and stabilizer: 4 l each

Exposure type	Normal/multi changeover switch
Reproduction speed	100.0 cm feed First: 4 min. for 60 Mz; 4 min. 48 sec. for 50 Hz Cycle: 1 min. 45 sec. for 60 Hz; 2 min. 5 sec. for 50 Hz
Weight	2,000 kg (main unit: 1,550 kg; processor:450 kg)
Electrical capacity	1∅, 100 V, 3.0 kW 1∅, 200 V, 7.3 kW
Machine dimensions	4820(W) x 1640(D) x 2000(H) mm
Optional accessories	Winch for lifting the rack, mixer

* In the interest of product improvement, these specifications may be changed without prior notice.

Process Drawing



3. INSTALLATION

1. Installation Conditions

For maintaining continued satisfactory operation of the machine, the following siting conditions should be met. For installation of the machine, select a place that satisfies the following requirements.

1.1. Strength of the floor

The camera main body and processor weigh 1,550 kg and 450 kg (520 kg with chemicals included) respectively. The floor should be strong enough to bear this total weight (strength 480 kg/m or more) and positioned horizontally.

1.2. Power Supply

The wiring should have a sufficient capacity to withstand electric power of:

100 V 3.0 kW singlephase

200 V 7.3 kW singlephase

Fluctuations in the line voltage should be within a range of +10% from the rating.

1.3. Avoid a place which may be exposed to direct intense sunlight.

1.4. Avoid a place where there is vibration. The floor surface should be free from unevennesses.

1.5. Space Requirement

See Fig. 1 below. Be sure to leave a space for servicing the machine.

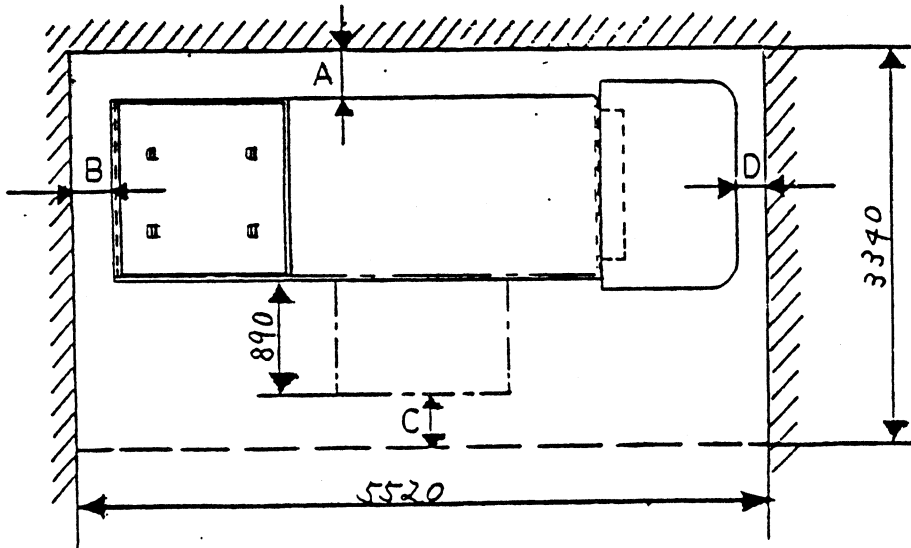


Fig. 1

- A: over 500 mm from the rear of the machine
- B: over 500 mm from the left side of the machine
- C: over 500 mm from the front side of the machine when the copy holder is drawn out
- D: over 200 mm from the right side of the machine

Install the CP-800S with the following procedure.

(The shipping brackets are coated yellow.)

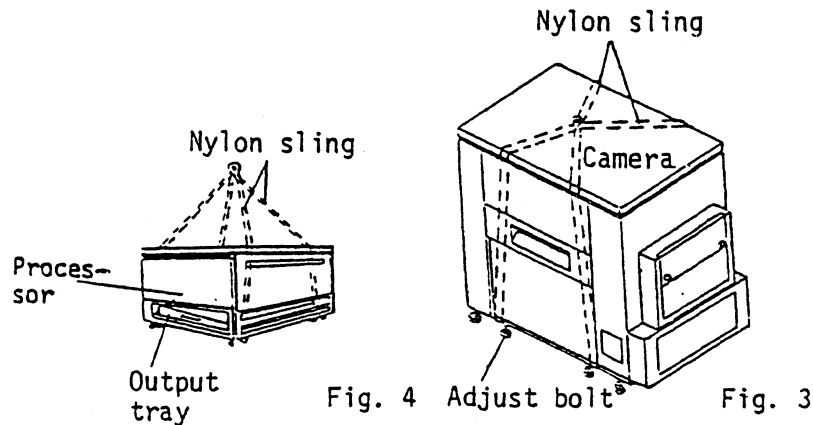
Unpacking

A: Camera (Main Unit)

1. Remove the crate from the camera except the crate bottom frame on which the main body lies.
2. Remove the four shipping brackets from the camera. See Fig. 2-2.
3. Put nylon slings on the center adjust bolts on the camera bottom and pass them on and along the outer side of the camera to lift it, and remove the crate bottom frame. See Fig. 3.
4. Casters are provided to facilitate conveyance of the camera.

B: Processor

1. Remove the crate from the processor except the crate bottom frame on which the processor lies.
2. Remove the four shipping brackets from the processor bottom. (See Fig. 2-6 & 2-7.)
3. Put nylon slings on the casters and pass them on and along the outer side of the processor to lift it, and remove the crate bottom frame. See Fig.4.
4. Casters are provided to facilitate conveyance of the processor.



Packing List

When unpacking, be sure to check all parts against the packing list to make sure that no parts have been overlooked

No.	Description	Qty
1	Main Unit (camera)	1
2	Processor	1
3	Spool Rims and Shaft	1 set.
4	Lamp Unit Block	1 set.
5	Halogen Lamp	2
6	Replenisher Bottles (activator and stabilizer)	1 each
7	Injection Adapter	1
8	Leg Pad	12
9	Vat	2
10	Funnel	1
11	Measuring Cup (10 ¢)	1
12	Developing Unit	1
13	Stabilizing Unit	1
14	Main Unit Front Lower Cover	1
15	Main Unit Rear Lower Cover	1
16	Tank Cover (activator and stabilizer)	1 each
17	Film Holder	1
18	Processor Left Lower Cover	1
19	Processor Inlet Guide	1
20	Processor Crossover Finger	1
21	Dryer Inlet Guide	1
22	Dryer Outer Lower Guide	1

23	Stabilizing Unit Lower Finger	1
24	Processor Top Cover	2
25	Miniature Darkroom	1 set
26	Wall Instructions	1
27	Operation Manual	1 each
	Technical Guide	
	Drain Disposal Manual	
28	Test Chart	4
29	Sample Original	1

No.	Description (Spare Parts)	Qty
29	Cutter Blade	1 set
30	Blower Brush	1
31	Metal Polishing Compound	1
32	Spring Belt (processor and photographing section)	3
33	Spring Belt (dryer)	3
34	Retouching Paints (dark gray, light gray)	1 each
35	Retouching Brush	2
36	Glass Fuse 1 A	1
37	Glass Fuse 3 A	6
38	Glass Fuse 10 A	4
39	Glass Fuse 15 A	4
40	Glass Fuse 20 A	4
41	Enclosed Fuse 30 A	2
42	Sucker Chuck	2
43	Mirror Cleaning Spray	1
44	Keyed Switch	2
45	Glass Cleaner	1
46	Step	1
47	Machine Screws	1 set
48	Tools	1 set
49	Tool Box	1

Fig. 3-6

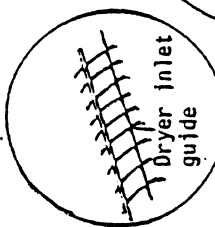


Fig. 3-6 Stabilizing unit

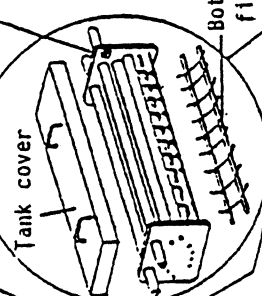


Fig. 3-7

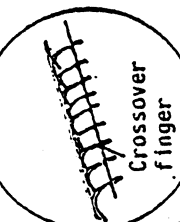


Fig. 3-8

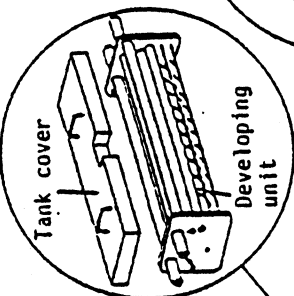


Fig. 3-9

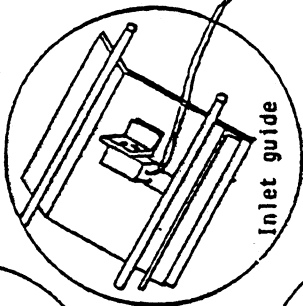


Fig. 3-4

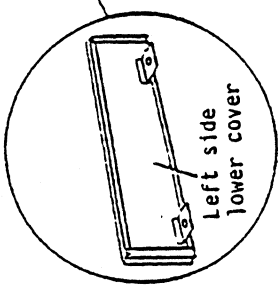
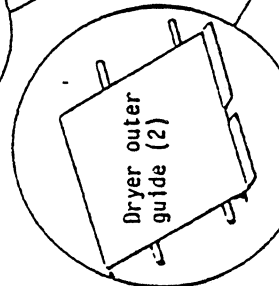


Fig. 3-3

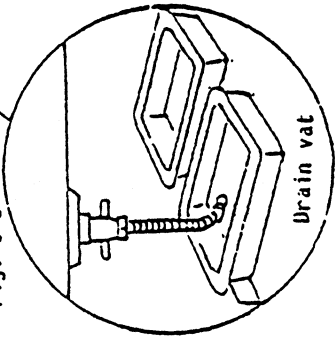


Fig. 3-10

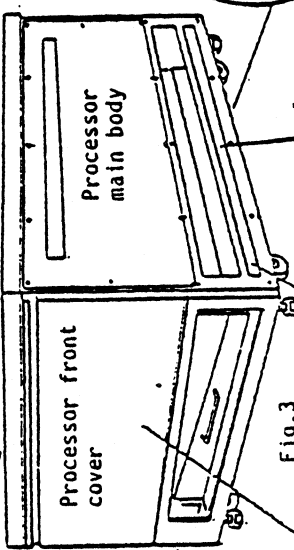


Fig. 3

Fig. 3-10

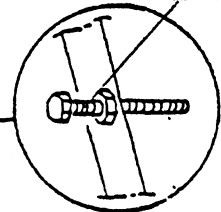
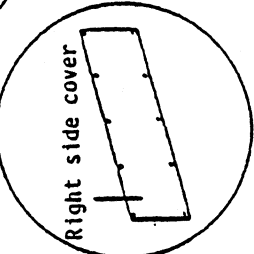


Fig. 3-1

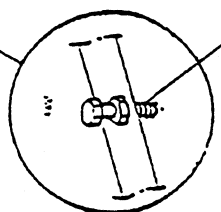


Fig. 3-2

Installation

- (1) Move the main unit to the installation site and put the leg pad under each of the eight adjust bolts.
- (2) Remove the two upper rear covers.
- (3) Open the top cover.
- (4) Cut the bands securing the upper front cover and stay from the inside of the top cover and open the upper front cover (Fig. 2-8)
- (5) Remove the four shipping brackets holding the exposure glass frame. (Fig. 2-14)
- (6) Cut and remove the band securing the compression bar of the photographing section. (Fig. 2-11)
- (7) Remove the tape securing the setter. (Fig. 2-10)
- (8) Hold the handle of the exposure glass frame and push it gently and slowly until it engages the ball catch.
- (9) place a level on the paper on the exposure glass frame (beyond the centerline or nearer to the nonoperation side) and adjust with the four adjust bolts at the main unit bottom corners until it is held in the horizontal position.
Keep the casters free or off the floor.
After leveling the main unit, tighten the four central adjust bolts a little.
- (10) Remove the front cover (right) by removing the two M4 hexagon bolts inside the top cover. (Since its lower side is engaged with the ball catch, pull it out.)

- (11) Remove the shipping brackets holding the lens board. (Fig. 2-12)
During the removal, be careful not to drop the shipping brackets.
To fix the rail for sliding the lens board, replace and lock
the hexagon socket head cap bolts in their original holes.
- (12) Remove the four shipping brackets holding the copy holder.
(Fig. 2-4)
- (13) Cut the band securing the hook. (Fig. 2-3)
- (14) Remove the polyurethane ether foam protecting the lamp unit block
and the band securing the bottom slit plate. (Fig. 2-1)
- (15) Install a halogen lamp into the lamp unit and put it into the lamp
unit block.
(Refer to the "Operation Manual" for the lamp installation method
and considerations)
- (16) Install the right side cover to the processor. (Fig. 3-10)
- (17) Move the processor to the main unit side and connect them.
(Fig. 4, Fig. 3-1, 3-2)
Insert the longitudinal positioning bolt into the positioning
bracket and put the height adjust bolts on the main frame side
brackets.
Then, adjust the processor stopper bolts so that the four stopper
bolts on the processor right side are in touch with the main frame.

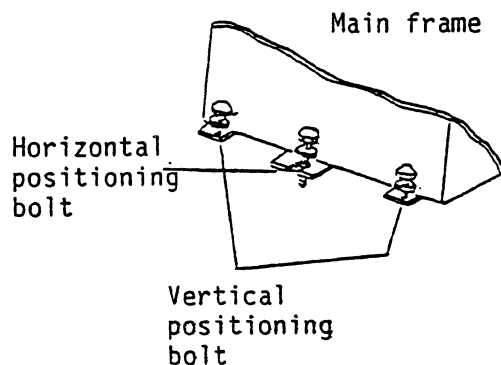


Fig. 4

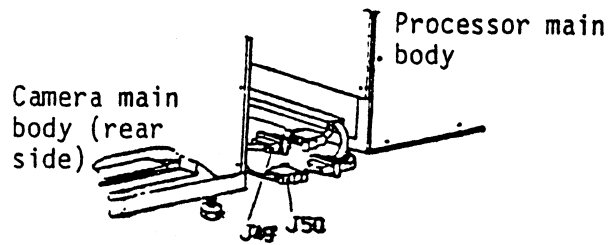


Fig. 5

- (18) Connect the camera connector J49 (rear side) and the processor connector J50 (frame side corner). (Fig. 5)
- (19) Put the developing unit in place. (Fig. 3-8)
- (20) Put the stabilizing unit in place. Before putting it, install the bottom fingers. (Fig. 3-6)
- (21) Install the crossover guide for bridging between the camera and the processor and connect the connector for the Master conveyance motor (RM6) stop limit switch, J52. (Fig. 3-9)
- (22) Install the crossover fingers between the developing unit and stabilizing unit. (Fig. 3-7)
- (23) Install the inlet guide between the dryer and the stabilizing unit. (Fig.3-5)
- (24) Install the dryer outer guide (2). (Fig.3-4)
- (25) Install the lower left side cover of the processor. (Fig. 3-3)
- (26) Remove the front cover from the processor by removing 2 M4 bolts.
- (27) Place the two drain vats under the tank. (Fig. 3-10)
- (28) Assemble the miniature darkroom. See Fig. 6.

- 1) Attach the supports (1) to the support brackets of the camera in such a way that the cover (1) touches the camera.
- 2) Stick the bottom curtain to the taping area at the bottom of the switchboard to shut out the light.
- 3) Install the stays (3) to the supports.
- 4) Install the runners (4) to the rail mounting hoop (5).
- 5) Install the rail mounting hoop (5) to the supports.
- 6) Install the safe lamp (6) to the top plate (7).
- 7) Install the top plate on the rail mounting hoop.
Fix the cord of the safe lamp on the saddle and insert the plug into the receptacle.
- 8) Install the cover 3 (8).
- 9) Install the cover 2 (9) in such a way that its soft tape area touches the camera main body.
- 10) Install the light shielding plate (10).
- 11) Install the curtain (11). (Hitch the curtain hangers on the runners.)
- 12) Connect the connector for the safe lamp, J1.
The connector J1 (female side) is located on the right inside the switchboard. (Fig. 2-15)

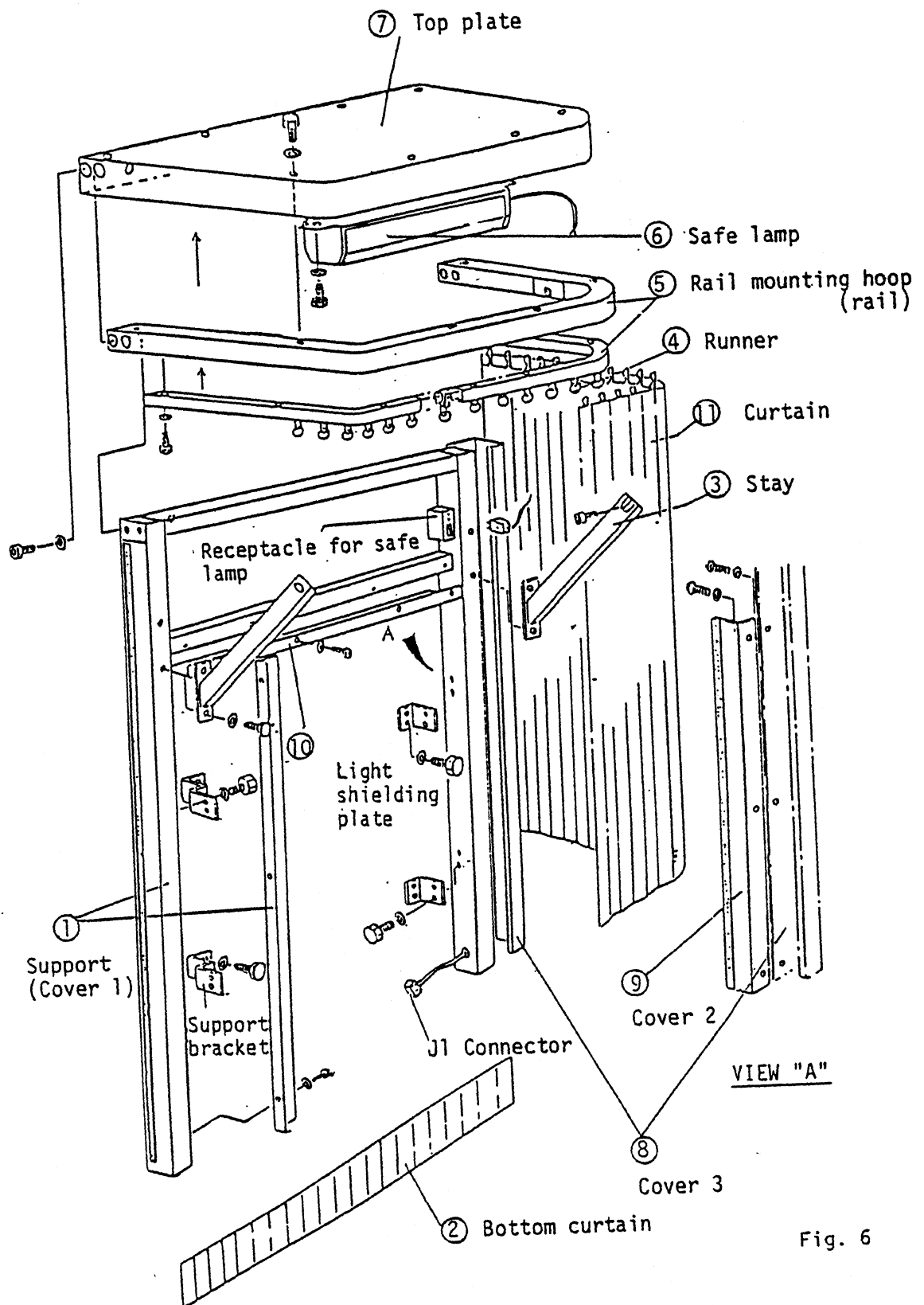


Fig. 6

Mixing processing solutions

- (1) Prepare the activator (34 ℓ) and stabilizer (24 ℓ) according to the Operation Manual and fill them into the respective tanks and replenisher bottles (4 ℓ).
- (2) Mount the replenisher bottles filled with processing solutions on the respective units.
- (3) Attach the tank covers to the developing and stabilizing units.
(Figs. 3-6, 3-8)
- (4) Attach the top cover of the processor.
Be sure to tally the marks (▲) since a safety switch is provided.

Connecting the power supply

- (1) Turn off the 100 V and 200 V POWER switches on the sub-control panel (1).
- (2) After checking the power supplied in the building, connect the input line.
(Power requirement 1φ 100 V 3.0 kW, 1φ 200 V 7.3 kW)
- (3) Be sure to ground the green wire of the input line independently for both 100 V and 200 V power.

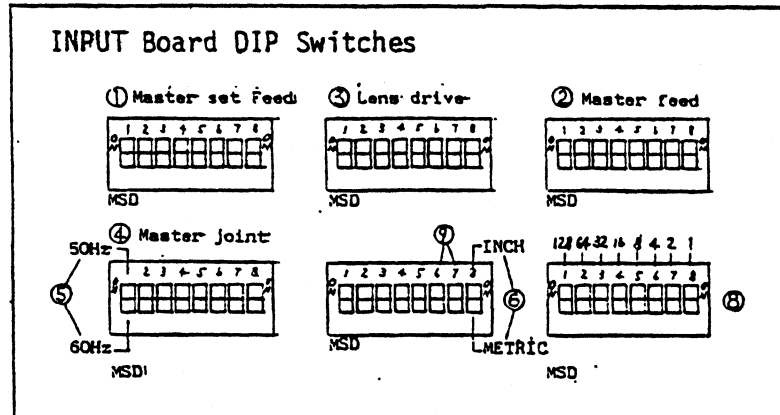
CAUTION: After connecting the power supply, the setter returns to the original position by turning on the POWER switch. So before turning on the power switch, make sure that no parts are not secured with band.

Inspection and adjustment - The machine is inspected and adjusted with the top cover of the camera open. Therefore, put the spare keyed switch into the safety switch before the inspection and adjustment.

- (1) Change the frequency depending on the local service power frequency.
Set the DIP switch ⑤ on the INPUT board inside the switchboard.
(See the Operation Manual.)

Frequency changeover switch ⑤:

Throw the switch up (ON) in 50 Hz areas and throw it down in 60 Hz areas.



- (2) Turn on the 100 V and 200 V POWER switches.
The setter will return to the original position.
- (3) Load a Master roll following the Operation Manual.
- (4) Check and adjust the position of the leading end of Master.
When Master is set, its leading end is flush with the cutting plane. If not so, adjust the DIP switch ① on the INPUT board.

DIP switch ①: Adjustment of the "Master set feed" length

This switch is used to adjust the length by which Master is fed to the cutting position after Master is set, counting started and the limit switch concerned turned on.

1) The basic feed length is 157.5 mm.

(DIP switch ①: zero)

2) "One" in switch setting corresponds to 0.5 mm.

3) The DIP switch ① is preset to 15.

Thus the feed length will be calculated as follows:

$$157.5 + 7.5 = 165 \text{ mm}$$

(5) Inspection and adjustment of the Master length

Set the most frequently used Master length with the MASTER LENGTH digital switch on the main control panel and measure the actually fed Master length.

If the actual Master length is different from the set length, adjust it with the DIP switch ② on the INPUT board.

DIP switch ②: Adjustment of the Master feed length

This switch is used to adjust the Master feed length.

- 1) This switch adjusts the compensating coefficient for the Master feed length.

For example, if the MASTER LENGTH digital switch is set to 1000 mm, Master will be fed by 1000 mm with the compensating coefficient 1.00 and by 980 mm with the compensating coefficient 0.98.

- 2) The basic compensating coefficient is 0.98.

(DIP switch ②: zero)

- 3) The DIP switch ② is preset to 20, which represents coefficient 0.02.

This means that compensating coefficient 1.00 (0.98 + 0.02) is set.

- 4) Method of adjusting the Master feed length

- i) First, set the DIP switch ② to 20 to get compensating coefficient 1.00.

- ii) Feed a sheet of Master and measure its length.

(It is better to feed it longer, preferably approx. 1000 mm.)

For example, if the measurement is 960 mm, the compensating coefficients are calculated as follows:

$$1000 \div 960 \approx 1.04$$

$$1.04 - 0.98 = 0.06$$

Therefore set the switch to 60 by turning on switch bit Nos. 3, 4, 5 and 6.

(6) Inspection and adjustment of the lens drive

If the amount of the lens drive for slit exposure is too small with respect to the Master feed length, silver deposit will occur in the exposure edge (leading edge at Master output).

If the amount of the lens drive is too large, the lens board will touch the camera safety limit switch and the camera will stop when the maximum Master length (106.0 cm) is set.

When an adjustment is needed, adjust with the DIP switch ③ on the INPUT board.

DIP switch ③: Adjustment of the lens drive (slit exposure length)

This switch is used to adjust the length of the exposure made by slit exposure.

NB) Be sure to carry out this adjustment after adjusting the Master feed length with the DIP switch ② since the amount of the lens drive may be changed according to the Master feed length.

- 1) The relationship between the setting of the DIP switch ③ and the compensating coefficient is the same as above with the DIP switch ②.

(7) Developing temperature control:

The developing temperature should be between 28°C and 31°C when the heater pilot lamp goes out. If not so, adjust the developing temperature with the thermo-dial on the processor.

(8) Unit changeover switch for the Master length set digital switch (for the machines for export to North America)

Use the DIP switch ⑥ on the INPUT board for switching from METRIC (cm) to INCH.

Unit changeover switch for the Master length set digital switch ⑥

- ° When it is thrown up (to INCH), the British unit system is selected. (The set Master length should range from 23.5" to 42.0".)
- ° When it is thrown down (to METRIC), the metric system is selected. (The set Master length should range from 60.0 cm to 106.0 cm.)

9. Adjustment of inlet roller of processor for gripping amount of master

After the exposure is completed, the time from the master is transferred by the carrier and the front end of the master turns ON the limit switch (LS-5) at the inlet of processor to the time the master is gripped by the roller at the inlet of processor (the time until the paper delivery motor turns OFF) can be adjusted. If the master is not gripped by the roller at the inlet of processor, refer to the table and change the switch in the direction of increase.

Setting made before shipment →

SW No.	6	7	Time (Second)	Amount of feed. (mm)
	OFF	OFF	1.305	27.0
	OFF	ON	1.576	33.1
	ON	OFF	1.848	38.8
	ON	ON	2.120	44.5

Final assembly and check-up

(1) Install the covers.

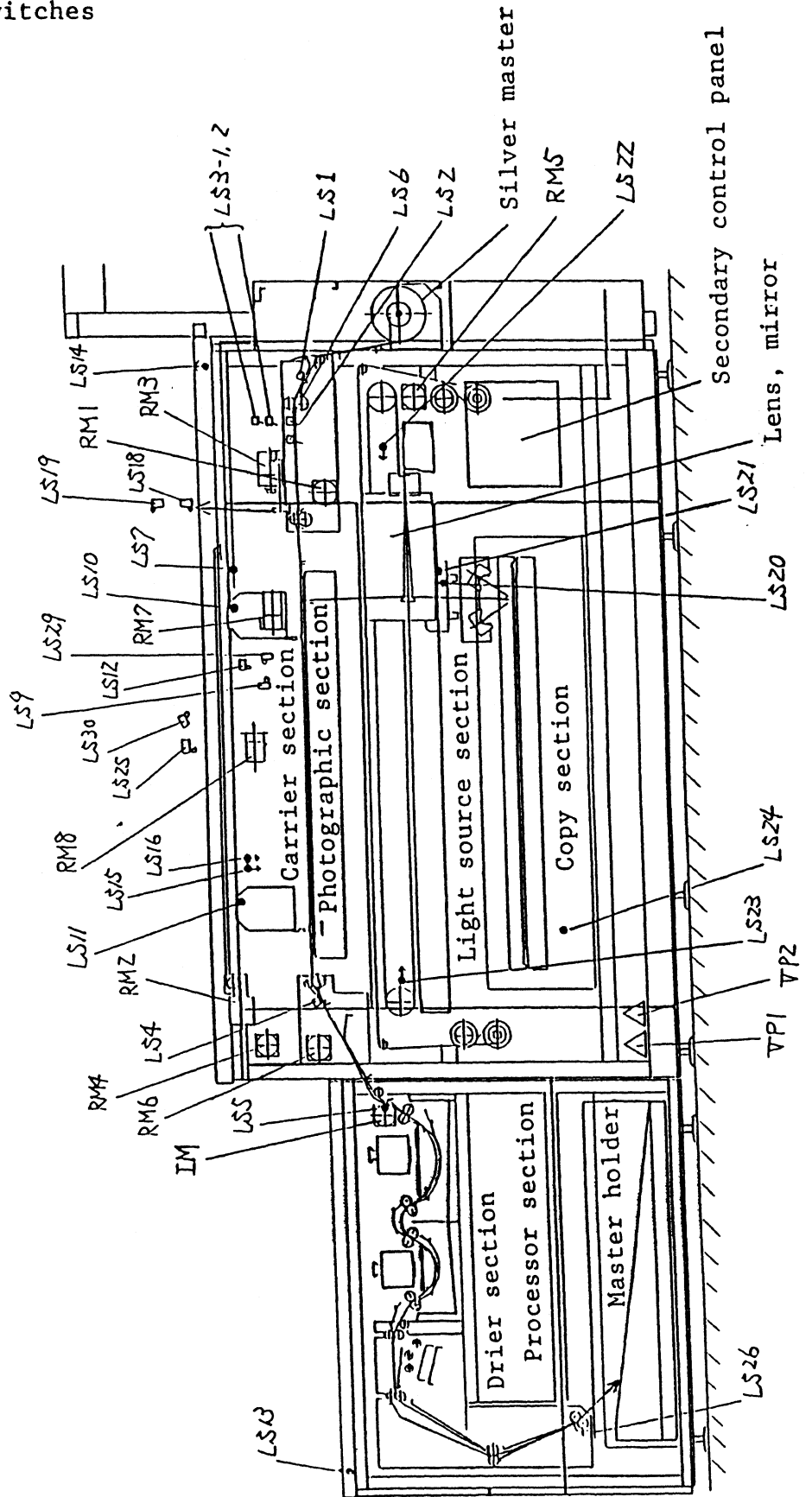
(2) Check-up

.Make a series of checks in accordance with the Operation Manual.

* Conduct running tests using the test chart.

4. Structure

4-1. Limit switches

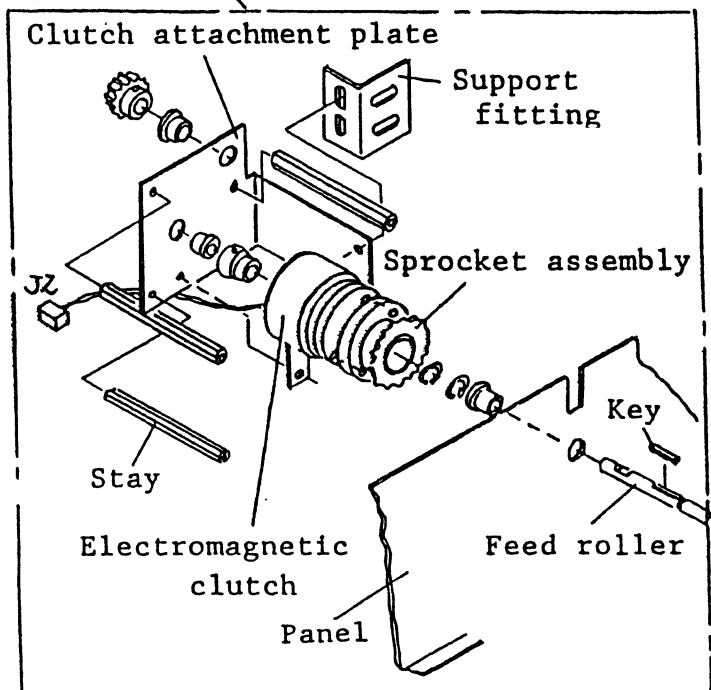
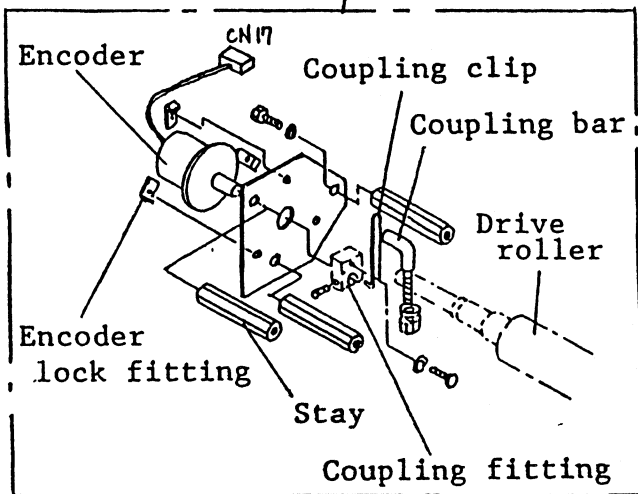
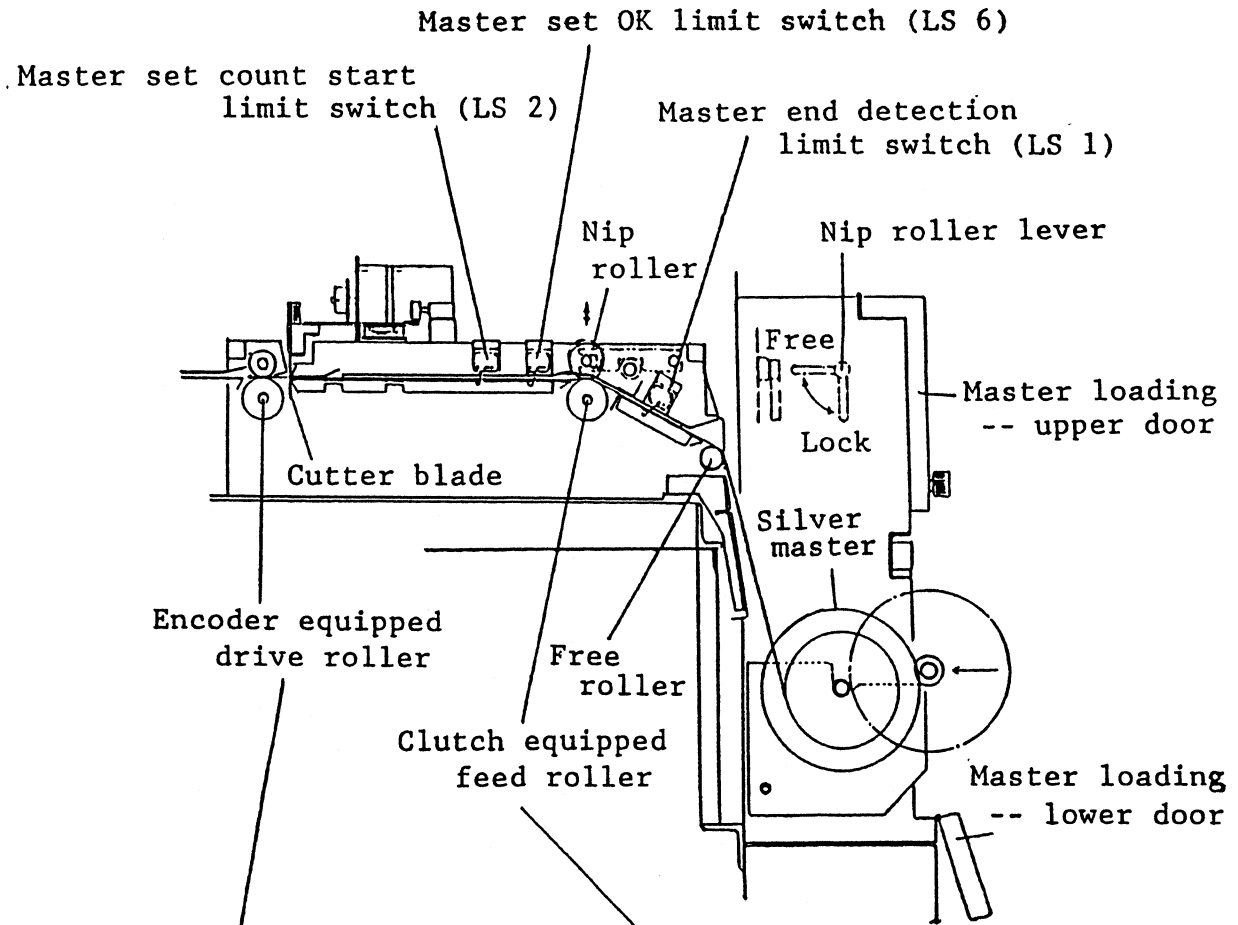


- LS 1 -- Master end detection limit switch
- LS 2 -- Master set count start limit switch
- LS 3 -- Master joint detection limit switch
- LS 4 -- Carrier motor (RM2) stop limit switch
- LS 5 -- Master discharge motor (RM6) stop limit switch
- LS 6 -- Master set OK limit switch
- LS 7 -- Carrier origin point limit switch
- LS 9 -- Chuck suction point limit switch
- LS 10 -- Optical axis detection limit switch
- LS 11 -- Carrier safety limit switch
- LS 12 -- Chuck origin point limit switch
- LS 13 -- Processor safety limit switch
- LS 14 -- Main unit safety limit switch
- LS 15 -- Pressure plate origin point limit switch
- LS 16 -- Pressure plate pressure point limit switch
- LS 18 -- Cutter origin point limit switch
- LS 19 -- Cutter reverse rotation limit switch
- LS 20 -- Lens board feed count start limit switch
- LS 21 -- Lens board origin point limit switch
- LS 22 -- Lens board safety limit switch
- LS 23 -- Lens board safety limit switch
- LS 24 -- Vacuum copy limit switch
- LS 25 -- Optical axis support plate origin point limit
switch
- LS 26 -- Master paper discharge detection limit switch
- LS 29 -- Chuck carry point limit switch
- LS 30 -- Optical axis support plate support position limit
switch

RM 1 -- Master feed motor
RM 2 -- Carrier motor
RM 3 -- Cutter motor
RM 4 -- Pressure plate up/down motor
RM 5 -- Lens board drive motor
RM 6 -- Master discharge motor
RM 7 -- Chuck up/down motor
RM 8 -- Optical axis support plate motor
I M -- Processor motor

VP 1 -- Chuck suction pump
VP 2 -- Vacuum copy pump

4-2. Master feed section



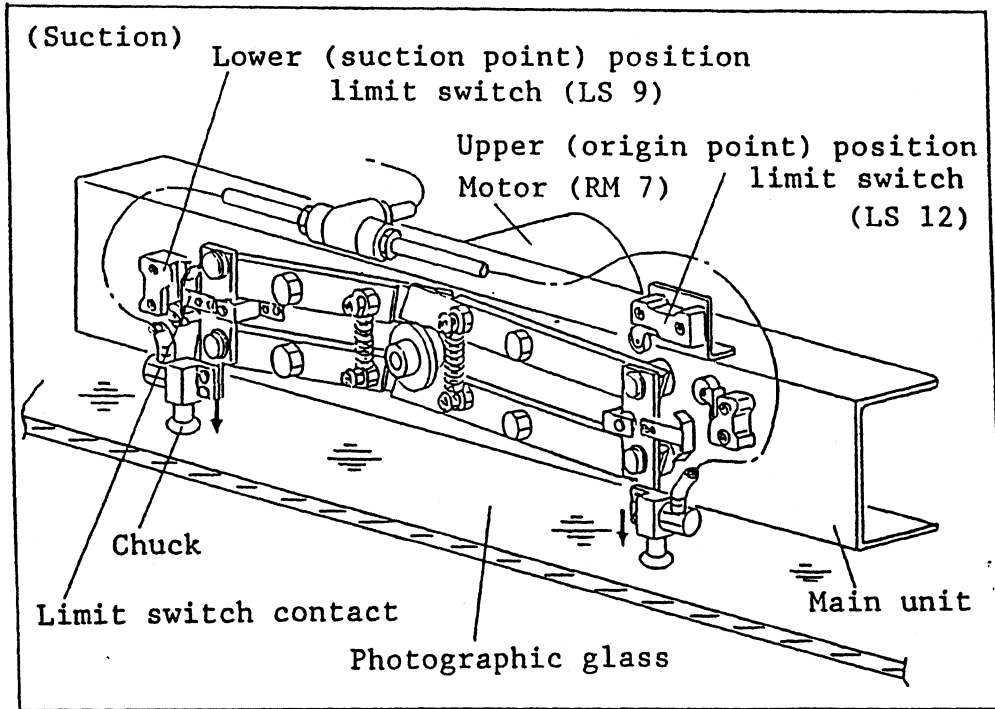
Master Setting

1. To set the master, switch the nip roller lever to "Free." Then, position the front edge of the master so that the master set OK limit switch (LS 6) is ON (indicator lamp OFF), return the nip roller lever to the "Lock" position and press the master set button.
2. Feeding is accomplished by the action of the master feed motor (RM 1), which turns the clutch (CL) ON, rotating the feed roller.
3. The amount of feed for master setting is the value (basic feed amount plus correction value) set with dip switch (1) on the input PCB of the switchboard. This value is read by the computer. When the master is fed and its front edge turns the master set counter start limit switch (LS 2) ON, the encoder count is cleared and the count restarts.
When the value read into the computer matches the encoder pulse count value, master feeding is stopped and master setting is completed.

Start

When the start button is pressed, the computer reads the value that was set with the master feed length digital switch on the main control panel and the correction value that was set by dip switch (2) of the input PCB on the switchboard. The computer then calculates the correction and, in the same manner as for master setting, continues feeding until the value read into the computer and the encoder pulse count (count starting from the master front edge -- cut surface) agree.

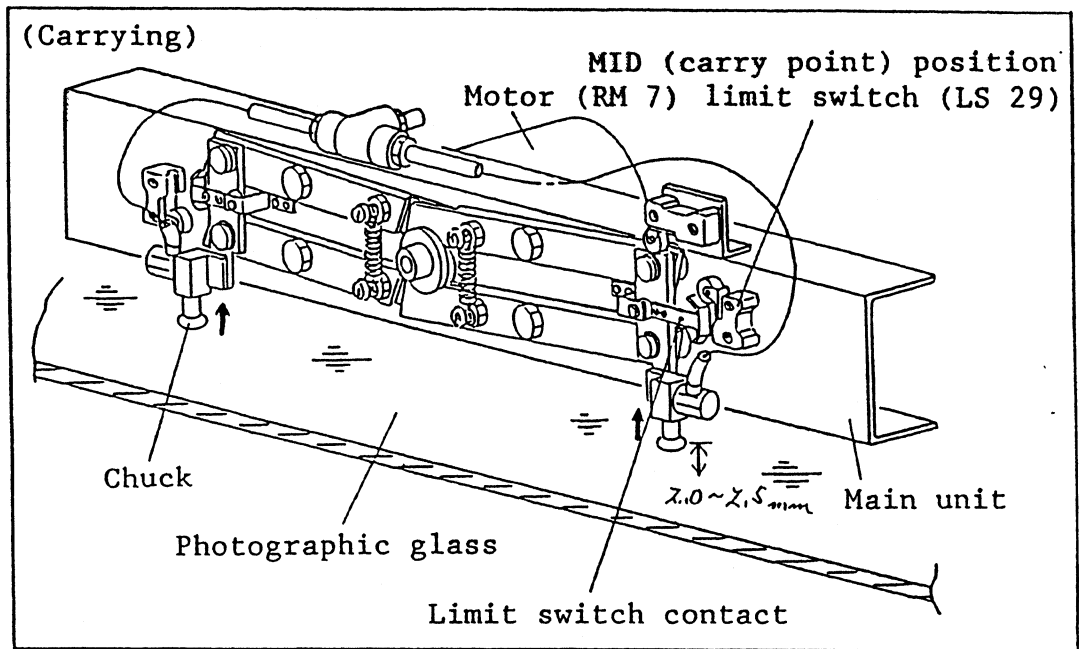
4-3. Carrier section



The carrier supports and carries the photosensitive material by means of chucks.

After starting, the master is fed the designated length and set. Then, the two chucks are moved vertically by the operation of the motor (RM 7) attached to the main unit, and the master is held by suction (LOWER -- suction point position).

Suction is supplied by a vacuum pump (VP1-DA40) through a suction valve (SV 2).



After suction is applied, the master is lifted to the MID (carry point) position and carried to the optical axis.

(Chuck position during carrying (MID))

During suction, the chucks are lowered to the surface of the photographic glass (photosensitive material surface) and suction is applied. During carrying, however, the chucks should be 2.0 -- 2.5 mm from the surface of the photographic glass.

This is adjusted using the MID position limit switch contact (oblong hole part).

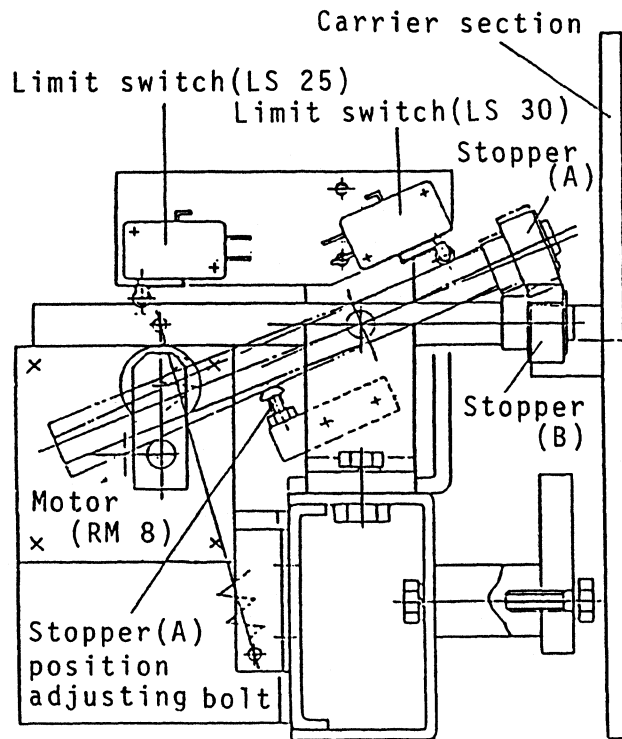
When out of adjustment, one of the following conditions will result. Check carefully to prevent this.

1) When the MID position value is more than specified:

The pressure bar (Alp) will interfere with the suction, causing the master to be dropped during carrying, or resulting in a snaking condition which will reduce the accuracy of photographic positioning.

- 2) When the MID position value is less than specified:
 For carrying, the MID position limit switch (LS 29) should be ON, and the lower position limit switch (LS 9) should be OFF, but when the MID position value is less than specified, the lower position limit switch is switched ON, cancelling successive processes and stopping the camera operation.

(Optical axis feed and feed start)

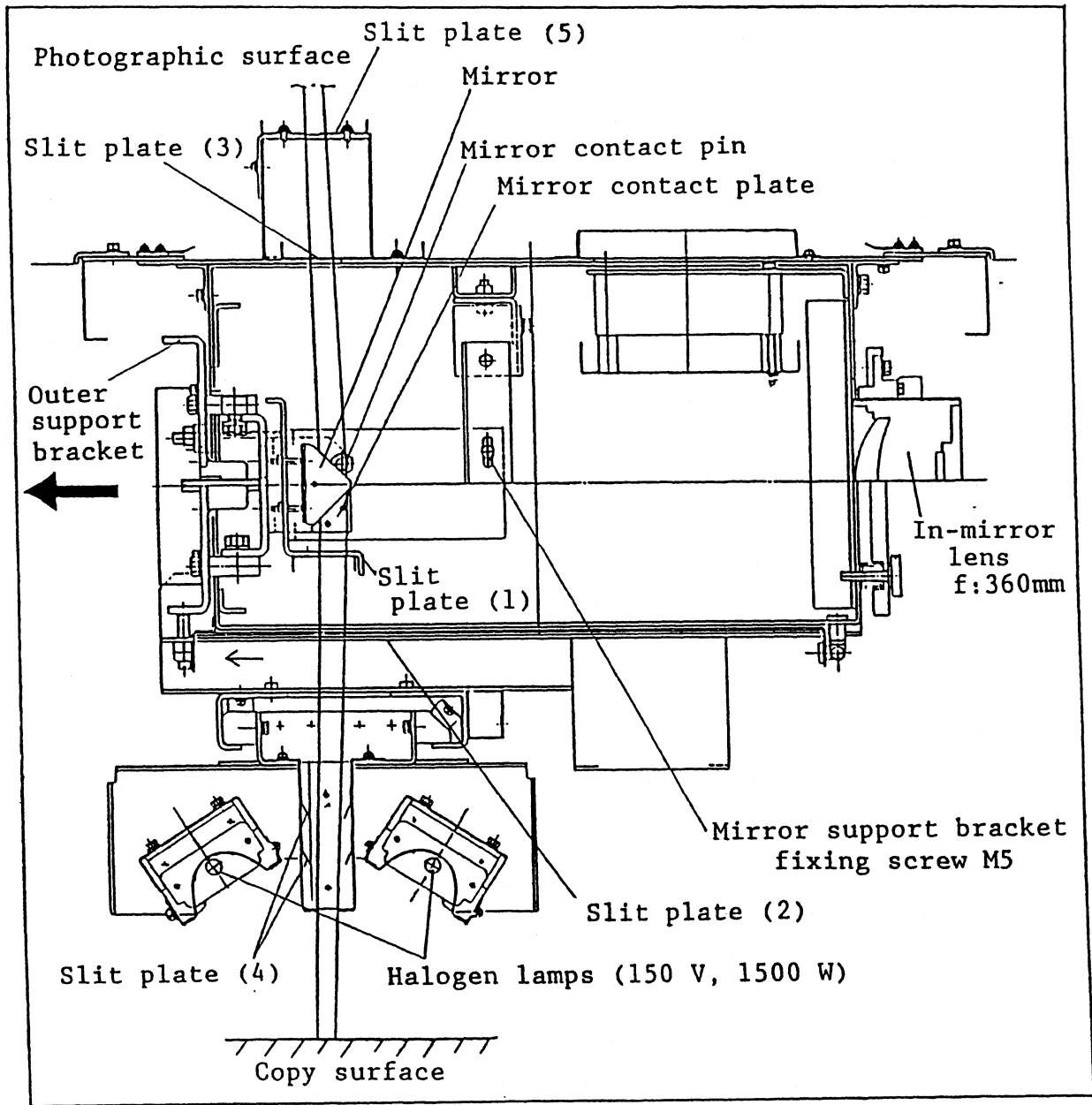


- o When the master is carried to the optical axis by the carrier section, the stopper position set by the operation of the optical axis contact plate motor (RM 8) is as shown by (B) in the diagram.
- o The carrier turns the optical axis detection limit switch (LS 10) ON, and then stops when it strikes stopper (B). (The inertia of the motor is mechanically stabilized and vertical alignment is achieved.)

- Next, the operation of the pressure plate up/down motor (RM 4) aligns the side direction, and the master is pressed onto the surface of the photographic glass by the pressure belt.

- After exposure, the optical axis contact plate motor (RM 8) operates and the stopper position is set to position (A), as shown in the diagram (origin point). The operation of the motor (RM 7) also lowers the two chucks to their suction points to hold the master by suction. At the same time, the pressure plate up/down motor (RM 4) operates raising the pressure belt (to the origin point), and the
- master is lifted to the MID (carry point) position. The carrier motor (RM 2) and the master discharge motor (RM 6) turn ON, and begin feeding to the processor side. When the front edge of the master turns the limiter switch (LS 4) of the camera exit section ON, the carrier motor stops and the suction valve shuts off. The two chucks then rise to the upper (origin point) position, and the carrier section moves to its origin point (right side). See section 9 of the transport procedure for details on carrier motor operation.

4-4. Lens section



The lens section is composed of an in-mirror lens, mirrors and slit plates.

There is a light source section in the lower part of the unit. Condensed light passes through each slit plate and is exposed on the photographic surface.

(1) Slit plates

○ Slit plates (1), (2), (3)

Slit widths are fixed. Slit plate (2) can be easily pulled out in the direction of the arrow shown above for mirror and lens cleaning.

○ Slit plate (4)

This plate is in the light source section and prevents flaring.

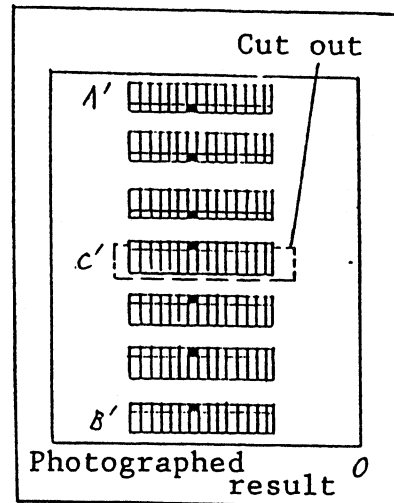
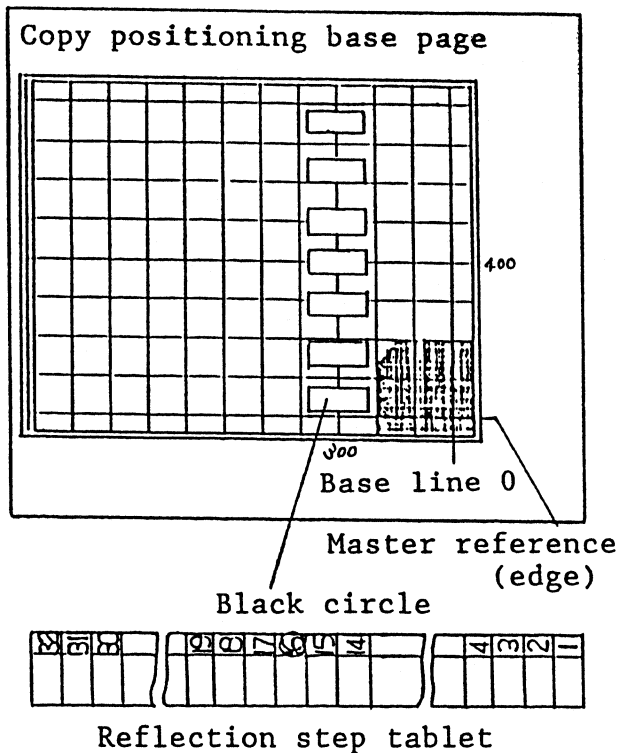
○ Slit plate (5)

This slit regulates the final slit width (center 12 mm).

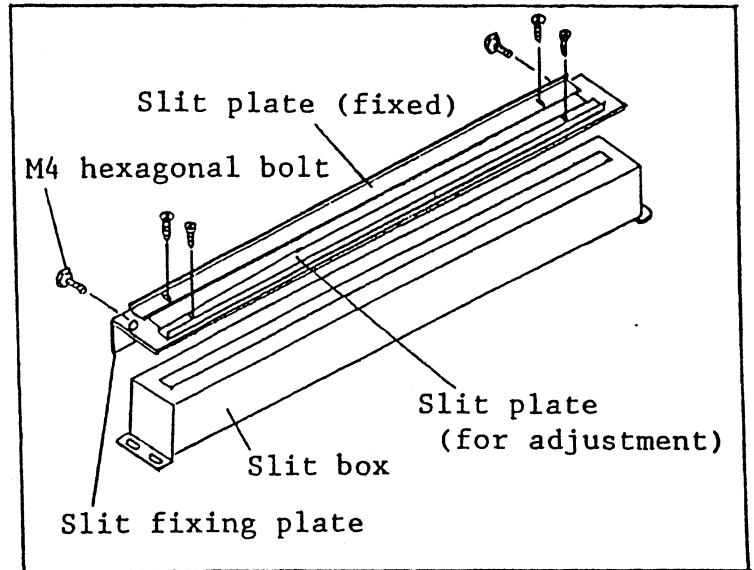
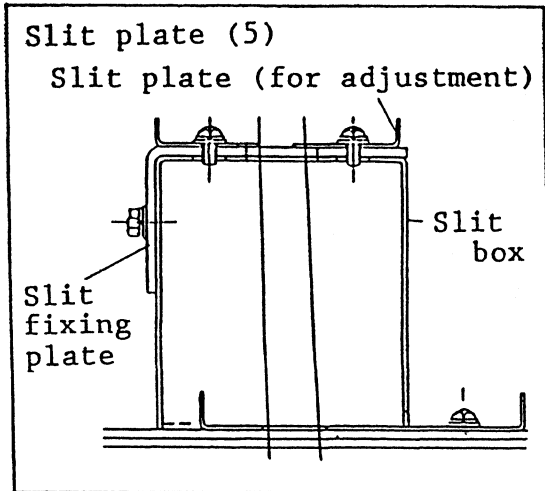
(Illumination distribution adjustment) -- Adjust by using slit plate (5)

Although the halogen lamps (150 V, 1500 W) are designed to illuminate the exposure surface uniformly, a slight amount of variation is inevitable.

Please refer to the points of caution given here, and make adjustments when exposure seems incorrect.



1. Set the master feed length at 60.0 cm.
2. Pull the copy frame out and open the upper frame glass.
3. Align the circle positions (D:0.6) of seven reflection step tablets (or a suitable substitute) along the 300 mm position of a copy base page.
4. Photograph at the standard exposure.
5. Cut out the center step tablet from the photographed result.
6. Using the circle of the cut out step tablet as reference, compare the circles of the remaining six tablets to check for density unevenness (step numbers).
7. If the density unevenness (step numbers) are within 1.5, it indicates that no difference has resulted from halogen lamp replacement and that an illumination distribution of 80% or greater is being maintained.

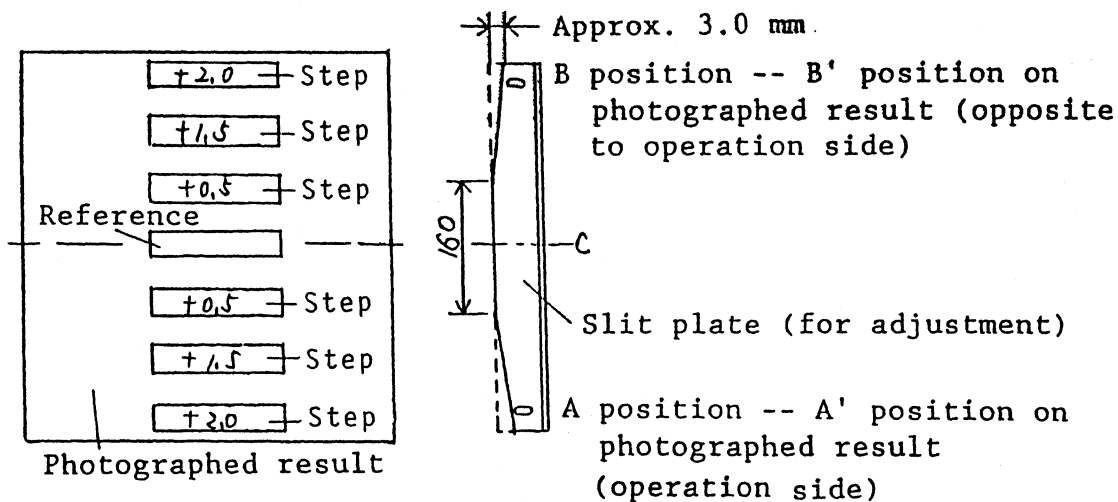


1. Open the front cover (above) upward.
2. Remove the rear cover (upper right).
3. Operate the lens switch (independent lens movement switch) on the secondary control panel to bring slit plate (5) in the upper part of the lens section into view.
4. Remove the slit fixing plate assembly (2 hexagonal bolts, M4).

* Confirm that the alignment labels on the slit plate ends for reassembly are correctly aligned.

[Adjustment]

The basic shape of the slit plate (for adjustment) is shown in the diagram below. Adjust in the direction which reduces the surrounding light quantity.



- o If the surrounding area is 2 steps brighter than the center step tablet used as reference:

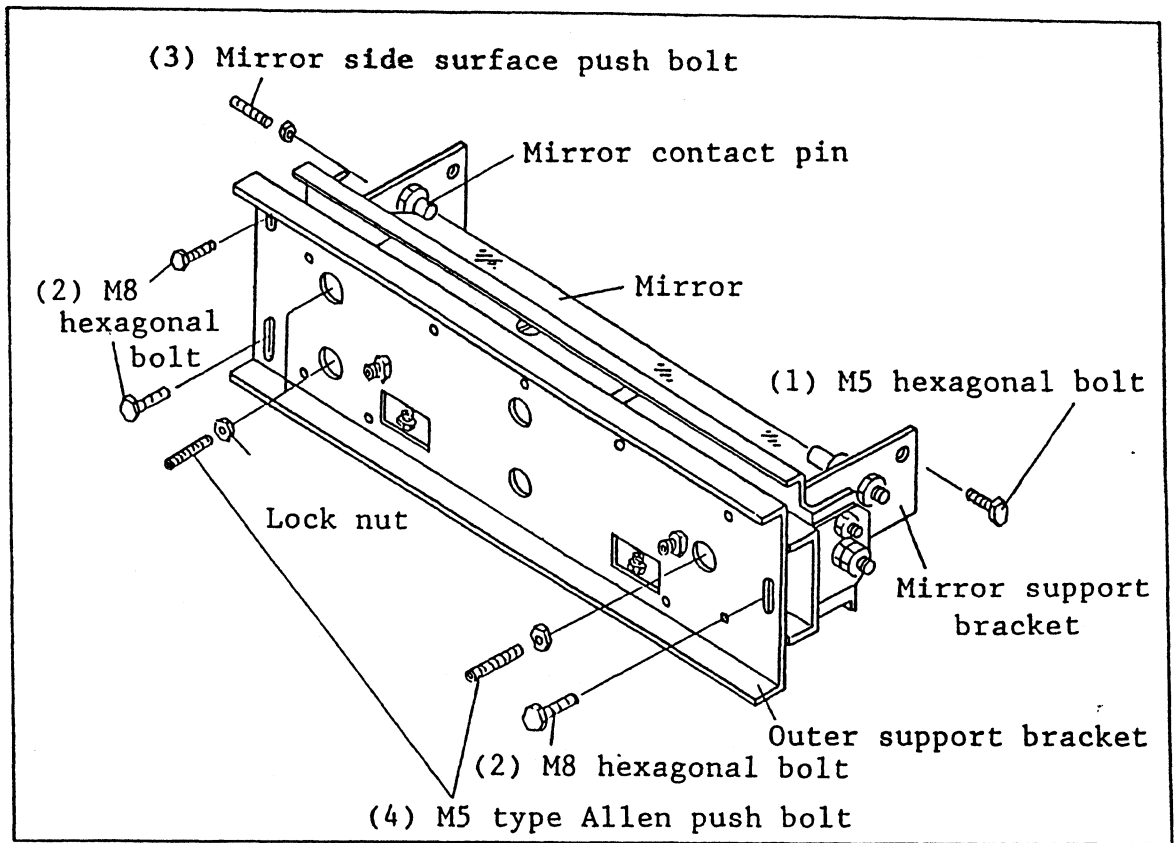
Narrow the width of the slit plate (for adjustment) by about 3.0 mm, as shown by the dotted line in the diagram. (Use double-sided tape to attach a PS plate, etc., (treated with black coating) onto the slit plate.

Adjust using the values shown above as a guideline, and then confirm the results by photographing.

(2) Mirror

The reflective surface is finished to a 90° angle and treated with an aluminum vapor deposition process. Both the left and right edges of the mirror portion are supported by contact pin and contact plate, and the mirror is secured by push bolts from the rear and side surfaces.

(Mirror replacement)



1. Use the lens switch (independent lens movement switch) on the secondary control panel to bring the lens section to the center.
2. Pull slit plate (2) out to the left, and remove the 2 bolts (M5 hexagonal bolts indicated by (1) in the diagram) which secure the mirror support bracket.
3. Remove the 3 bolts (M8 hexagonal bolts indicated by (2) in the diagram) which secure the outer support bracket. The entire assembly shown in the diagram can then be lifted out.

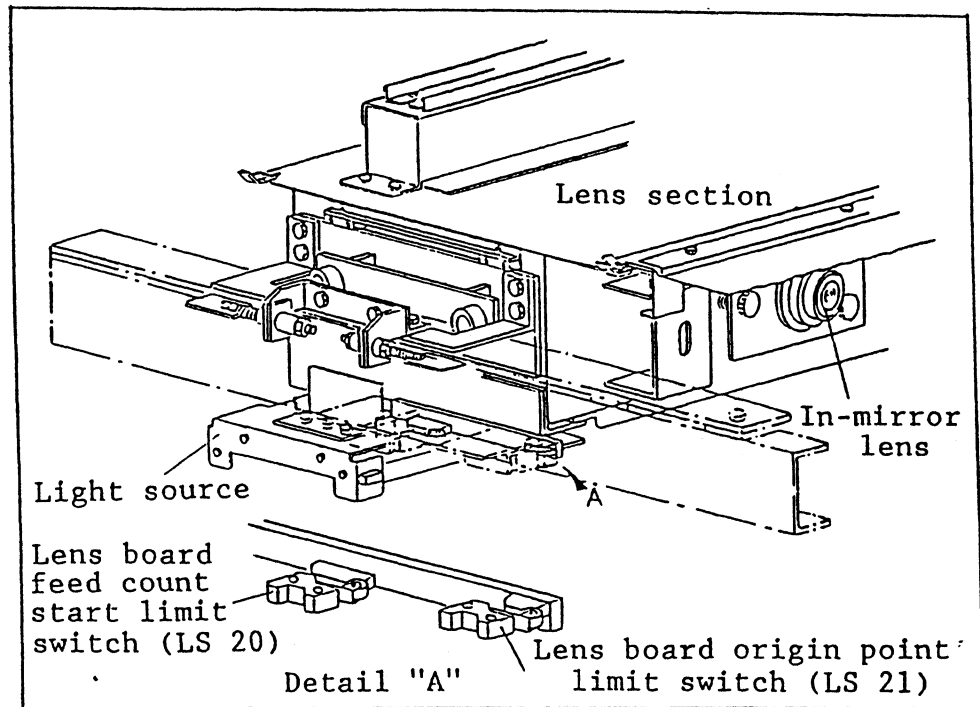
Note: The mirror assembly is extremely heavy. Be sure to provide it with sufficient support when lifting it out.

4. Slightly loosen the push bolt (indicated by (3) in the diagram) for only one side of the mirror side surface.

5. Loosen the lock nuts for the rear surface push bolts (indicated by (4) in the diagram), and loosen the M5 type Allen push bolts (2.5 mm diagonal). The mirror can then be removed.
6. When replacing with a new mirror, set the 90° reflective surface of the mirror against the mirror contact pin and contact plate, being very careful not to scratch or dirty the reflective surface, and tighten the M5 type Allen push bolts (indicated by (4) in the diagram) very lightly to lock in place.

Note: If these bolts are tightened with too much force, the mirror will be twisted. Tighten only enough to prevent the mirror from moving.
7. Assemble by following the first 4 steps above in reverse order (4, 3, 2 and then 1).
8. Perform a trial operation, and check the actual photographed result to confirm that the mirror is correct.

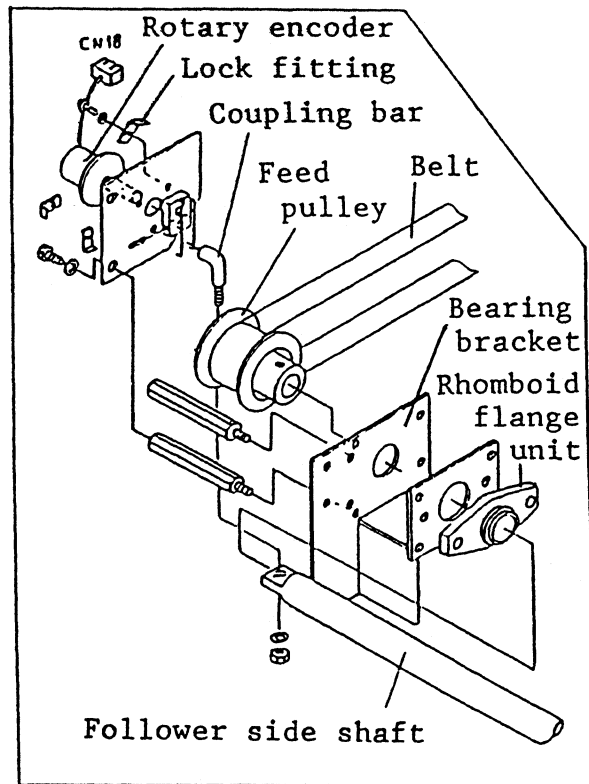
4-5. Lens section operation



The lens section, located on the right, is in its normal operating condition when the origin point limit switch (LS 21) and the feed count start limit switch (LS 20) are both ON. During continuous operation, the lens section moves to the left and exposes, starting when the master paper is in the master position.

When the origin point limit switch goes OFF and the feed count limit switch goes OFF, the rotary encoder starts the pulse count.

The computer reads the master feed length and the correction coefficient, which is set on dip switch (3) in the input PCB inside the switchboard, and then computes the correction value. The lens section continues to move until the pulse count value matches the computer value. When exposure is complete, the lens section moves back to the right (the origin point side) and stops when LS 20 and LS 21 turn ON.



If the count start limit switch does not turn ON when the lens section is at the origin point, the lens section will remain stopped. If this happens, adjust so that the count start limit switch turns on properly.

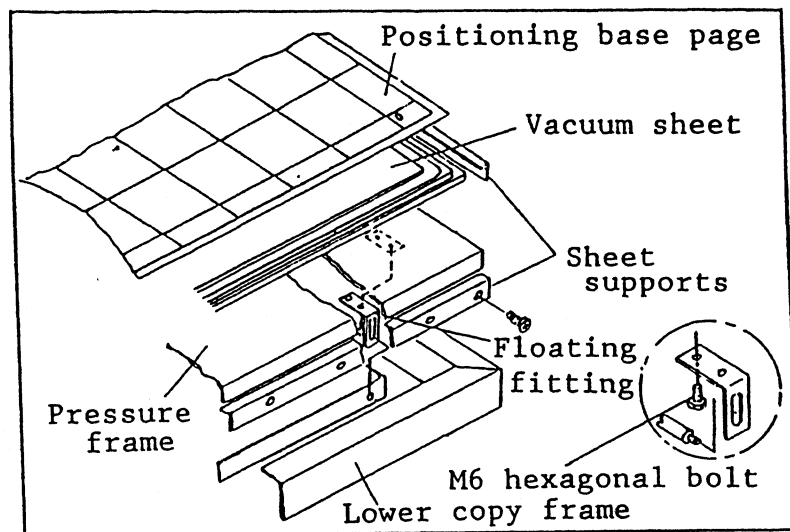
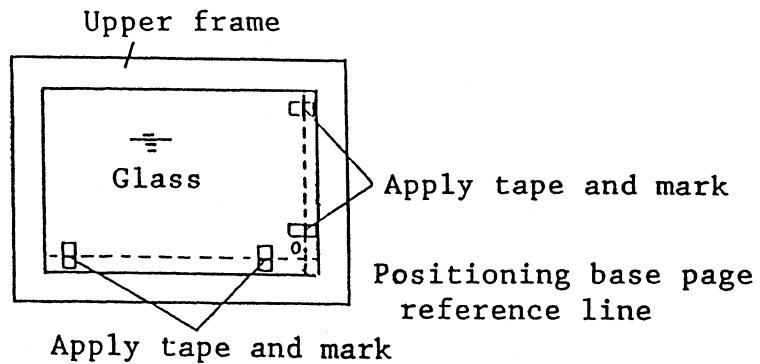
{Slip detection mechanism}

The camera is equipped with safety circuits that activate whenever the lens section slips or stops, turning off the light source and the lens section motor. When this happens, the "EXPOSURE" pilot lamp flashes, informing the operator of the condition. As detection is achieved through the encoder output signal, refer to the "Electrical System, Troubleshooting," and "Encoder check" sections. Also check for mechanical trouble, such as incorrect belt tension or a broken belt.

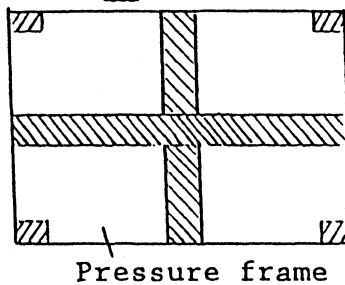
4-6. Copy section

[Changing the vacuum sheet]

* When changing the vacuum sheet due to vacuum troubles, place tape and positioning marks on the upper copy frame glass so that the positioning base page can be replaced in its original position.



▨—50 mm wide double-sided tape
▨—100 mm wide double-sided tape

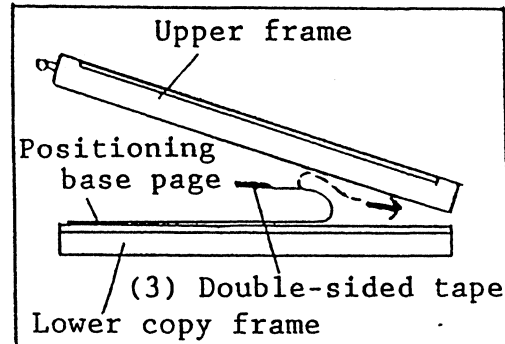
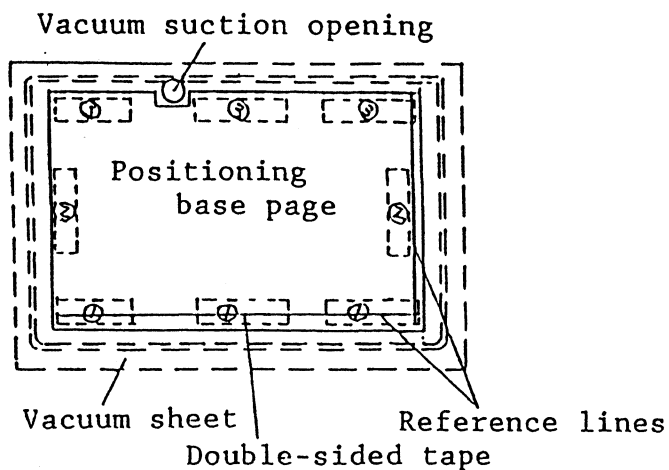


1. Pull out the copy frame and open the upper frame.
2. Loosen the M6 hexagonal bolt on the floating fitting that secures the pressure plate.
Due to the action of the pressure spring, the pressure frame will rise up and the sheet supports can be removed.
* Loosen the M6 hexagonal bolt only far enough so that the sheet supports can be removed.
3. Remove the vacuum sheet and the double-sided tape which holds it in place.
4. Apply fresh double-sided tape to the upper surface of the pressure frame.
5. Attach a new vacuum sheet and secure it with the sheet supports.
6. Secure the floating fitting.

Do not remove the positioning marks from the upper copy frame glass until the positioning base page has been attached.

[Attaching the positioning base page]

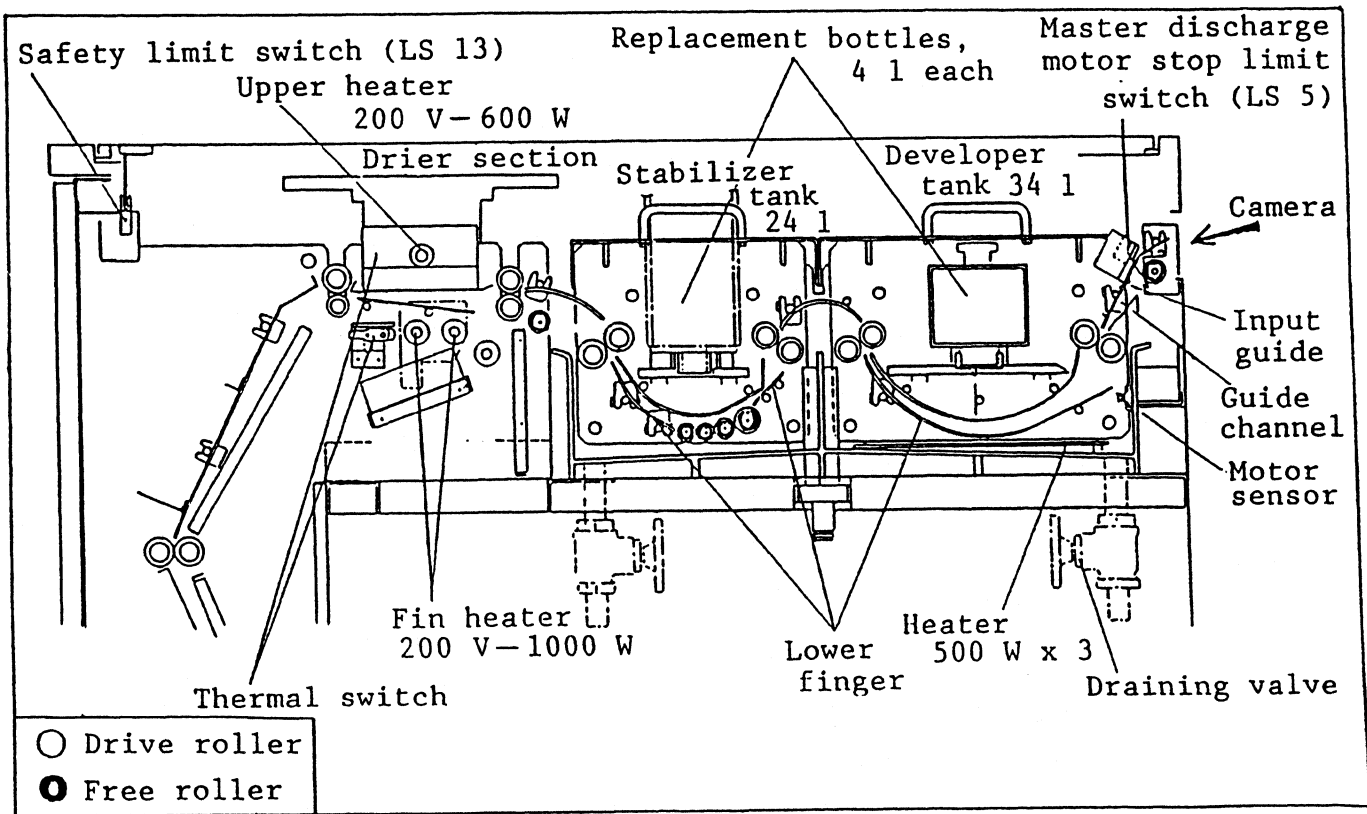
- * When the vacuum sheet is changed or when a soiled positioning base page is changed, tape and positioning marks are placed on the upper copy frame glass so that the positioning base page can be returned to its original position. (See "Changing the vacuum sheet.")
When the vacuum sheet is not being changed, place up to two positioning base pages, one on top of the other.



1. Cut the four sides of the positioning base page. The four sides should be cut to the same configuration (size) as that when the unit was shipped, allowing for the vacuum suction opening.
2. Apply double-sided tape to the back of the positioning base page.
Tape (about 50 mm wide and 200 mm long) is applied at nine positions which are separated 5 mm from the edges of the base page.
3. Place the positioning base page on top of the vacuum sheet and align the base page reference lines with the positioning marks on the upper copy frame glass.
4. Reset the copy frame and photograph the base page.
In order to photograph the base page, set the exposure dial to between 8 and 9.
5. After confirming that the base page is in position, carefully open the upper copy frame and attach the double-sided tape to the operation side in the positions indicated by number (1).

6. Attach the double-sided tape in the positions indicated by number (2).
7. When attaching the double-sided tape in the positions indicated by number (3), proceed as is shown in the diagram at the left so that the vacuum sheet does not stick to the upper frame glass.

4-7 Processor and dryer sections



【 Operation of the master discharge motor stop limit switch 】

< Normal operation >

When the time interval set by dip switch (9) (on the input PCB in the switchboard) elapses after the end of the master sent from the camera side turns the master discharge motor stop limit switch (LS 5) ON, the end of the master enters the processor input roller and the discharge motor stops. The operation of the processor motor moves the master through the developer and stabilizer processes, through the drier to be dried, and then out of the unit.

When setting the input guide after cleaning the developer unit (when changing processing fluid, etc.), be careful not to bend the limit switch actuator (LS 5).

Note 1: When the input guide is set, the following condition will result if the limit switch actuator (LS 5) rests on top of the free roller at the entrance and the limit switch is OFF:
The master will be sent from the camera side with no trouble, but will jam at the processor entrance.

Note 2: When the input guide is set, the following condition will result if the limit switch actuator (LS 5) is bent and the limit switch is ON:
After exposure is completed, the carrier will not move to the processor side and the "MASTER CARRY" pilot and "START" button lamps will flash.

【For scratches on the master in the processor section:】

Inspect the following items and clean if necessary.

1. The free rollers should be free of dirt and should revolve smoothly.
2. The lower finger that sends the emulsion side of the master should be free of silver sludge, foreign objects or dirt.

To clean the above parts, use the accessory cleaning compound.

【For wrinkles on the end of the master:】

Inspect the following items and adjust if necessary.

1. Check the spring belt to confirm that it is not broken or out of place.
2. Check the alignment of the developer tank exit finger and squeezing roller, and confirm that there are no deformations in the finger.
3. Check the alignment of the stabilizer tank input roller and crossover finger.
4. Check the alignment of the stabilizer tank exit finger and squeezing roller, and confirm that there are no deformations in the finger.

Before performing the above items, first check to see where the problem is occurring.

【 Setting the drier temperature 】

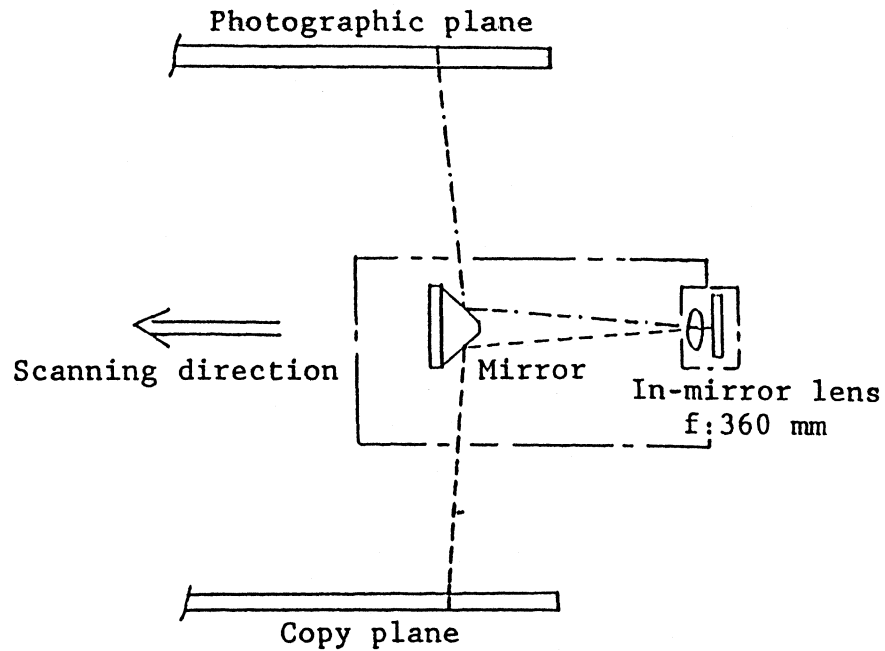
The drier temperature can be changed by the thermal switch. Depending on the environment where the unit is installed, silver master SLM-RII can be over-dried. In such cases the switch should be adjusted. (Only the upper heater is turned off.) There is one thermal switch for the upper heater and one for the lower heater. When the thermal switch is turned clockwise, the temperature increases, when turned counter-clockwise, it decreases.

5. Optical System Confirmation and Adjustment

Although the focus and scaling are inspected thoroughly at the factory before shipment, a confirmatory adjustment should be made using the following procedure whenever the system does not seem to be operating properly.

【Confirmation and adjustment procedure】

- (1) Adjustment for diagonal ----- Adjust the mirror tilt dimension error
- (2) Skew and scaling ----- Vertically adjust the adjustments copy section frame /8-6/
- (3) Focus adjustment ----- Horizontally adjust the lens



Proper focus

Distance from copy plane (C) to lens (L) ————— $A = f(1 + \frac{1}{m})$

Distance from lens (L) to photographic plane (P) — $B = f(1 + m)$

f: Lens focus length
m: Magnification

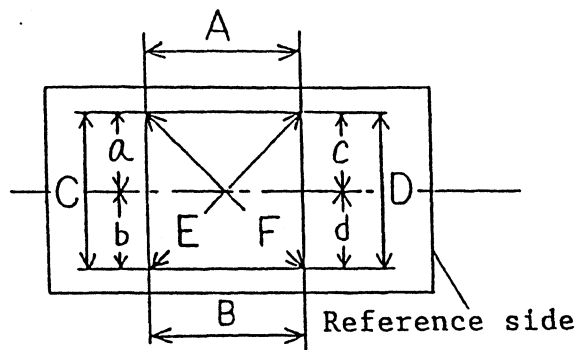
Theoretical position relationship of copy -- lens --
photographic plane

$$\begin{aligned}
 A &= B && \text{(ex)} \\
 f(1 + \frac{1}{m}) &= f(1 + m) && f: 360 \text{ mm} \quad m = 100\% \\
 &&& 360(1 + \frac{1}{1}) = 360(1 + 1) \\
 &&& \therefore A = B = 720 \text{ mm}
 \end{aligned}$$

Practically speaking, the focal length varies with each lens and is not always 720 mm.

A. [Skew and scaling confirmation and adjustment]

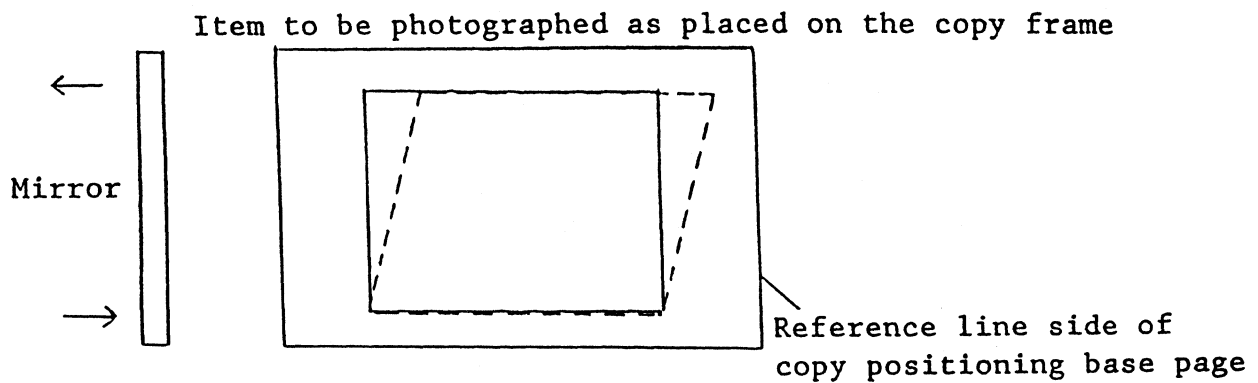
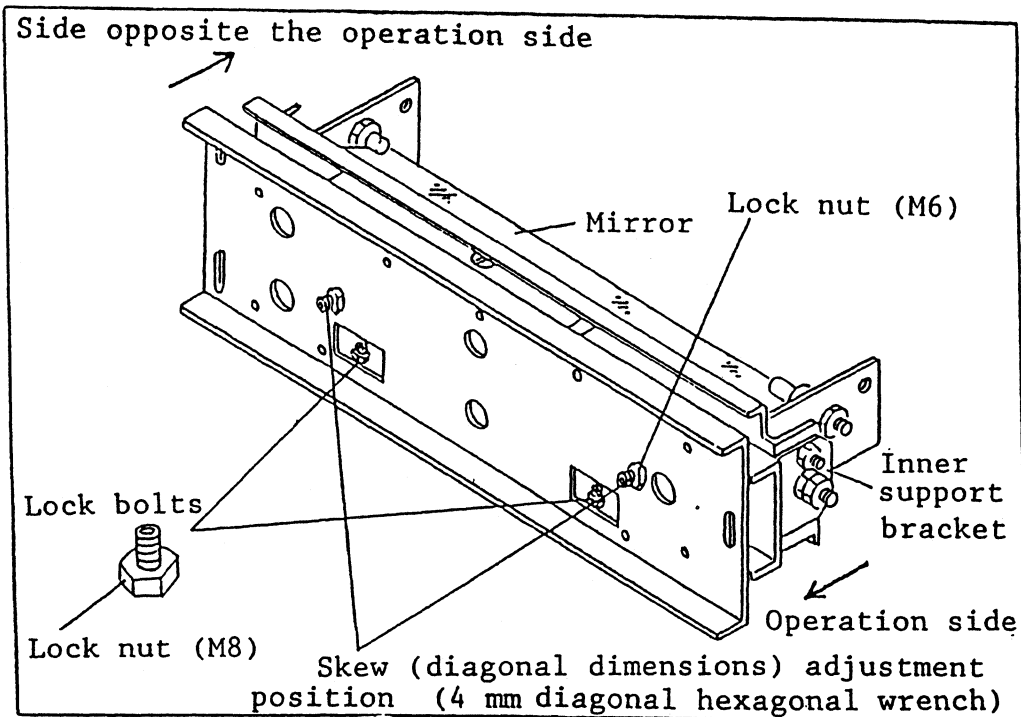
- (1) Set a test chart (grid chart), scale or other copy appropriate for scaling confirmation.
- (2) Photograph with the master feed length at about $l = 800$ mm, and measure A, B, C, D, E and F as well as a, b, c and d, as shown in the diagram below.



[Tolerances]

- * A, B, C and D: ————— 570 mm measurement ± 0.5 mm
- * B-A, C-A, D-A and E-F: ——— ± 0.5 mm
- * a-b and c-d: ————— ± 0.4 mm

- (1) If the error in the diagonal measurement, E-F, exceeds its tolerance:
 - * As an error in the diagonal measurement will be produced if the camera is not horizontal, make sure to adjust it horizontally prior to making the above adjustments.



* The following is for situations, like the one shown in the above diagram, when the dimensions of photographed images are similar to the dimensions shown by the dotted line.

(Procedure)

1. Remove the rear cover (lower) of the camera.
2. Pull out the copy frame, and work from the side opposite to the camera operation side.
3. Confirm the lock bolt and skew (diagonal dimension) adjustment positions. Do not touch any other mounting screws.
4. Loosen the lock nuts (M8) on the lock bolts, and then loosen the lock bolts. (Use a 5-mm diagonal hexagonal wrench.)
 - * Because the mirror is attached to an inner support bracket and because there is a support pin in the center, the skew (diagonal dimension) adjustment bolts must be rotated equal amounts in opposite directions. Failure to do so will twist the mirror.
5. Loosen the lock nut (M6) on the operation side, and turn the bolt 45° counter-clockwise with a 4-mm diagonal hexagonal wrench. Then, retighten the lock nut. When retightening the lock nut, make sure that the bolt does not rotate.
6. Loosen the lock nut (M6) on the side opposite from the operation side, and turn the bolt clockwise 45° with a 4-mm diagonal hexagonal wrench. Then, retighten the lock nut.

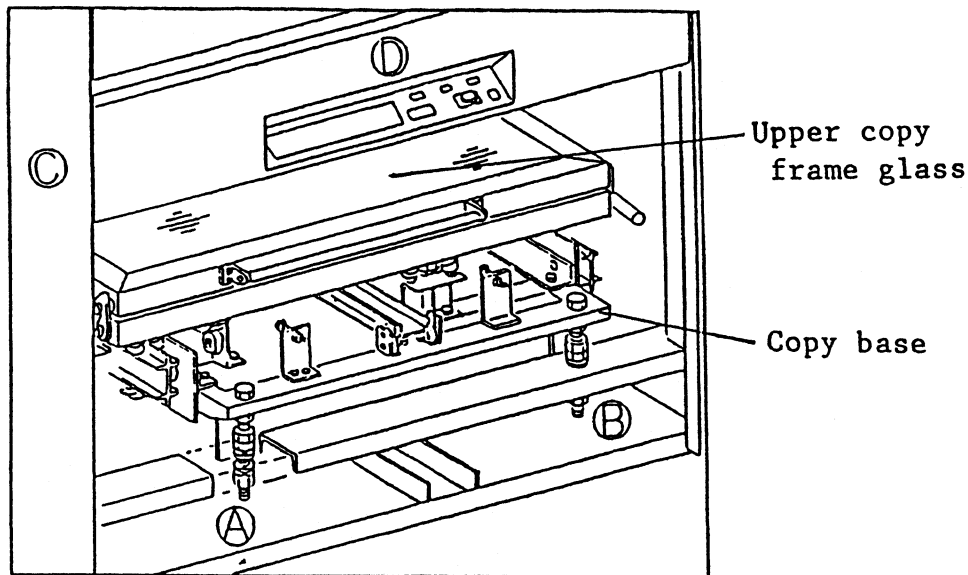
Adjustment amount:

When the bolt is rotated 90°, it will produce a change of about 1.5 to 2.0 mm.

7. Confirm the adjustment by photographing, and repeat the procedure if necessary.

(2) Scaling adjustment: Adjust by vertically moving the copy base to which the copy frame is attached.

* Dimensions A and B in the feed length direction are maintained by mechanical precision. They are not adjustable. Measure dimensions a, b, c and d after measuring dimensions C and D.



1. The item to be photographed is placed facing upward on the copy glass. Here, it is aligned with the reference on the copy positioning base page.
2. The copy frame is attached to the copy base (the lower section) and is aligned with the frame with four lock screws, (A), (B), (C), and (D).
3. The dimensions a, b, c and d which were measured are adjusted at positions (C), (A), (D) and (B), respectively. However, if there is a discrepancy between the a and c dimensions in reference to the b and d dimensions and adjustments are made individually, the copy frame may become tilted and resolution may be adversely affected. In such cases, refer to the next section, (3).

* If dimensions a, b, c and d are too large, adjust the copy base to a lower position.

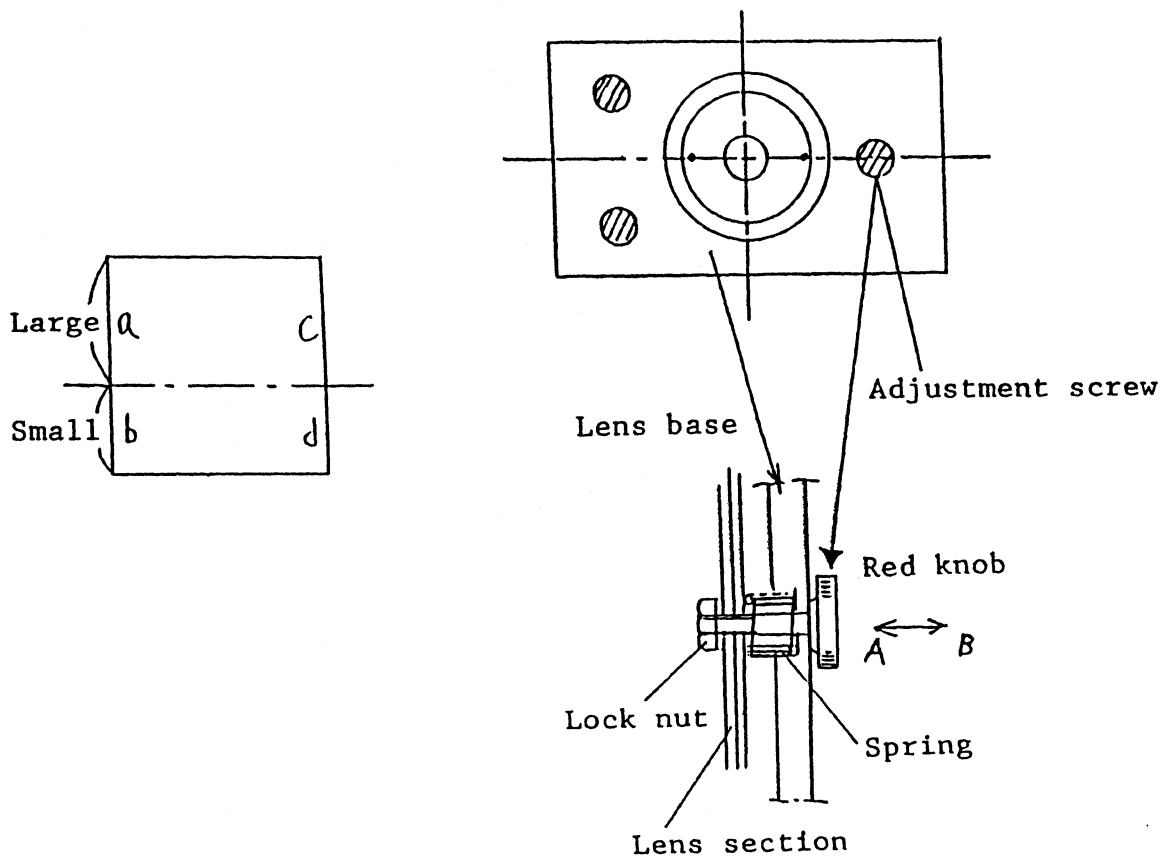
* If dimensions a, b, c and d are too small, adjust the copy base to a higher position.

Adjustment amount:

When the lock screw nut is turned one revolution, the dimension will change about 0.8 mm.

(3) When the dimensional discrepancies a-b or c-d are larger than their tolerances:

* If resolution over the entire surface is 8.3 lines/mm or greater and the above skew is present, adjust as follows.



Adjustment position

As this adjustment involves adjusting the tilt of the lens base, it is done with the adjustment screw and the red adjustment knob indicated in the diagram (the one on the side with only a single knob).

1. Place the item to be photographed facing upward on the copy glass, aligning it with the reference on the copy positioning base page.
 2. Using the secondary control panel (1) lens switch (independent lens section movement switch), move the adjustment screw far enough to allow adjustment.
- * If a and c are greater than b and d:
- (1) Slightly pull out slit plate (2) on the lower part of the lens section.
 - (2) Loosen the lock nut inside the lens section which holds the adjustment screw (red knob).
 - (3) Before adjusting, mark the position of the adjustment screw so that it can be returned to its original position, and move it in direction "A" (clockwise).
 - (4) Confirm the adjustment by taking a photograph, and repeat the procedure if necessary.
- * If a and c are less than b and d:
The tilt direction for the lens base is "B."

Adjustment amount:

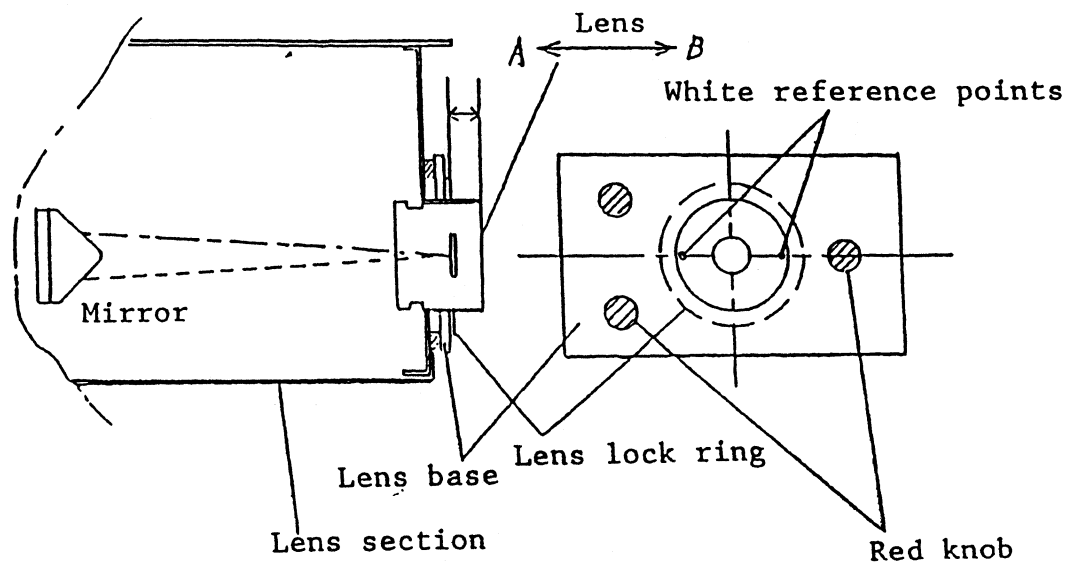
When the adjustment screw is turned 180°, the left-right dimension changes about 0.5 mm.

B.【Focus confirmation and adjustment】

1. Photograph a test chart (resolution chart) or a Mitsubishi reference chart at an exposure 70% greater than normal.
2. Inspect the chart with a magnifying glass. If the resolution is 8.3 lines/mm or greater, the unit is in focus.

(1) Focus adjustment: Adjusted by moving the lens horizontally.

* Using the secondary control panel (1) lens switch (independent lens section movement switch), move the lens far enough to allow adjustment.



1. In order to be able to return the lens to its original position, measure the distances to the end of the lens and the lens lock ring prior to adjusting the focus.
2. Holding the lens with your hand so that it does not revolve, loosen the lens lock ring by turning it counter-clockwise.
3. Rotate the lens clockwise to move it in direction "A."
* Always adjust the lens so that the reference points lie horizontally, i.e., when adjusting, always move the lens either 180° or 360°.
4. With the lens lock ring locked, photograph the test chart. Compare the photographed results with the original sample. If the focus has worsened, turn the lens in the opposite direction (counter-clockwise) to move the lens in direction "B." Confirm the results by re-photographing the chart.
5. Adjust the lens to its optimal focus (8.3 lines/mm or greater) by repeating steps 3 and 4, above.