

SERVICE MANUAL
FOR
DIAFAX MASTER PLATEMAKER EP-12 AH II

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* For other contents, please refer to operating instructions, technical guide, parts list, etc.	
* When ordering spare parts, please be sure to specify model No. (EP-12 AH II), serial No., parts Nos., and parts names as shown on the parts list, quantity and desired time of delivery.	
* Publication and reproduction of the present manual, whole or in part, is strictly prohibited.	

1. Specification & process drawing

* This specification is subject to change without prior notice due to continual improvements.

Item	Specification
Master width	Width of roll master 254 mm (10"), 279 mm (11"), 305 mm (12"), 310 mm (12-1/4")
Master length	Digital setting type 350 to 480 mm (Can be set up to 300 to 499 mm)
Effective image size	310 x 430 mm
Magnification	100%, 90% change-over type
Lens	f: 210 mm F 14.6
Exposure adjustment	Stationary, Digital setting (0 to 99.9 seconds)
Light source	Halogen lamps, 100V, 500W x 4
Processing speed	26 to 30 seconds per plate
Developing method	Jet-spray liquid toner system
Toner replenishment	Automatic replenishment system With liquid level alarm lamp
Fixing system	Air heater fixing by 750W x 2 lamps Electronic thermo-control With safety fuse for temperature control
Dimensions	1100 mm (W) x 750 mm (D) x 1160 mm (H)
Weight	190 kg
Power source	1ϕ AC 100V 2.2 kW 50/60 Hz

Conditions

1. Choose a place where good ventilation is available and temperature and humidity are normal (18°C to 28°C, 45% to 75%) throughout the year.
2. Avoid a place where there is a direct sunlight.
3. Maintain the supply voltage of 1ϕ, AC 100V, 2.2 kW, 50/60 Hz. and use the platemaker at over 22A.
4. Leave a space of at least 10 cm behind the main body.

Process chart

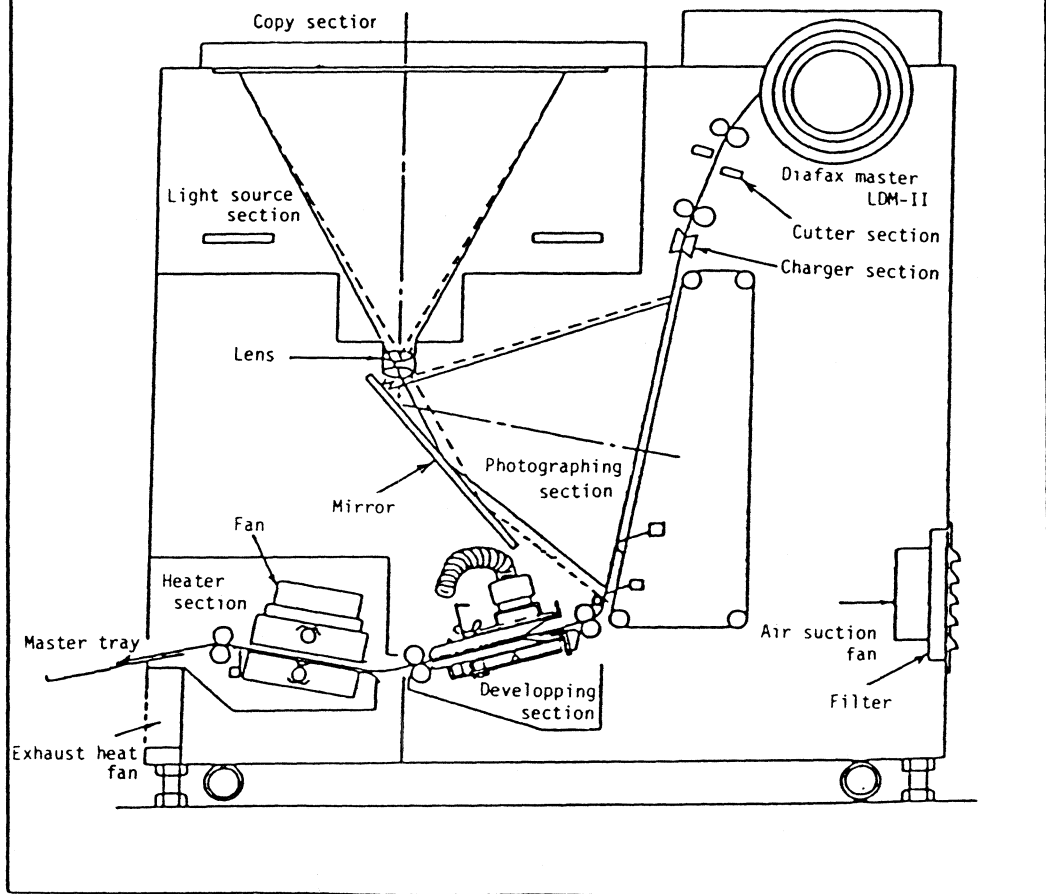
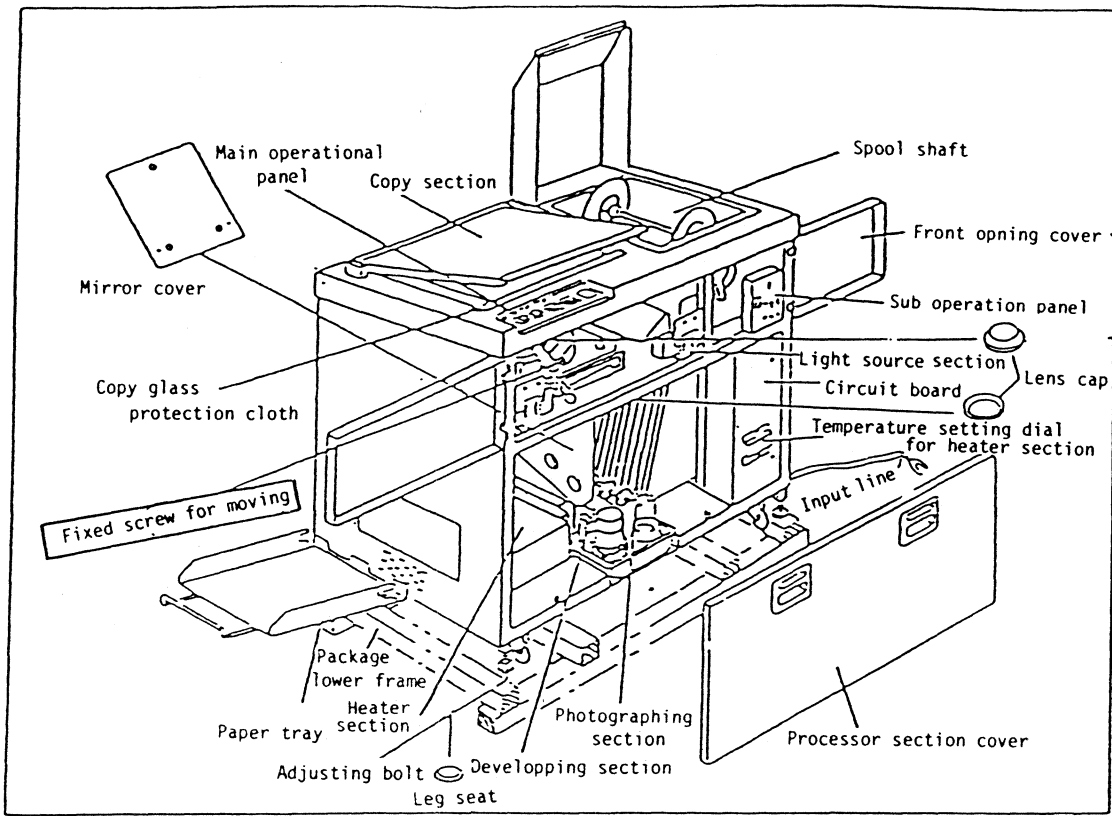


Fig. 1

2. Installation procedure for EP-12 AH II



Packing details

No.	Description	Quantity
1	Main body	1
2	Leg seat	4
3	Spool and shaft	1 set
4	Paper receiver	1
5	Test chart & photographed sample	1 each
6	Operating instructions, Technical guide, Wall instruction	1 each
7	Tools	1 set
8	Air brush	1
9	Enclosed fuse (3A)	5
	Key for repairing	3
10	Charger wire ($\phi 0.07 \times 10 \text{ m}$)	1
11	Brush for charge wire	1
12	Plastic screw M4 x 6 (flat-head)	2
13	Plastic screw M4 x 6 (round-head)	2
14	Plastic screw M4 x 30 (round-head)	1
15	Correction paint & brush	1 set
16	Temperature fuse	2

Conditions

1. Choose a place where good ventilation is available and temperature and humidity are normal (18°C to 28°C, 45% to 75%) throughout the year.
2. Avoid a place where there is a direct sunlight.
3. Maintain the supply voltage of 1ϕ , AC 100V $\pm 10\%$ and use the platemaker at over 22A.
4. Leave a space of at least 10 cm behind the main body.

Open in the packing

1. Remove the wooden frame of the packing.
2. The lower frame of the packing is fixed to the main body by means of the fittings for securing the machine during transportation. Remove bolts at right and left of the main body, loosen the adjusting bolts, remove the fittings and remove the main body from the lower frame.

Installation and adjustment

1. Carry the main body to the specified position, place the leg seats under the main body adjusting bolts (4) and install the main body properly. Casters are provided at lower part of the main body to facilitate the carrying.
2. Open the upper copy frame and remove the protective cloth set around the copy glass. Put a level on the copy glass, adjust the main body horizontal by means of the adjusting bolt. In that case, retain the adjusting bolt until the caster plays.
4. Remove the mirror cover (M4 set-screw x 2) as well as the lens cap (upper & lower). In that case, take care not to leave your fingerprints on the mirror and the lens.
5. Insert the paper receiver by the coverless part on the left side and hook its end at the screw.
6. The lens adjusting ring in the bore of the cam ring is secured (magnification changing handle shaft to the 95% side) to prevent it from being moved during transportation. Remove the M4 pan head screw (1).

Installation Procedure for EP-12 AH II

Install the model EP-12 AH II in the following manner:
(Applicable to serial No. 83080-2471#)

Preparation of processing liquid: LOM-ED

1. Shake well the container of the developing liquid before pouring the liquid into the developing tank.
2. Pour four bottles of developing liquid in the developing tank.
3. Reserve a fifth bottle for replenishment and place it at the replenishment bottle holder at the side of pump inside the tank. The developing liquid is replenished automatically.

Preparation of automatic cleaning liquid replenisher of the squeezing roller section: LOM-CL

Refer to the separate operating instructions for "preparation of automatic cleaning liquid replenisher of the squeezing roller section, LOM-CL."

Connection to power source

1. Open the front opening cover and turn off the POWER (Camera switch).
2. Confirm that the power is of 1 ϕ , 100V, and connect the power cord. (Power source: 1 ϕ , 100V, 2.2 kW, 50/60 Hz.)
3. Ground the green wire of the power cord. (Class 3 grounding work)

Inspection and adjustment

Check the following movement:

Switch on the POWER of the sub-control panel and turn on the CONTROL CIRCUIT switch to confirm the warming up action. Keep the warming up action until the heater and DRIVE become possible of fixing (internal temperature of the lower side being 150°C and the internal temperature of the upper side being 170°C). No

starting is possible before the heater and DRIVE are in the above condition. The degree of the toner fixing is dependent on the installation environment. Refer to the operating instructions.

By MANU switch:

- ° Confirmation of lighting of 4 lamps at the light source by means of the LAMP switch.
- ° Confirmation of driving of VS belt, etc. by means of the DRIVE switch.
- ° Confirmation of circulation of the developing liquid by means of the PUMP switch.

By AUTO switch:

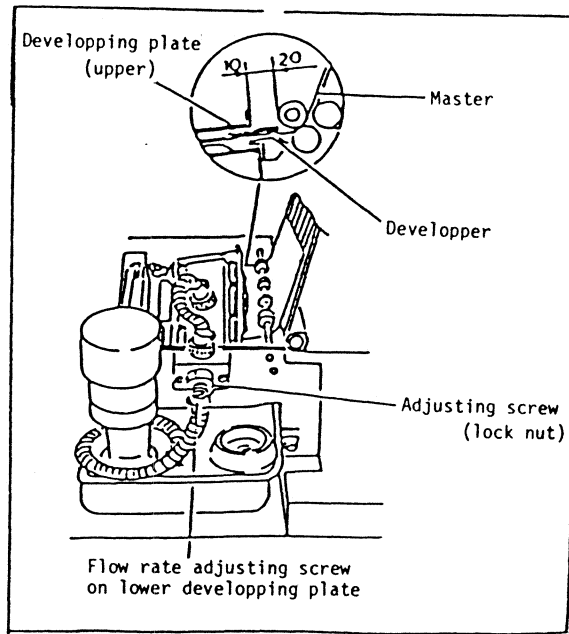
- ° Confirmation of sequence and photographing test by means of the test chart.
- Confirmation of sequential actions based on the operating instructions.

Confirmation of flow of the developing liquid

- ° As the master passes the developing section, the developing liquid flows out over the surface of the master from the developing panel. The flow is normal if the developing liquid flows 10 to 20 mm when measured from the end of the developing panel. But, if the flow is greater than this, the feed roller is wetted, and if less, then uneven developing at the developing section results. Be attentive to the flow of the developing liquid.

Adjustment of flow

- ° When the flow is big:
Loosen the lock nut and turn the flow adjusting screw clockwise.
- ° When the flow is small:
Contrary to the above, turn the flow adjusting screw counter-clockwise.



3. Mechanism and functioning

See Fig. 4.

3-1 Outline of the mechanism

The explanation in this manual starts from where the copy and the roll master have been set correctly to be ready for plate making.

- (1) If you push the START button, the clutch and the drive motor mounted on the drive roller operate and the Diafax master is fed by the rotation of each roller.
- (2) The Diafax master is sent to the discharging section of the charger by means of the intermediate driving roller and the intermediate nip roller, and a negative potential is charged on the photosensitive surface of the Diafax master by means of a high tension transformer.
- (3) While the Diafax master passes through the discharging section of the charger, the clutch is disconnected to stop the driving roller and the nip roller, and, immediately after that, the cutter works and the Diafax master is cut to the specified length by means of the plate length regulating device. (The feeding is detected by an encoder. One rotation of the driving roller feeds about 80 mm.)

- (4) The master cut to the specified value is drawn in by the photographing belt to be sent to the photographing section. When the tip of the master activates the limit switch (LS6) in the photographing section, the charger (corona discharge) stops. When the limit switch (LS2) is actuated after this, the master stops on the belt. A certain time later (about 0.8 seconds), the lamps for exposure (L1 to L4) are lit. While the lamps for exposure are lit, the heater for fixing does not work.
- (5) The photosensitive surface of the master is deenergized at the part where there is no image by the reflected light coming from the copy through the lens and the mirror, and an electrostatic latent image is formed on the photosensitive surface.
- (6) When the timer regulated by the exposure timer, the lamps for exposure (L1 to L4) go out and, a certain time (about 0.8 seconds) later, the driving motor works and the master is transferred.
- (7) The master is sent into the developing section by means of the roller at the entrance. A visible image is formed on the photosensitive surface of the master by a liquid jet-spray system (only of the upper side) and the developing liquid on both faces of the paper is eliminated by squeezing rollers.
- (8) The master which is sent out of the developing section by the squeezing rollers passes on the lower guide panel of the fixing section and is dried by the radiation from the heater and the hot air from the fan.
- (9) The dried (fixed) master is discharged on the paper tray by means of the paper discharging roller.

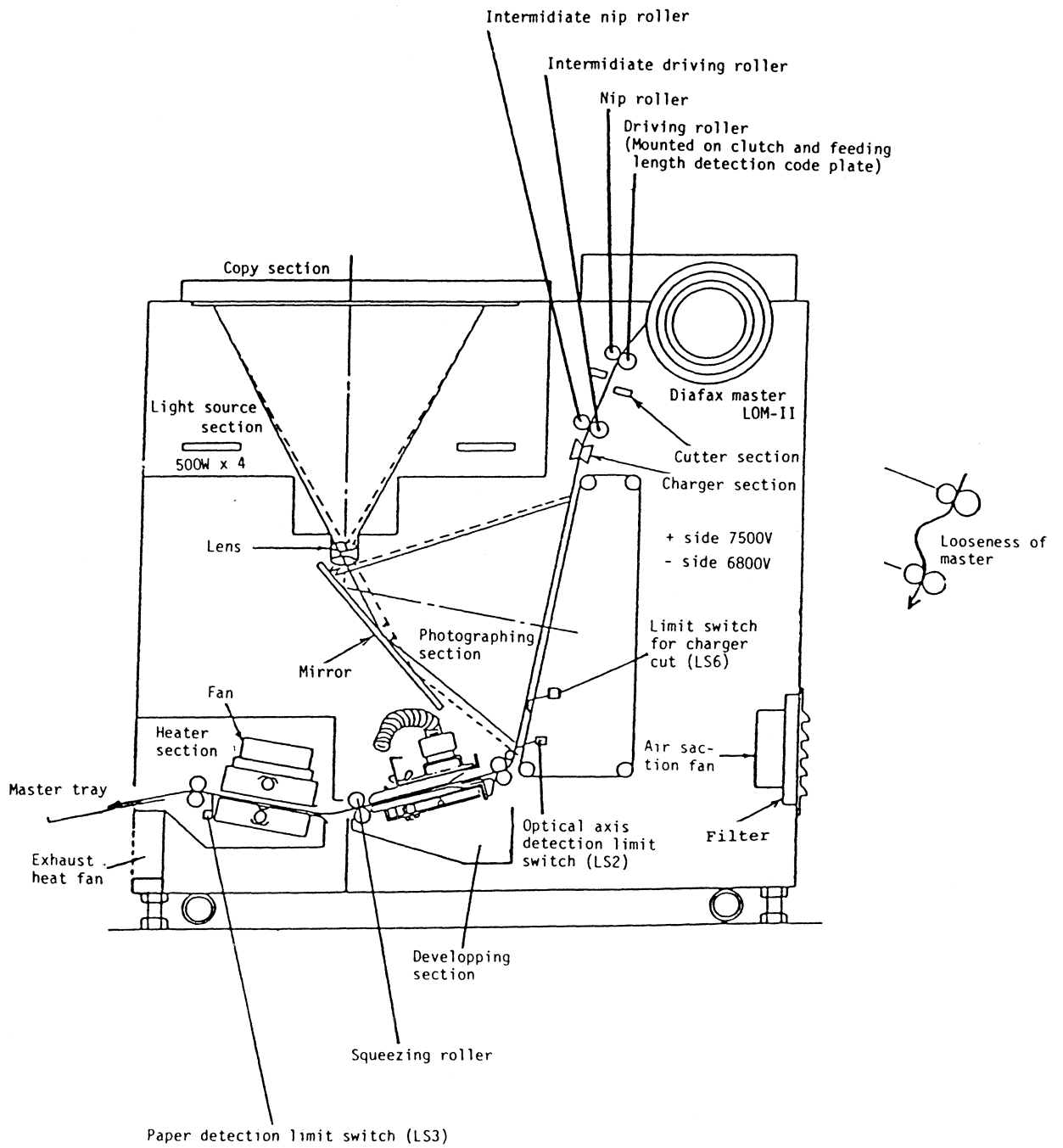


Fig. 4

3-2 How to set the master

Refer to the operating instructions.

3-3 Cutter section

The automatic cutter is sloped in such a way that the master is cut gradually from one end just as with scissors.

Method of replacement See Fig. 5.

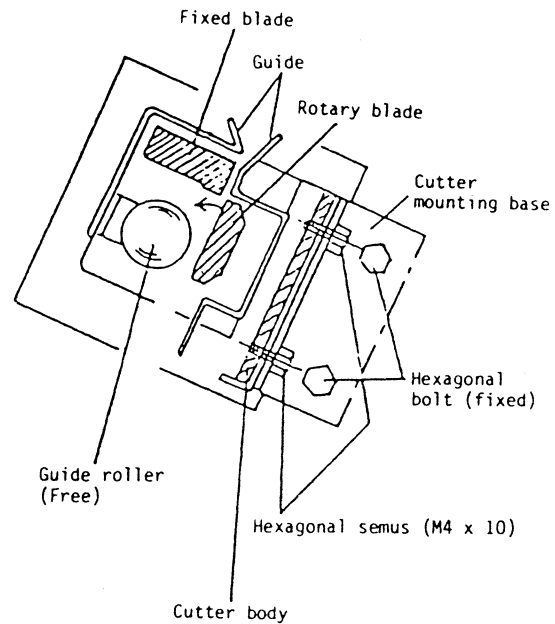


Fig. 5

1. Remove the rear cover. (Non-operating side)
2. Open the opening cover at the upper right part. (Operating side)
3. The cutter proper is fixed with two each of M4 x 10 hexagonal screw on both the operating and the non-operating sides. Remove these screws, and the cutter can easily be pulled out toward the front (operating side) along the cutter base.
4. Insert a new cutter to complete the cutter section.

Notes

1. When replacing the cutter section, the complete set of the cutter proper must be replaced. Loosening the set-screws for the guide, etc. causes the defective cutting.
2. The cutter base is fixed to the side plate with two each of M4 x 10 hexagon headed bolts (fixed). Never loosen these bolts. Otherwise, the squareness and paper feeding of the master cut become defective.
3. Lever may be hard to resure the first position in the manual cutting. Set the lever back into the original position with hand.
4. When the input voltage is at full load and is less than 95V, the defective cutting can result. Confirm the input voltage.

3-4 Charger section

In the charger section, high voltage of 6800V (green label) on the minus side (on the side of the photosensitive film surface) and 7500V (brown label) on the plus side (on the master side) cause a corona discharge to charge the master.

* The charger is equipped with an inverter, therefore you have no need to switch between 50 Hz and 60 Hz where it is used. For cleaning of the discharge section of the charger and the replacement of the charging wire, refer to the operating instructions.

3-5 Photographing section (Vacuum Bag proper)

The Vacuum Bag proper consists of a front plate and a rear plate. The front plate has a hole for suction on both sides of the rubber belts. The rear plate is equipped with two blowers (Silocco fans). The Vacuum Bag proper sucks the master and transfers it. Thirteen rubber belts are provided and each roller is in the form of a drum to prevent meandering of the belts.

Hot to replace the Vacuum Bag rubber belts See Fig. 6.

Fig. 6

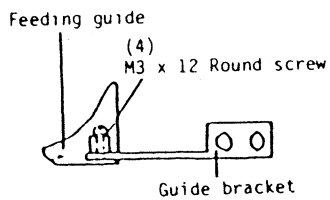
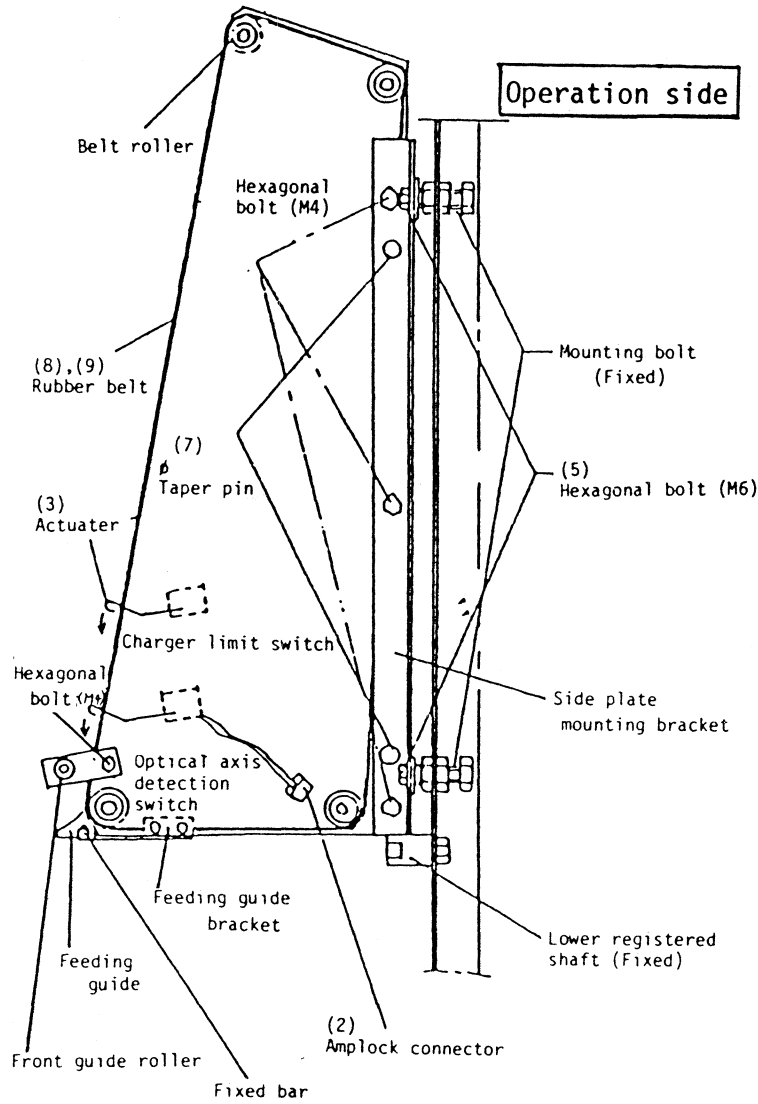


Fig. 6-1

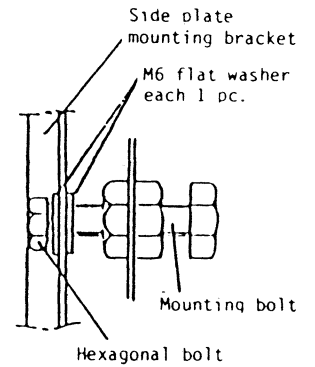


Fig. 6-2

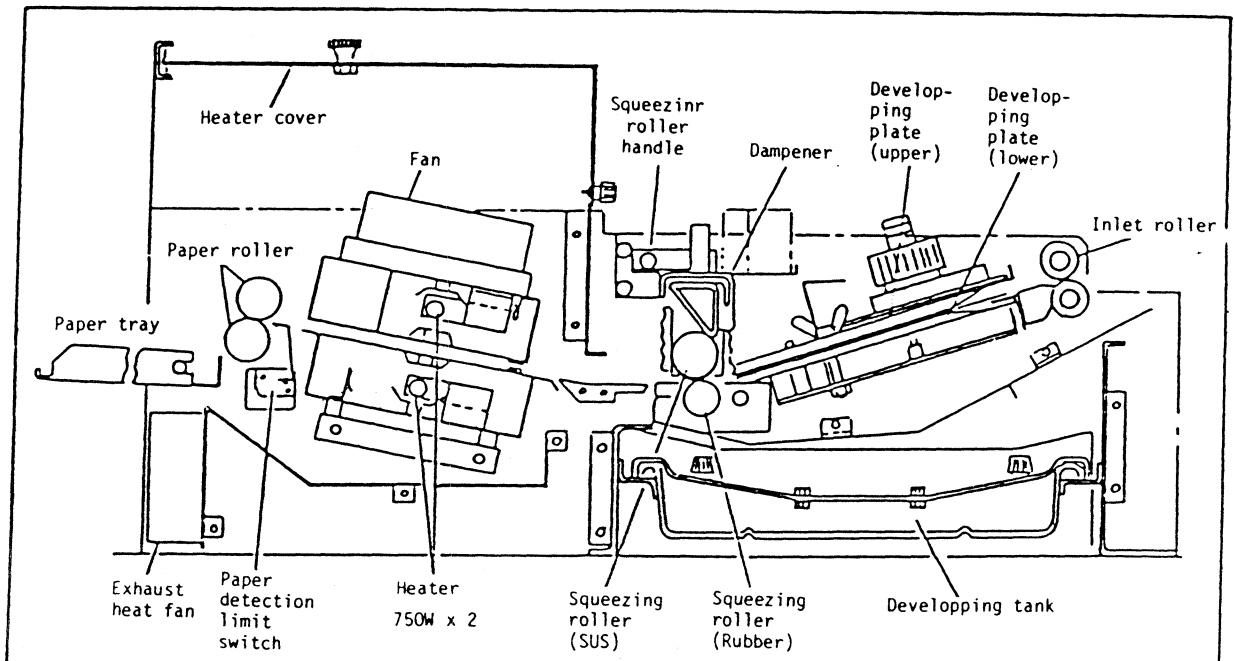
Remove the side plate fitting on the operating side to facilitate the replacement of the Vacuum Bag rubber belts.

- (1) Remove the cover of the processor section and the cover on the right side face.
- (2) Remove the amplock connectors of the limit switch for the detection of the optical axis and the limit switch for turning off the charger from the right side face.
- (3) Fix each actuator of 2 on the arrow side with a tape when replacing the rubber belts so as not to bend it .
- (4) Remove the front side roller and the bracket together. (M4 hexagon headed bolt)
- (5) Remove the two set screws (M3 x 12 round screws) on both ends of the fixing bar with the feeder guide. Refer to Fig. 6-1.
- (6) Remove two M6 hexagon headed bolts. * Pay attention to the M6 flat washer which is placed at the tip of the setting bolt. Refer to Fig. 6-2.
- (7) Remove three M4 hexagon headed bolts.
- (8) Tap gently the two $\phi 4$ tapered pins from inside the main body of the Vacuum Bag with a resin hammer, etc. in the direction of the operating side. The side plate fitting will be detached.
- (9) Remove the rubber belts placed on the belt roller from the operating side.
- (10) Replace the rubber belts with new ones.
- (11) For assembling, reverse the steps of disassembling.

Note:

Never loosen the part shown as "fixed", otherwise the flatness of the Vacuum Bag may be affected to cause such problems as improper squareness or blockage of the paper feeding. Do not splash the developing liquid on the rubber belts. The life of the rubber belts is shortened.

3-6 Developing section



The developing section is provided for the purpose of charging the electrostatic latent image formed on the master by exposure at the photographing section into a visible image. The master fed by the roller at the entrance of the developing section passes through between the upper and the lower developing plates. The developing liquid (LOM-ED) is pumped up by the pump on the developing tank to flow into the Toner manihold. The flow of the developing liquid is adjusted by the Toner manihold and is gushed out through the slit of the upper developing plate to develop the master. The liquid that has passed through the developing plate falls on the lid of the developing tank from the liquid guide plate, passes through a filter to be removed of paper powder, etc., returns to the developing tank, and is supplied again to the developing section.

Confirmation and adjustment of the flow

* Refer to the Installation procedure on page 3 of the service manual.

3-7 Development squeezing roller section

The master developed at the developing section is got rid of the liquid on both faces by the squeezing roller (SUS) and the squeezing roller (rubber). This device works in such a manner that when you put the squeezing roller handle on the SET side, the squeezing roller (SUS) applies the pressure to the squeezing roller (rubber) by the pressure of the spring. The two squeezing rollers are turned forcibly by a gear system to extract the liquid of the master.

(NOTE): If the two squeezing rollers are stained with the toner of the developing liquid, stained master and defective fixing will result.

How to remove, remount and clean the squeezing rollers

* Refer to the operating instructions.

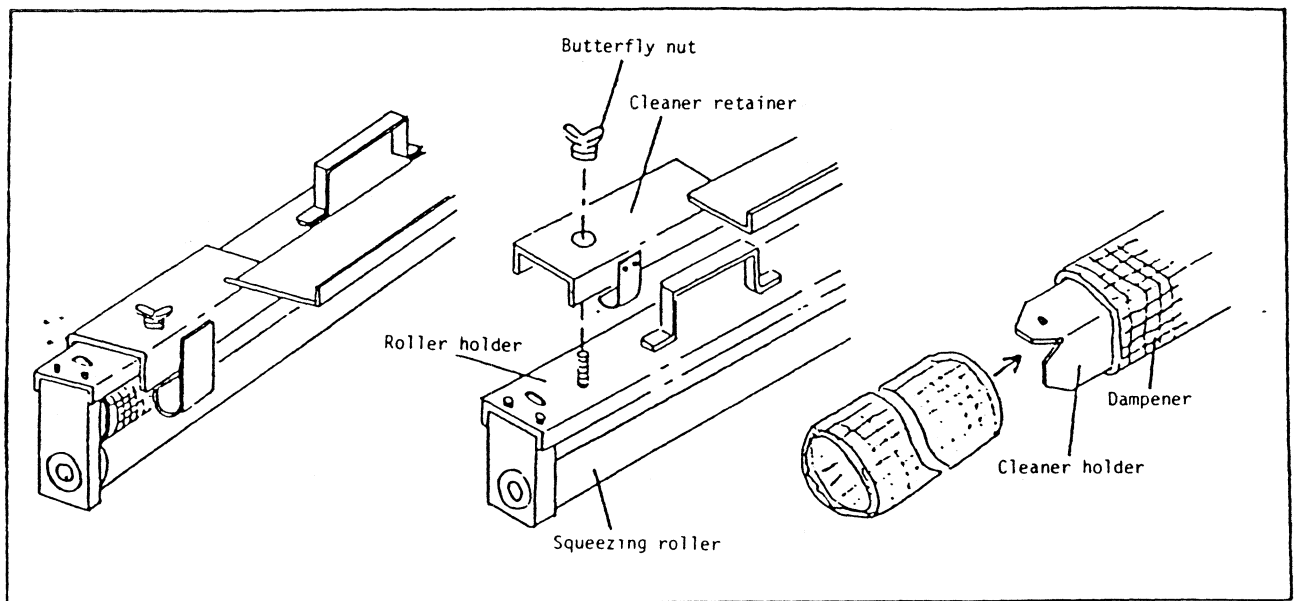


Fig. 8

How to replace the dampener of the squeezing roller section

1. Turn the squeezing roller pressure handle slowly 90° (to the free side) and remove the squeezing roller.
2. Loosen the butterfly nut and pull the cleaner holder upward.

3. When inserting a new dampener into the cleaner holder, insert it from the arrow side as shown above to make the insertion easy.
4. Reverse the disassembling procedure to reassemble the dampener. The cleaner holder is equipped with a holder spring to cause the dampener to contact firmly (the pressure at right and left side of the cleaner is equal) with the squeezing roller.

Adjustment of squeezing roller pressure

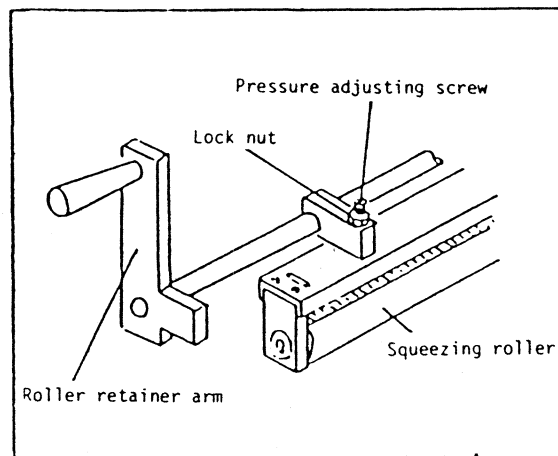


Fig. 9

Confirm that both squeezing rollers are not stained before making the pressure adjustment. In the case where the squeezing effect is unbalanced, correct it by means of the squeezing roller pressure adjusting screws as shown in the illustration at left. There are two adjusting screws. Loosen the lock nut on the side where the squeezing effect is not balanced, and turn the pressure adjusting screw in the clockwise direction slightly.

(NOTE): For the best pressure adjustment, turn the pressure adjusting screw to protrude 0.5 to 1.0 mm from the bottom of the arm so that the squeezing roller is pressurized. The protrusion of the pressure adjusting screw exceeding the above may cause the pressure adjustment to worsen.

3-8 Heater section See Fig. 7

The surface of the master is not completely dry after being squeezed at the development squeezing roller section, and the toner is removed if the surface of the master is touched with hand. To make the printable press plate, a hot air is blown against the master by means of a heater and a fan while the master passes the hot lower guide plate of the heater section to cause the toner to be fixed on the master.

- * To eliminate the uneven fixing of the toner, the built-in electronic thermostat turns the heater ON and OFF automatically to control the inside temperature while the power is ON. When the defective fixing occurs due to the installation environment, adjust the temperature setting with the dial on the cover of the switchgear.

Standard temperature setting:

Set the temperature of the upper electronic thermostat of TH1 at 170°C.

Set the temperature of the lower electronic thermostat of TH2 at 150°C.

3-9 How to stretch and set the driving chains

Three chains of (A), (B) and (C) are provided as shown in Fig. 10.

Adjust the chain (A) at the driving motor mounting section.

Adjust the chains (B) and (C) at each chain stretching section.

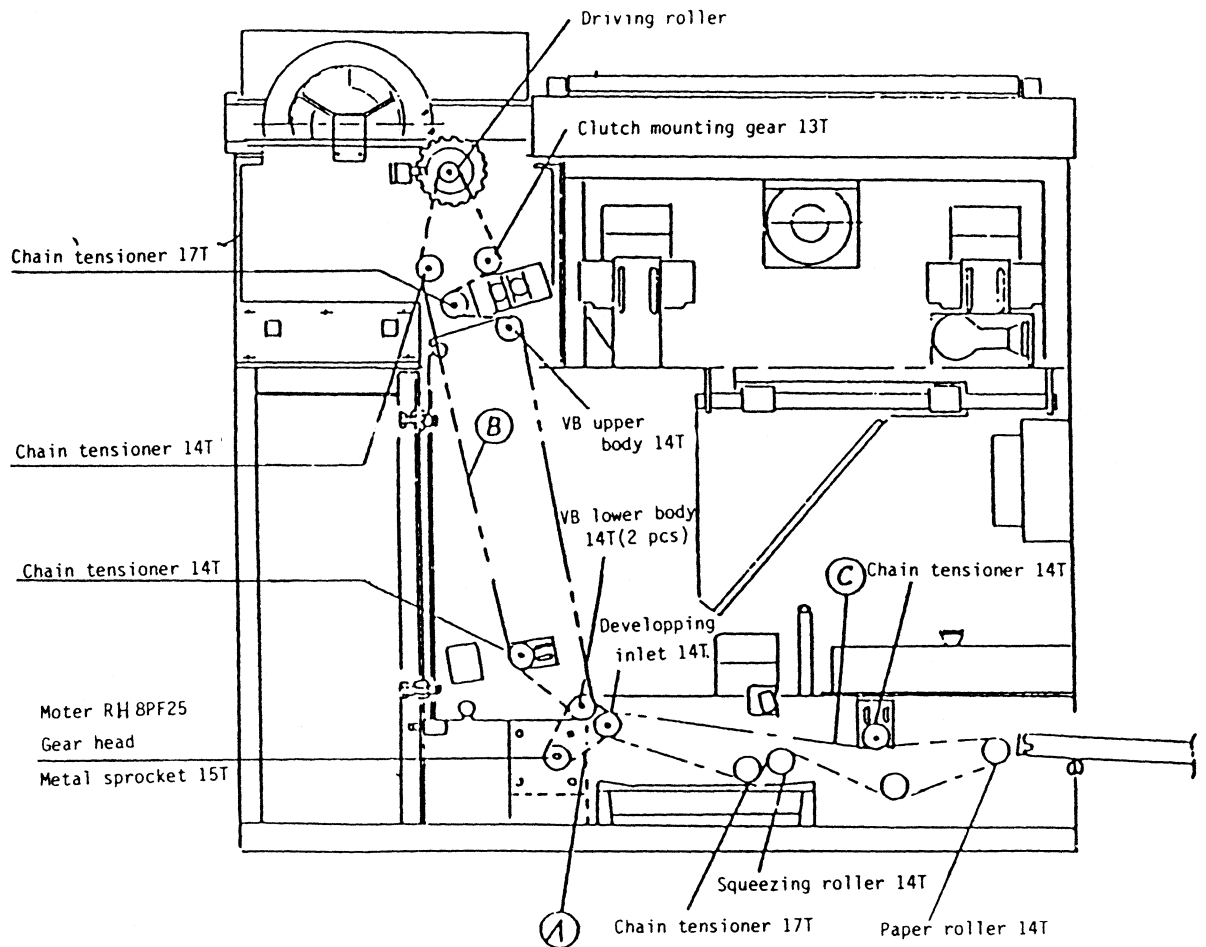
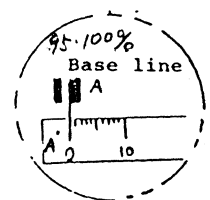


Fig. 10

3-10 Copy section

Replacement of copy positioning sheet

1. Loosen the sheet fixing screw and remove the sheet.
2. Set a new sheet under the sheet holder and position in the following manner.
3. Adjust the two points (A) and (A') to the reference mark of the positioning scale pasted on the copy glass so that the left end of the 100% reference line of the sheet is aligned with the "0" position of the scale.



- Adjust the optical axes (B), (B'), (C) and (C') to the reference line on the copy glass.

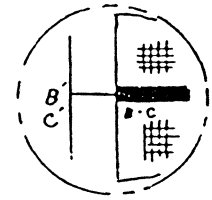
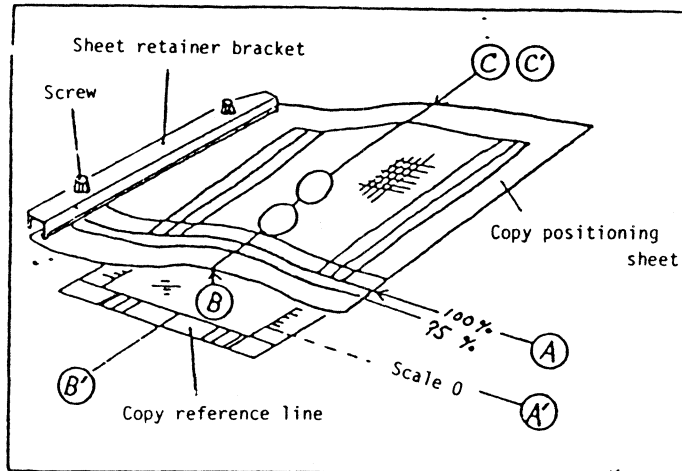


Fig. 11

Adjustment of copy loading

If the copy is loaded defectively on the copyboard, ruled line on the copy can be bent. In that case, adjust in the following manner:

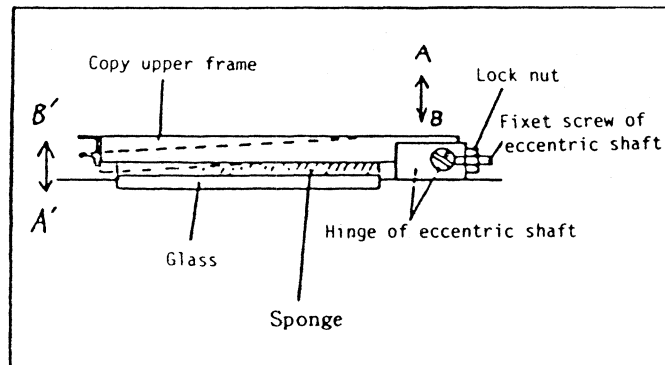


Fig. 12

- Loosen the lock nut of the hinge of the upper frame of the copyboard.
- Loosen the setting screw of the eccentric shaft.

3. The hinge side of the upper frame of the copyboard is moved vertically by rotating the eccentric shafts at right and left.
4. By this action, if the hinge side is moved in the upward direction of A, the tip of the handle side moves in the downward direction of A', and if the hinged side is moved in the downward direction of B, the tip of the handle side moves in the upward direction of B'.
5. Adjust the two eccentric shafts at right and left in suitable positions, tighten the setting screws of the eccentric shafts, and fasten the lock nuts.

Method of confirmation

- (1) Prepare four strips of paper of 30 mm wide by cutting the master, etc.
- (2) Place the strips of paper at the four corners of the copy glass and close the upper frame of the copyboard.
- (3) Pull the master and confirm the loaded condition of the master.

3-11 Light source section

Construction of the light source section Refer to Fig. 13 & 14.

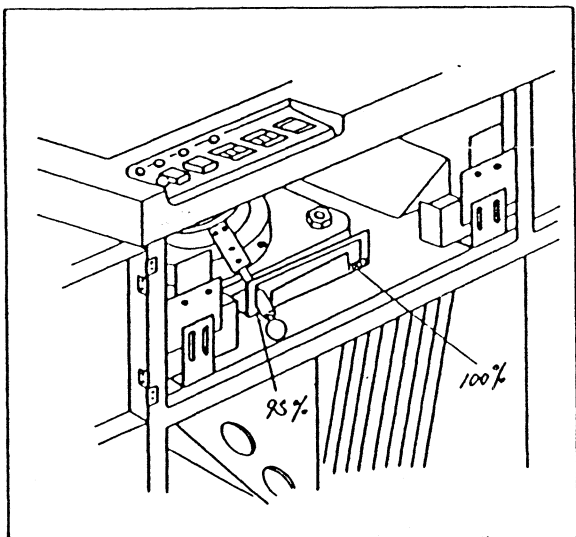


Fig. 13

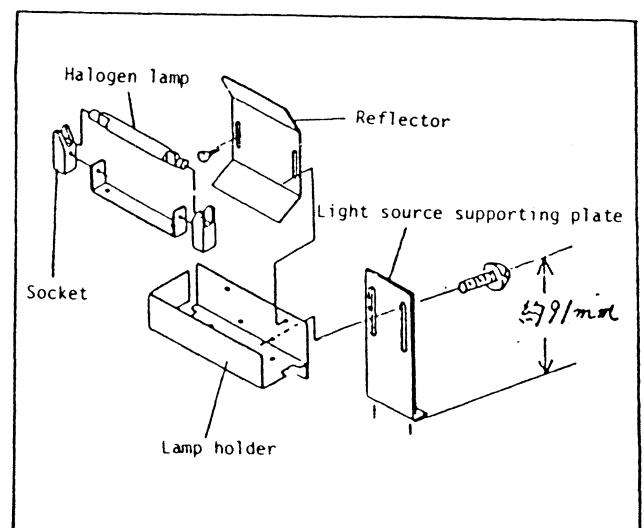


Fig. 14

1. Four lamps are provided as the light source for the exposure at time of photographing; two lamps on the operating side and two lamps on the non-operating side respectively. The lamps are halogen lamps of AC 100V, 500W x 4.
 2. The lamp of the light source for the copy positioning lights only when the lamp at the left of the operating side has opened the upper frame of the copyboard. This light source lamp is a tungsten lamp of AC 100V, 100W x 1.
 3. To secure the distribution of the intensity of illumination, the lamp is installed as shown in Fig. 14 before it is shipped from the factory.
 - 3-1 Install the reflector on the lamp holder by fixing at the center of the slot of the reflector with screws.
 - 3-2 Install the lamp holder on the light source supporting plate by providing a distance of about 91 mm from the bottom of the light source supporting plate to the center of the screw.
 4. In the case where the distribution of the intensity of illumination has been unbalanced due to trouble, etc. during transportation, adjust the unbalance based on the following.
 - 4-1 If the reflector is installed at the upper part, the illumination at the corner of the copy surface is increased.
 - 4-2 If the reflector is installed at the lower part, the illumination at the center of the copy surface is increased.
 - 4-3 Stains and scratches on the reflector, mirror, lens and copy glass also affect the intensity of illumination.
4. Confirmation and adjustment of optical system
- The squareness, focus and magnification are well checked at the time of delivery from the factory. But in case a failure is suspected, confirm and adjust in the following way.

Procedure of confirmation and adjustment

4-1 Confirmation and adjustment of squareness

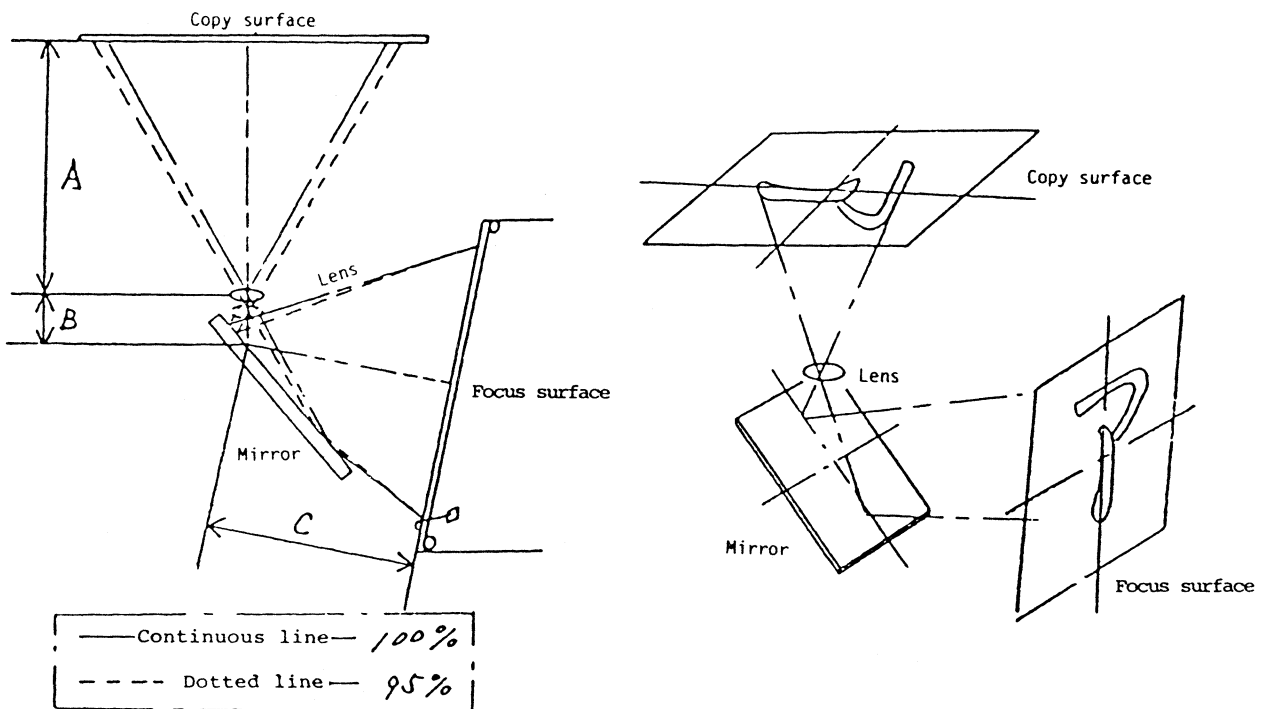
..... Adjustment by the inclination of the mirror

4-2 Confirmation and adjustment of the focus

..... Adjustment by right and left movement of the mirror

4-3 Confirmation and adjustment of the magnification

..... Adjustment by up and down movement of the lens



Right focus .. Theoretically, positional relation of the copy, lens and photographing surface is as follows:

$$\underline{A} = \underline{B + C}$$

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

f = Focal distance of the lens

m = Magnification

(ex) $f = 210, m = 100\%$

$$A = 210(1 + 1/1) = 420$$

$$B + C = 210(1 + 1) = 420$$

Therefore,

$$A = B + C = 420 \text{ mm}$$

(ex) $f = 210, m = 95\%$

$$A = 210(1 + 1/0.95) = 431$$

$$B + C = 210(1 + 0.95) = 409.5$$

In practice, it is necessary to move the copy surface, and the resolution power is cleared by the depth of focus near the same size.

4-1 Adjustment of the squareness Adjustment by the inclination of the mirror

Knowledge of squareness

In order to photograph the copy of a square precisely as a square and the copy of a rectangle precisely as a rectangle, each of the copy surface, lens surface and photographing surface must be parallel and flat each with the other.

As shown in Fig. 15, if the copy surface is out of the parallelism (B C), the image obtained will be a trapezoid of small a' and large b' , and this condition is called the generation of the "squareness".

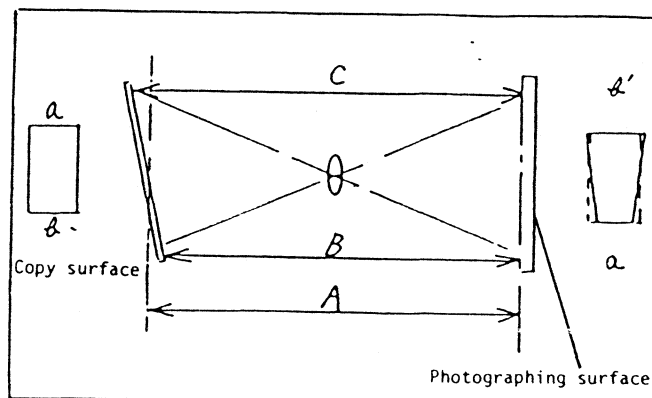


Fig. 15

In construction, the model EP-12 has a reversing mirror between the lens and the photographing surface, and the squareness is adjusted by the mirror section.

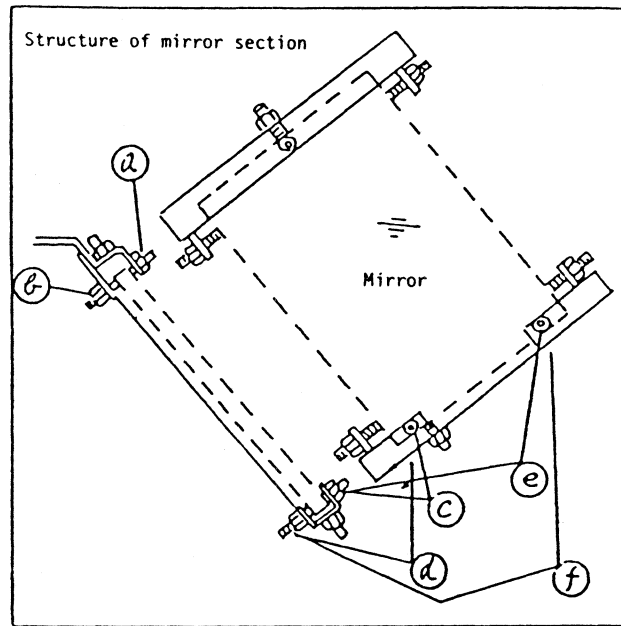


Fig. 16

Confirmation of the squareness

1. Set a chart suitable for the squareness measurement on the copyboard. (A chart of a square or rectangle)
2. Measure the four sides of the photographing object. The chart is normal if the dimensional difference is less than 0.5 mm.

(Example) Reference value of the chart of the maker.

100% for the 250 mm measurement

95% for the 237.5 mm measurement

Method of adjustment of the squareness Refer to Fig. 17

- (1) If the image is big at the top and small at the bottom, loosen the screws (d) and (f) and tighten (c) and (e) by the same degree.
- (2) If the image is small at the top and big at the bottom, loosen the screws (c) and (e) and tighten (d) and (f) by the same degree.
- (3) As viewed from the image surface of the photographing object, if the image is big at the right and small at the left, loosen the screw (c) and tighten the screw (d). If

the image appears in the vertical direction, adjust according to (1) and (2) above.

- (4) If the image is small at the right and big at the left, loosen the screw (e) and tighten the screw (f). If the image appears in the vertical direction, adjust according to (1) and (2) above.

(NOTE): Do not touch the reflective surface of the mirror during the adjustment.

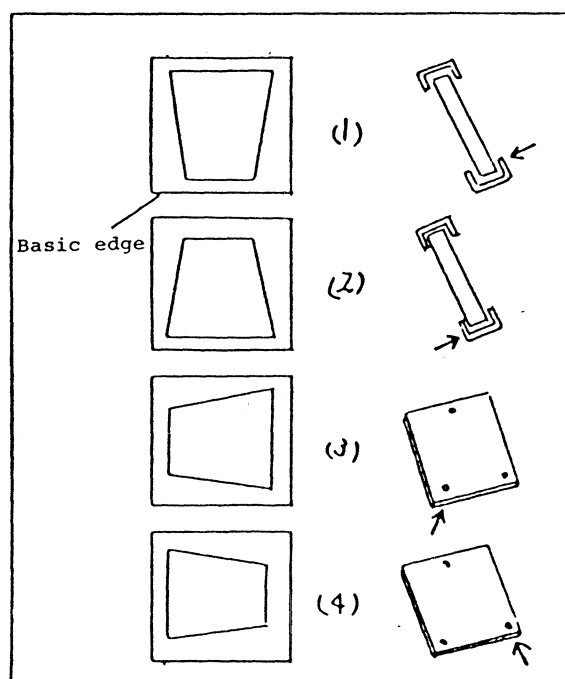


Fig. 17

4-2 Adjustment of focus ... Adjustment by right and left movement of the mirror section

The focus is well checked at the time of delivery from the factory. But in case a failure of focusing is suspected, confirm and adjust in the following way.

Method of confirmation

1. Photograph the test chart (resolving power test chart). The test chart is normal if the resolving power of over 8 lines/mm is obtained. (In case of 95%, over 7.0 lines/mm.)
2. If the proper resolving power is not obtained, adjust in the following way.

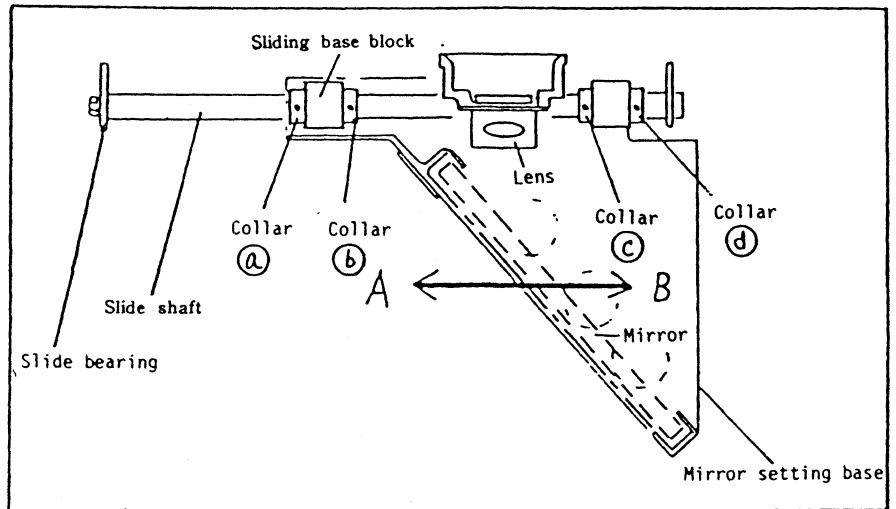
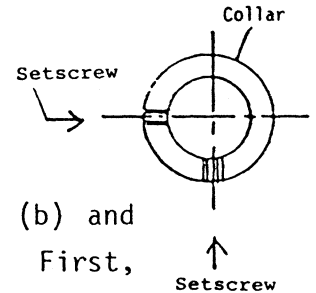


Fig. 18

Method of adjustment Refer to Fig. 18

- (1) Loosen the setscrews of the collars (a) and (c) (M4 hexagon socket head screw). (Each piece of collar has two set-screws.)
 - * At this time, never loosen the fixed collars (b) and (d) in order to secure the original position. First, make adjustment of 100% focusing.
- (2) Move the mirror setting base little by little in the direction of A and photograph the test chart. Compare with the first sample and if the focus becomes soft or blurred, reset the mirror setting base at its original position again (set it back to the positions of the collars (b) and (d)).
- (3) Reset the collars (a) and (c) at its original positions. Then, loosen the collars (b) and (d), move the mirror proper little by little in the direction of B, and photograph the test chart to obtain a position of good focus. (Also confirm the focus of 95%.)



- (4) After a correct focus is found out by the works of (2) and (3) above, lock the collars (a), (b), (c) and (d) without giving an excessive force to the mirror setting base.
- (5) Measure the dimensions of the image with the photographing object obtained. If the measurement differs from the dimensions of the copy, compensate the dimensions according to "4-3 Adjustment of magnification".

4-3 Adjustment of magnification ... Adjustment by up and down movement of the lens

The magnification is well checked at the time of delivery from the factory. But in case a failure of magnification is suspected, confirm and adjust in the following way.

Method of confirmation

1. Set an appropriate copy such as scale, etc. on the copy frame for confirmation of the magnification.
2. Set the copy to 100% and photograph it.
3. Measure the dimensions of the image and compare with that of the copy.

(Example) Reference value of the chart of the maker.

100% for the 250 mm measurement	Less than
95% for the 237.5 mm measurement	± 0.5 mm

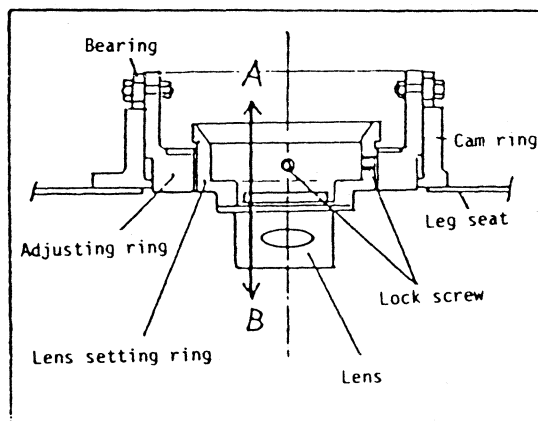


Fig. 19

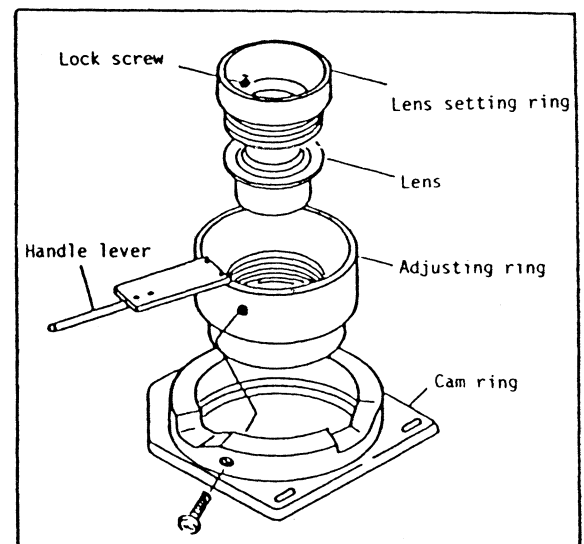


Fig. 20

Outline of mechanism Refer to Fig. 19 & 20.

The cam ring is fixed to the seat plate. For changing from 100% to 95%, the lens adjusting ring moves up and down by moving the bearing on top of the cam ring. The lens is fixed to the lens setting ring. The lens setting ring is screwed into the lens adjusting ring and fixed at to positions by the locking screw after the magnification is adjusted.

Method of adjustment

* When the dimensions of the image are bigger than those of the copy

- (1) Loosen the locking screws (M4 hexagon socket head) at two locations.
- (2) Hold the lens setting ring with your hand, move (2 mm/turn) it little by little in the direction of B (right turn), photograph the scale and measure it.
- (3) Repeat the steps (1) and (2) until 100% and 95% is held within the reference value.
- (4) After the correct position is found by the step (3), tighten the locking screw at that position.

* When the dimensions of the image are smaller than those of the copy

- (1) Adjust in the same steps as above.
- (2) Hold the lens setting ring with your hand, move it little by little in the direction of A (left turn), photograph the scale and measure it.
- (3) } Adjust in the same steps as above.
- (4) }

5. How to replace the mirror

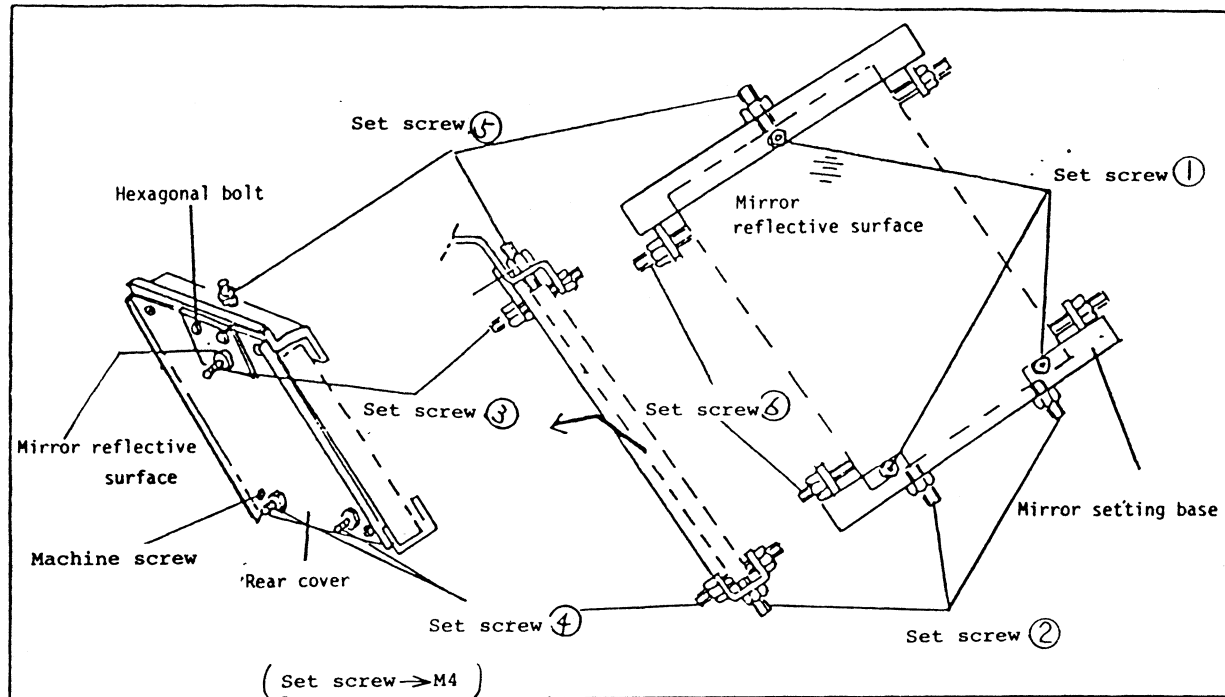


Fig. 21

- (1) Remove the processor cover and the left side cover.
- (2) Loosen the hollow screws (5) and (6) a little from the operating side.
(NOTE): Never loosen the hollow screws (1) and (2) (fixing) the reflective surface side of the mirror because it is necessary for reassembly.
- (3) Remove the rear cover (M4 truss x 4) of the mirror section from the left side.
- (4) Loosen the hollow screws (3) and (4) a little.
- (5) Remove the mirror supporting fixture (M4 hexagon headed bolt x 4).
(NOTE): Support the mirror with your hand to keep it from falling down on the side of the arrow.
- (6) Pull out the mirror and set a new mirror.
- (7) Put on the mirror supporting fixture (M4 hexagon headed bolt x 2).

- (8) Tighten the hollow screws (3) and (4) uniformly until the hollow screw (1) touches lightly the reflective surface of the mirror. Do not tighten too strongly, otherwise the flatness of the mirror may be affected, causing defective focusing.
- (9) Put on the rear cover of the mirror section.
- (10) Attach the hollow screws (5) and (6) lightly to the mirror.
- (11) Be sure to tighten well the lock nut for each hollow screw.
- (12) Put on each cover and photograph the test chart for confirmation.

6. Troubleshooting guide

1. Power source voltage
2. Hopping and unevenness of the image
3. The master does not pass correctly.
4. The master does not fix correctly.
5. Defective optical axis
6. Alarm buzzer sounds during paper delivery.

6-1 Power source voltage

The present machine is designed to be used with the power source capacity of 2.2 kW in the range of supply voltage $100V \pm 10V$. The supply voltage as mentioned here refers to the voltage at the time of full load (20A) (during the exposure), and if it gets lower than 90V there is a possibility of erroneous actions even if the machine is at normal state.

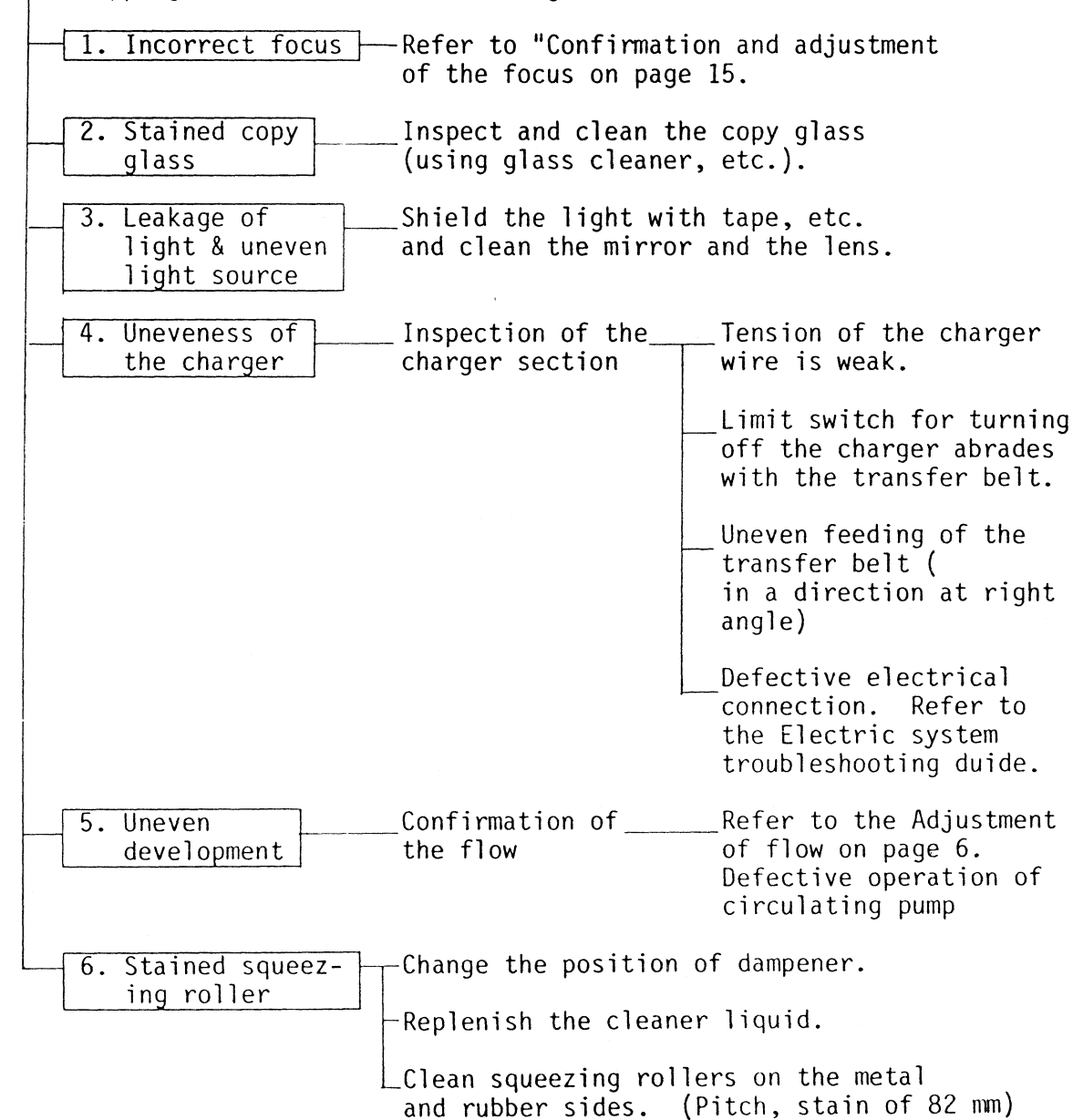
It is a case of insufficient capacity of the power, which must be improved. Arrange to be able to maintain the supply voltage at over 95 V as much as possible.

It is possible that some of the troubles come from the power source condition as mentioned below.

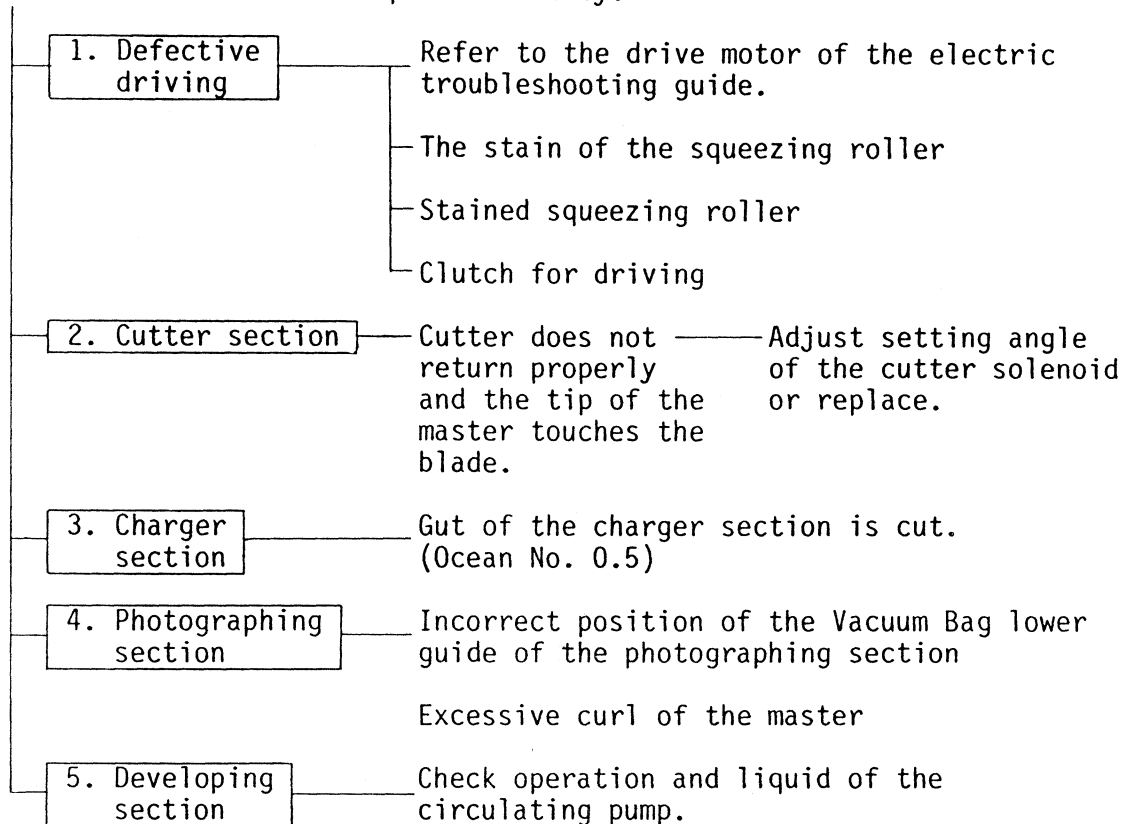
Contents of trouble

- (1) Pushing the start button does not start the machine immediately.
- (2) Alarm buzzer sounds during passing and the defective fixing of the master is caused.
- (3) Cutter does not operate.
- (4) Mater length is shorter than the set value and varies.
- (5) DC 24V relay chatters (cracking sound).

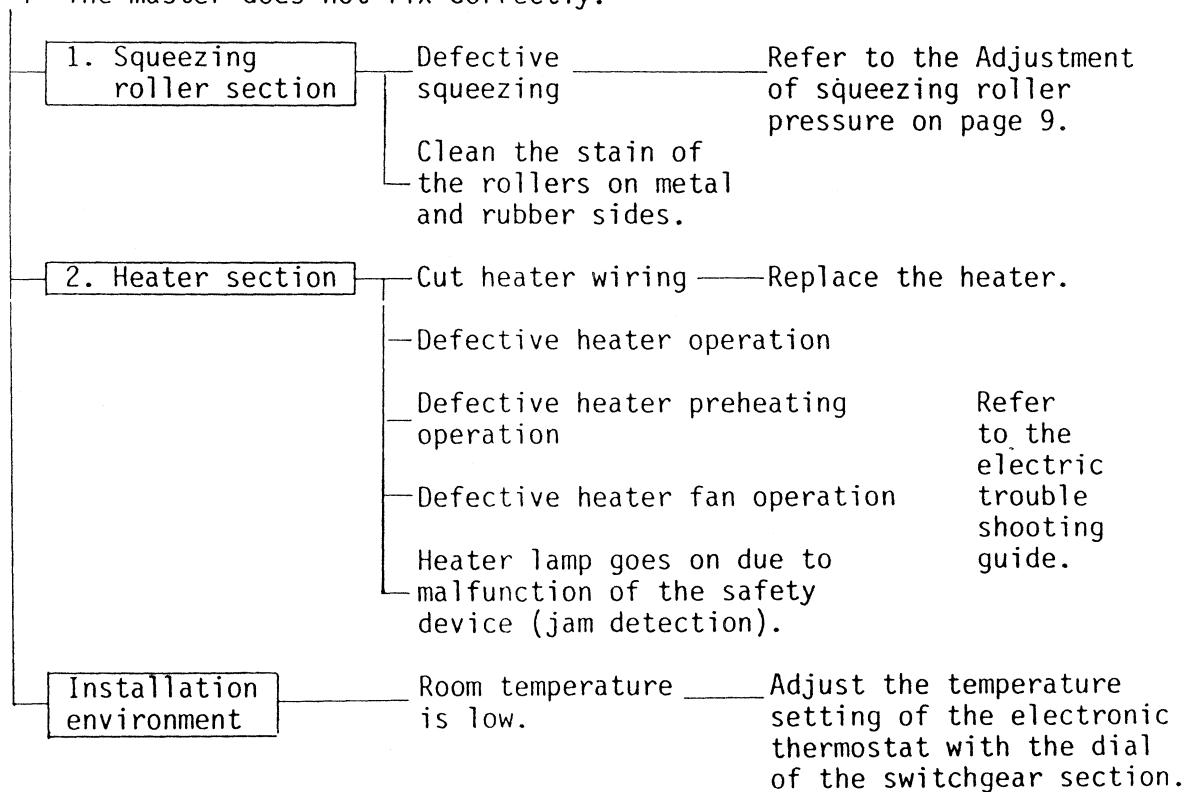
6-2 Hopping and unevenness of the image



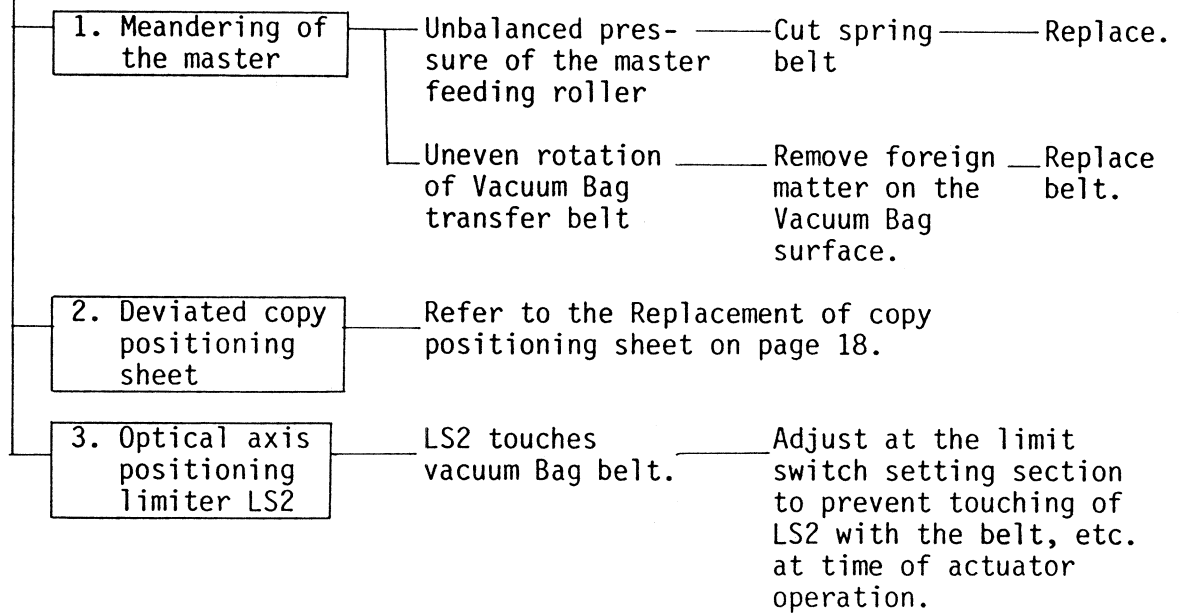
6-3 The master does not pass correctly.



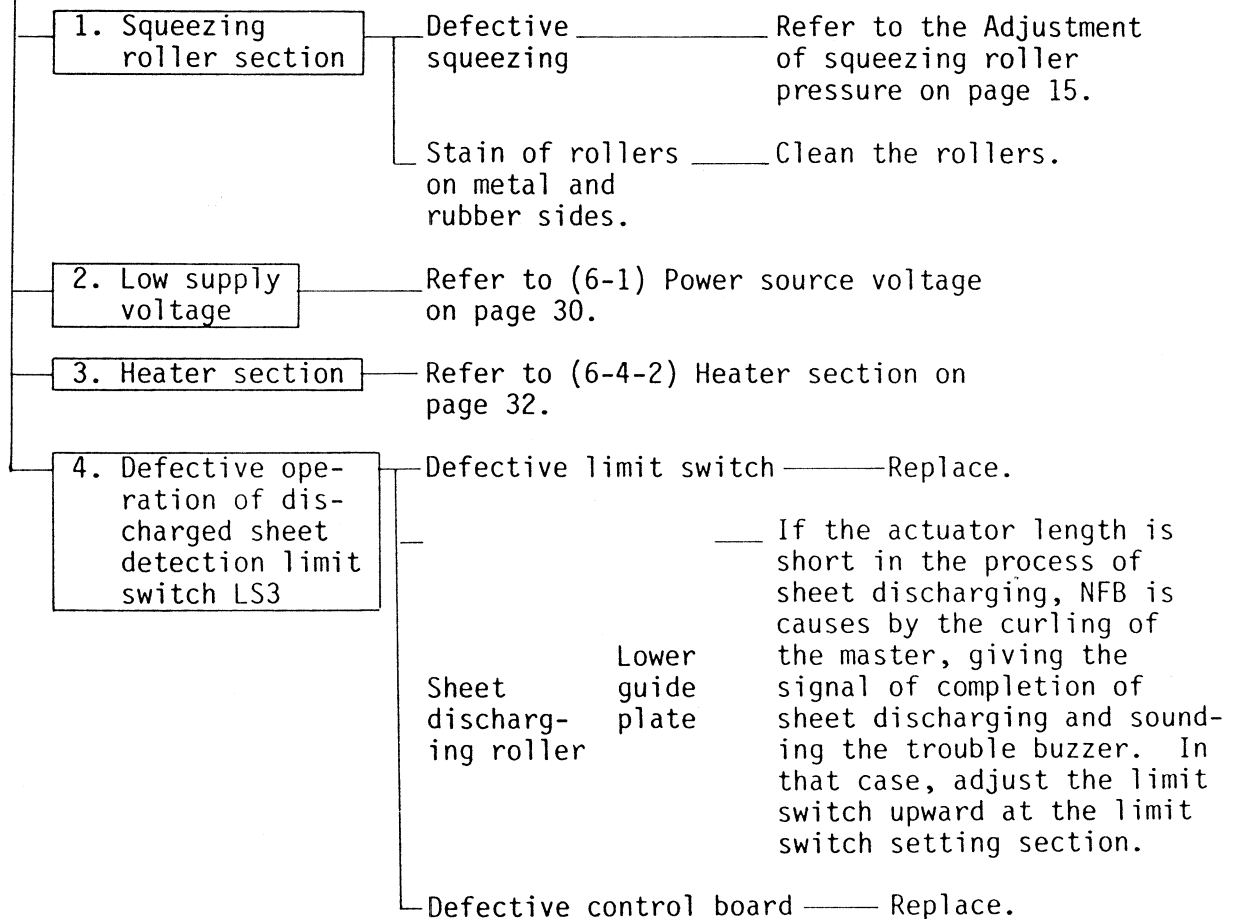
6-4 The master does not fix correctly.



6-5 Defective optical axis



6-6 Alarm buzzer sounds during paper delivery. (A sequential operation is normal.)



Electrical Troubleshooting Guide
for DIAFAX Master Platemaker EP-12 AH II

Contents

(1) OK lamps for START and COPY don't light up. -----	1
(2) Copy-set illumination lamp doesn't light up. -----	2
(3) START cannot be activated. -----	2
(4) Driving motor doesn't rotate. -----	3
(5) Absorbing fan doesn't rotate. -----	4
(6) Air-intake fan doesn't rotate. -----	4
(7) Light source cooling fan doesn't rotate. -----	4
(8) Lower-position cooling fan doesn't rotate. -----	4
(9) Heater fan doesn't rotate. -----	5
(10) Heater fan doesn't stop rotation. -----	6
(11) Heater lamp doesn't light up. -----	6
(12) Heater doesn't turn OFF. -----	7
(13) Circulation pump doesn't operate. -----	8
(14) Master paper cannot be fed. -----	9
(15) Master paper feed length varies, or the feeding operation cannot be terminated. -----	9
(16) Master paper cannot be cut off. -----	10
(17) Charger doesn't function. -----	11
(18) Master paper is not fed to optical axis position. -----	12
(19) Master paper feeding doesn't stop at optical axis position. ----	12
(20) Exposure cannot be made (light source lamps don't light up). ---	13
(21) Light source lamp(s) doesn't light up. -----	14
(22) Light source don't turn off, and the paper is not fed further. -----	14
(23) Master END cannot be displayed. -----	15
(24) Trouble buzzer doesn't sound. -----	15
(25) Master paper discharge cannot be detected. -----	17
(26) Power source pilot lamp doesn't light up. -----	18
(27) Operation cannot be terminated. -----	18
(28) Exposed paper amount display counter doesn't function. -----	19

Precaution

The DIAFAX Master Platemaker EP-12 AH II incorporates the each safety limit switch in the light source section, processor section, and the subcontrol panel section. While the covers of each section are opened, RY10 remains OFF, shutting off the power to the operation circuit, relay circuit, and others. If the unit malfunctions, be sure to first check and confirm the status of RY10 and the safety limit switches.

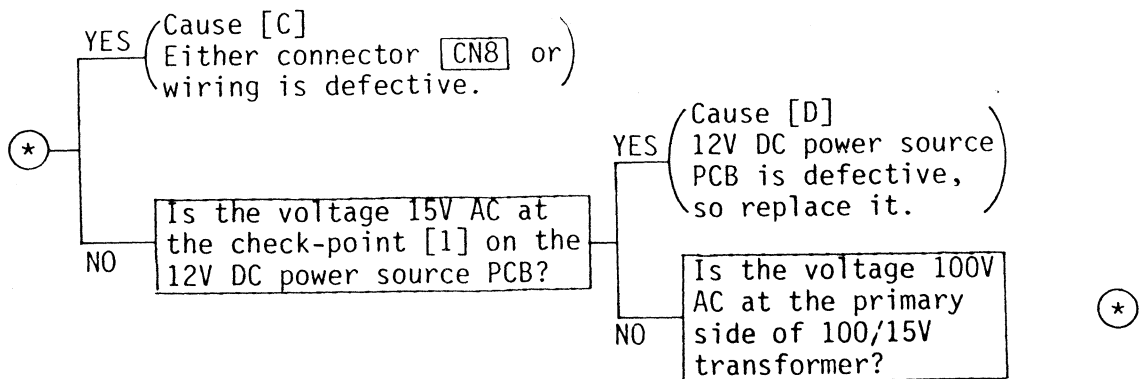
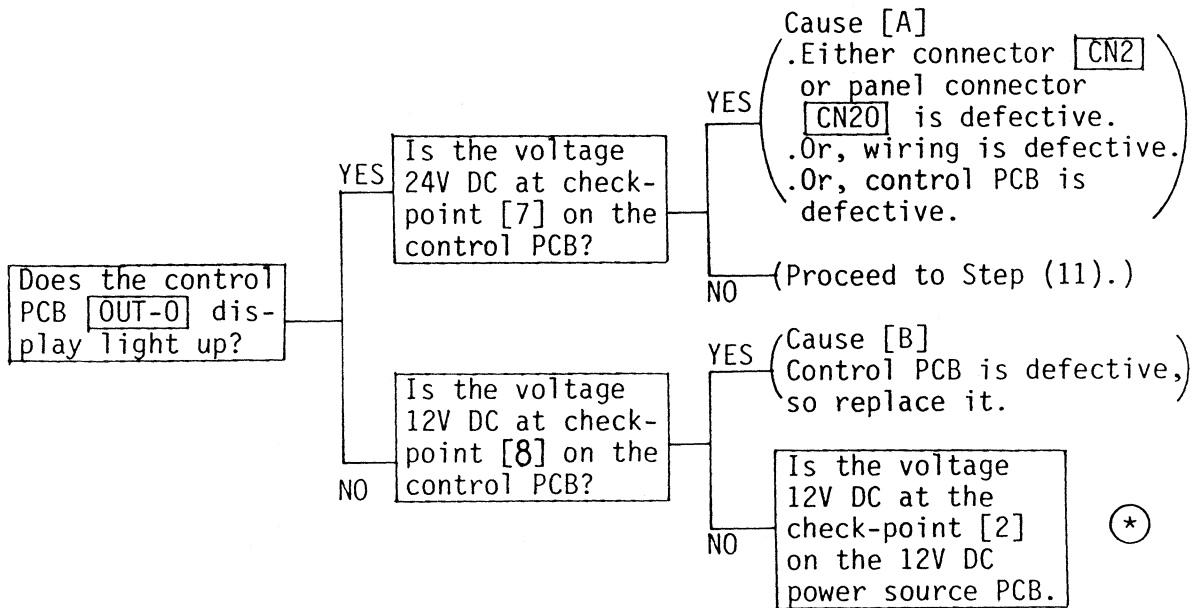
Reference: LS8 : Sub-control panel section
LS9 : Light source section
LS10: Processor section

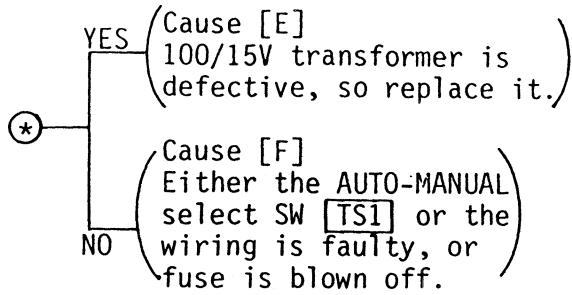
Step (1) OK lamps for START and COPY don't light up.

Check items

- (1) Is AUTO-MANUAL select switch [TS1] set in the AUTO position?
- (2) Does the heater lamp light up (or does the electronic thermostat correctly function)? If it doesn't, proceed to Step (10).
- (3) A short while after turning the main switch ON, check to see if the electronic thermostat turns OFF (and LED lamp also turn OFF) and the heater lamp also turns OFF, or not.
- (4) Are T3 and RY9 functioning correctly?
- (5) Check to see if connector is properly connected, or not.

* PCB = printed circuit board

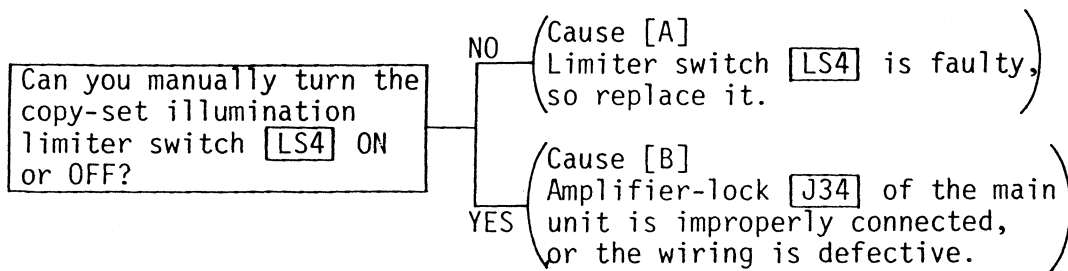




Step (2) Copy-set illumination lamps don't light up.

Check item

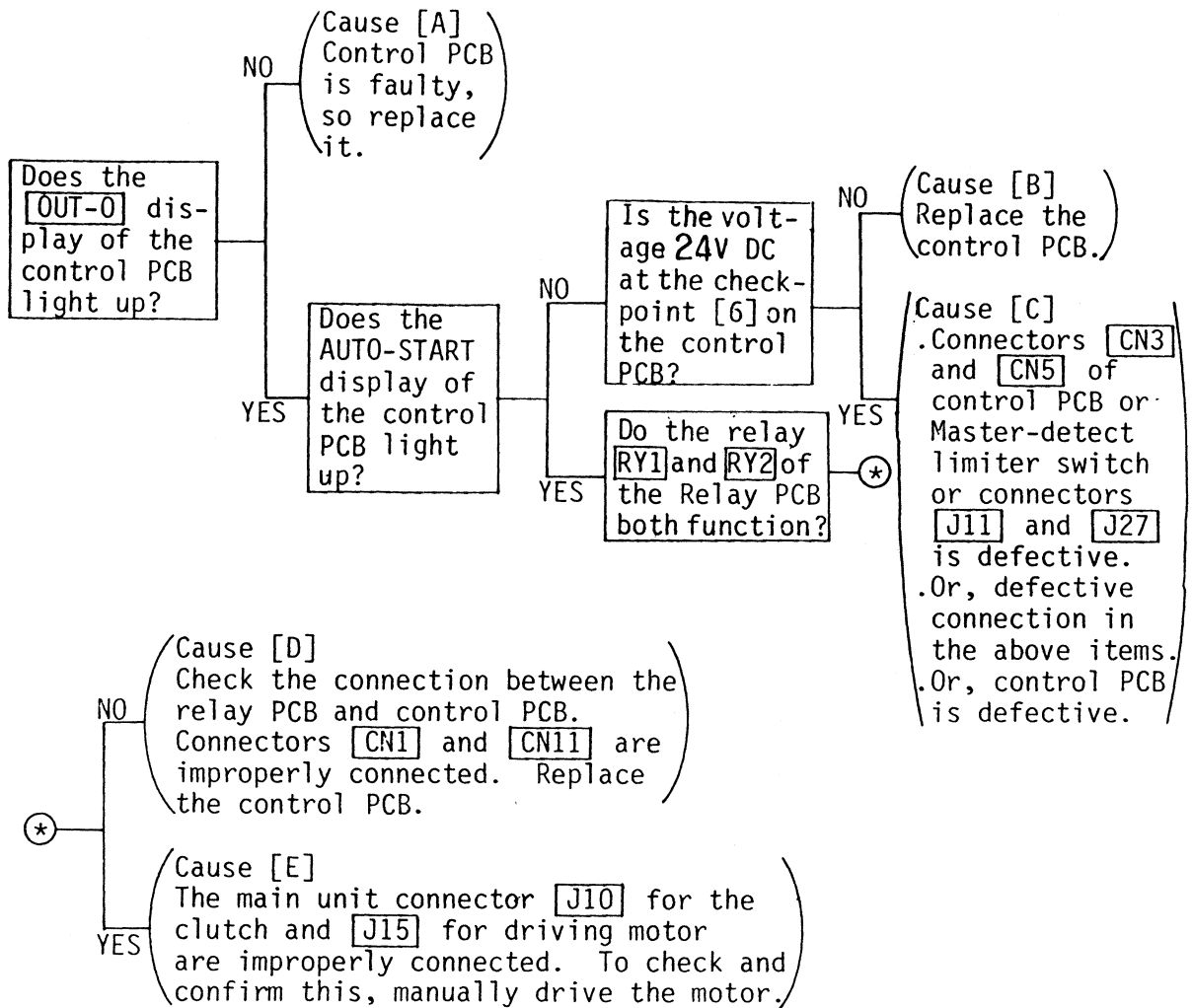
(1) Check if the illumination lamp blows out.



Step (3) START cannot be activated.

Check items

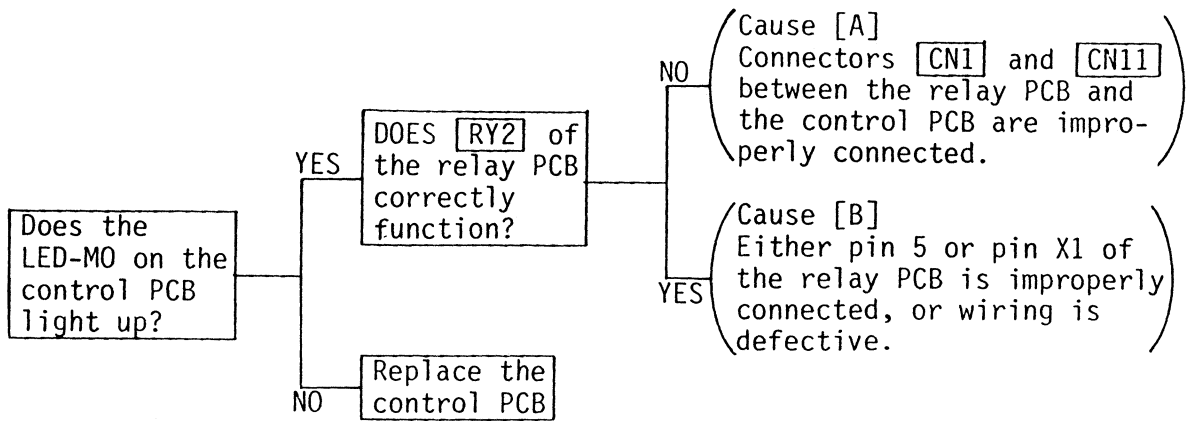
- (1) Are OK lamps for START and COPY correctly illuminated? If they aren't, return to Step (1).
- (2) Is the Master-feeding digital switch properly set for between 300 and 400 mm?
- (3) Does the Master paper finish indicator lamp light up? If it lights up, set the Master paper.
- (4) Is fuse blown?



Step (4) Driving motor doesn't rotate

Check items

- (1) By manually operating the motor, check to see if the motor smoothly rotates. If the motor doesn't rotate, connector [J12] is improperly connected.
- (2) When START is pushed, do OK lamps for START and COPY light out? If they don't, return to Step (3) "START cannot be activated".
- (3) If the alarm buzzer sounds, squeezing rollers are not correctly set.



Step (5) Absorbing fan doesn't rotate

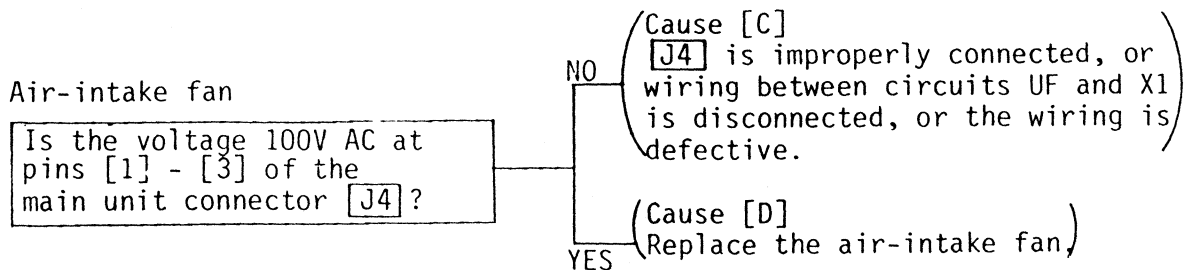
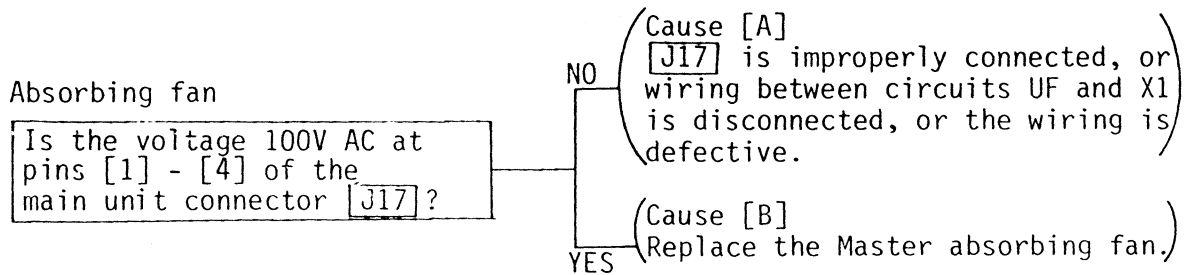
Step (6) Air-intake fan doesn't rotate

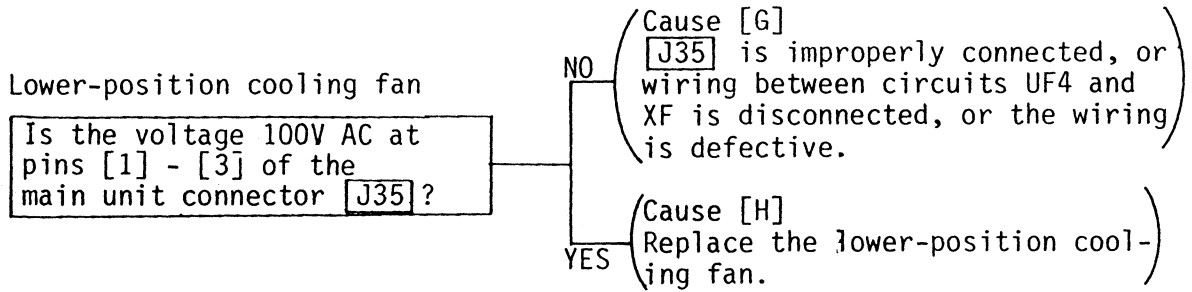
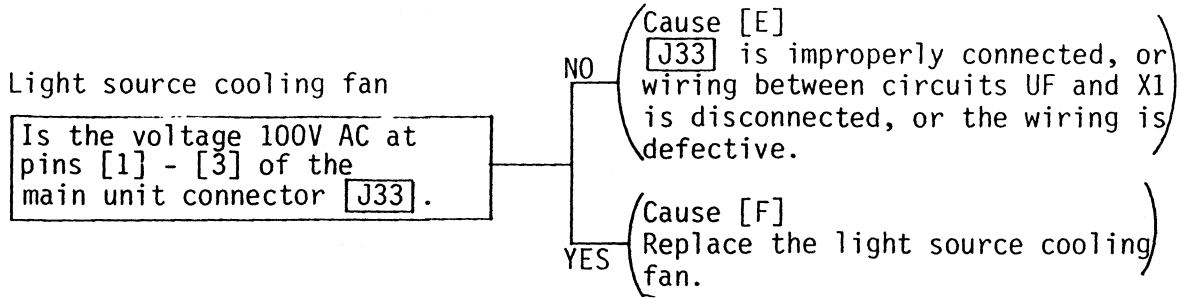
Step (7) Light source cooling fan doesn't rotate

Step (8) Lower-position cooling fan doesn't rotate

Check item

- (1) Check to see if either the control fuse (3A) or the fan fuse (3A) is blown off.

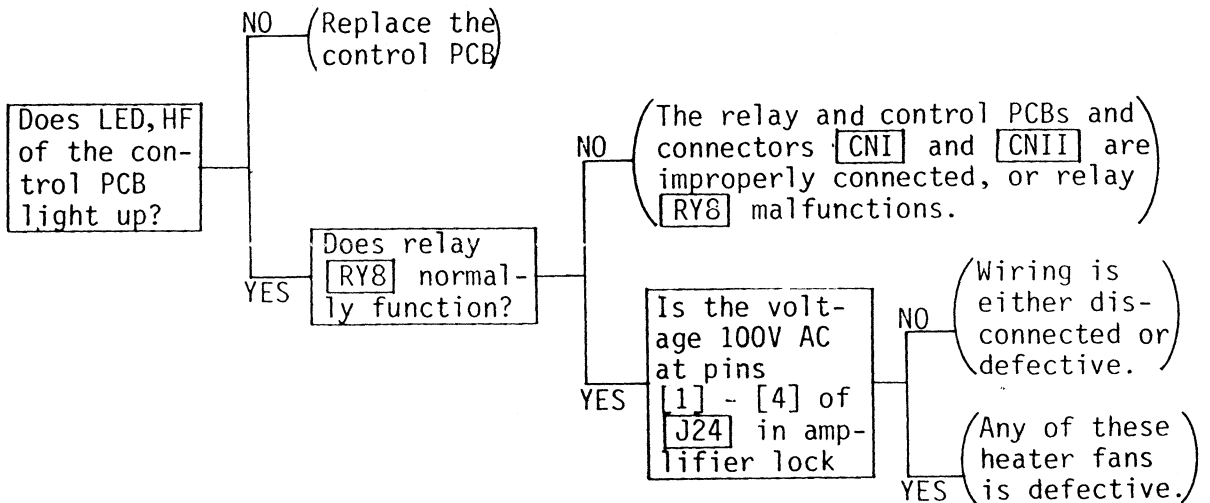




Step (9) Heater fan doesn't rotate

Check item

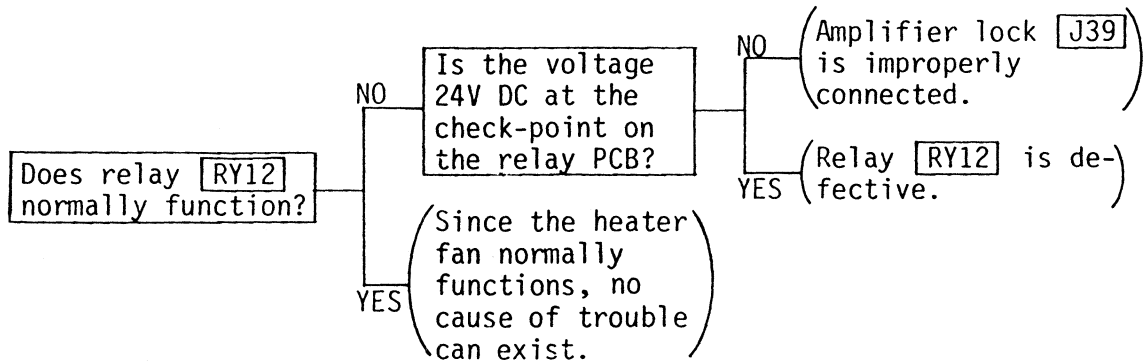
- (1) Check to see if the absorbing fan, light source cooling fan, and the air-intake fan normally rotate.



Step (10) Heater fan doesn't stop rotation

Check item

- (1) By turning the discharged paper detecting microswitch [LS3] ON, check to see if the COPY CHANGE OK pilot lamp lights up.

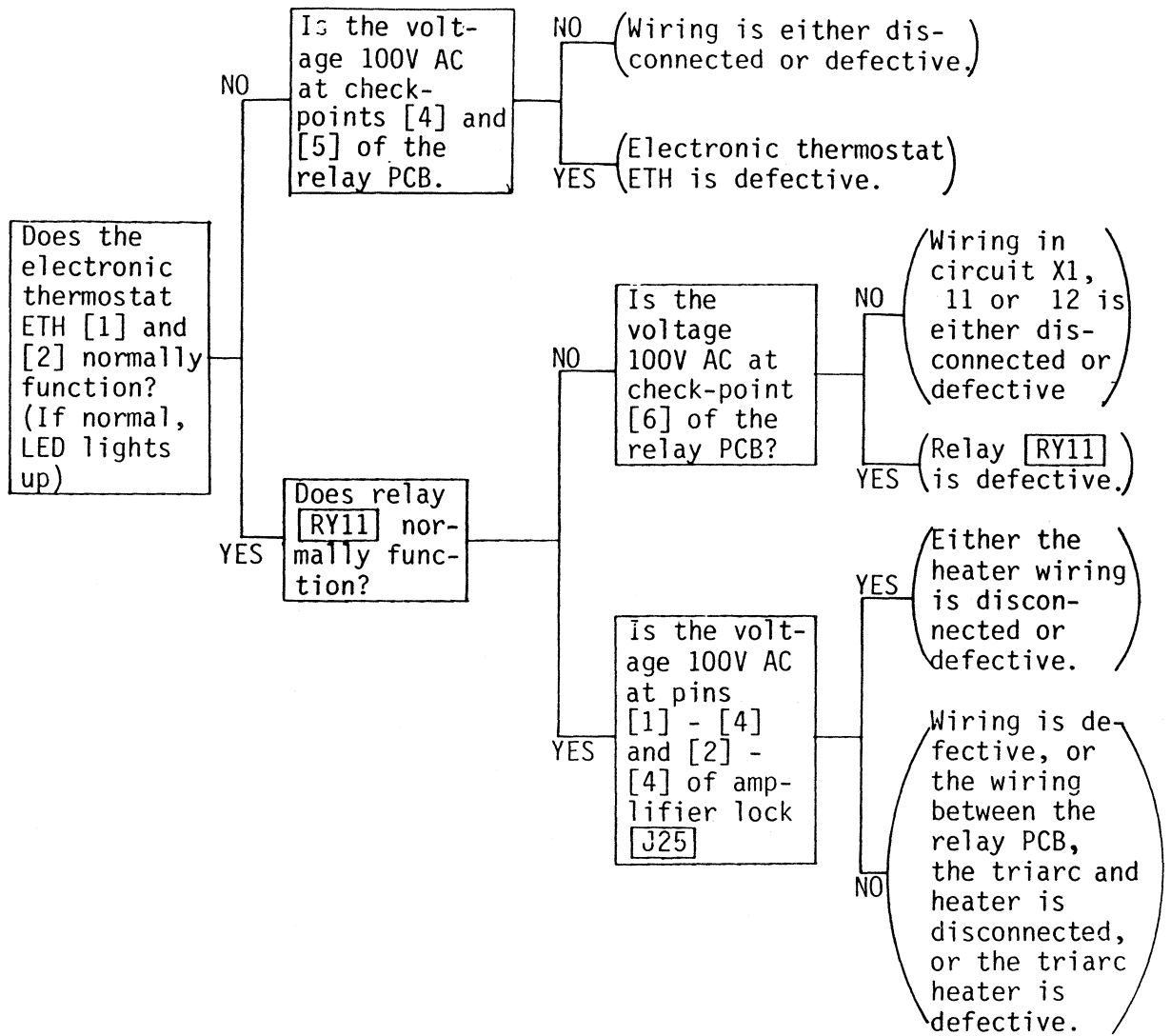


Step (11) Heater doesn't turn ON

Check items

- (1) Check to see if the circuit breaker (20A) for the heater remains OFF.
- (2) Check to see if the thermostat-fuse is blown

Note: The thermostat-fuse doesn't function until it is cooled to some extent after being heated up.



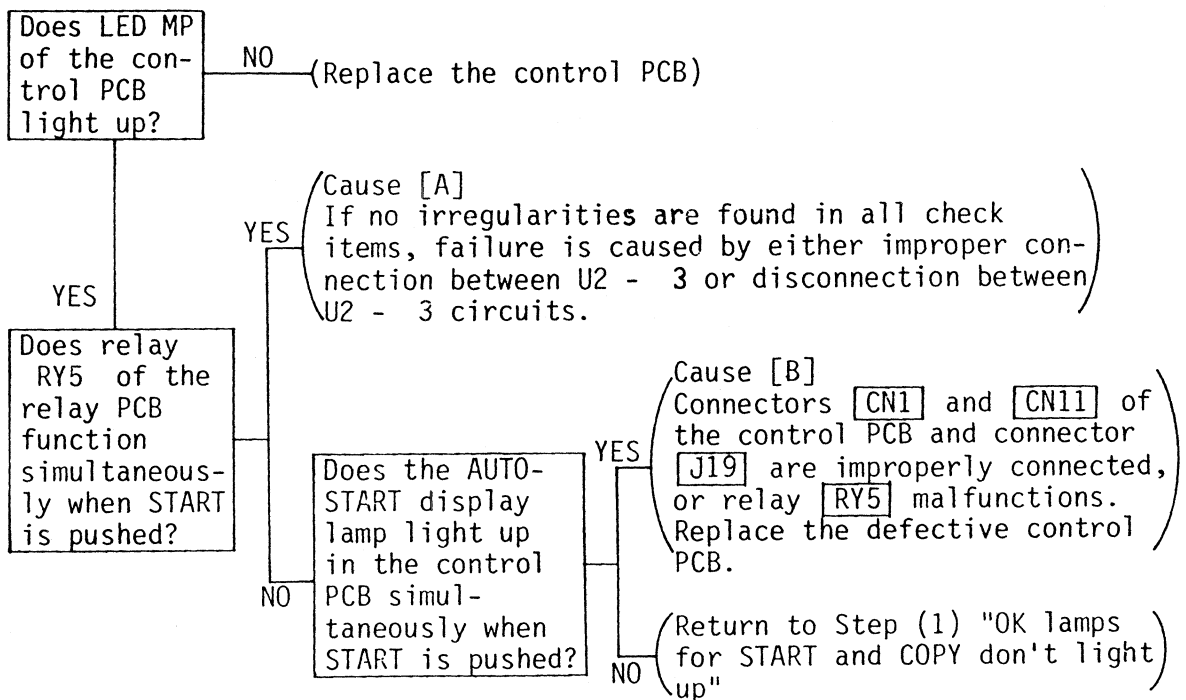
Step (12) Heater doesn't turn OFF

Amplifier-lock **J24** is improperly connected, or the wiring (THA, THB) (THC, THD) between the relay PCB and the heater is disconnected.

Step (13) Circulation pump doesn't operate.

Check items

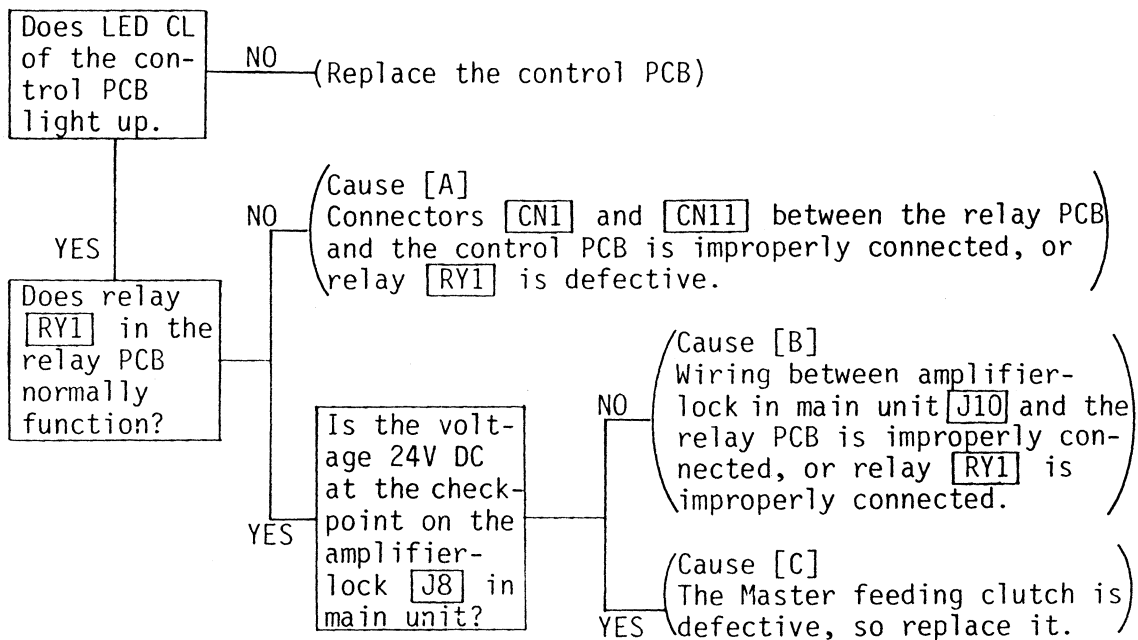
- (1) Does the circulation pump rotate using the manual switch [TS3]?
- (2) Is the squeezing roller setting lever correctly set?
Check to see if the roller is present and the limit detector switch [LS5] remains ON.
- (3) Is the plug from circulation pump securely inserted into the outlet?
- (4) Does the circulation pump rotate independently in AC 100V?



Step (14) Master paper cannot be fed

Check items

- (1) Is the Master-feeding digital setting switch correctly set for 300 - 499 mm?
- (2) Does the Master-detect display lamp light up? (Alarm buzzer sounds when the main switch is ON.)
- (3) Does the driving motor smoothly rotate?



Step (15) Master feeding length varies, or the feeding operation cannot be terminated.

Check items

- (1) Is connector CN4 of the control PCB correctly set?
- (2) Are all pins of the flat cable connector of the control PCB correctly inserted in specified position?
- (3) Does the Master feed detecting sensor section receive the external light or the light source?
- (4) Are the feed detecting sensor disc and the sensor are precisely installed in specified position. Does the disc rotate normally without snaky movement?

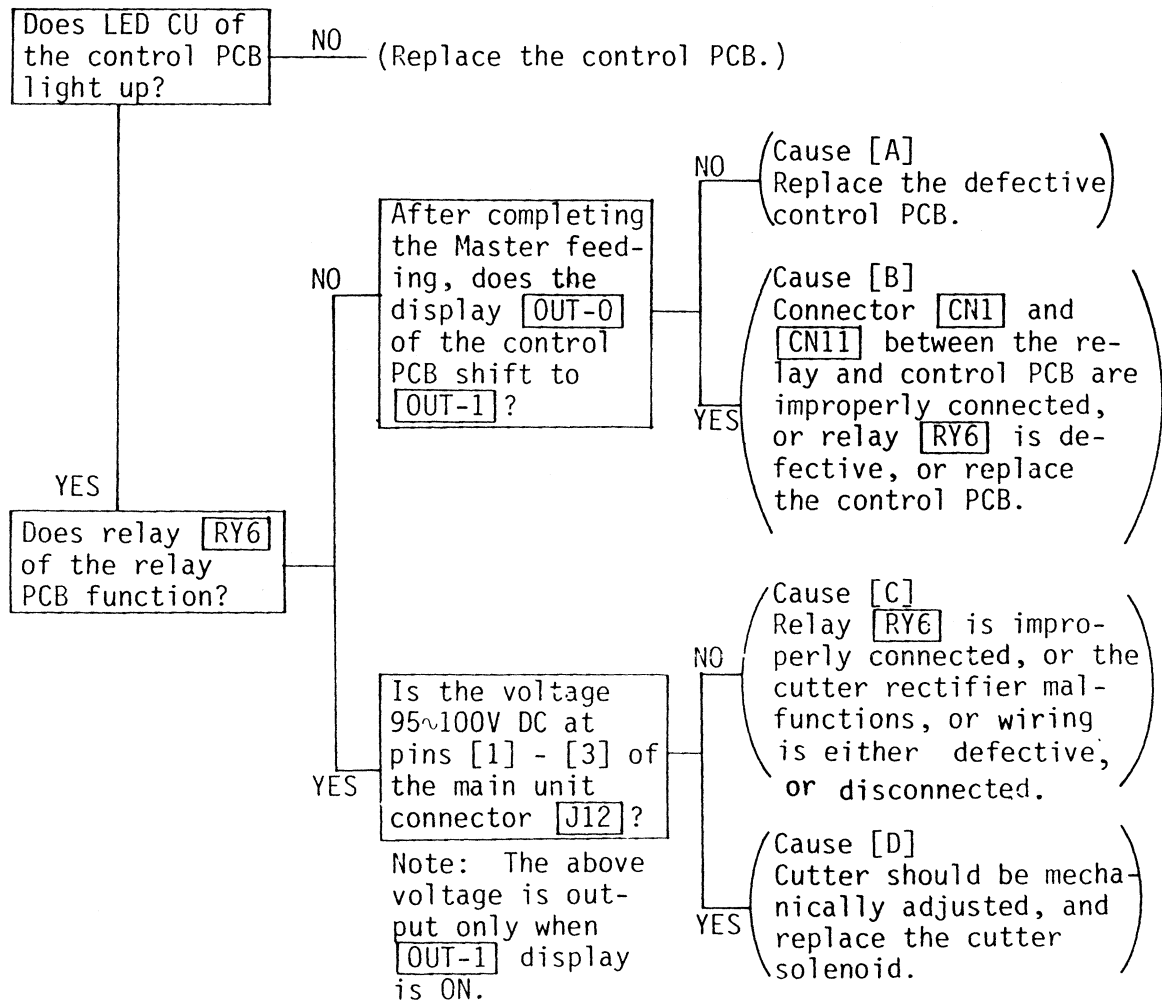
Cause [A]

If irregularity is not found when the above checkings are executed, replace the feed detecting sensor.

Step (16) Master paper cannot be cut off

Check items

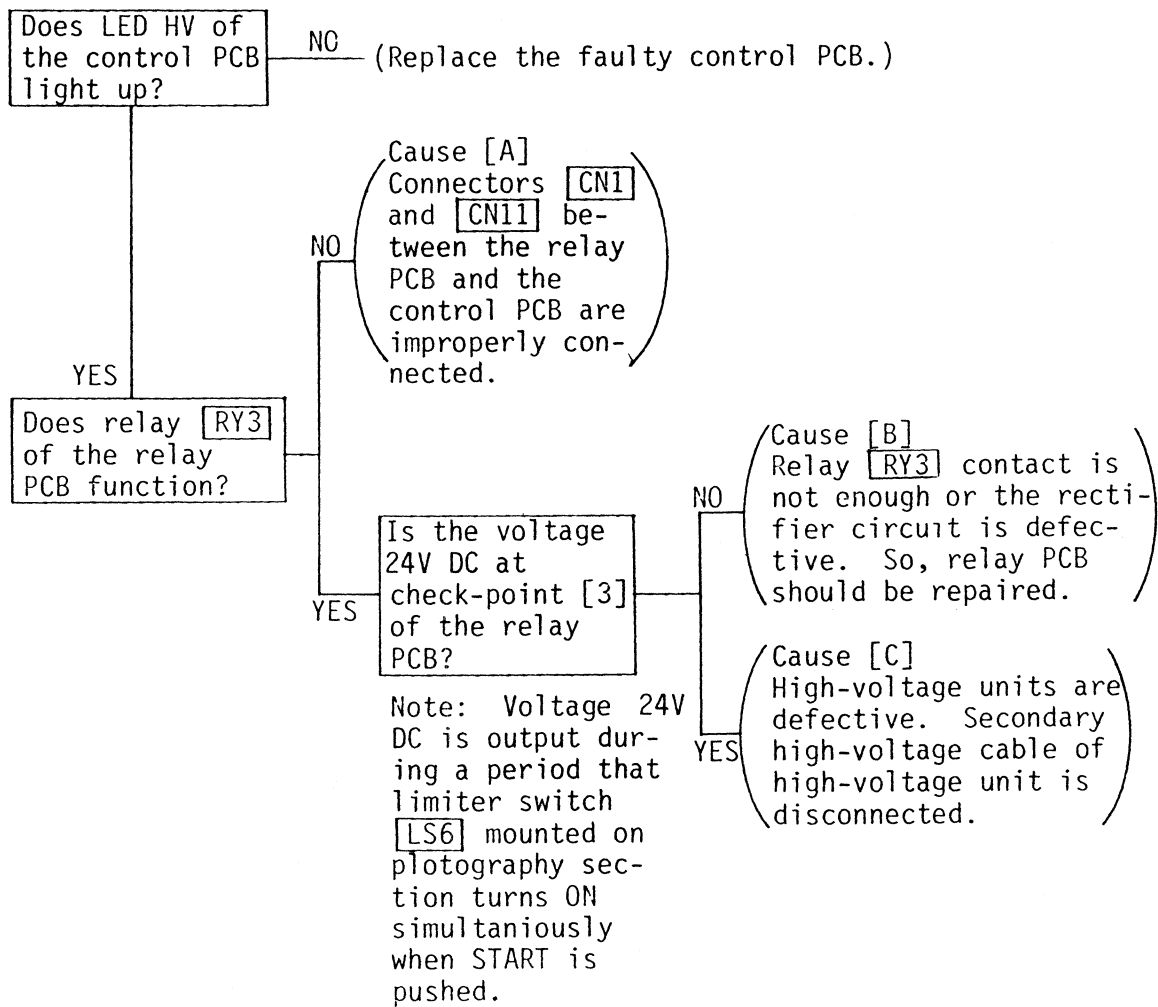
- (1) Can the Master paper be cut smoothly using the manual cutter lever?
- (2) Does the [LOAD] display lamp of the control PCB momentarily light up as soon as the Master feeding operation is completed (for about 0.1 sec. max.)?



Step (17) Charger doesn't function

Check item

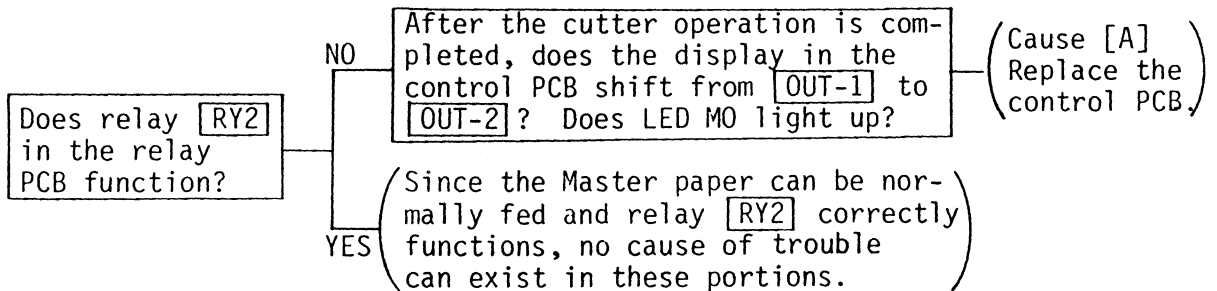
- (1) Check to see if both relays **RY1** and **RY2** normally function at the start of the unit operation.



Step (18) Master paper is not fed to optical axis position.

Check item

- (1) Check to see if the [LOAD] display lamp on the control PCB momentarily lights up as soon as the cutter operation is completed.

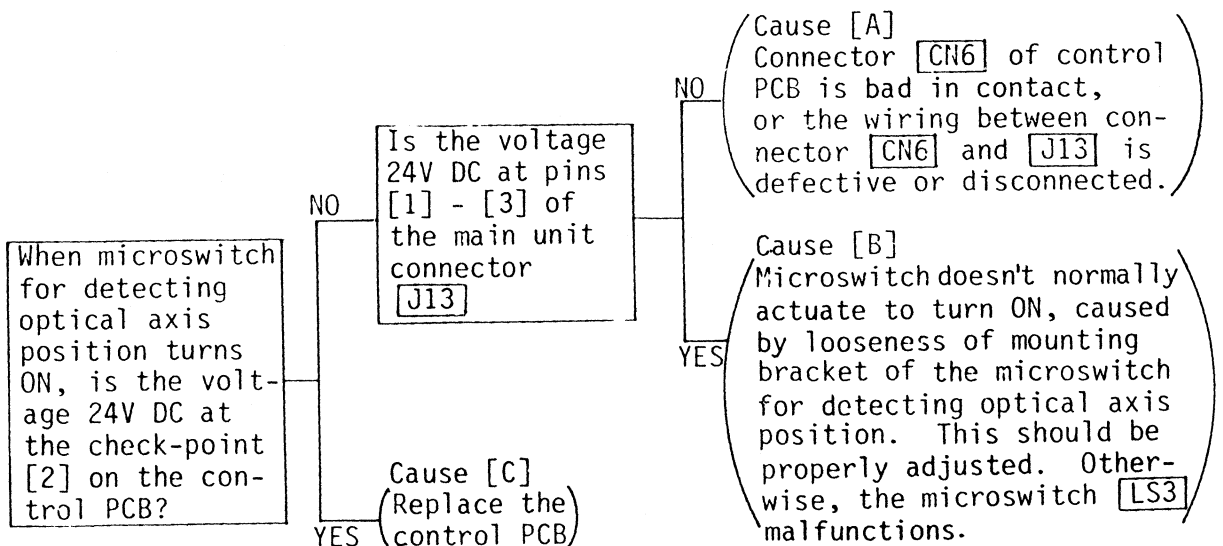


Step (19) Master paper feeding doesn't stop at optical axis position.

Check item

- (1) Check to see if the microswitch [LS2] for detecting the optical axis position is pushed by the Master feeding belt or by any mechanical means.

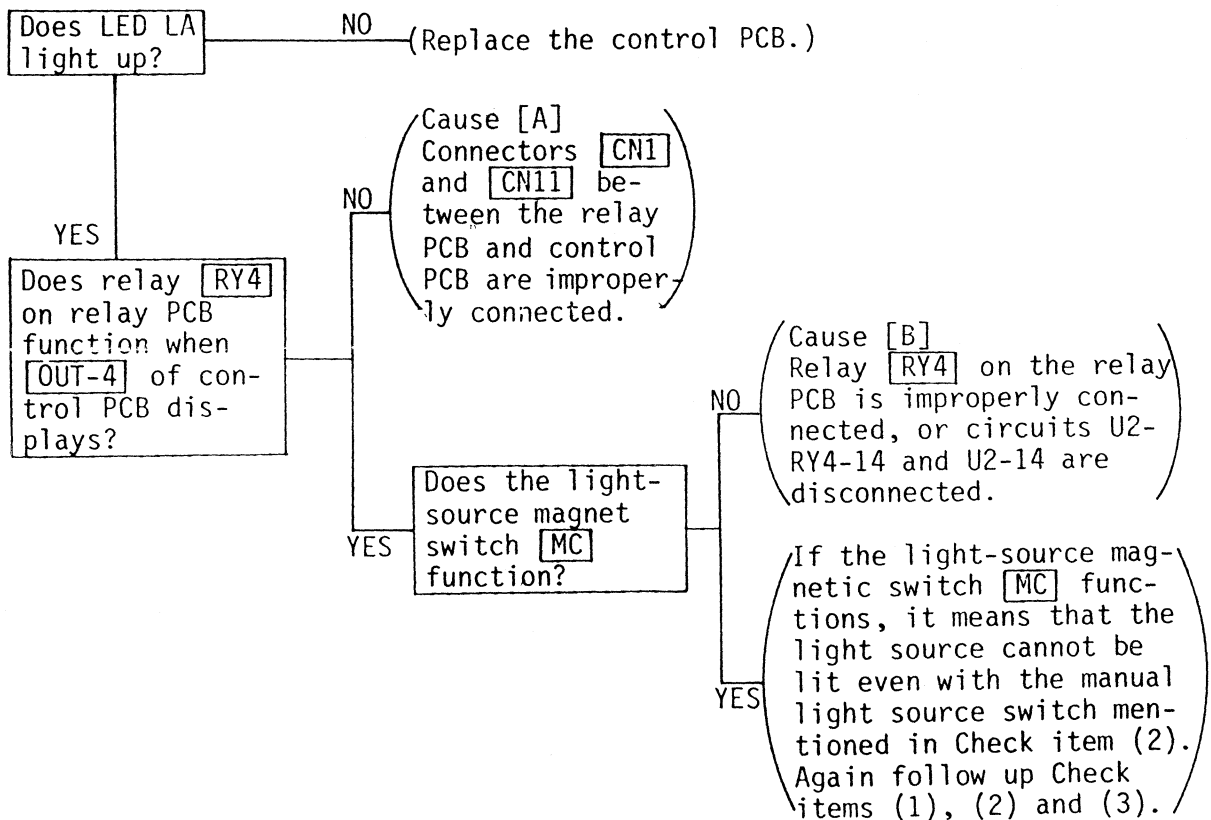
Note: After the cutter operation is completed, if master paper is fed to the optical axis position in the condition of the microswitch [LS2] being pushed mechanically, master paper will not stop at the optical axis position. (No optical axis signal is output.)



Step (20) Exposure cannot be made. (Light source doesn't light up.)

Check items

- (1) Check to see if the light source circuit breaker remains OFF.
- (2) Check to see if the light source is lit by the light source manual switch [TS5].
- (3) Check to see if the exposure iodine lamp is blown.
- (4) After the microswitch for detecting optical axis position [LS2] turns ON, does the display on the control PCB correctly shift from [OUT-2] to [OUT-3] (for 0.8 sec.) and from [OUT-3] to [OUT-4]?
- (5) As soon as the microswitch [LS2] for detecting optical axis position turns ON, does the [LOAD] display on the control PCB momentarily light up and light up again in an instant 0.8 sec. later?
- (6) Even after confirming the operations of display lamps mentioned in (4) and (5), if the light sources do not light up, follow up the cause according to the troubleshooting guide shown below. If procedures (4) and (5) cannot be confirmed, the control PCB should be replaced.



Step (21) Light source lamp(s) doesn't light up

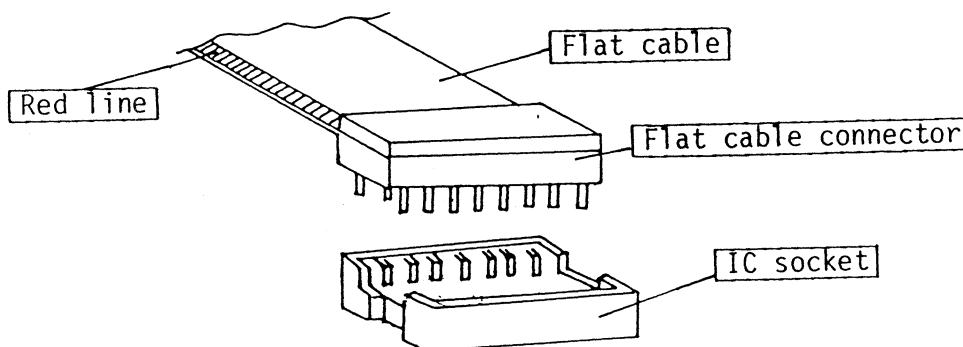
Check items

- (1) Check to see if any of light source lamp(s) doesn't light up by operating the manual light source switch [TS5]. If it doesn't, lamp is blown or the main unit connectors [J29] and [J32] may be improperly connected.
- (2) After confirming the above, if the light source lamp(s) cannot fully light up the failure can be caused by the poor contact of the lamp socket part, or by the disconnection of the UA, UB, XL1 circuit or by the poor contact of the light source magnet switch [MC].

Step (22) Light source don't turn off and the paper is not fed further.

Check items

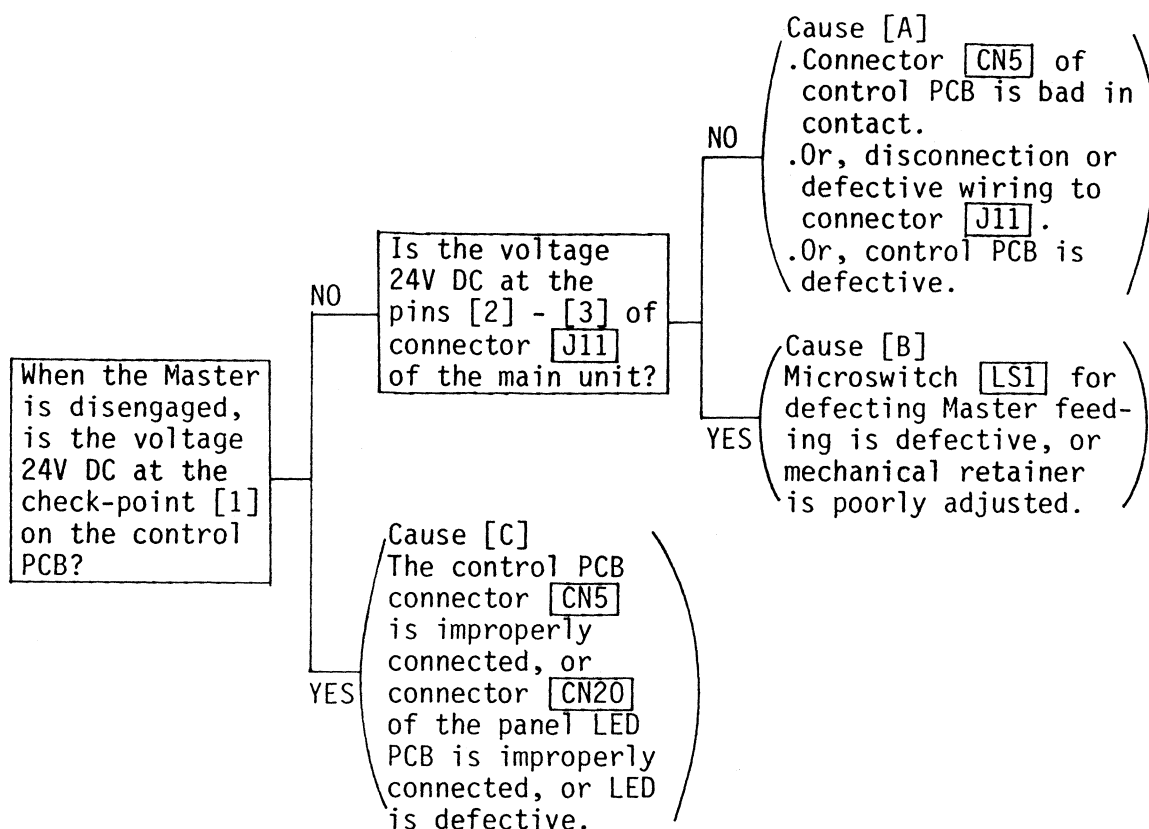
- (1) Check to see if the cable between the [flat cable connector] of the control PCB and [flat cable connector] of the panel digital switch is correctly connected.



Note: Correctly insert the flat cable connector so that the cutout portion of the IC socket can match with the "red line" of the flat cable.

- (2) As soon as [OUT-4] display appears on the control PCB, does the [PRESET] display momentarily light up?
- (3) If Check item (2) cannot be confirmed, replace the control PCB.
- (4) Even after confirming Check item (2) or the light source lamps don't turn off, if the exposure operation still lasts, the digital switch of the panel may be defective.

Step (23) Master END cannot be displayed



Step (24) Trouble buzzer doesn't sound

Check items

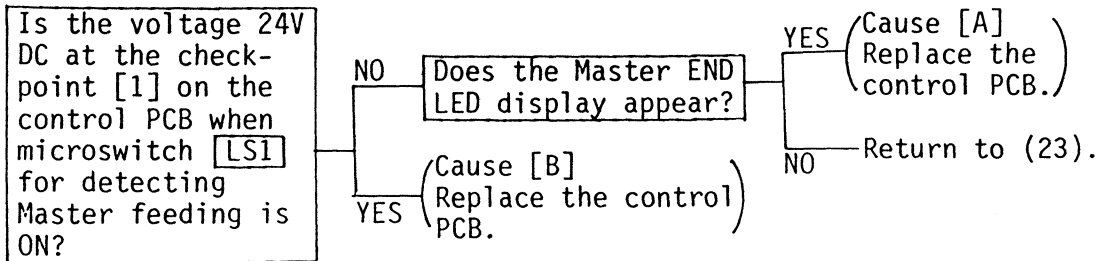
- (1) If the discharged paper detecting microswitch [LS3] is still ON after papers are discharged, buzzer may be activated even when papers are normally fed. Be very careful for installing and adjusting [LS3].
- (2) Trouble buzzer is activated (1) when microswitch [LS7] for detecting the squeezing roller is set to OFF.
- (3) Trouble buzzer is activated (2) when the Master paper is reached to END. (3) [Master paper feeding] → [Cutting] → [Paper feeding to the optical axes position]

After the cutter operation is completed, if more than 5 seconds passed before the cut paper piece reaches the optical axes position, the buzzer will be activated (heater will be cut off).

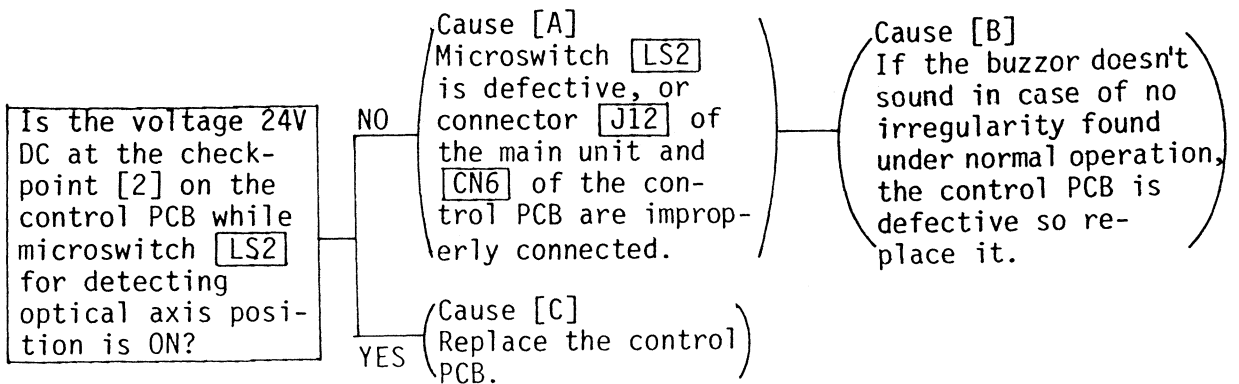
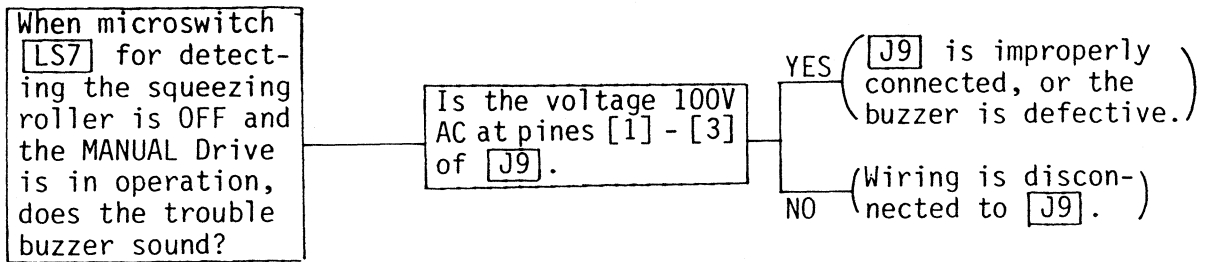
(5) Trouble buzzer is activated in such timings shown below:

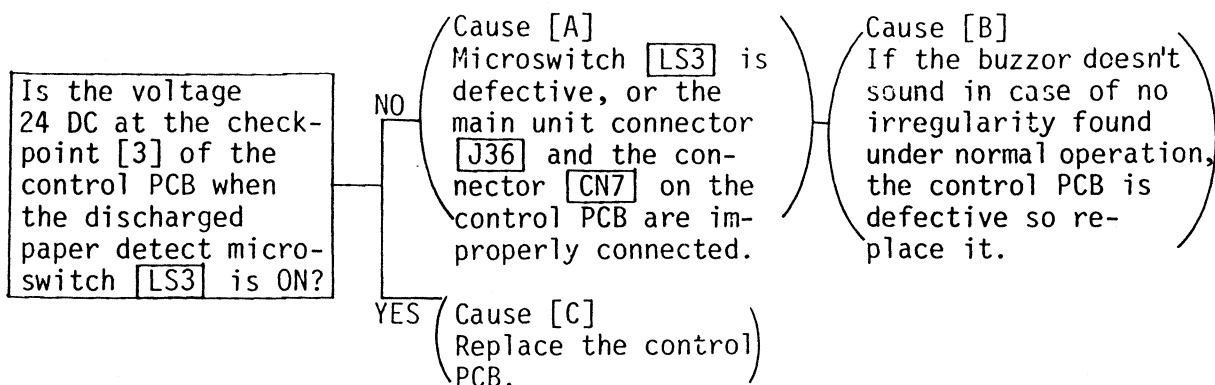
(4) Exposure terminated → Paper discharge

After the exposure finished, if more than 16 seconds passed before the paper is fully discharged, the trouble buzzer will be activated.



Confirmation

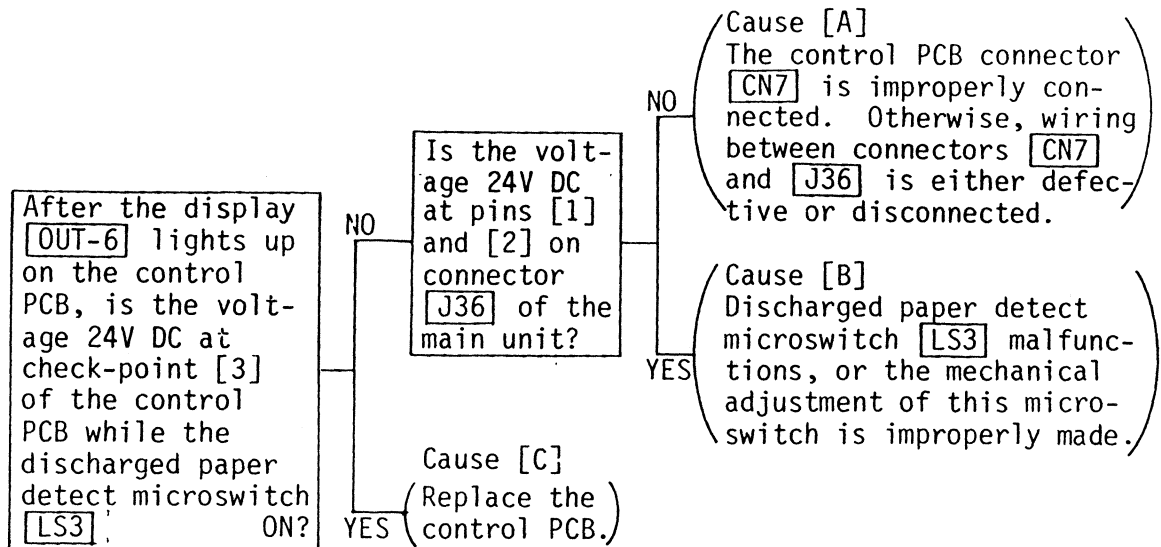




Step (25) Discharged Master paper discharge cannot be detected.

Check items

- (1) Check to see if the discharged paper detect microswitch [LS3] smoothly and mechanically turns ON and OFF. If the paper is mechanically caught, buzzer may be activated even when operations are normally performed, so be very careful for adjusting this switch.
- (2) After completing the exposure operation, does the display on the control PCB correctly shift from [OUT-4], [OUT-5] (for 0.8 sec.), and to [OUT-6]?
- (3) When the display [OUT-4] shifts to [OUT-5] and [OUT-6], does the display [LOAD] in an instant light up?
- (4) Even after confirming normal operations of display lamps mentioned in (2) and (3), if the discharged paper cannot still be detected, follow up causes according to the troubleshooting guide shown below. If procedures (2) and (3) cannot be confirmed, the control PCB should be replaced.



Step (26) Power source pilot lamp doesn't light up

Check items

- (1) Are both the main switch and the power switch (no-fuse breaker) ON?
- (2) Is the control fuse (5A glass fuse) blown?

Cause [A]

After confirming the above, if no irregularity is found, when the pilot lamp doesn't light up possibly because the main unit connector [J26] is improperly connected or the pilot lamp is defective replace the J26 or the lamp.

Step (27) Operation cannot be terminated

Check items

- (1) When the discharged paper detect microswitch [LS3] is turned ON and OFF while [OUT-6] is displayed on the control PCB, does the display shift to [OUT-7]?
- (2) Does the display [LOAD] momentarily light up simultaneously with the display of [OUT-7]?
- (3) If the display [OUT-6] doesn't shift to [OUT-7], the discharged Master paper detection is out of order, so be sure to check the Step (25).

Cause [A]

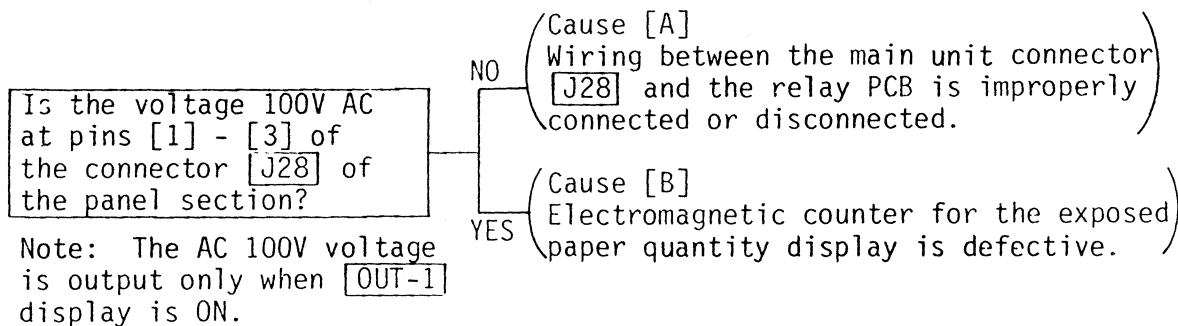
Even when [OUT-7] is displayed and [LOAD] display in an instant lights up, if the whole operation cannot be terminated 4 seconds after [OUT-7] is displayed, the control PCB is faulty, so replace it.

If [LOAD] display doesn't in an instant light up, the control PCB is faulty, so replace it.

Step (28) Exposed paper quantity display counter doesn't function.

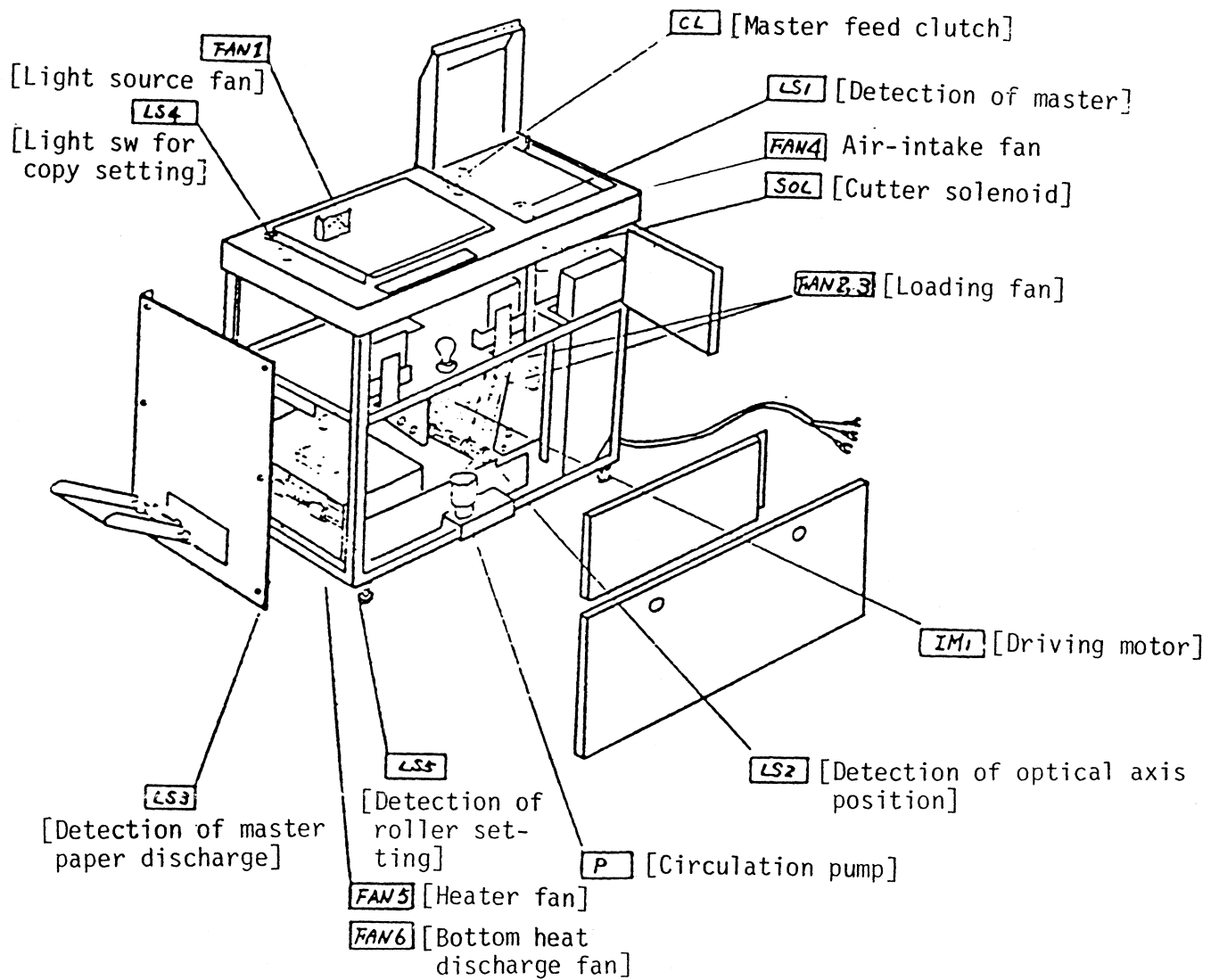
Check item

- (1) The circuit is designed so that electromagnetic counter for the exposed paper quantity display functions simultaneously with the cutter operation. Following up the following troubleshooting procedures. So, if the cutter is in normal operation and the counter doesn't work properly.



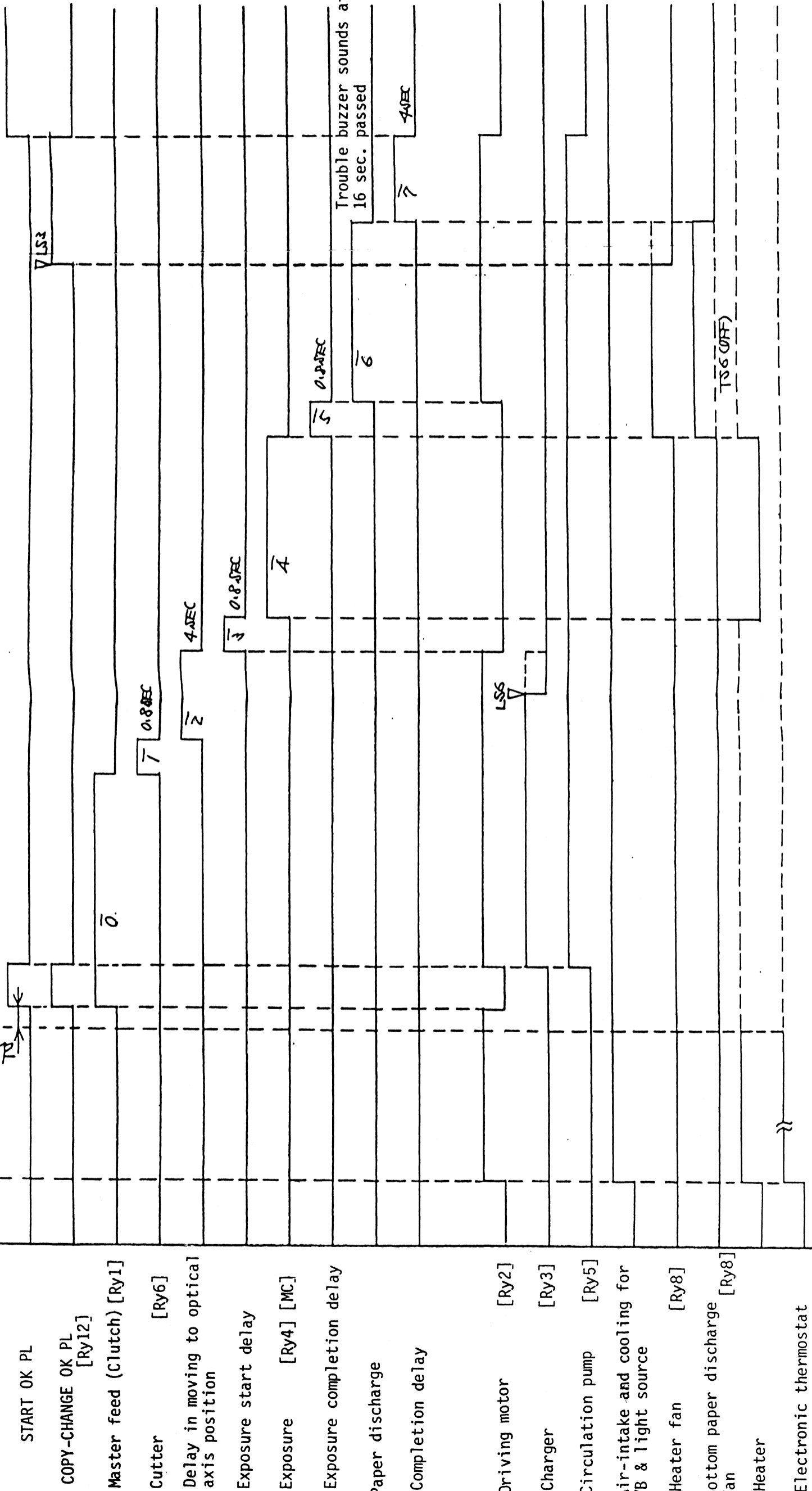
10. Time Chart

[Installation Layout of Electric Parts]



MAIN SW ON V

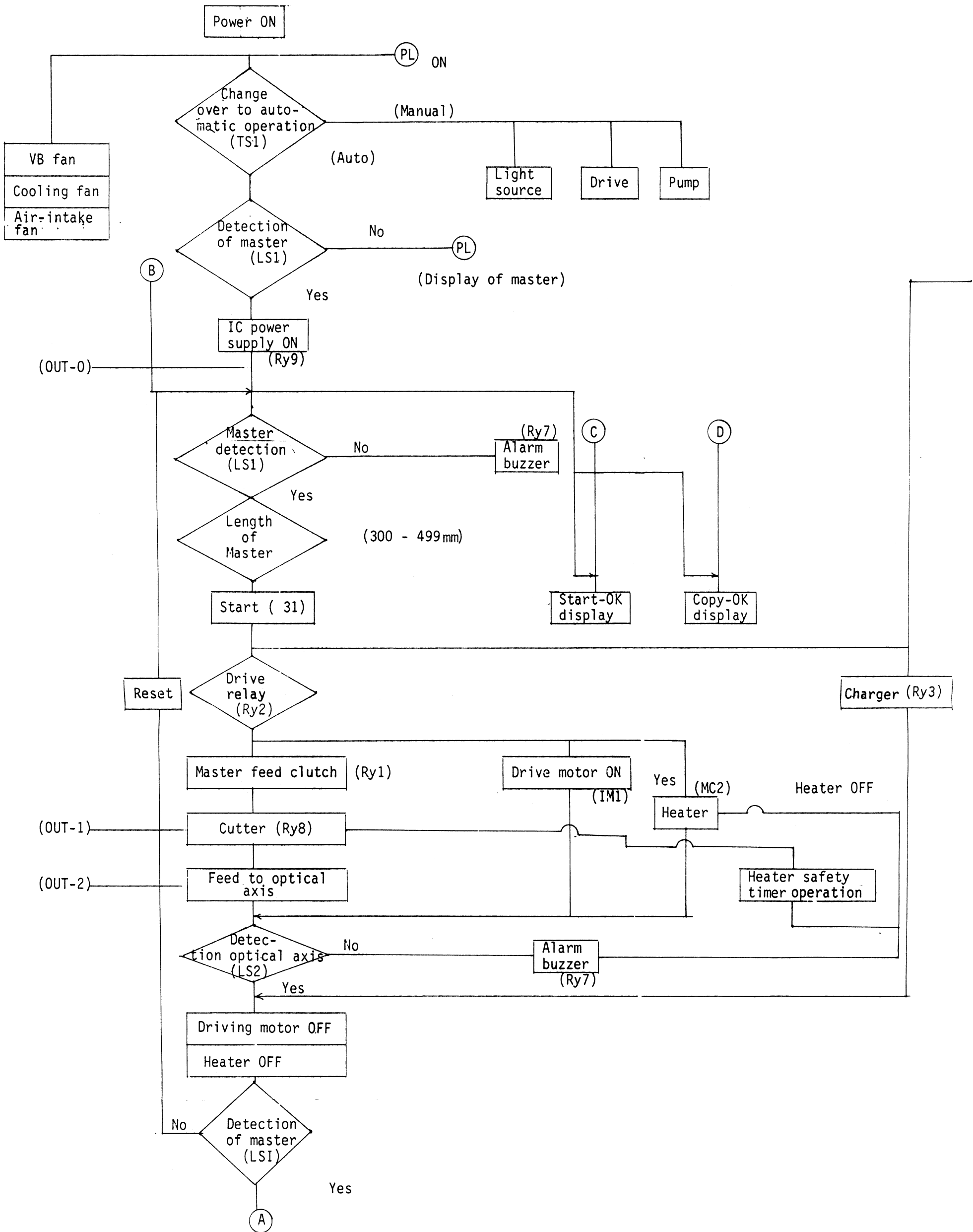
START PB ON V



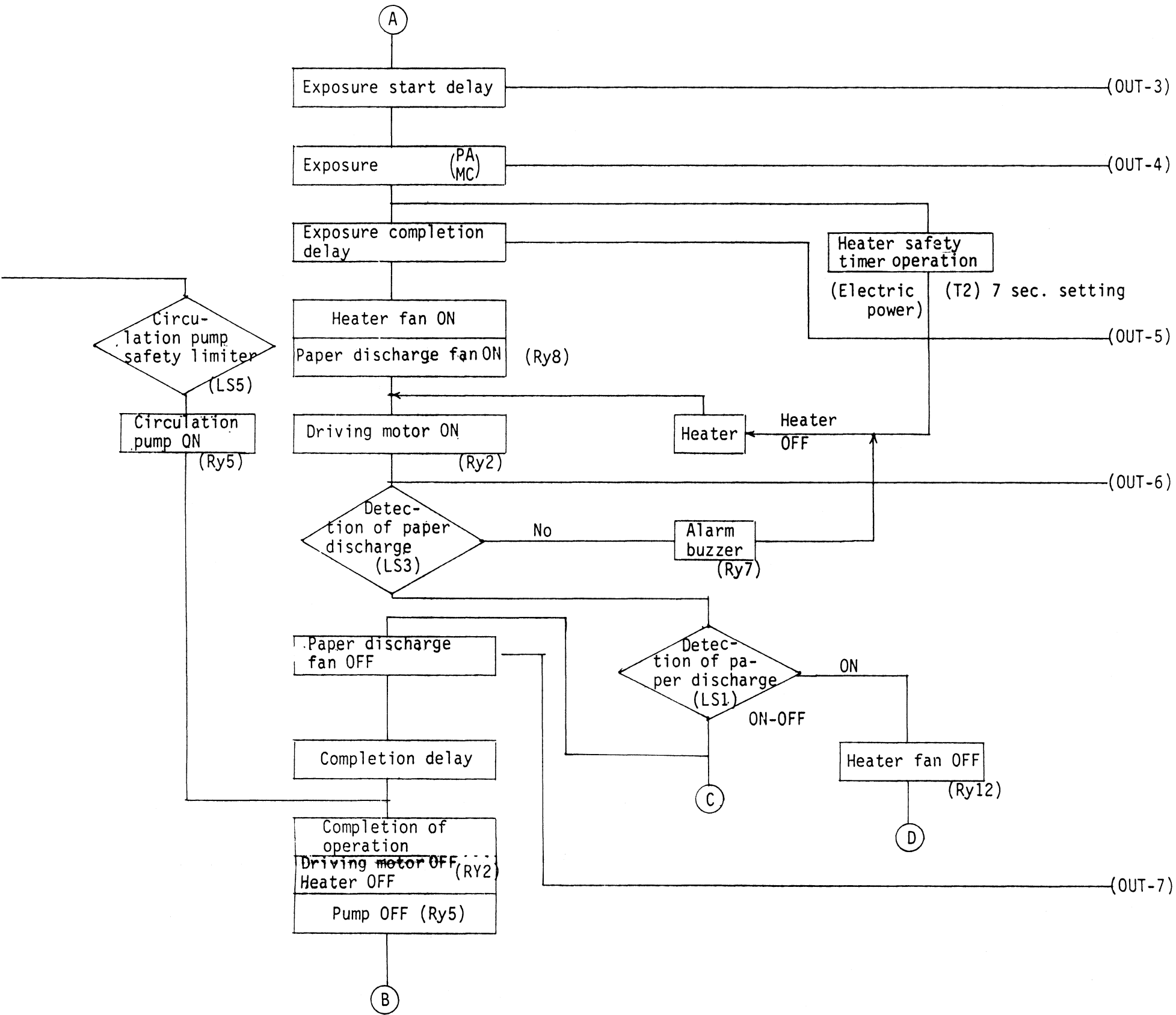
DESIGN	TITLE
DRAWING	Time Chart
CHECKED	
APPROVED	
DATE	
MODEL	DWG NO.
CF-142-84	

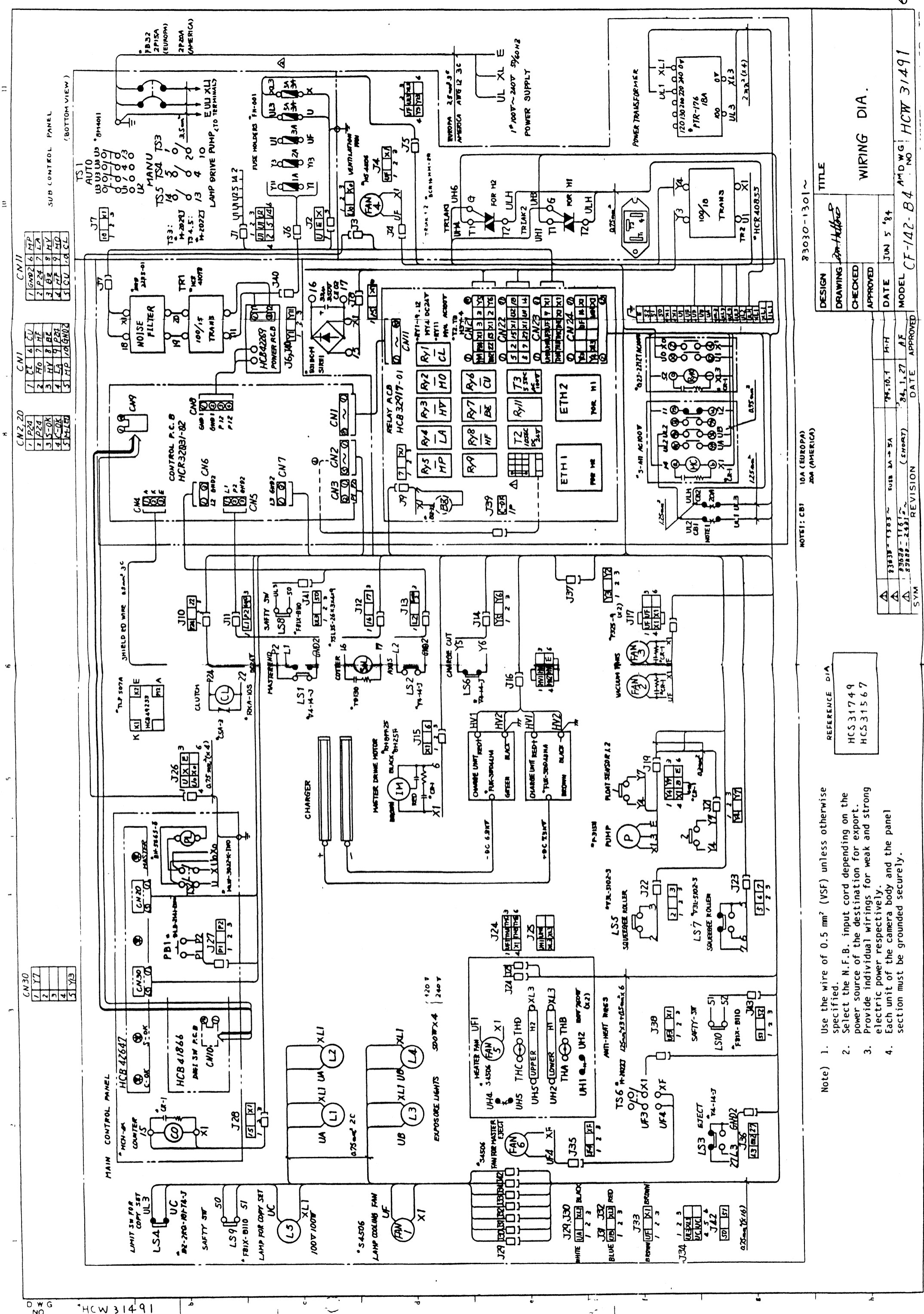
Δ		DATE	APPROVED
Δ			
Δ			
SYM	REVISION		

11. Flow Chart



12. Circuit Diagram & Wiring Diagram





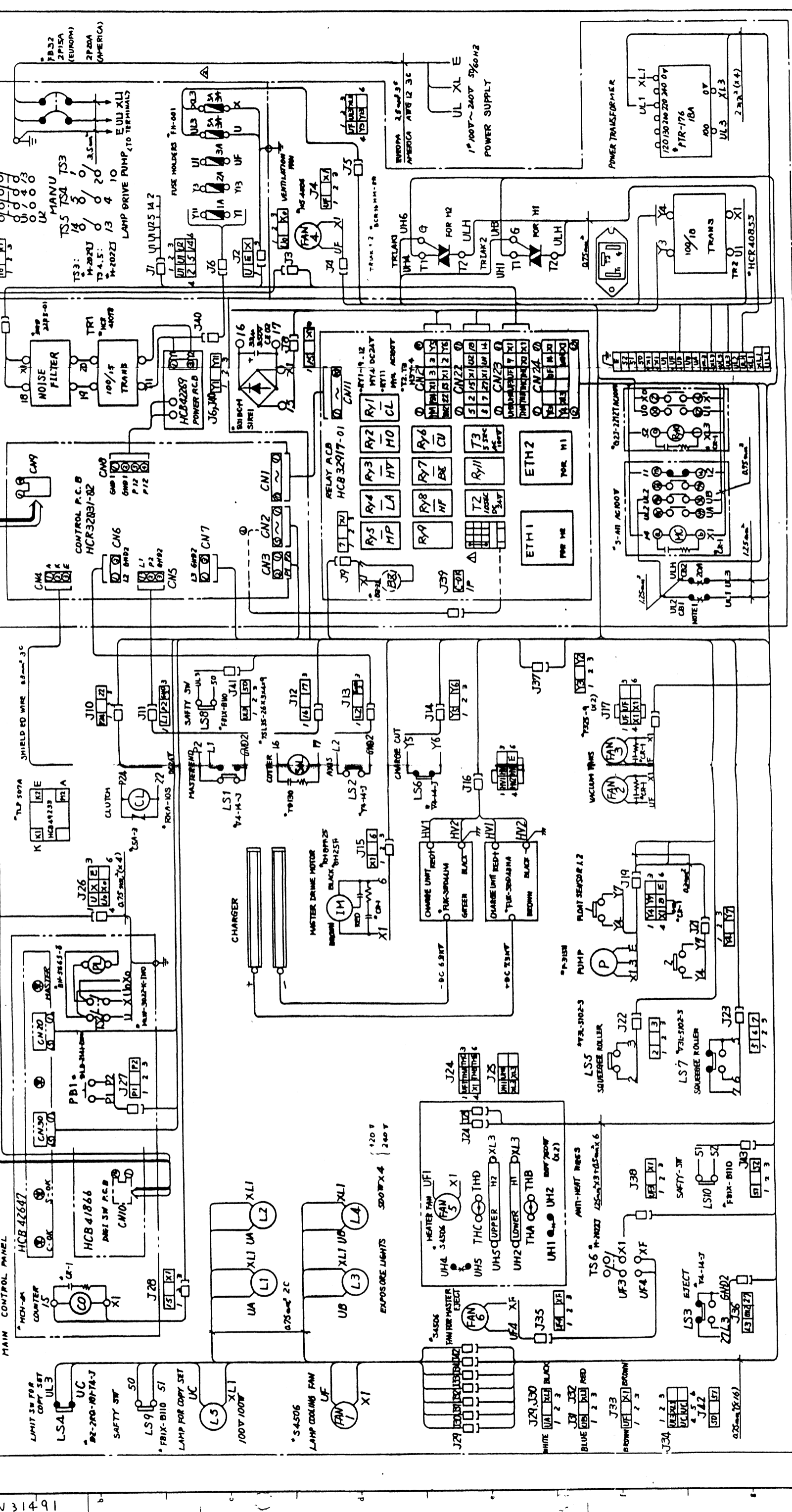
HCW 31491

CN1	1 CL	6 CU	MP
	2 HO	7 HF	LA
	3 HV	8 BE	NV
	4 LA	9 BE	ND
	5 MP	10 GND	CL

CN2, 20	1 P24	6 CU	MP
	2 P24	7 HF	LA
	3 S-OK	8 BE	NV
	4 C-OK	9 BE	ND
	5 HELED	10 GND	CL

CN30	1 Y7
	2 Y7
	3 Y7
	4 Y7
	5 Y7

MAIN CONTROL PANEL
SUB CONTROL PANEL (BOTTOM VIEW)



NOTE: CBI 10A (EUROPA) 20A (AMERICA)

83030-1301

DESIGN	DRAWING	CHECKED	APPROVED	DATE	MODEL

WIRING DIA.

JUN 5 '84

CF-142-B4 AMD WG NO HCW 31491

REVISION DATE APPROVED

SYM

83838-1303 ~ 84.10.7 H-H

83838-1301 ~ 84.1.27 AF

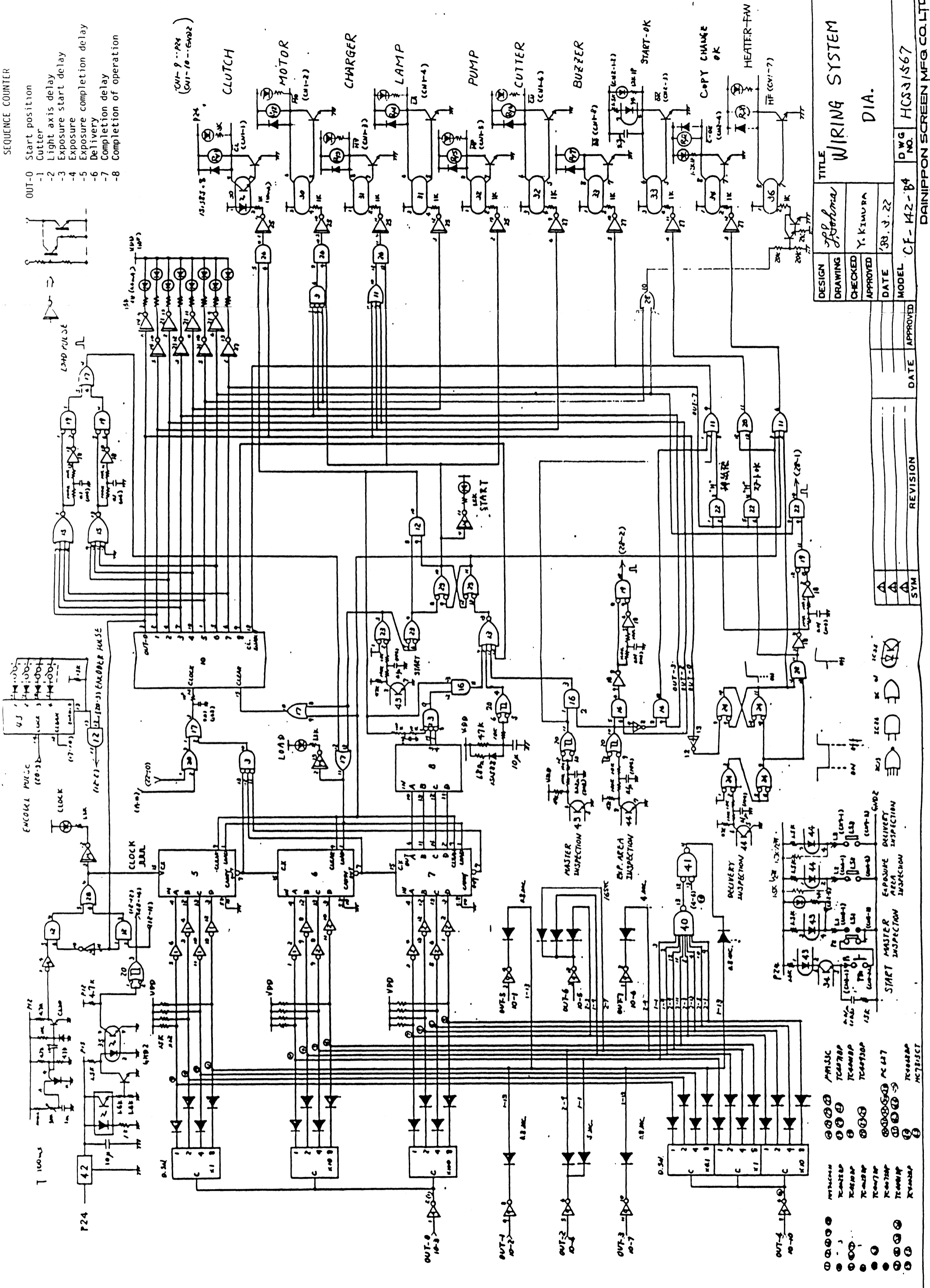
83838-2481 ~

- Note) 1. Use the wire of 0.5 mm² (VSF) unless otherwise specified.
2. Select the N.F.B. input cord depending on the power source of the destination for export.
3. Provide individual wirings for weak and strong electric power respectively.
4. Each unit of the camera body and the panel section must be grounded securely.

REFERENCE DIA
HCS 31749
HCS 31567

SEQUENCE COUNTER

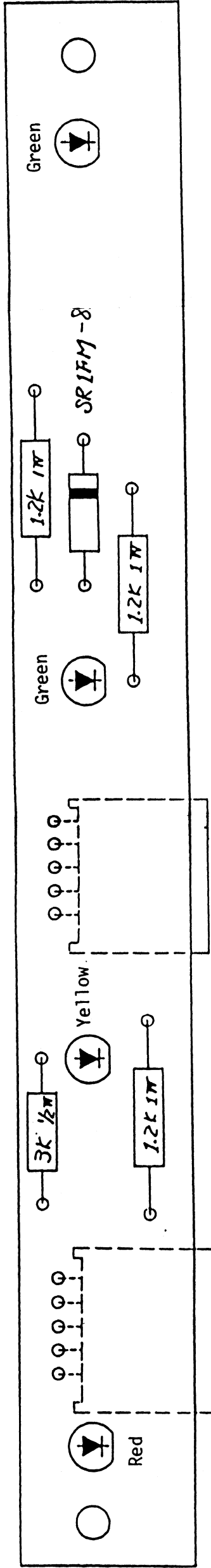
- OUT-0 Start position
- OUT-1 Cutter
- OUT-2 Light axis delay
- OUT-3 Exposure start delay
- OUT-4 Exposure
- OUT-5 Exposure completion delay
- OUT-6 Delivery
- OUT-7 Completion delay
- OUT-8 Completion of operation



DESIGN	Y. Kimura	TITLE	WIRING SYSTEM
DRAWING		CHECKED	
APPROVED		DATE	'83.3.22
MODEL	CF-42-84	DWG NO.	HCS31567

REVISION	DATE	APPROVED

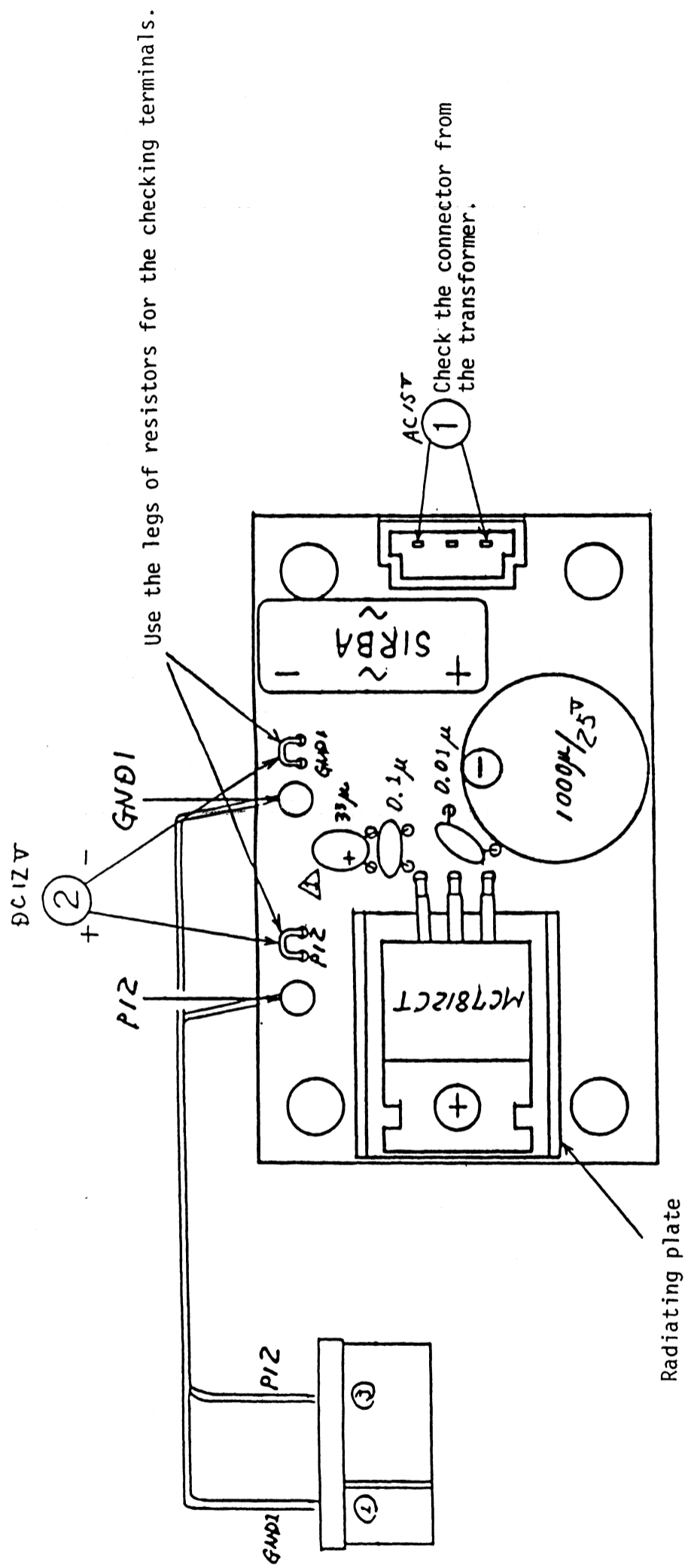
①	AND	①	START INSPECTION
②	OR	②	MASTER INSPECTION
③	NOT	③	EXPOSURE AREA INSPECTION
④	RELAY	④	DELIVERY INSPECTION
⑤		⑤	
⑥		⑥	
⑦		⑦	
⑧		⑧	
⑨		⑨	
⑩		⑩	
⑪		⑪	
⑫		⑫	
⑬		⑬	
⑭		⑭	
⑮		⑮	
⑯		⑯	
⑰		⑰	
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PCB	HCB42647			
LED	GL-5PR1 (Red)	Sharp	x 1	
	GL-5PG1 (Green)	Sharp	x 2	
	GL-5PY1 (Yellow)	Sharp	x 1	
	(5HY1)			
Diode	SRIFM-8	Mitsubishi	x 1	
Connector	171305-2	AMP	x 2	
Resistor	3 K Ω 1/2 W		x 1	
Resistor	1.2 K Ω 1 W		x 3	

DESIGN	TITLE
DRAWING	LED PCB Parts Layout Drawing
CHECKED	
APPROVED	
DATE	7/82, 2, 13
MODEL	CF-142-84
	DWG NO. HCR41322

SYM	REVISION	DATE	APPROVED
△			
△			
△			

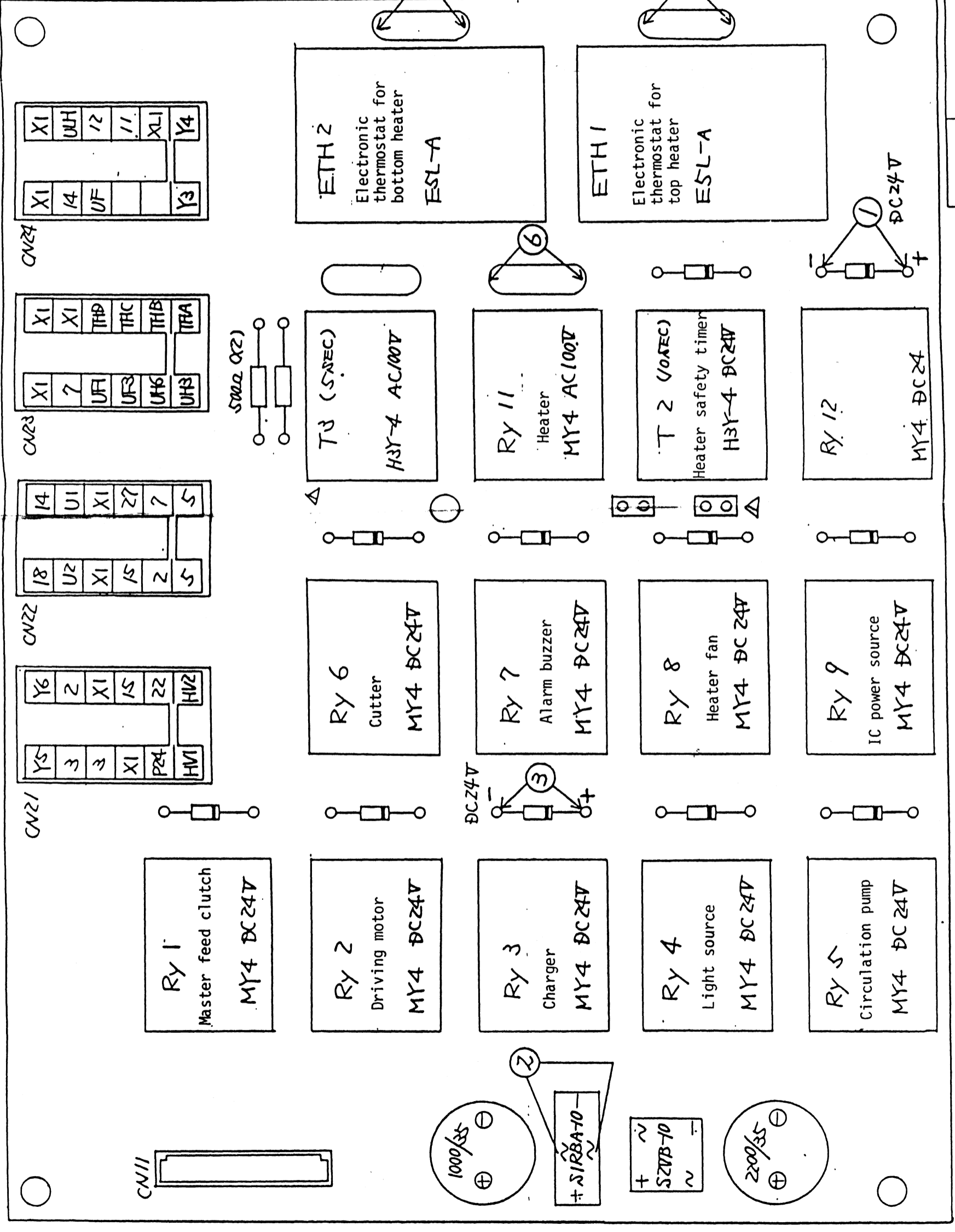


- . 3-terminal regulator MC7812CT 1
- . Rectifier SIRBA10 1
- . Electrolytic condenser 1000 μ /25 V 1
- . Electrolytic condenser 33 μ 1 SHA 33 μ /16 V
- . Ceramic condenser 0.1 μ 1
- . Ceramic condenser 0.01 μ 1
- . Radiating plate HCB52087 1
- . Connector 171303-2 1
- . Power supply PCB HCB42269 1
- . Connector 171141-1 1

DESIGN	TITLE
DRAWING	Power supply PCB Parts Layout Drawing
CHECKED	
APPROVED	
DATE	18/10/15
MODEL	CF-14.2-B4
DWG NO.	HCR 41088

REVISION	DATE	APPROVED
1		
2		
3		
4		
5		

26	Holding fitting	: PHC-11
25	Holding fitting	: PFC-P
24	Header connector	: 2P
23	Receptacle connector	: 2P
22	Delay relay	: H3Y-4 100 V AC, 5 sec.
21	Relay PCB	: HCB32917
20	Bush	: TA-307
19	Collar	: TB-300
18	Connector	: 350213-1, 12P
17	Connector	: 171283-1, 10P
16	Connector	: 171279-2, 10P
15	Electrolytic condenser	: 1000 μ , 35 V
14	Electrolytic condenser	: 2200 μ , 35 V
13	Rectifying stack	: S2VB-10
12	Rectifying stack	: S188A-10
11	Resistor	: 500 OHM
10	Resistor	: SNR-14A-130K
9	Diode	: 1S1585
8	Relay socket	: PT14-0
7	Electronic thermostat	: ESL-A 100-200°C
6	Relay socket	: PY14-0
5	Relay	: H3Y-4 24 V DC, 10 sec.
4	Relay	: MY4 100 V AC
3	Relay	: MY4 24 V DC
2	Relay	
1	Relay	



DESIGN	of Lohma
DRAWING	
CHECKED	Y. KIMURA
APPROVED	
DATE	'82.3.22
MODEL	CF-142-84
DWG NO.	HCR4155A
	12

TITLE		Relay PCB Parts Layout Drawing	
REVISION	DATE	APPROVED	
△			
△			
△	HCB32917-02 SJ		
SYM			

