

D I A F A X M A S T E R

E P - 1 8

S E R V I C E M A N U A L

DAINIPPON SCREEN MFG. CO., LTD.

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## 1. INTRODUCTION

This Service Manual is intended to be used for after-sale service on the EP-18. For operation of the machine and other details, refer to "EP-18 Operation Manual", "Technical Guide" and other related documents.

Due to our policy of continual product improvement, all designs and specifications are subject to change without advance notice.

For parts ordering and consultation, refer to "EP-18 Parts List" and quote the following:

- Model (EP-18)
- Serial number
- Reference numbers and descriptions of parts
- Required quantities
- Date of delivery

\* Publication and duplication of this document are prohibited.

For more information, CALL:  
DAINIPPON SCREEN MFG. CO., LTD.,  
Hikone Plant, Quality Control Department  
(Phone) 0749-24-1165

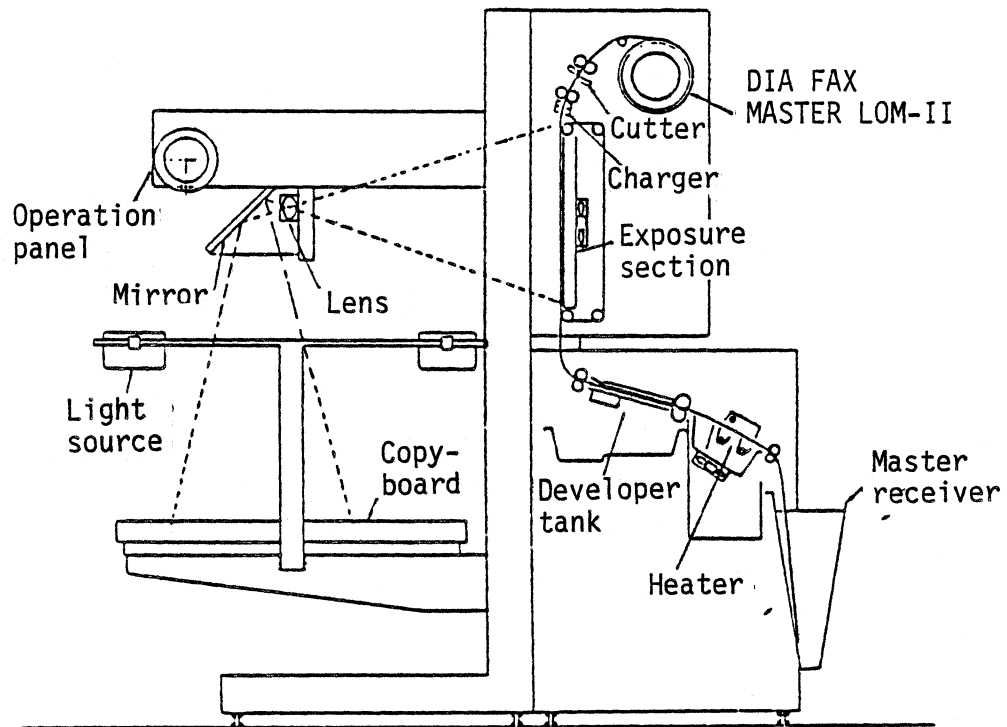
## 2. SPECIFICATION

### Specifications of EP-18 FAX VARIABLE POWER DIRECT PROCESS PLATE MAKING MACHINE

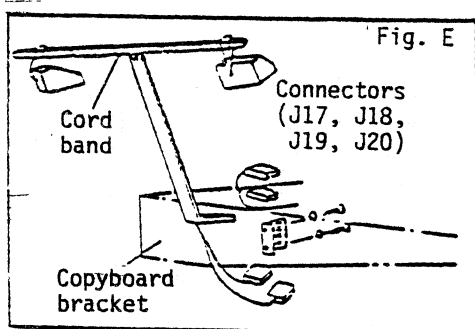
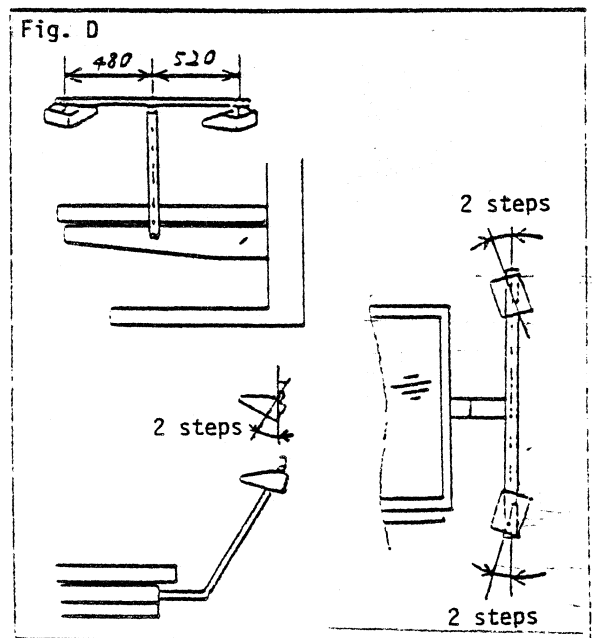
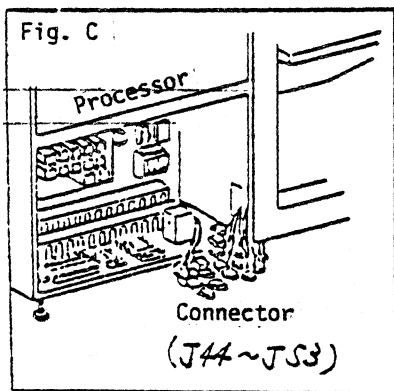
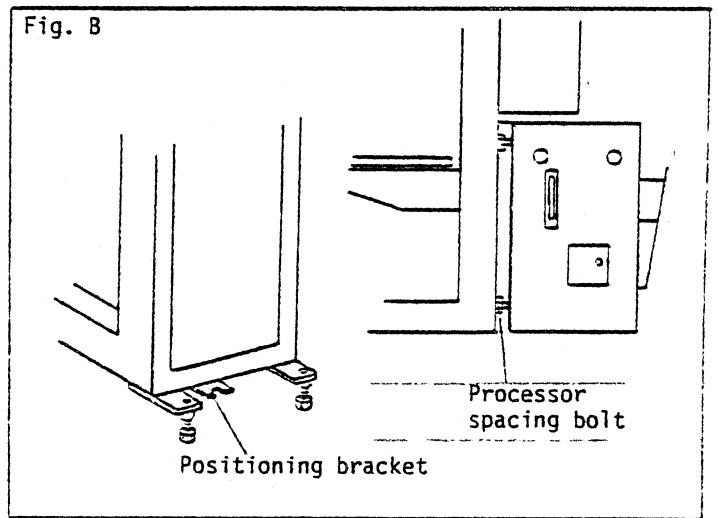
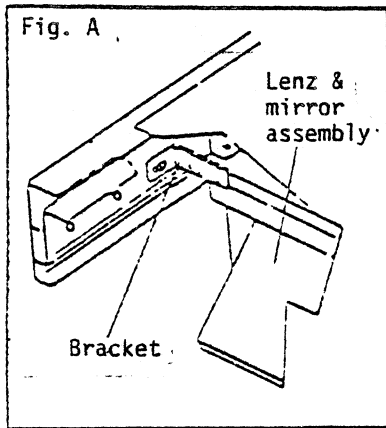
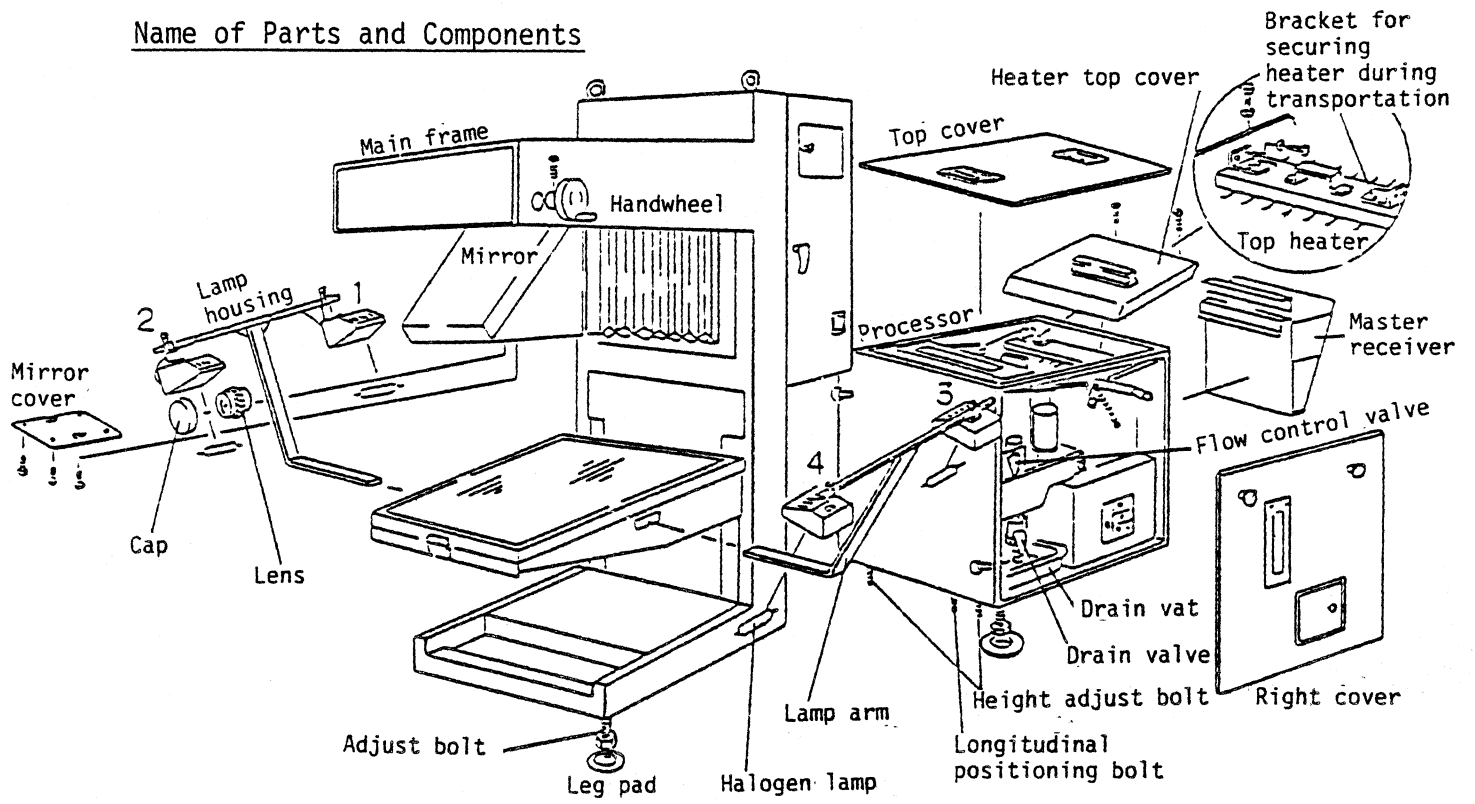
No.	Descriptions	Specifications
1	Master holder	Fixed on one side
2	Master width	254, 279, 305, 310 mm
3	Master length	Max. 100 m
4	Master feed length	350 - 499 mm (digital setting)
5	Max. output image size	310 x 430 mm
6	Max. copy size	517 x 720 mm (including blank exposure)
7	Copy frame size	620 x 840 mm
8	Lens	Fixed focal length 360 mm f
9	Magnification range	60 - 125%
10	Focusing	Focusing with magnification scale: L board ... Manual C board ... Auto
11	Cutter	Motor-drive rotary cutter (solenoid)
12	Charger	Double charging: Wire diameter of 0.07 mm
13	Exposed surface	Belt type, vacuum suction
14	Exposing method	Total stationary exposing
15	Exposure control	Digital setting (0 to 99.9) sec. or auto- matic integrating light-meter.
16	Multi exposure	Available
17	Shutter	Single blade type
18	Light source	Halogen lamps: 100V 500W x 4
19	Copy positioning	Calibrated copy base sheet, with lamp switch for single lamp positioning
20	Developed film surface	Down side
21	Developing method	Wet type, solution spray on lower side
22	Processor tank capacity	4 liters
23	Replenishing bottles	One liter
24	Developing capacity	1500 plates/B4/4 weeks 6 liters
25	Squeezing rollers	Top roller ..... rubber Bottom roller ... SUS

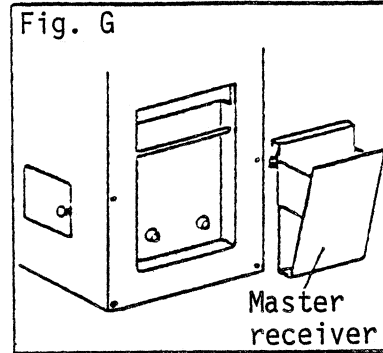
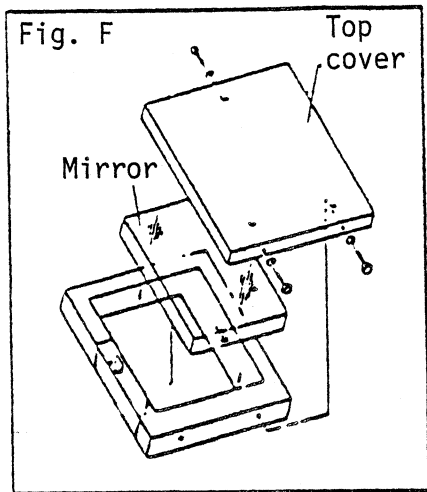
No.	Descriptions	Specifications
26	Drying method	Hot air drying by panel heater: 750W x 3 lamps
27	Separate switches	Switches for developer pump, drive motor, light source
28	Warming up	Operates upon turning on power until stabilizing temperature is reached.
29	Platemaking speed	25 - 30 seconds/plate
30	Electricity	1ø 100V 3KW
31	Machine dimensions	145 x 210 x 190 cm (Width x Depth x Height)
32	Weight	350 kg

### 3. INSTALLATION



Name of Parts and Components





Packing List

Frame main body	1	Lens	1
Processor	1	Mirror	1
Right lamp arm	1	Lens drive handwheel	1
Left lamp arm	1	Spool rim and shaft	1 set
Lamp body	4	Leg pad	8
Master receiver	1	Spring belt	2
Operation Manual	1	Cord band	8
Test sample	1	Retouching paint	3
Tool bag	1 set	Blower brush	1
Drain vat	1	Key switch (for main frame body)	2
Glass fuse 0.3A	2	Plastic screw (M4 x 6)	2
Glass fuse 1.0A	2		
Glass fuse 2.0A	4	Plastic screw (M4 x 6)	2
Glass fuse 5.0A	4		
Enclosed fuse 30A	4	Plastic screw (M4 x 30)	1
Charger wire ( $\phi 0.07 \times 10 \text{ m}$ )	1	Cover screw (M4 x 8)	10
Charger wire brush	1		
Key switch (for processor)	1	Master width name plate (for mm)	1

[Conditions for Installation]

1. Install the machine in a place of good ventilation throughout the year, where normal temperature ranges from 18°C to 28°C and normal humidity from 45% to 70%.
2. Avoid a place subjected to direct sunlight.
3. Power supply voltage must be maintained at  $1\phi$  100V  $\pm$  10% with over 30A.

[Assembly and Preparations]

1. Put the leg pads in place and put the main frame on them. Remove the bracket which secures the lower part of the exposure section and the main frame body.
2. Remove the bracket which secures the lens/mirror assembly and put the removed screws back in place. (Fig. A)
3. Remove the protective paper on the copy glass, place a level adjust bolts to level the main frame so that the four bolts are equally weighted.
4. Connect the processor with the main frame. (Fig. B) (Open up the exposure section.)

Fit the processor longitudinal positioning bolt into the positioning bracket and place the height adjust bolts on the main frame bracket. Then, level the processor so that the four processor stopper bolts are in touch with the processor.

5. Connect the connectors (J44 - J55) between the processor and main frame (Fig. C). (J54 is optional.)
6. Untie the string which secures the inlet roller of the exposure section of processor.
7. Remove the retaining screws of the heater top cover and remove the bracket for securing heater during transportation provided on the top heater.



8. Insert the lamp arm into the copyboard down to the "Δ" mark and lock it with the bolts. Attach the four lamp houses at point 1 (left, back), 2 (left, front), 3 (right, back) and 4 (right, front), respectively as shown and secure them at the "Δ" mark on the respective lamp arms. Each lamp house is positioned by turning notch by notch and aligning with the "Δ" mark as shown in Fig. D.
9. Pass the connectors (J17, J18, J19 and J20) through the lamp arms and connect them with the amplifier lock under the copyboard. Then, secure them on the lamp arms with cord bands. (Fig. E)
10. Install halogen lamp.  
Hold the lamp glass tube with paper or the like on your hand. Do not hold them with bare hands.
11. Remove the mirror cover and attach the lens. Special care should be taken not to leave any fingerprint marks on the mirror surface.
12. Install the mirror. (Fig. f)  
Remove the top cover from the mirror and put the mirror in the bracket with its reflecting surface down. Then, give a light press with the top cover. Special care should be taken not to leave any fingerprint marks on the reflecting surface.
13. Install the lens drive handwheel, master receiver (Fig. G), drain vat and other parts.

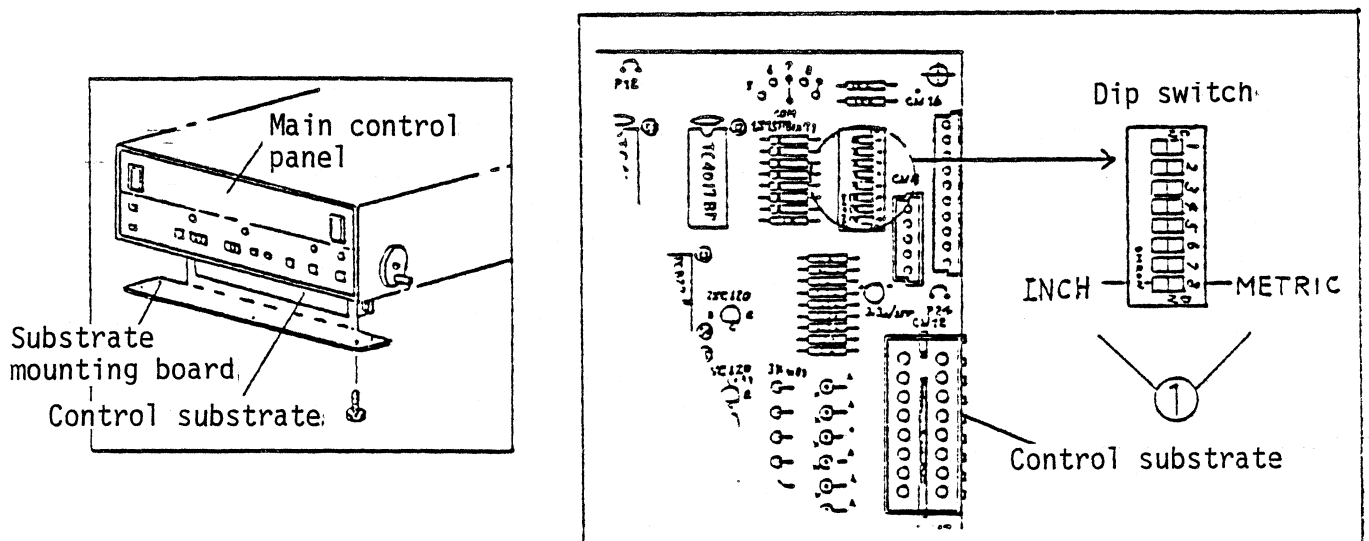
[Mixing Processing Solutions] LOM-ED

1. Prepare four bottles of developer according to the Operation Manual, and pour them into the developer tank.
2. Load the fifth bottle filled with developer on the side of the pump in the tank as a replenisher bottle. The developing solution is automatically replenished.

[Connecting the Power Supply]

1. Turn on the POWER switch
2. Connect the power lead wire with the power source. (1 $\phi$  100V, 3.0KW)
3. Insure that the earth wire (green wire) is provided when connecting the power lead wire. (Class third earthing work)

[Inspection and Adjustment of Main Control Panel]



1. For changing the unit for master feed length setting from METRIC to INCH, use the dip switches in the control substrate (upper right).  
When set to INCH side (thrown to left), a setting range from 114" to 19.9" is available.  
When set to METRIC (thrown to right), a setting range from 35.0 cm to 49.9 cm is available.

2. Turn on the POWER switch on the sub-operation panel and turn on the CONTROL CIRCUIT switch on the operation panel. Then, check the warm-up operations. Keep warming up until the processor heater reaches the stabilizing condition approx. 60 seconds). The machine will not start unless the warming up is completed. The degree of toner fixing varies with the environment of installation. Refer to the Operation Manual for the toner fixing.

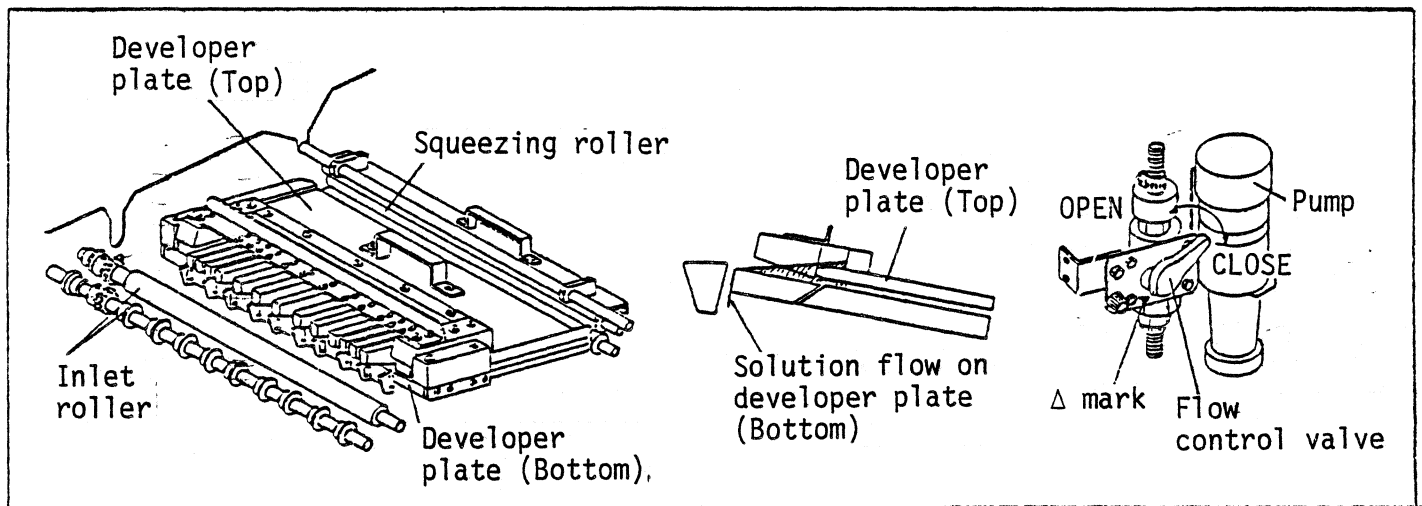
Confirm the following operations.

In MANU mode, turn on the PUMP switch and check that the developing solution circulates evenly.

In AUTO mode, check that a series of machine operation is carried out smoothly, and make test exposures using the test chart.

[START button ON → MASTER FEED → CUTTING → EXPOSURE → DEVELOPING & STABILIZING (HEATER) → DELIVERY]

[Inspection of Flow Rate of Developer]



Check that the flow control valve is set to the "Δ" mark. (60Hz.) Turn on the power, throw the switch on the sub-operation panel to MANU position, turn on the PUMP switch, and the developer starts to circulate.

Normally, the developer should stay over the face of the developer plate (top) and flow a little on the front side (inlet roller side) of the developer plate (bottom). (Check this condition after 15 to 20 seconds after the PUMP switch has been turned on.) Excessive solution may prevent smooth paper flow through the developer and too little solution may cause uneven developing. Adjust the quantity of developer properly.

#### How to Control the Solution Flow Rate

Adjust the flow rate as follows, using the flow control valve.

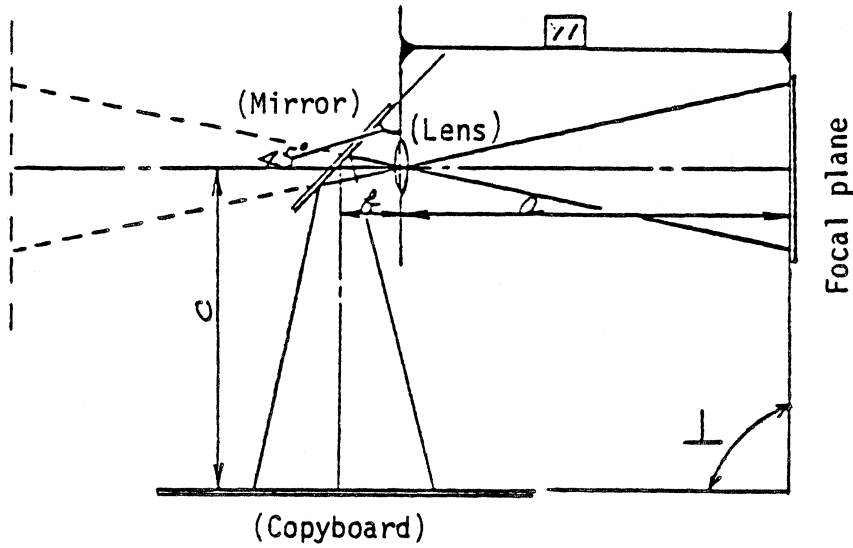
- In case of excessive solution:  
Turn the flow control valve to CLOSE (clockwise) position.
- In case of little solution:  
Turn the flow control valve to OPEN (anticlockwise) position.

#### 4. INSPECTION AND ADJUSTMENT OF THE OPTICAL SYSTEM

The focusing and sizing system is adjusted before shipment. However, if it is found to fail, make an inspection and an adjustment with the following procedures.

##### [Inspection and Adjusting Procedures]

- |                                       |   |                          |   |   |
|---------------------------------------|---|--------------------------|---|---|
| (1) Checking Image Distortion         | ┌ | •Cross distortion        | — | •Adjustment of the height of the copy frame top surface (farther side). |
|                                       | └ | •Longitudinal distortion | — | •Adjustment of the copyboard suspending chain fitting hardware.         |
| (2) Checking the Image Focus and Size |   |                          | — | •Adjustment with the magnification scale.                               |



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

$$b + c = f(1 + \frac{1}{m})$$

$$m = \frac{a}{(b + c)}$$

f: focal length (360 mm)

m: magnification

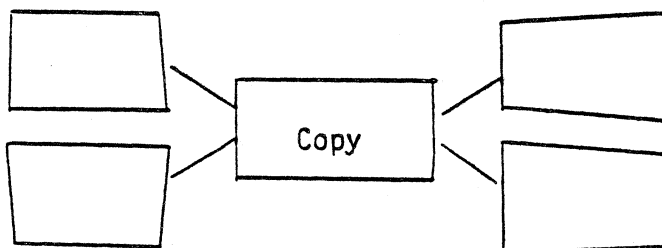
At least the following conditions should exist to make correct reproduction.

1. The focal plane, lens plane and copy plane are parallel to each other.

(Since the CP-18 employs a mirror, the angle between the lens plane and the mirror plane and the angle between the mirror plane and the copy plane should be 45° respectively.)

#### [4-1. Correction of Image Distortion]

If the focal plane and the copy plane are not parallel to each other, a trapezoidal image is produced. We call this "Image Distortion." If such occurs, correct it by adjusting the copyboard.



Allowable error  
(image distortion)


0.5 mm/270 mm or less

Load the test chart (ruled) and make an exposure of it at 100% magnification. Then, measure the four sides of the image and correct it with the procedures below.

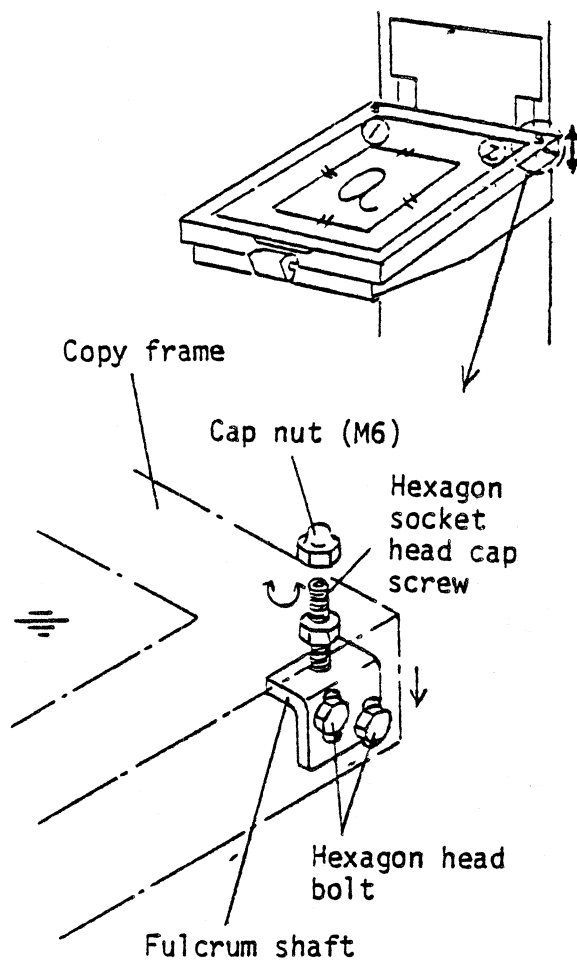
(1) If a distortion occurs crosswise:

Adjust the height of the copy frame opposite (farther) side.

Measure the image (exposure)

1.  ... Adjust the height of points ① and ② by equal amount alternately.

- 1) Remove the M6 cap nut.
- 2) Put a wrench (width across flat: 3 mm) into the top of the M6 hexagon socket head cap screw and loosen the lock nut.
- 3) Then, retighten the lock nut by turning the hexagon socket head cap screw counterclockwise (approx. 0.3 mm/turn).
- 4) Loosen the M6 hexagon head bolts securing the fulcrum shaft.
- 5) Push the copy frame down and tighten the M6 hexagon socket head bolts with the hexagon socket head cap screw in contact with the fulcrum shaft.



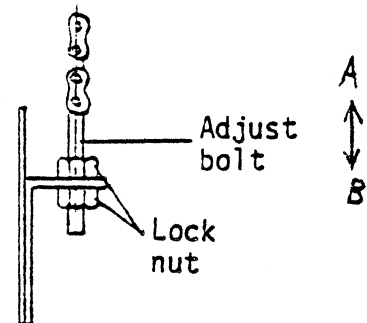
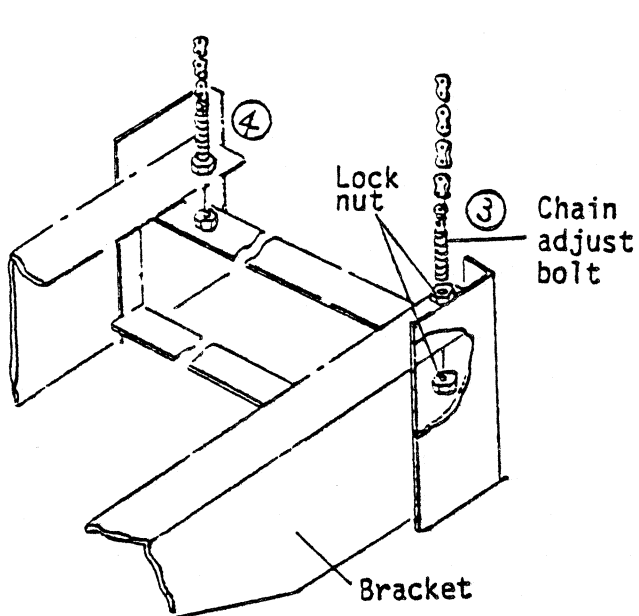
NB: Never touch the hook (Nearer) side.

2. ~~a~~ ... Adjust the height of points 1 and 2 by equal amounts alternately.

- 1) Remove the M6 cap nut.
- 2) Loosen the M6 hexagon head bolts securing the fulcrum shaft.
- 3) Put a wrench (width across flat: 3 mm) into the top of the M6 hexagon socket head cap screw and loosen the lock nut.
- 4) Then, retighten the lock nut by turning the hexagon socket head cap screw clockwise (approx. 0.3 mm/turn).
- 5) Push the copy frame down and tighten the M6 hexagon head bolts with the hexagon socket head cap screw in contact with the fulcrum shaft.



(2) If a distortion occurs longitudinally:

Remove the cover at opposite (farther) side of the copyboard.



\* The copyboard is suspended with two chains. It can be inclined by loosening either of the lock nuts and adjusting the chain adjust bolt.

Measure the image (exposure)

3.  ... Raise point ③ or lower point ④.
4.  ... Raise point ④ or lower point ③.

\* Each adjusting point has an upper and a lower lock nut. In order to raise the copyboard, loosen the upper nut and tighten the lower lock nut. (One turn of the lock nut raises it about 0.6 mm.)

[4-2. Focus/Scale Adjustment]

1. Correct the image distortion as stated above.
2. Set the lens assembly or the copyboard to its 100% position. (Assume that the lens assembly has been set to its 100% position.)
3. Move the copyboard up and down bit by bit around the copyboard scale 100% division and make an exposure each time. Then, compare the exposures and find the copyboard position corresponding to the best focused image.
4. With the copyboard in the best focus position, make an exposure of a sample and calculate the magnification from the following equation:

Magnification

$$(\%) = \frac{\text{Output image size}}{\text{Sample size}} \times 100(\%)$$

$$\text{ex. } \frac{303}{300} \times 100 = 101\%$$

5. Adjust the respective scales to the calculated magnification (ex. 101%) with the lens assembly and the copyboard fixed.



- Put the lens assembly and the copyboard in their 100% positions on the scales. Make an exposure and check the focus and size of the image obtained.

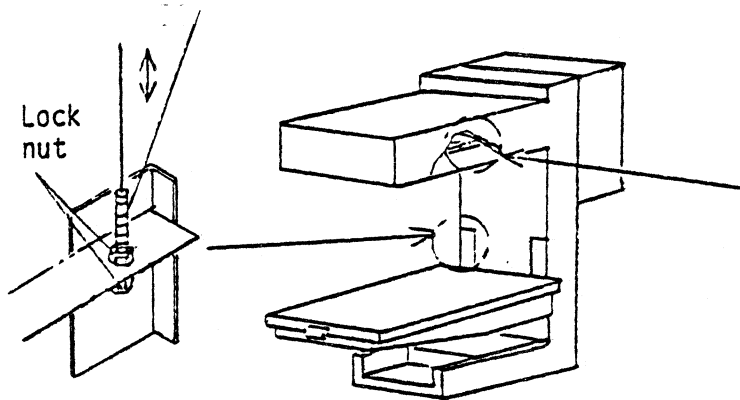
Required resolution: 10 lines/mm

Max. allowable dimensional error:  $\pm 0.5$  mm/270 mm or less

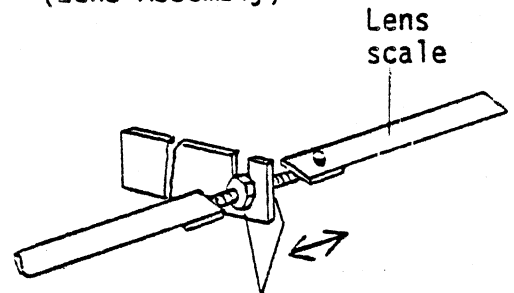
- If the above requirements for dimensional accuracy and resolution are not met, repeat above steps 2 through 6.

(Copyboard)

Loosen the lock nuts and move the copy scale adjust bolt up or down.



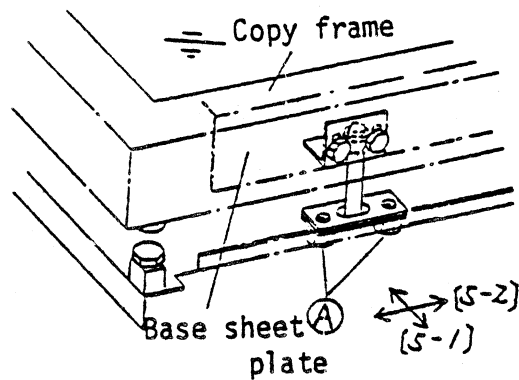
(Lens Assembly)



Loosen the lock nuts to move the scale.

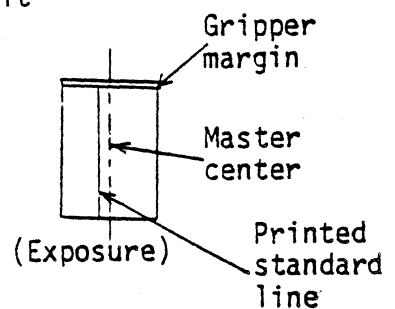
## 5. OPTICAL AXIS ALIGNMENT

Make sure that master paper does not lie in a zigzag line in the exposure section. Then, make an exposure of the copy base sheet, and check the position of the standard line printed in the exposed paper to check the position of the plate which has the copy positioning base sheet on it.



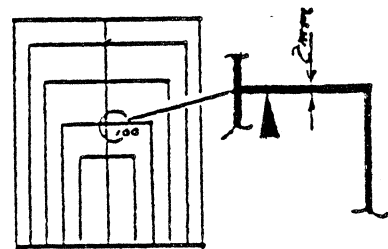
[5-1. Longitudinal Adjustment  
(Left/right adjustment of the base sheet plate)]

For example, if the printed standard line is at the left of the master (paper) centerline, it means that the copy frame is at the left of the normal position. Therefore, in case of 100% magnification, loosen eight bolts at the four points (A) and move the frame to the right by the amount of the distance between the master centerline and standard line. During the copy frame may not move smoothly because the torsion bar is functioning. Therefore, tap the bar joint with a hammer or the like in advance to push away the bar for adjustment convenience.



[5-2. Cross Adjustment (front/back adjustment of the base sheet plate)]

1. Place a black triangle on the X-axis 100% standard line of the base sheet and make an exposure of it. Then, check the result.



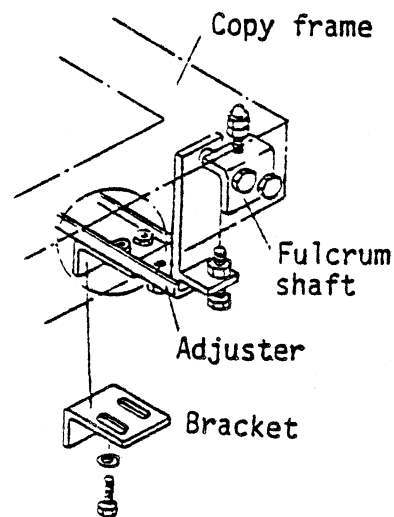
2. No adjustment is required if the vertex of the triangle is 2 mm (line width) from the gripper margin (effective area on the end of image) in the exposure.
3. If not, loosen eight bolts at four points (A) in the same manner as "5-1." and adjust the base sheet plate (on which the copy positioning base sheet is printed) by moving it back and forth.

\* When replacing the copy positioning base sheet, mark the old base sheet position on the copy glass surface. Take the same steps for optical axis realignment.

### [5-3. Longitudinal Adjustment of the Copy Frame]

If optical axis realignment is made with the base sheet plate (longitudinally or crosswise), the copy frame may not be closed or opened smoothly. In such a case, adjust the copy frame longitudinally since the positional relationship between the copy frame and the base sheet plate is not correct.

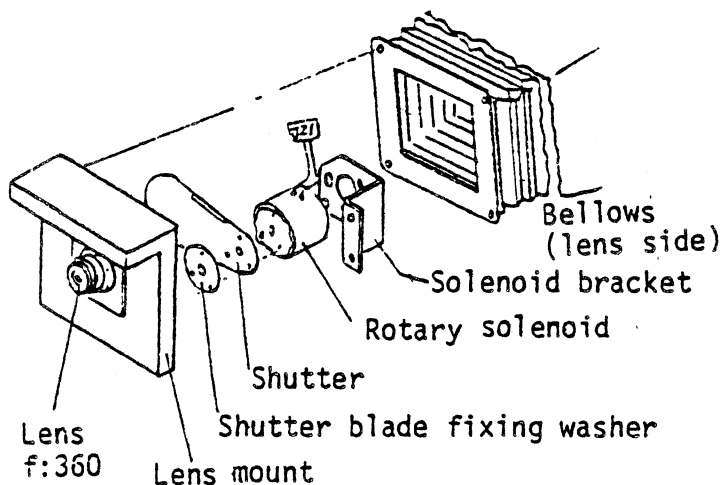
- (1) Loosen four bolts at two plates (B) on the rear of the copyboard.
- (2) Adjust the copy frame to make the space between the copy frame inside and base sheet plate equal.
- (3) Tighten the bolts at points (B).



## 6. LENS

### [6-1. Replacement of Shutter Solenoid]

- (1) Remove the four screws (M4) securing the bellows on the lens mount.
- (2) Remove the rotary solenoid cord connector J21 and remove the two screws (M4) to remove the solenoid bracket.
- (3) Remove the three solenoid mounting screws (M4).
- (4) Remove the three shutter mounting screws (M3) to separate the solenoid from the shutter.
- (5) When fitting the shutter to a new solenoid, take the reverse procedures taking care not to place the shutter the wrong way.



## 7. MIRROR

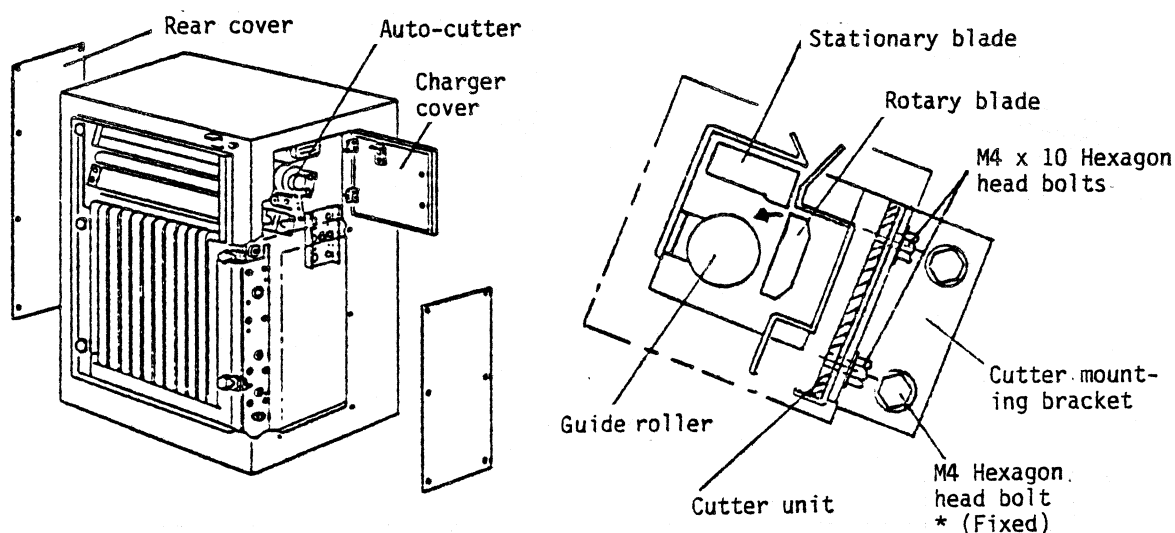
### [7-1. Replacement of the Mirror]

Refer to "3. INSTALLATION."

## 8. REPLACEMENT OF AUTO-CUTTER

The auto-cutter is tapered to cut paper from its end to end, like scissors.

(Method of replacement)



- (1) Turn off the power switch.
- (2) Remove the rear cover.
- (3) Open the exposure section and open the charger cover.
- (4) The cutter unit is secured by the four M4 x 10 hexagon head bolts (two each on front and back sides). Remove these mounting bolts and gently pull out the cutter unit toward the handwheel side along the cutter mounting bracket.
- (5) Remove the connector J6 for auto-cutter.
- (6) Reverse the above removal procedures to install the new cutter unit.

**NB:** Never loosen the cutter mounting base which is secured to the side plate of the master feeder section with M4 hexagon head bolts. If loosened, squareness and paper feeding of the master cut will be affected.

## 9. CHARGER

The charger generates high voltage of 6800V (green label) at minus side (sensitive film side) and 7500V (brown label) at plus side (base side) to charge the electricity with the master through the corona discharge.

- \* Charger employs an inverter, so that no changeover of the power between 50Hz. and 60Hz. is necessary.

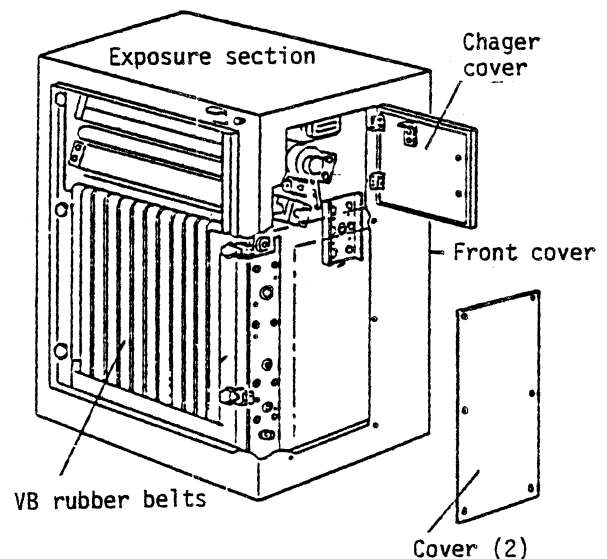
Refer to the Operaiton Manual for cleaning and replacement of the charger.

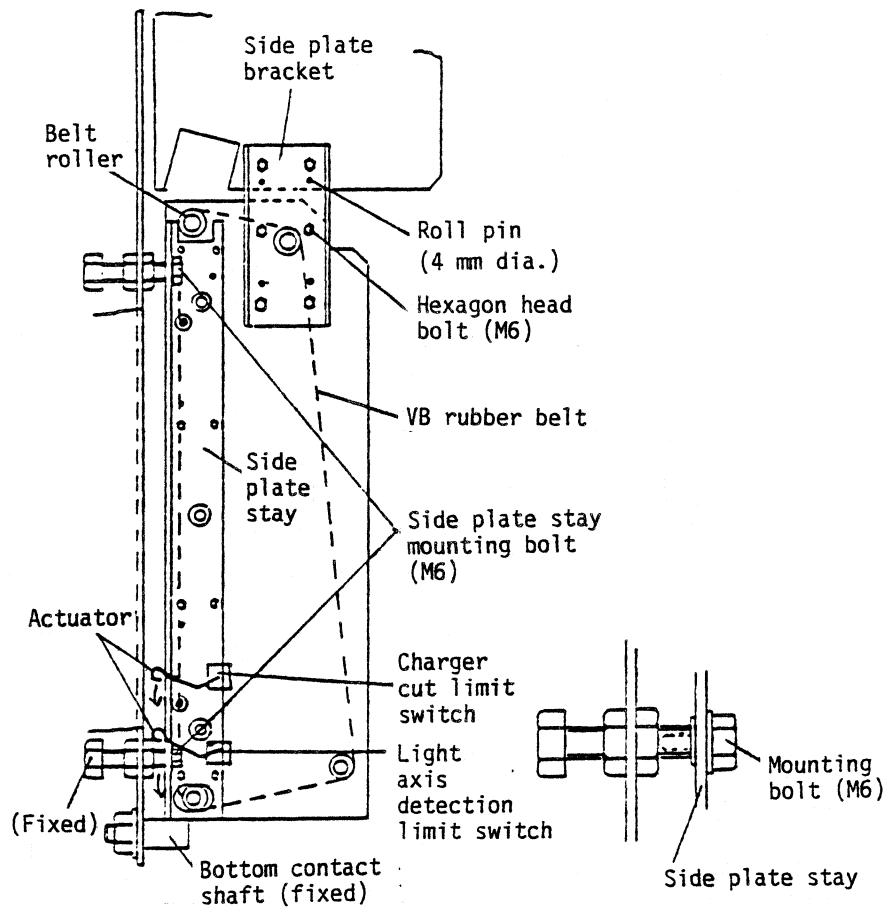
## 10. EXPOSURE SECTION (VB Unit)

The VB unit consists of the front plate and rear plate. Suction holes are provided at both sides of the belt on the front plate side and the two blowers (Silloco fan) are fitted to the rear plate side, so that the master is transferred while it is attracted against the suction holes. Drum type rollers are installed to prevent zigzagging of the 13 bolts.

(Replacement of VB belts)

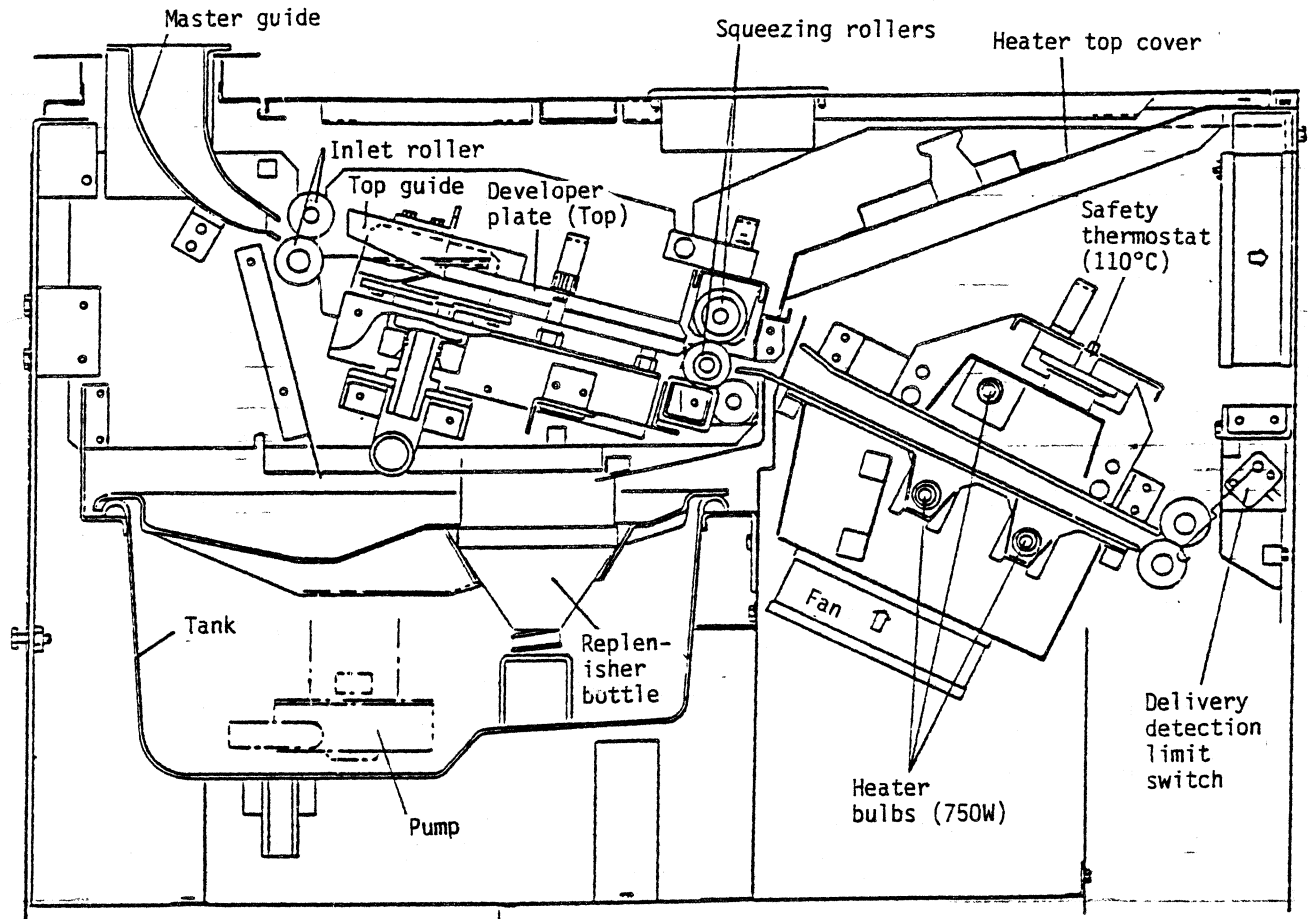
1. Remove the front cover and the cover (2) from the exposure section.
2. Remove the connector (CN-1) from the photometer substrate in the exposure section.
3. Use suitable tape to attach actuators for charger cut and light axis detection on the arrow side when replacing the rubber belts. Do not bend the actuators.





4. Pull out the four roll pins (4 mm dia.) for repositioning, and remove the six M6 hexagon head bolts to remove the side plate bracket.
  5. Remove the two mounting bolts (M6) of the side plate stay.
  6. Slightly move the VB unit and remove rubber belts fitted on the belt rollers from the operation side.
  7. Replace with new rubber belts. Always replace two rubber belts together, and install them symmetrically at each side.
  8. Reverse the above procedures for reassembly.
- NB: Never loosen the bottom contact shaft and other fixed parts. If loosened, VB flatness is affected resulting in poor image alignment, light axis and paper feeding.

## 11. DEVELOPING SECTION AND HEATER SECTION



The developer section is provided to convert the electrostatic latent image which is exposed at the exposure section and formed on the master into the visible image. The master fed over the inlet roller at the developer section passes through between the bottom developer plate and top developer plate. The processing solution in the developer tank is sucked up by the pump, controlled of its flow rate, and gushed out from the slit under the developer plate.

### Inspection and Adjustment of Flow Rate

\* Refer to the "INSTALLATION" on page 7 of the Service Manual for inspection and adjustment of flow rate.

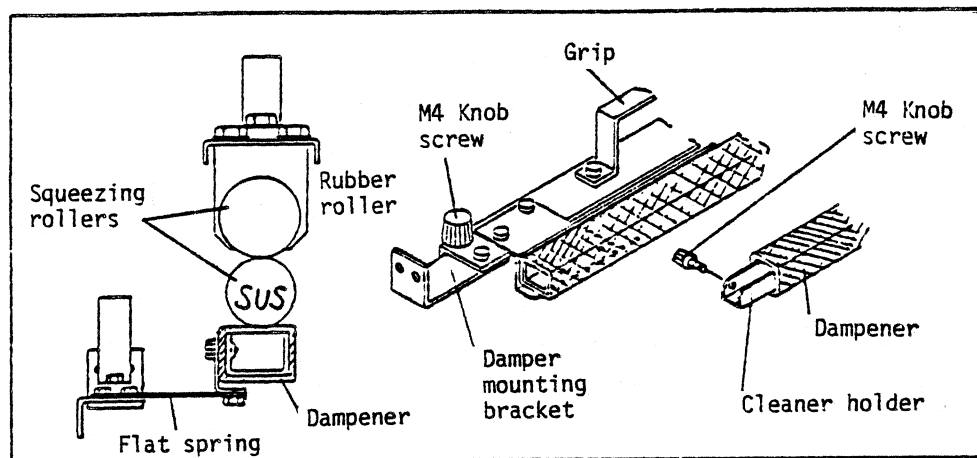


### 11-1. Squeezing Roller of the Developer Section

The master developed at the developer section is squeezed of the solution on both sides by the squeezing rollers (SUS roller on the film face side) (rubber roller on the base side). Setting the squeezing roller handle to SET position causes the squeezing roller (rubber) to press against the (SUS) roller side by the spring pressure. Both rollers are driven by the gearing mechanism to squeeze the solution out of the master.

NB: Clean both rollers whenever they are stained with the developer toner. Otherwise, poor toner stabilization may result.

#### [Squeezing Roller Section: Replacement of Dampener]



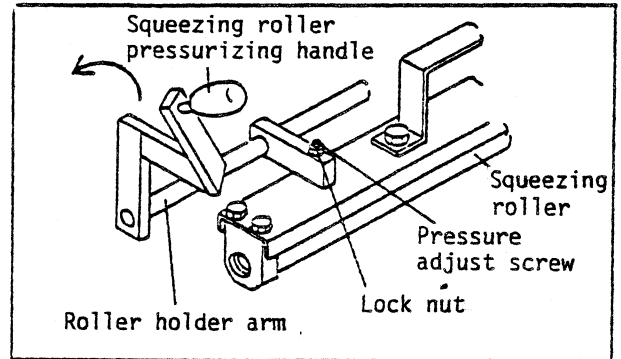
1. Remove the developer plates (top and bottom).
2. Remove the two M4 knob screws securing the dampener mounting bracket.
3. Remove the two M4 knob screws securing the cleaner holder.
4. Insert the cylindrical dampener into the cleaner holder. If the pitch stain by the squeezing roller is produced during the plate making, change the position of the dampener.

5. Reverse the above procedures for reassembly.

After the reassembly, insure that the dampener is in tight contact with the pinch roller by the flat spring effect.

[Adjustment of Squeezing Roller Pressure]

If the squeezing effect of the roller is working on one side, adjust the squeezing pressure with the pressure adjust screws provided on each side. Loosen the lock nut on the side with less pressure and turn the pressure adjust screw slightly in clockwise direction. Tighten the lock nut after adjustment.



NB: Set the pressure adjust screw to protrude 0.5 - 1.0 mm from the arm bottom to achieve an optimum squeezing pressure of the roller. Excessive protrusion of the adjust screw may produce the opposite effect.

11-2. Heater

The master squeezed of the solution by the squeezing roller at the developer section is not yet dried of its surface and the toner is removed if touched with hand. To make the printable plate out of the master, hot air is blown against the master to fuse and deposit the toner, using the three heaters (750W) and a fan.

If the heaters overheat, a thermostat (set at 110°C) actuates to turn off the heaters. In such a case, reset the thermostat manually with RESET button.

## 12. TROUBLE SHOOTING GUIDE

1. Power source voltage
2. Skipped, uneven and dirty image
3. Faulty feeding of master
4. Faulty stabilization of master
5. Faulty light axis
6. Buzzer sounds during delivery.

### 12-1. Power Source Voltage

EP-18 is designed to operate on the power source capacity of 3.0KW and voltage of 100V  $\pm$  10% range.

The power source voltage referred to means the voltage at total load (during heater operation), and malfunction may result if the voltage goes down below 90V in case even the camera unit is in normal condition.

In such a case, it is necessary to improve insufficient capacity of wirings for power source voltage. Always maintain the power source voltage above 95V.

When the following problems occur, locate and remove their causes immediately.

- (1) The machine does not operate immediately by pushing the START button.
- (2) Cutter does not operate.
- (3) TROUBLE BUZZER sounds and poor master stabilization occurs.
- (4) Short and varied master feed length against the setting.

12-2. Skipped, Uneven and Dirty Image

1. Blurred focus ——— Refer to "Focus/Scale Adjustment" on page 13.
2. Dirty copy glass ——— Inspect and clean the copy glass using glass cleaner or the like.
3. Leaking light and irregular light from light source ——— Shield the light with tape etc. and clean the mirror and lens.
4. Irregular charger ——— Inspect the charger section.
  - Charger line tension is weak.
  - Charger cut limit switch is touching the conveyor belt.
  - Uneven drive of conveyor belt (Pulls out in a direction at right angle.)
  - Refer to the faulty electrical connections
5. Faulty developing ——— Check the flow rate. ——— Refer to the flow rate adjustment on page  
Faulty operation of circulating pump or insufficient solution.
6. Black streaks ——— Pitch with inlet guide of developer section ——— Inlet guide of developer plate (top) is dirty or the guide is not flush with developer plate.
7. Dirty squeezing roller ——— Change position of dampener.
  - Clean metal and rubber squeezing rollers. (Dirty pitch of 82 mm)

12-3. Faulty Feeding of Master

1. Faulty drive ————
  - Refer to the Drive Motor
  - Faulty setting of master roller holder
  - Dirty squeezing rollers
  - Clutch for driving.
  
2. Cutter ————
  - Faulty cutter ———— Adjust cutter solenoid return. mounting angle or replace solenoid.
  - Master end contacts the blade.
  
3. Charger ———— Cut gut of charger (Ocean No. 0.8)
  
4. Exposure section ————
  - Faulty sliding of VB rubber ———— Replace belt of exposure section. belt.
  
5. Developer section ———— Faulty operation of circulating pump and insufficient solution.

12-4. Faulty Master Stabilization

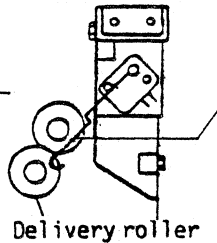
1. Squeezing roller ————
  - Faulty ———— Refer to the pressure adjustment of squeezing roller on page 23.
  - Dirty metal and ———— Clean rubber rollers. rollers.
  
2. Heater ————
  - Cut wire of heater ———— Replace heater.
  - Faulty heater operation.
  - Faulty preheating of heater.
  - Faulty heater fan operation.
  - Faulty heater lamp lighting caused by malfunction of safety device (jam detection) }
  
- Installation environment ————
  - Low room ———— Increase frequency to warm temperature. up heater lamps.

12-5. Faulty Light Axis

1. Master zigzagging
  - Uneven master feed roller pressure — Cut spring belt — Replace belt.
  - Uneven rotation of VB belt — Remove obstacles on VB belt. — Replace belt.
2. Light axis does not align with positioning base sheet. — Refer to the light axis adjustment on page 14.
3. Light axis positioning limiter LS-2 — Limiter touches VB belt. — Adjust limit switch mounting bracket to clear the limiter from the belt and other parts during actuator operation.

12-6. Buzzer Sounds During Delivery.  
(Other operational sequences are normal.)

1. Squeezing rollers
  - Faulty squeezing — Refer to the pressure adjustment of squeezing rollers on page 22.
  - Dirty metal and rubber rollers. — Clean rollers.
2. Low power source voltage — Refer to the power source voltage (12-1) on page 24.
3. Heater — Refer to the Heater (12-1) on page 23.
4. Faulty actuation of limit switch for delivery detection.
  - Faulty limit switch. — Replace limit switch.



Adjust the position.

  - Faulty control substrate. — Replace the substrate.

ELECTRICAL TROUBLE SHOOTING GUIDE

FOR

EP-18

## CONTENTS

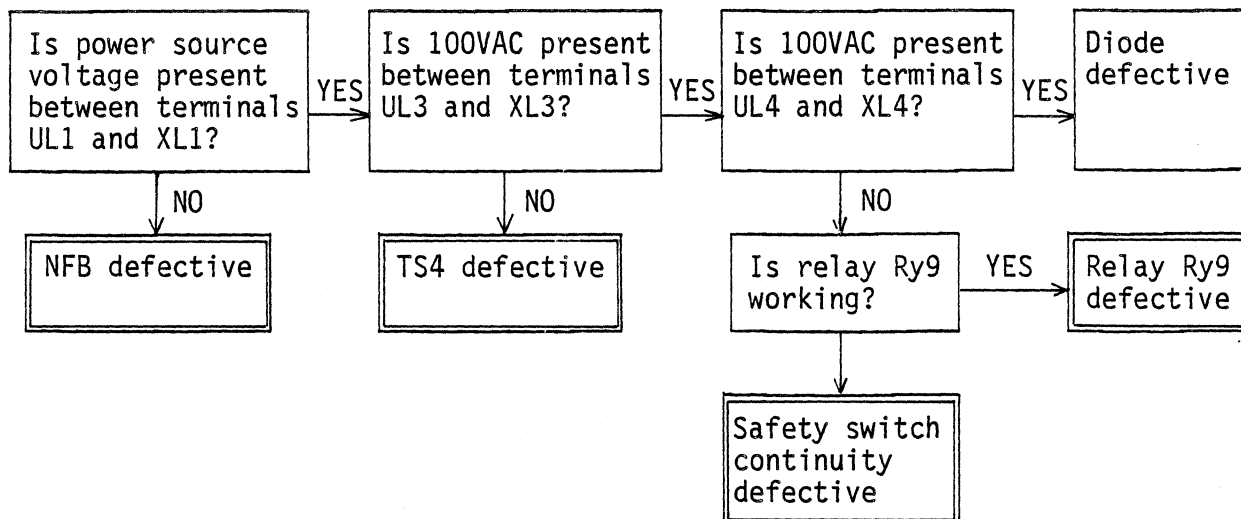
	Page
(1) Power pilot lamp will not light .....	1
(2) Start OK pilot lamp will not light .....	2
(3) Copy set illumination lamp will not light .....	3
(4) Machine will not start .....	4
(5) Master feeder motor will not start .....	5
(6) Clutch will not move .....	5
(7) Charger will not work .....	6
(8) Pump will not work .....	6
(9) Cutter will not work .....	7
(10) Exposure will not start (Light source will not light) .....	7
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1. Power pilot lamp will not light.

Be sure that:

- (1) The power cord is connected to the camera outlet.
- (2) The no-fuse breaker is on.
- (3) The power switch is on. (TS-4)
- (4) The safety switch is on (charger cover and processor top cover are closed and the door switch of exposure section is locked.)
- (5) The pilot lamp is not blown off (PL-4).

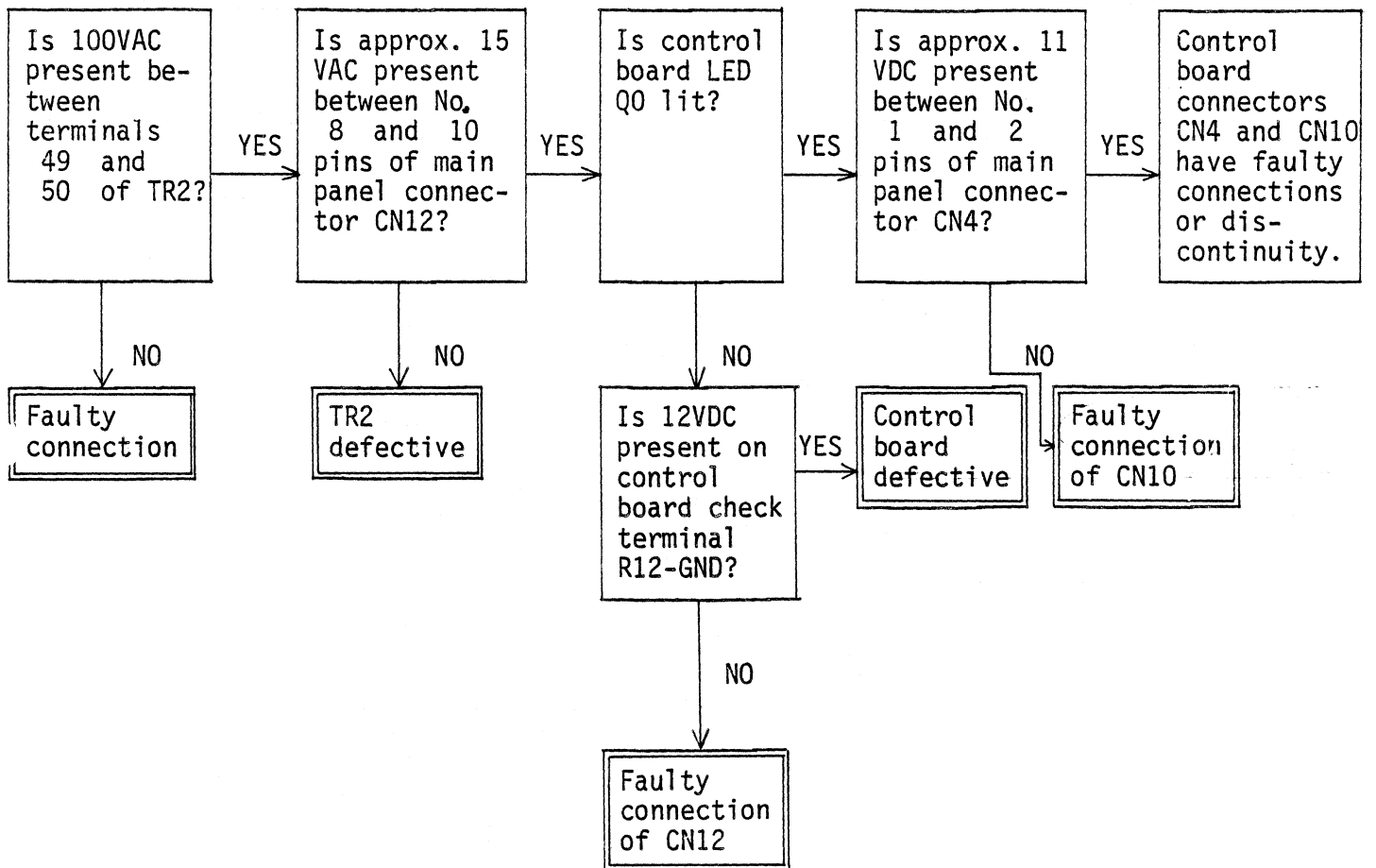


- (1) LS6 ... charger
- (2) LS9 ... exposure section
- (3) LS10 .. processor

2. Start OK pilot lamp will not light.

Be sure that:

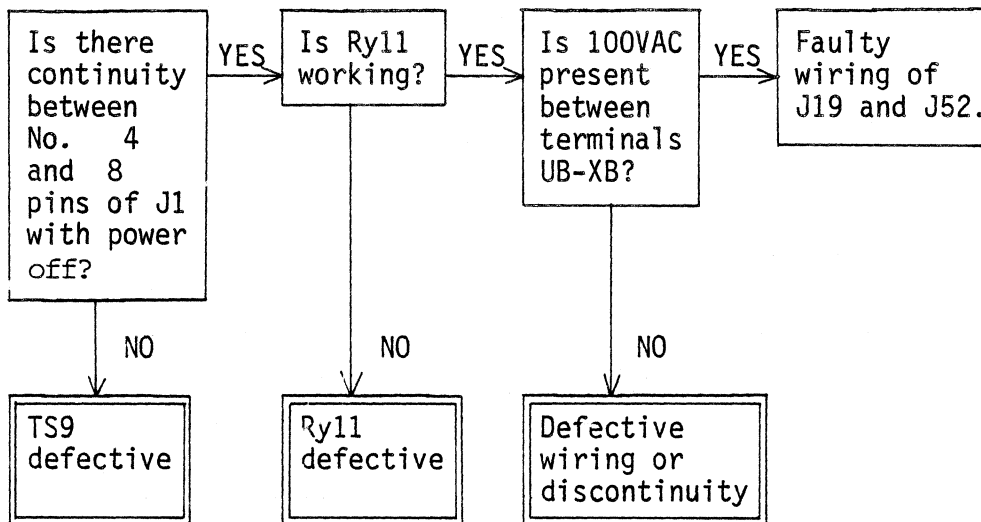
- (1) 60 seconds have elapsed after turning on the POWER switch (warm up time).
- (2) Fuse F8 is not blown.
- (3) Master is set.
- (4) The digital switch setting is within allowable range (MM-300 ~ 499 mm, INCH-12" ~ 19.9").
- (5) Pilot lamp (PL1) is not blown.
- (6) TS5 switch is set to "AUTO" position.



3. Copy set illumination lamp will not light.

Be sure that:

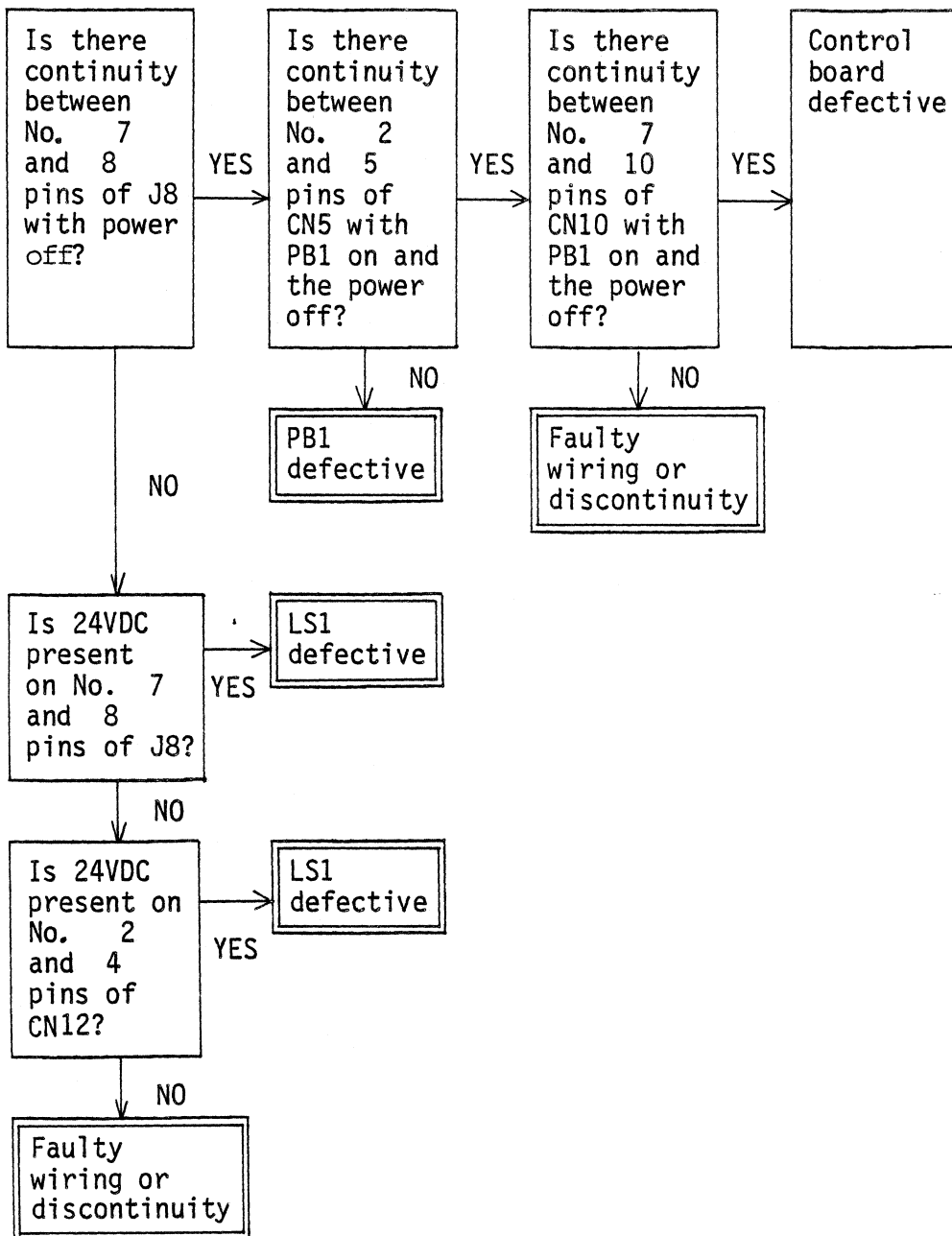
- (1) TS9 is set to "COPY SET" position.
- (2) The illumination lamp is not blown.
- (3) No-fuse breaker (30A) is not off.



4. Machine will not start.

Be sure that:

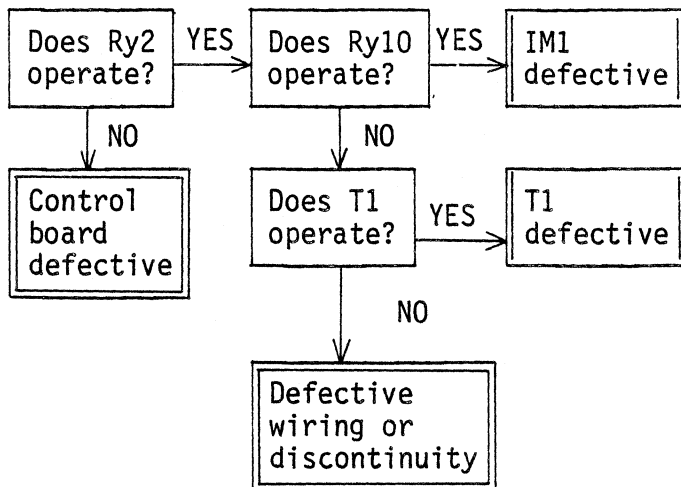
(1) Start OK lamp is lit. (If not, take the procedure in 2.)



5. Master feeder motor will not start.

Be sure that:

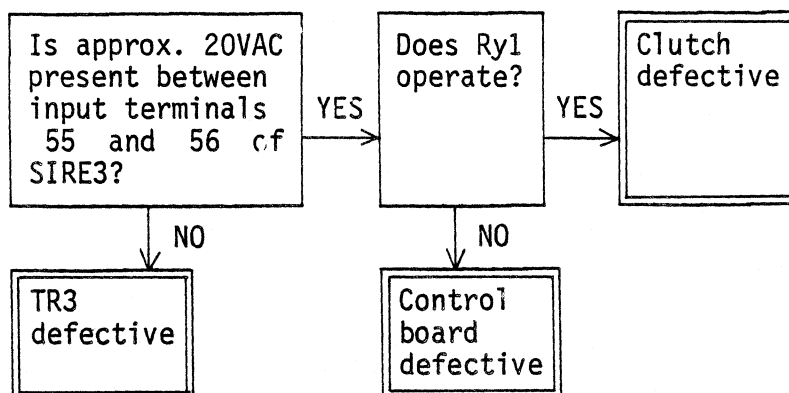
(1) Start OK pilot lamp is lit. (If not, take the procedures in 4.)



6. Clutch will not move.

Be sure that:

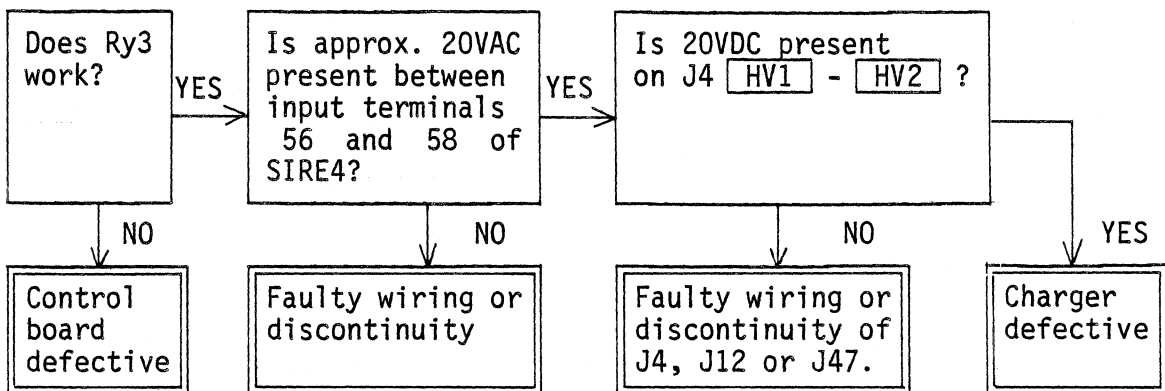
- (1) The machine is started.
- (2) The master feed motor is running.
- (3) Fuse F9 (2A) is not blown.



7. Charger will not work.

Be sure that:

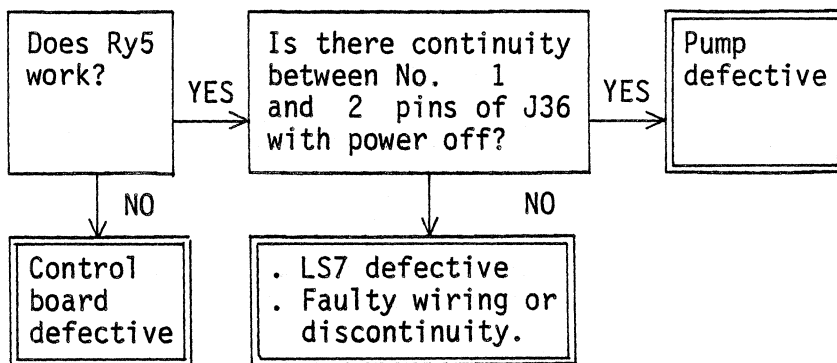
- (1) Charger cut (LS12) is not on.
- (2) Fuse F9 (2A) is not burned out.



8. Pump will not work.

Be sure that:

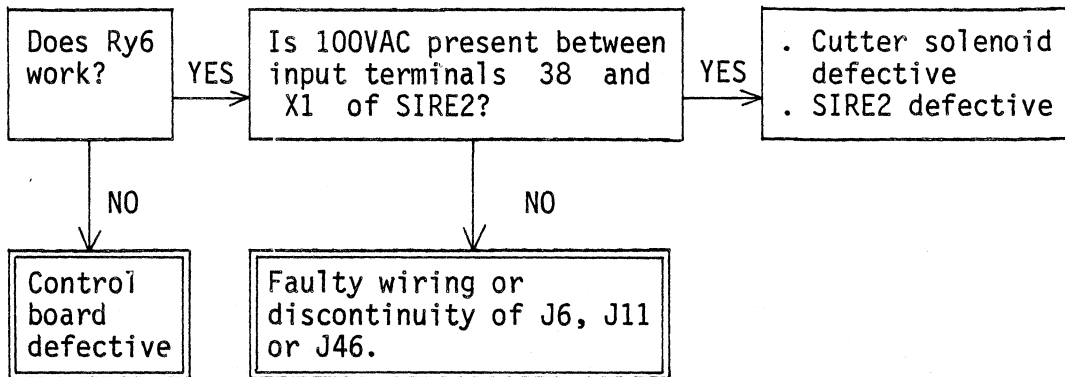
- (1) LS7 is not off.
- (2) Fuse F6 (1A) is not blown.



9. Cutter will not work.

Be sure that:

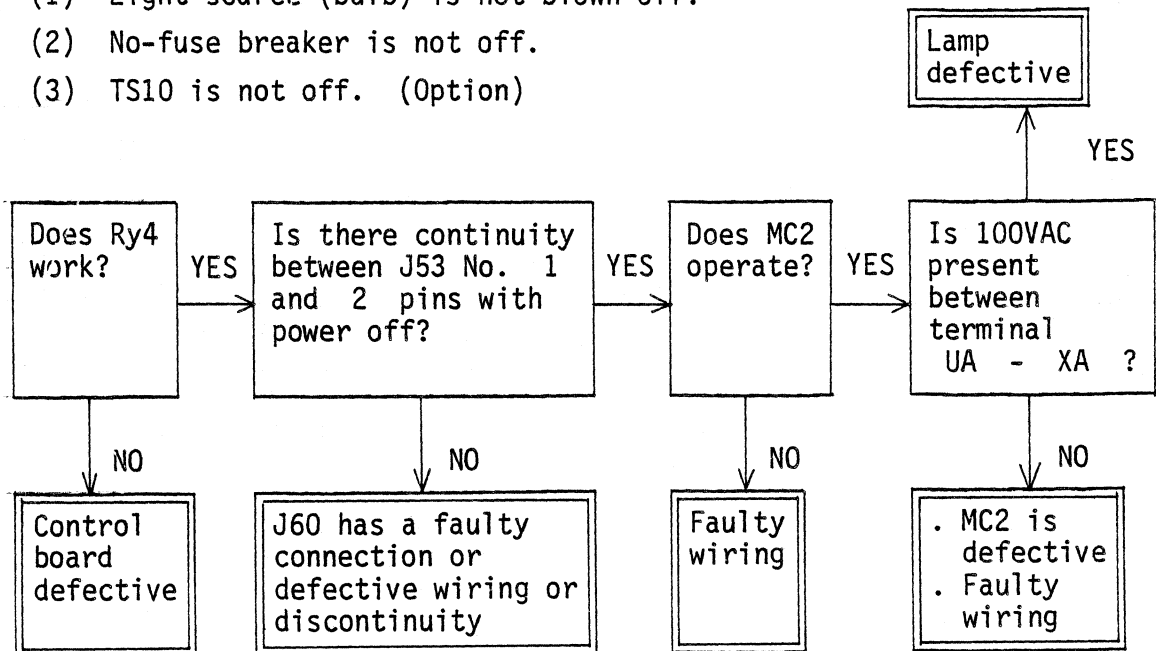
- (1) Master is being fed to the specified setting.



10. Exposure will not start (Light source will not light).

Be sure that:

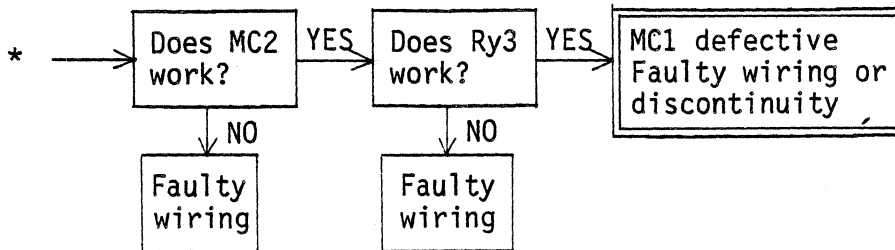
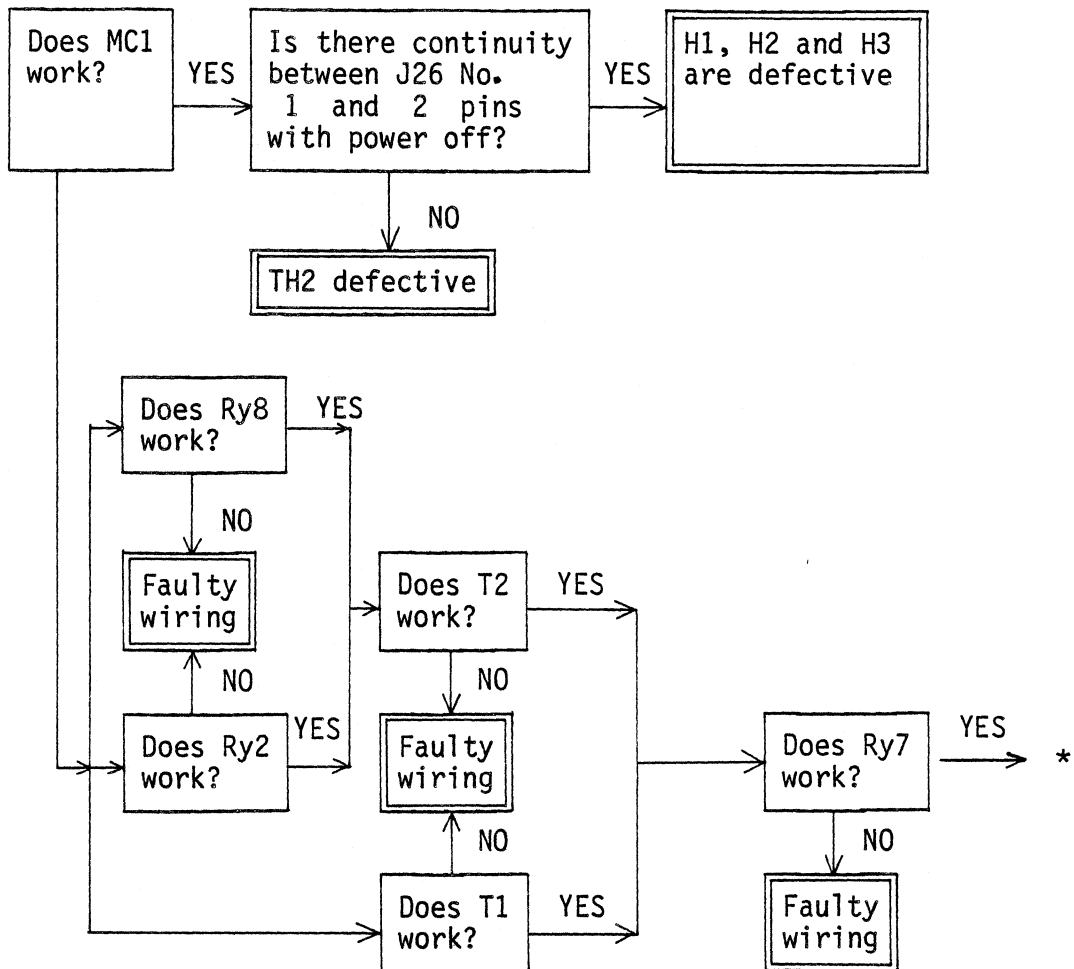
- (1) Light source (bulb) is not blown off.  
 (2) No-fuse breaker is not off.  
 (3) TS10 is not off. (Option)



11. Heater will not work.

Be sure that:

- (1) Fuse F1 (30A) and F2 (30A) are not burned out.
- (2) Thermo-switch TH2 is not off.





12. Master feed is not accurate.

Be sure that:

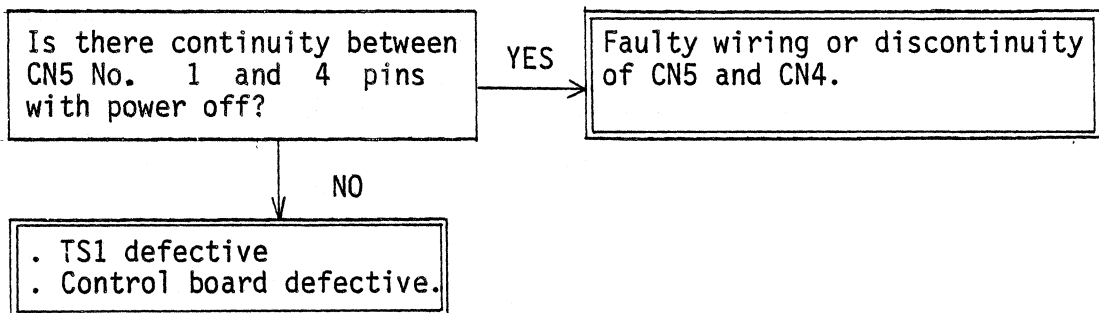
- (1) Control board connector CN11 and digital switch board connector CN7 are correctly wired.
- (2) Control board connectors CN8 and CN16 are correctly wired.
- (3) Connectors CN1, CN2 and CN3 of light-meter board are correctly wired.
- (4) Master feed detection dial is not rotating zigzag.
- (5) Master feed sensor (photo interrupter) is not damaged.

13. Master feed will not stop.

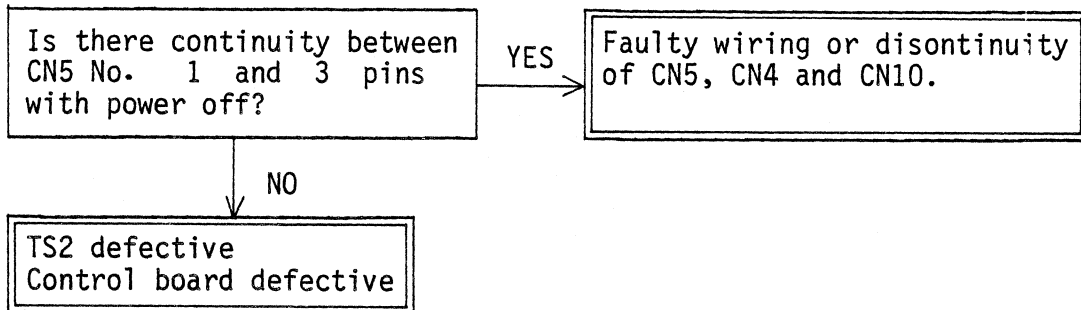
Be sure that:

- (1) Brake unit is not defective.
- (2) Ry1 is not defective.
- (3) Ry2 is not defective.
- (4) Ry10 is not defective.

14. MULTI/NORMAL switch will not function.



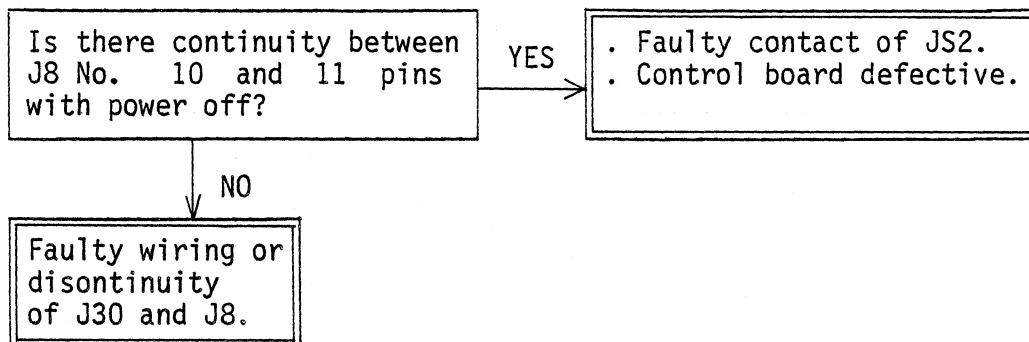
15. LIGHT METER/TIMER switch will not function.



16. Light axis is not detected.

Be sure that:

(1) Master is cut.



17. EXPOSURE will not finish.

Be sure that:

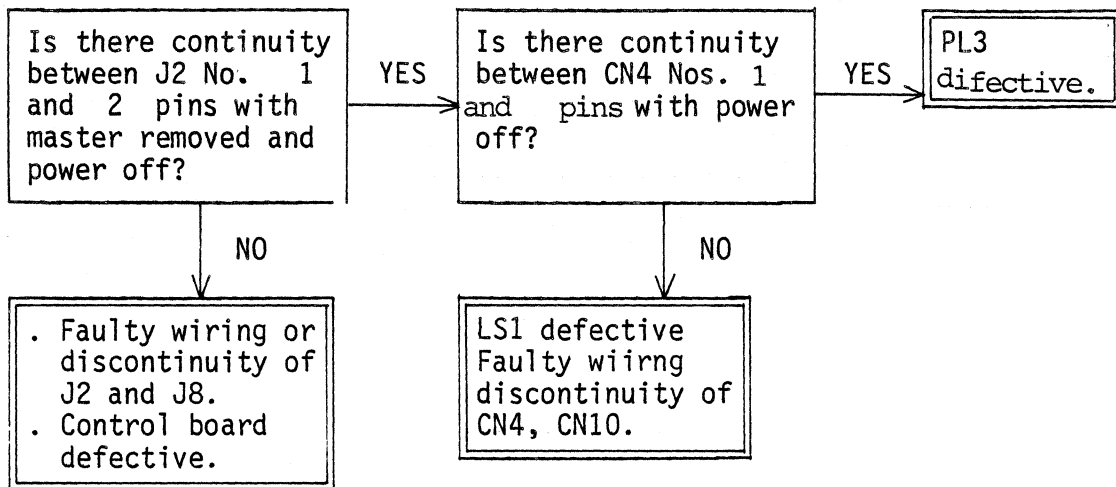
(1) Control board connector CN11 and digital switch board connector CN7 are correctly wired.

(2) EXPOSURE pilot lamp is flickering.

Check the following:

- (I) Defective Ry4.
- (II) Defective control board.
- (III) Short circuit of MC2 and Ry11.

18. MASTER END pilot lamp will not light.

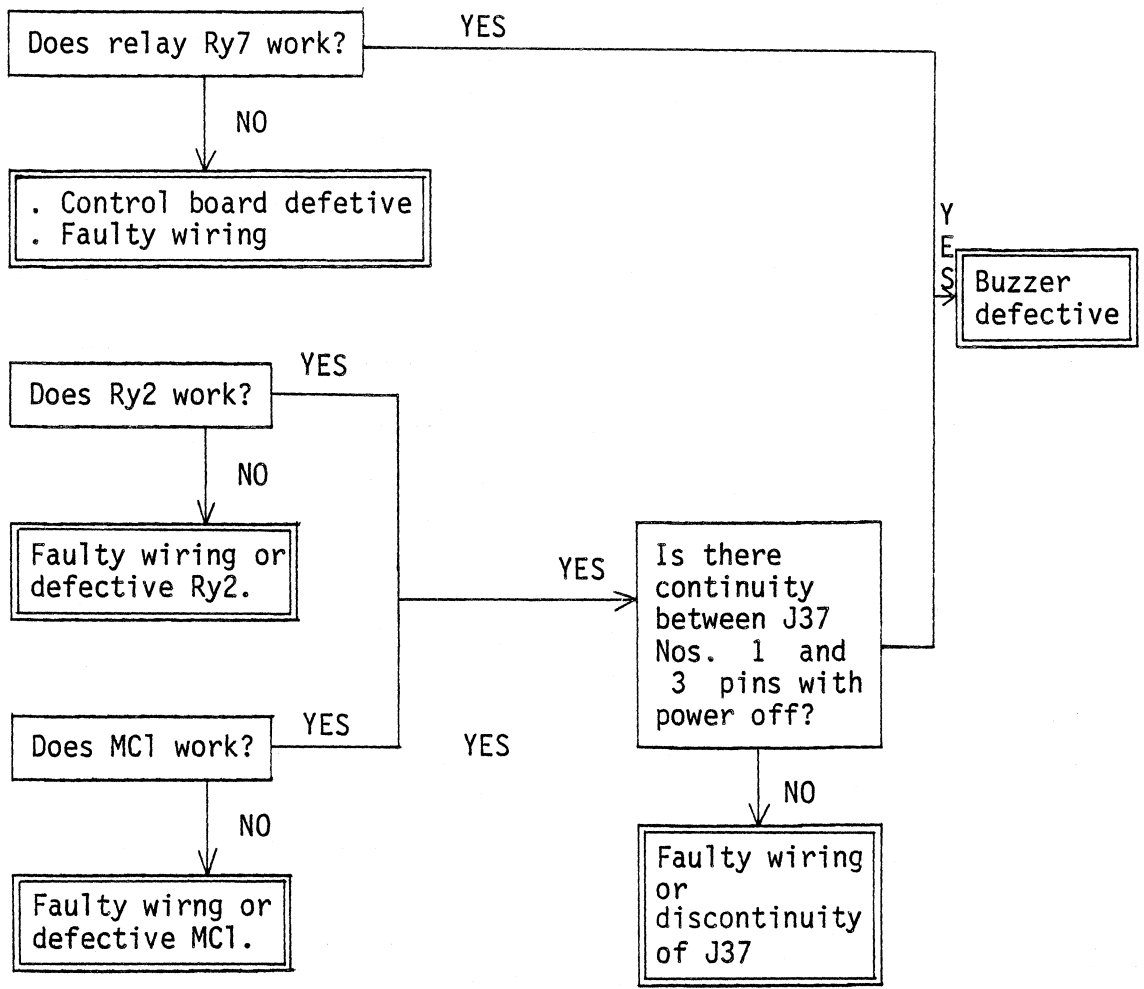


19. TROUBLE buzzer will not sound.

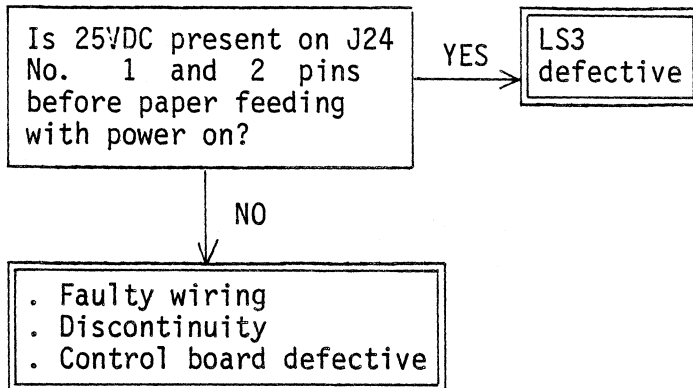
Be sure that trouble buzzer will sound when:

- (1) Master detection LS1 is turned off. (PL3 lights.)
- (2) Light axis detection LS2 is not on after master cut.
- (3) Delivery detection LS3 is not on.
- (4) Buzzer is not turned off after delivery detection LS3 is on.
- (5) Roller LS8 is turned off during motor runnign or heater operation.

In either case of the above, check the following;



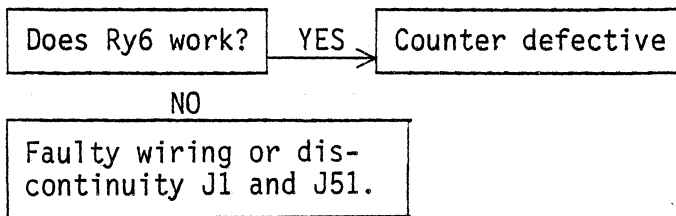
20. Paper delivery is not detected.



21. Counter will not work.

Be sure that:

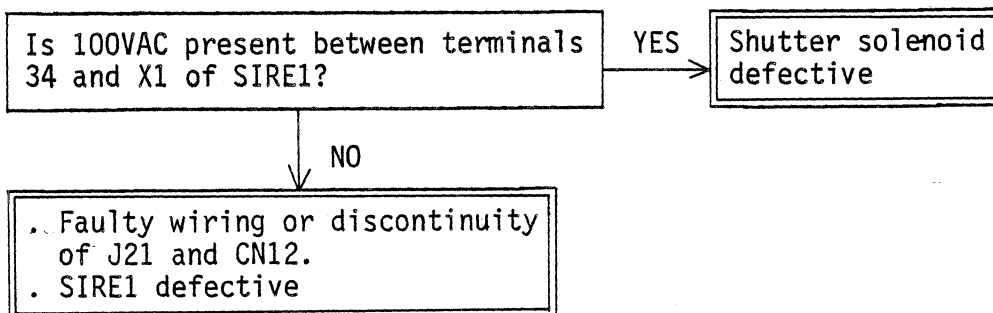
(1) Cutter functions.



22. Shutter will not operate.

Be sure that:

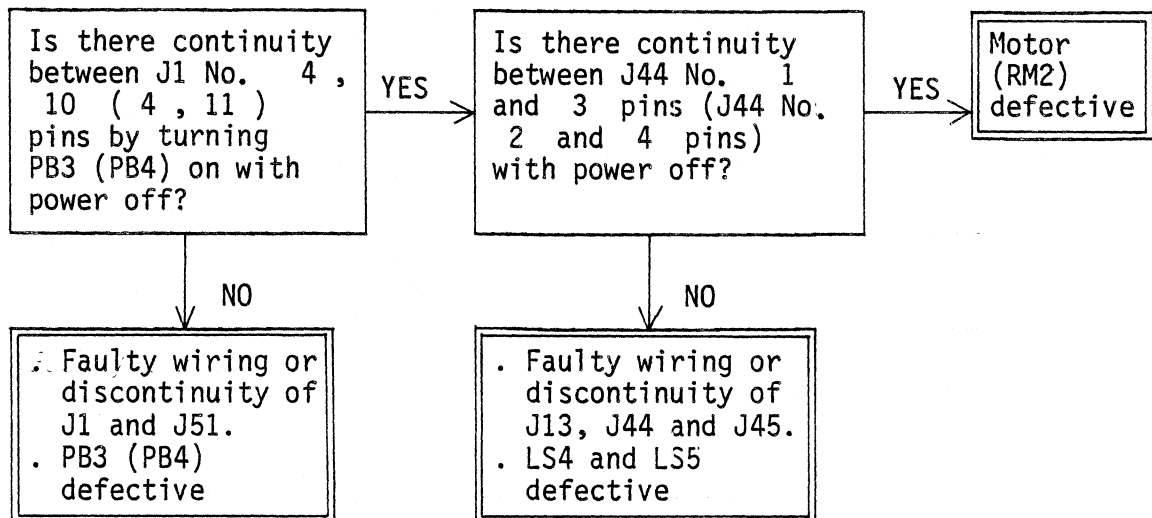
(1) Light source is lighted.



23. Copyboard vertical shift motor will not work.

Be sure that:

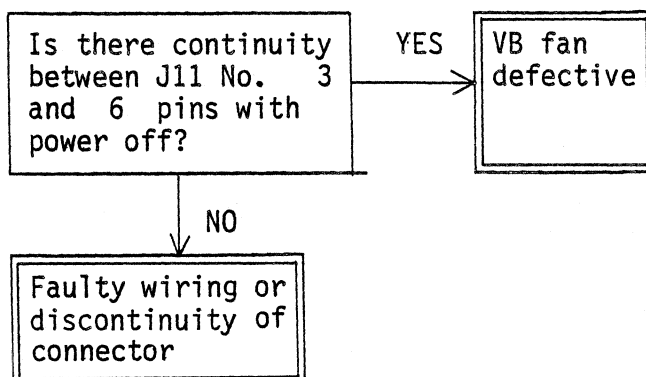
- (1) Both of UPPER LIMITER (LS4) and LOWER LIMITER (LS5) are not on.



24. VB fan will not work.

Be sure that:

- (1) Fuse F7 (2A) is not blown.
- (2) J3 and J11 connectors are not disconnected.



25. Heater fan will not work.

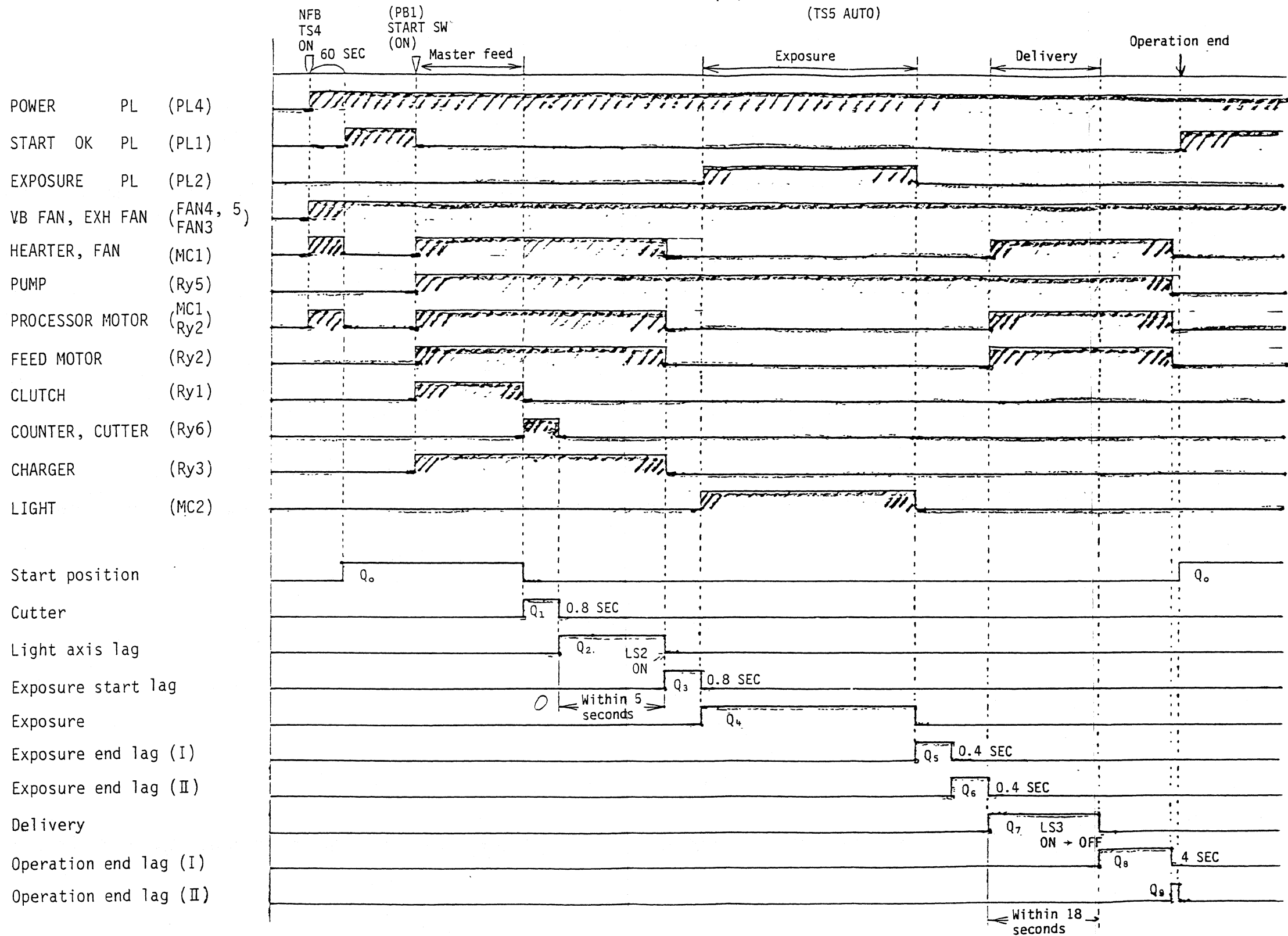
Be sure that:

- (1) Heater works. (If not, take procedures in 11.)
- (2) Fuse F3 (1A) is not blown.

Likely causes are:

- (I) defective heater fan.
- (II) faulty wiring of connector J29.
- (III) discontinuity.

TIME CHART ( I ) - NORMAL  
(TS5 AUTO)

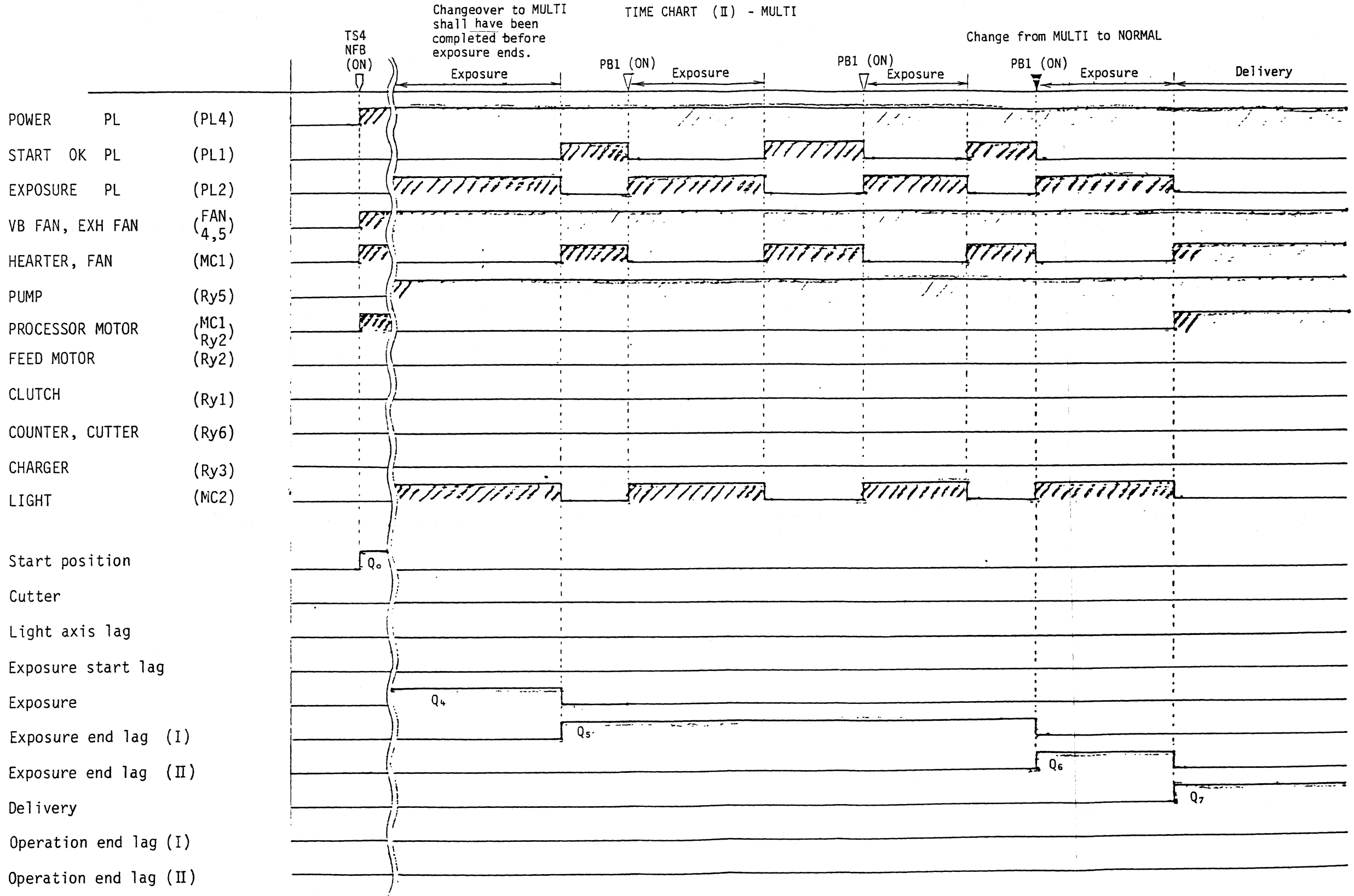


Advances from Q2 to Q3 upon turning on of LS2.

Advances from Q7 to Q8 when LS3 is off after turning on once.

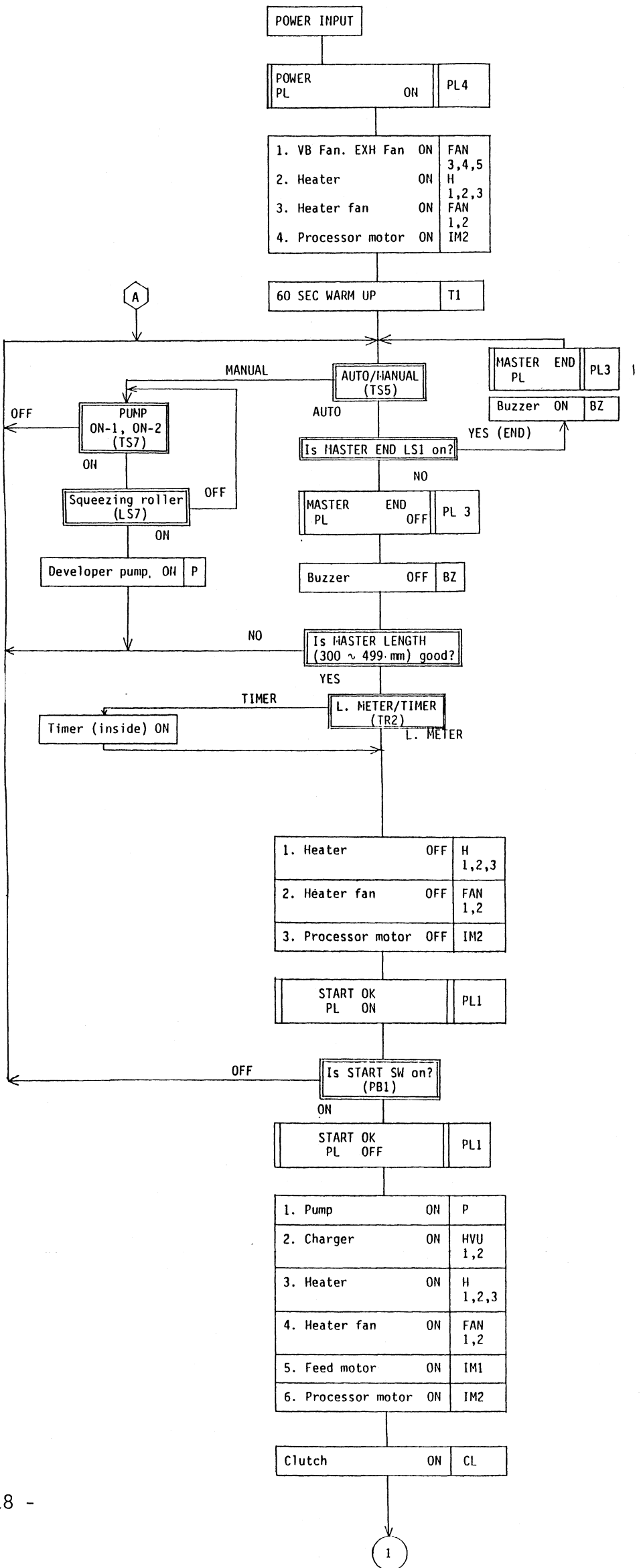


TIME CHART (II) - MULTI

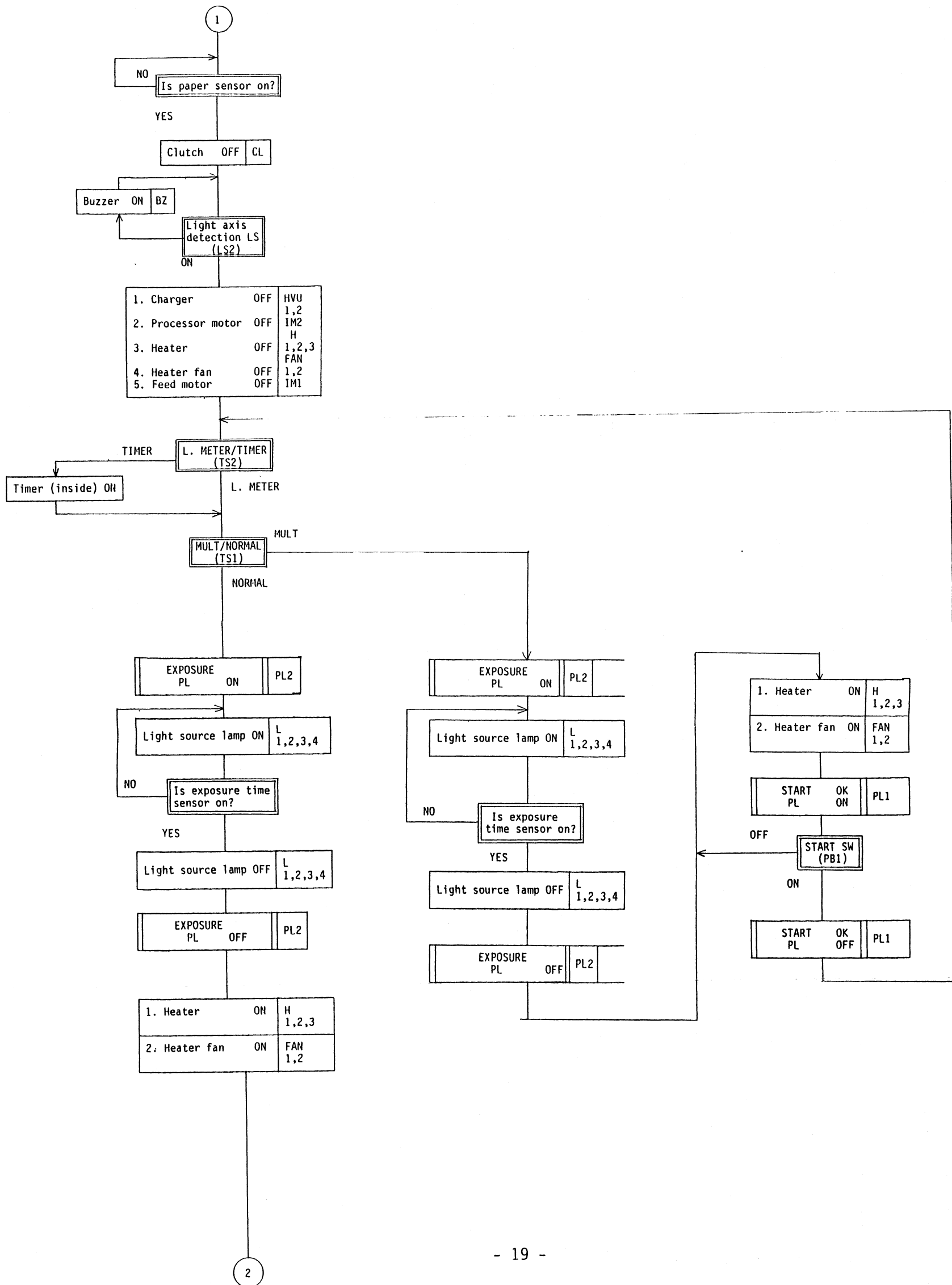


Q5 will not advance to Q6 unless TS1 is not changed from MULTI to NORMAL.

# OPERATION FLOW CHART (1)



OPERATION FLOW CHART (2)





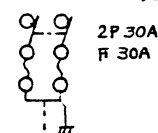
REFERENCE DIA.

1.	WIRING SYSTEM DIA. (HARD)	HCS 31695
2.	" (LOGICAL CIRCUIT)	HCS 21649
3.	" (LIGHT METER)	HCS 41593
4.	CONNECTION DIA. DISTRIBUTING BOARD	HCM 30943
5.	" CONTROL PANEL	HCZ 31154
6.	" REAR CASE	HCZ 31155
7.	" PROCESSOR	HCZ 31156
8.	" (OPTION) TRANS. LIGHT	HCZ 31094

(SEE HCZ 31155)

(SEE HCZ 31154)

POWER SUPPLY  
1 $\phi$ 100-240V 50/60 HZ

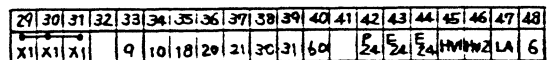


2.5 mm<sup>2</sup> 3C (T-D-E)  
AWG 12 3C (UL)

0.5 mm<sup>2</sup> 2C 2 mm<sup>2</sup> 1C

PROCESSOR (SEE HCZ 31156)

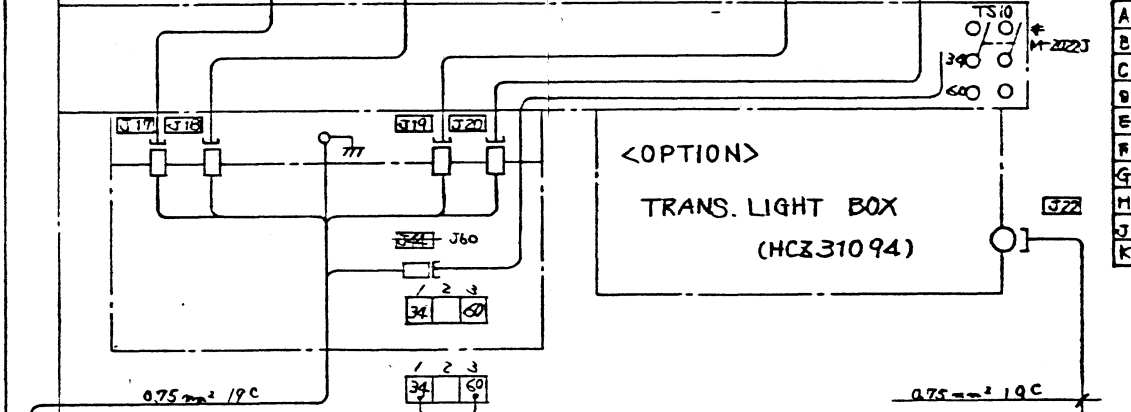
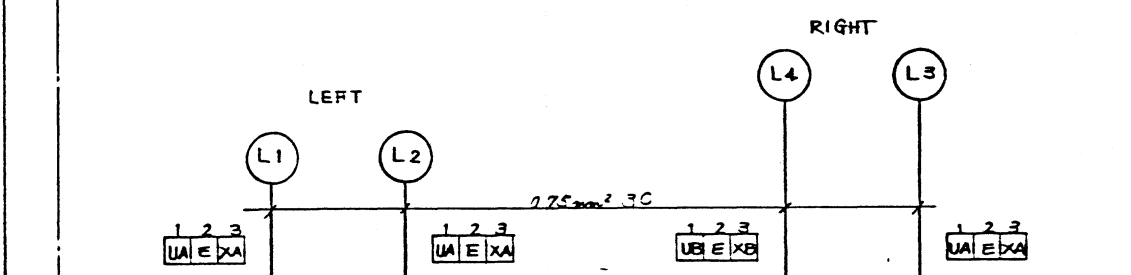
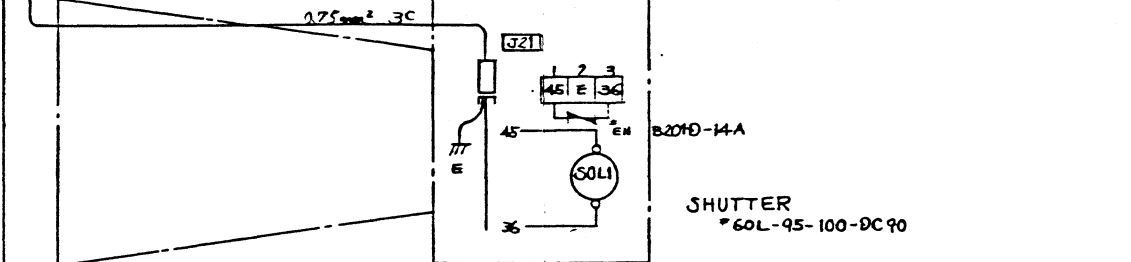
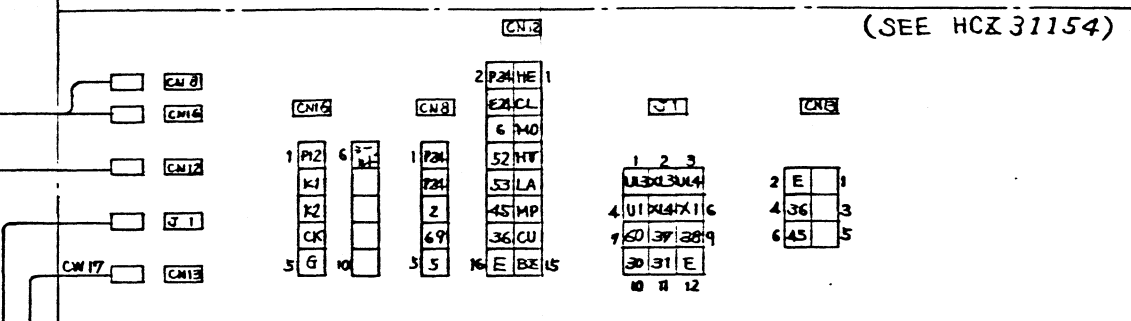
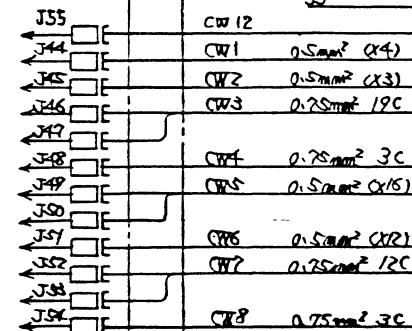
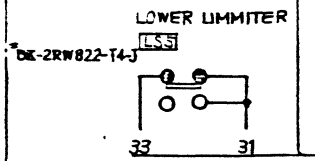
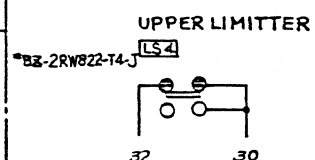
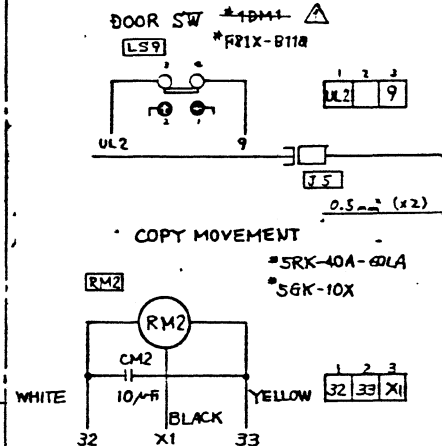
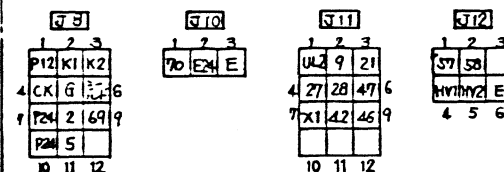
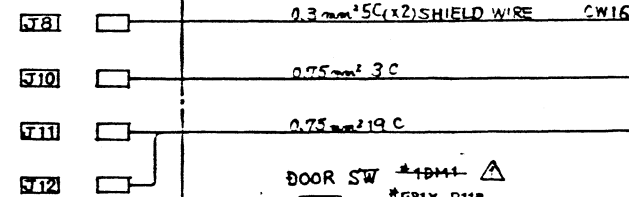
DISTRIBUTING BOARD (SEE HCM 30943)



TU - 303 (x4)  
TU - 20 (x8)  
TU - 15 (x36)

CROSS-REFERENCE TABLE FOR WIRE GAUGES

mm <sup>2</sup>	AWG
3.5	12
2	14
1.25	16
0.75	18
0.5	20
0.3	22

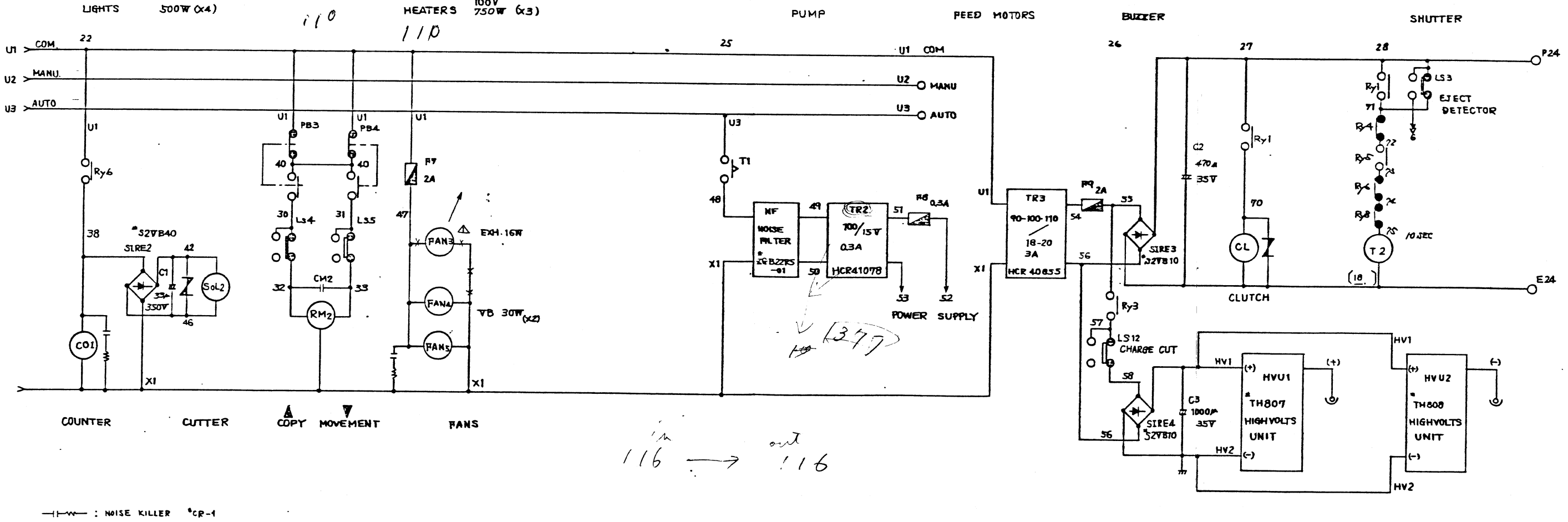
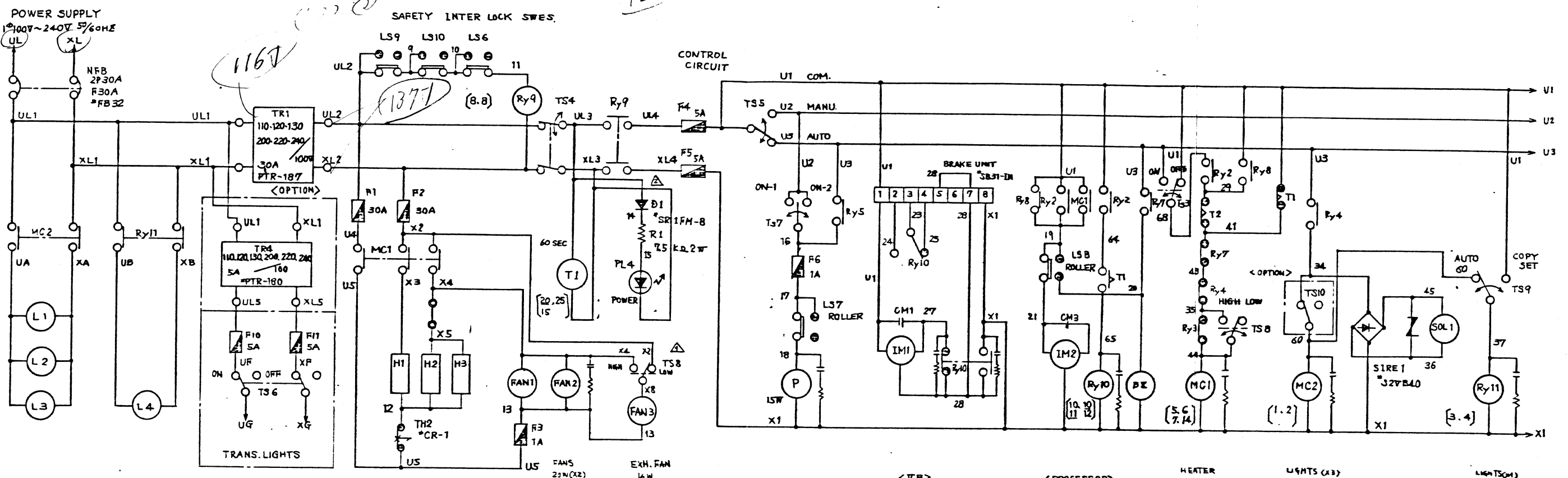


A	UL	F98
B	UL	F99
C	UL	F100
D	UL	F101
E	UL	F102
F	UL	F103
G	UL	F104
H	UL	F105
I	UL	F106
J	UL	F107
K	UL	F108

SYM	REVISION	DATE	APPROVED

DESIGN	TITLE
DRAWING	WIRING DIA
CHECKED	
APPROVED	
DATE	
MODEL	NO.
CF-151-B4	HCW 31444

DWG NO. HCS 31695



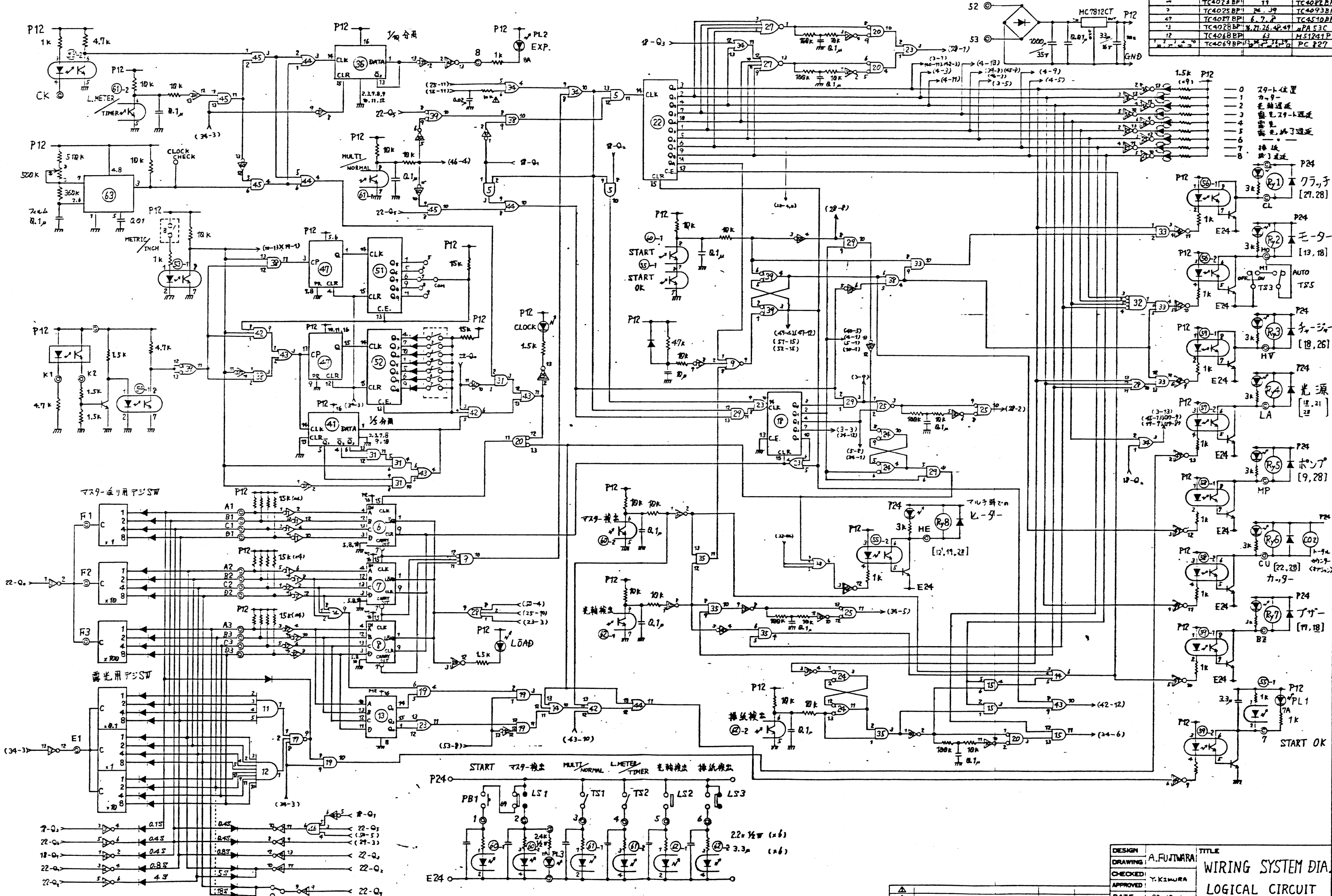
116 → 116

DESIGN		TITLE	
DRAWING	<i>[Signature]</i>	WIRING SYSTEM DIA	
CHECKED		HARD	
APPROVED	Y. KIMURA		
DATE	JAN. 31. '84		
MODEL	CF-151-B4	DWG NO.	HCS 31695

SYM	REVISION	DATE	APPROVED
△			
△			
△			

0103 21669

20-25	TC4001BP	23, 34, 43, 44	TC4001BP
27-32	TC4002BP	42, 46	TC4002BP
18-22, 51, 52	TC40017BP	14, 28	TC40017BP
36-41	TC40018BP	14, 28	TC40018BP
47	TC40023BP	11	TC40023BP
7	TC40025BP	24, 39	TC40025BP
47	TC40077BP	6, 7, 2	TC40077BP
3	TC40078BP	7, 21, 26, 40, 49	TC40078BP
12	TC40088BP	43	TC40088BP
10, 11, 40, 45	TC40098BP	15, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	TC40098BP



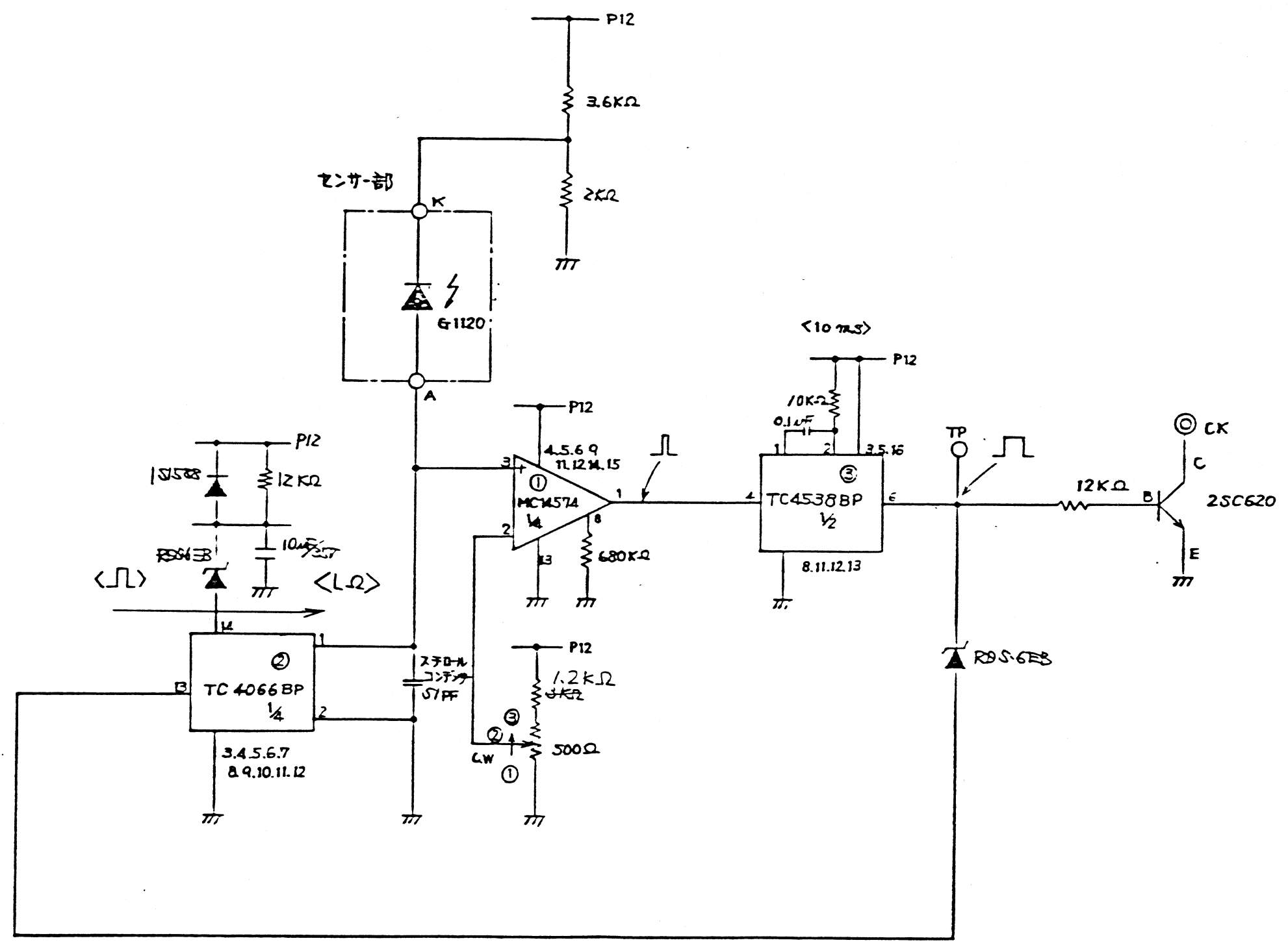
- 0 29-1位置
- 1 カ-9-
- 2 光軸通過
- 3 磁気29-1通過
- 4 磁気
- 5 磁気29-1通過
- 6 磁気
- 7 磁気
- 8 磁気

- P24 クラッチ [21, 28]
- P24 モーター [13, 18]
- P24 AUTO TS5
- P24 磁気 [18, 26]
- P24 光源 [18, 21]
- P24 LA [22]
- P24 ホント [9, 28]
- P24 MP
- P24 CO2
- P24 カ-9-
- P24 丁
- P24 B2
- P24 PL1 [7A]
- P24 START OK

DESIGN	A. FUJIWARA	TITLE	WIRING SYSTEM DIA.
DRAWING		CHECKED	Y. KIMURA
CHECKED		APPROVED	
DATE	23. 12. 7	MODEL	CF-151-B4
SYMBOL	10kΩ 磁気通過	REVISION	NO. 4, 6
		DATE	APPROVED

DATE	23. 12. 7
REVISION	NO. 4, 6
APPROVED	

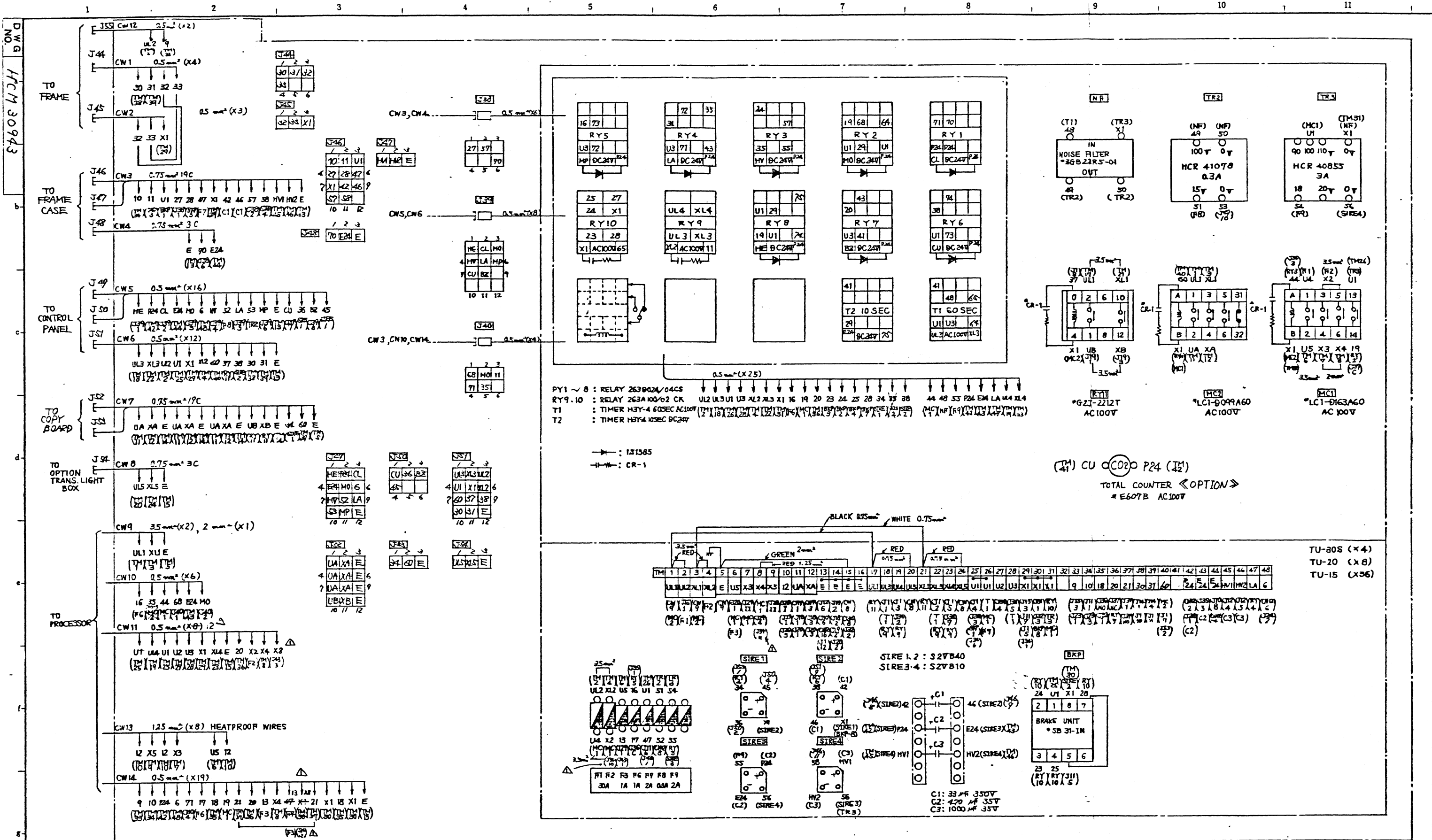
DWG NO. HCS41593



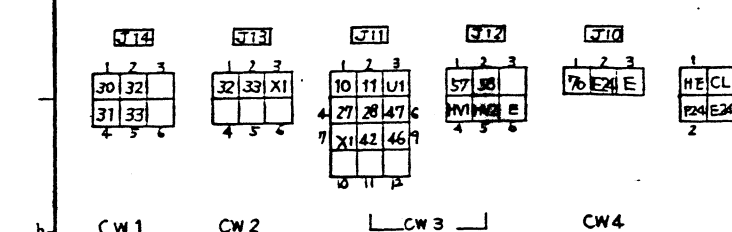
DESIGN		TITLE	
DRAWING	<i>M. Hattori</i>	LIGHT METER	
CHECKED		光量計回路図	
APPROVED	Y. KIMURA		
DATE	APR 15 '83		
MODEL	CP, EP	DWG NO.	HCS41593

△				
△				
△				
SYM	REVISION	DATE	APPROVED	

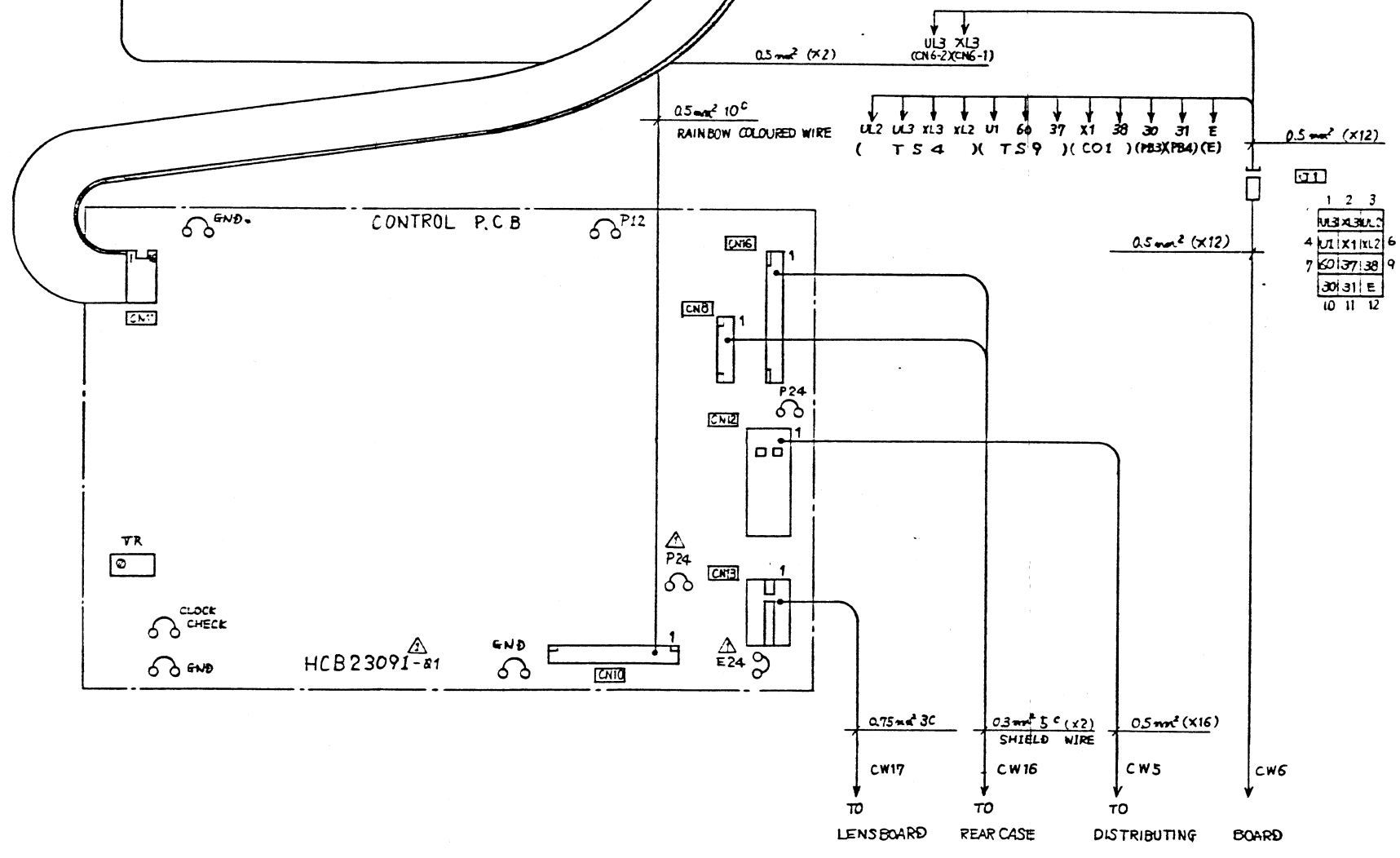
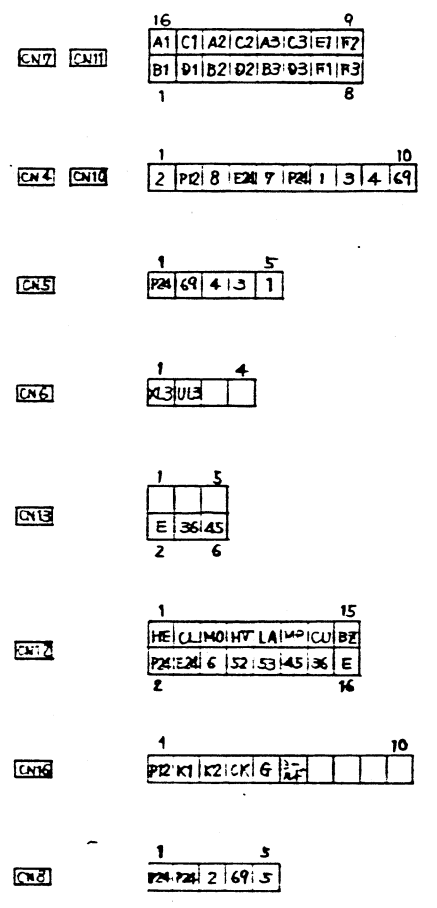
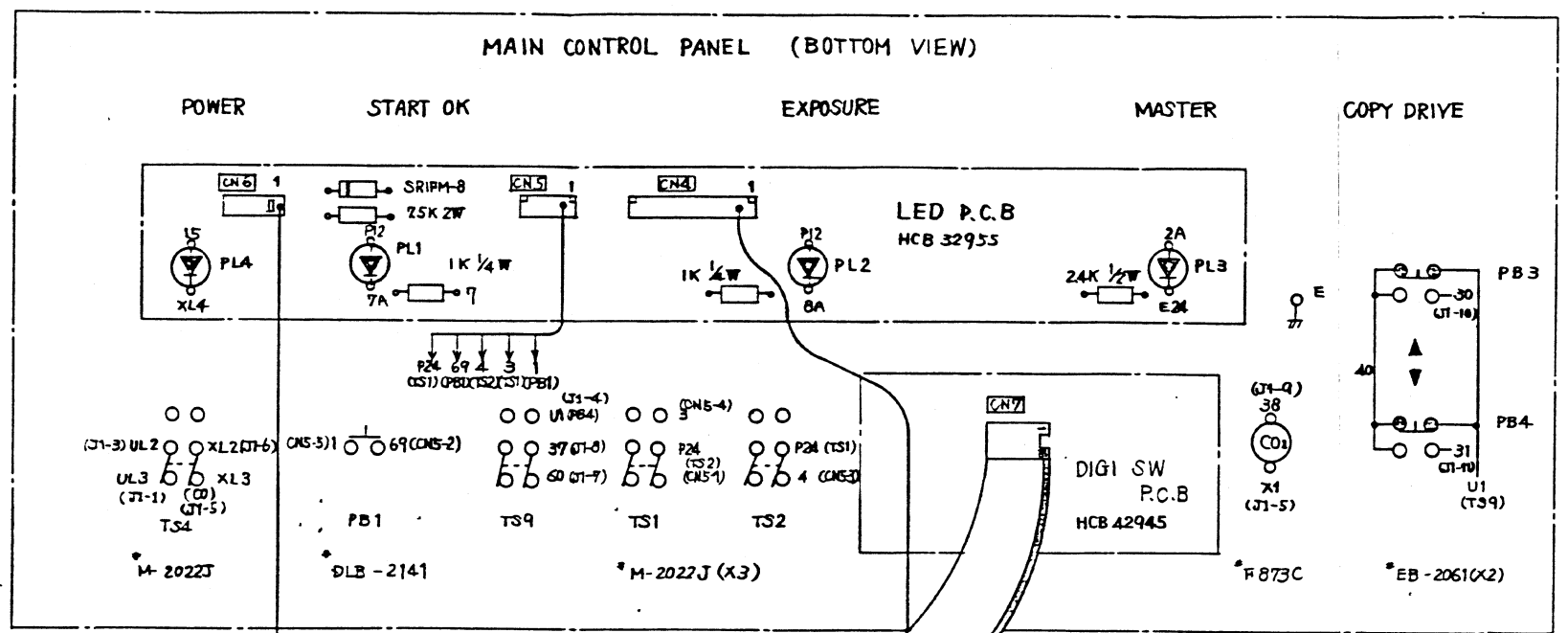




D.W.G. HCM 30943



DESIGN		TITLE	CONNECTION DIA
DRAWING	<i>M. Hattori</i>		DISTRIBUTING BOARD
CHECKED	Y. KIMURA		
APPROVED			
DATE	JAN 31 '84		
MODEL	CF-151-B4	D.W.G. NO.	HCM 30943 5
REVISION		DATE	MAY 17 '84
APPROVED			

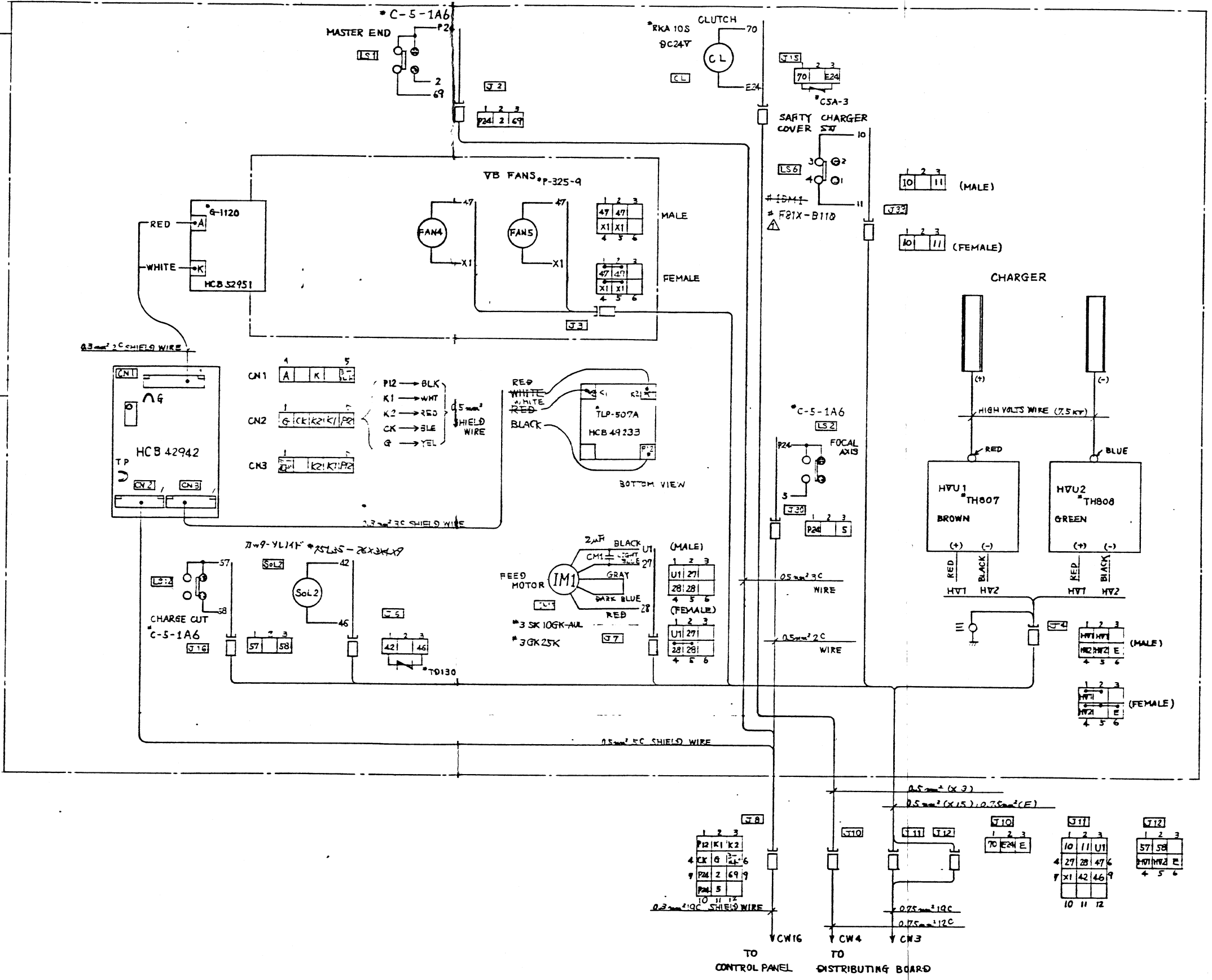


DESIGN	TITLE
DRAWING <i>Imitation</i>	CONNECTION DIA
CHECKED	CONTROL PANEL
APPROVED Y. KIMURA	
DATE JAN 31 '84	
MODEL CF-151-B4	DWG NO. HZX 31154

SYM	REVISION	DATE	APPROVED
△	HCB 23091 → HCB 23091-01	1983-2521	A.F.

DWG NO. HCZ 31155

CONTROL PANEL (BOTTOM VIEW)

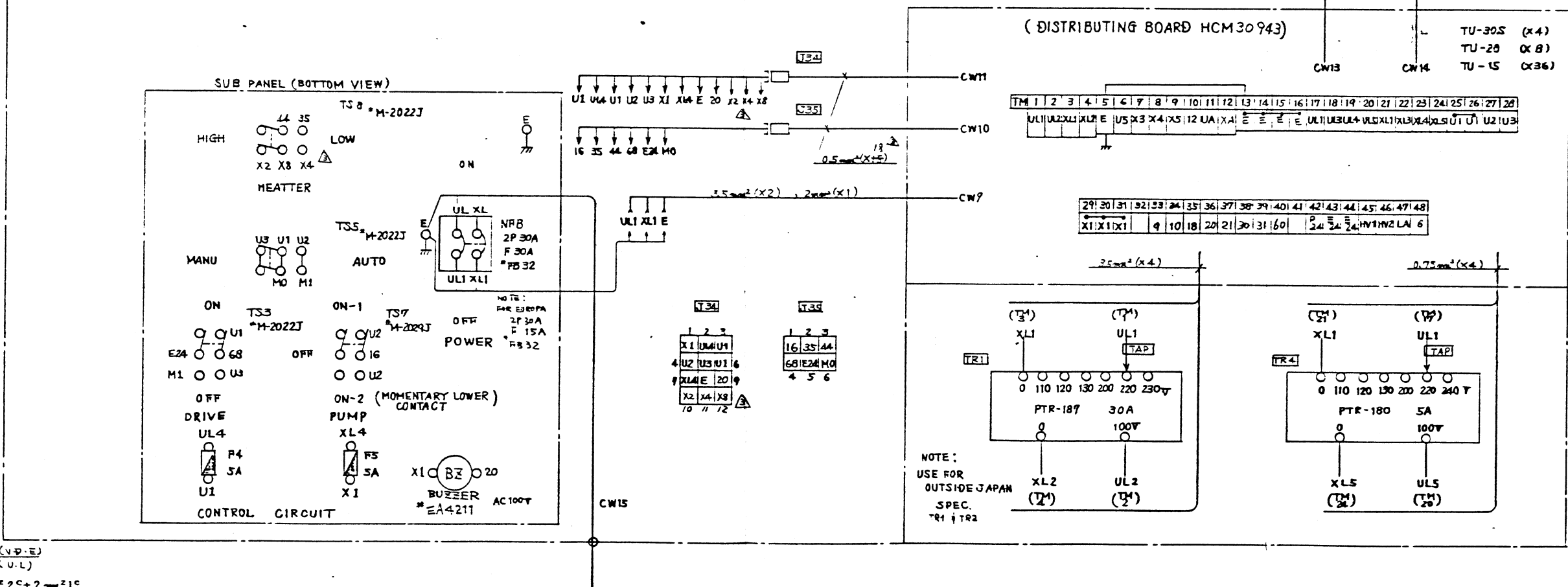
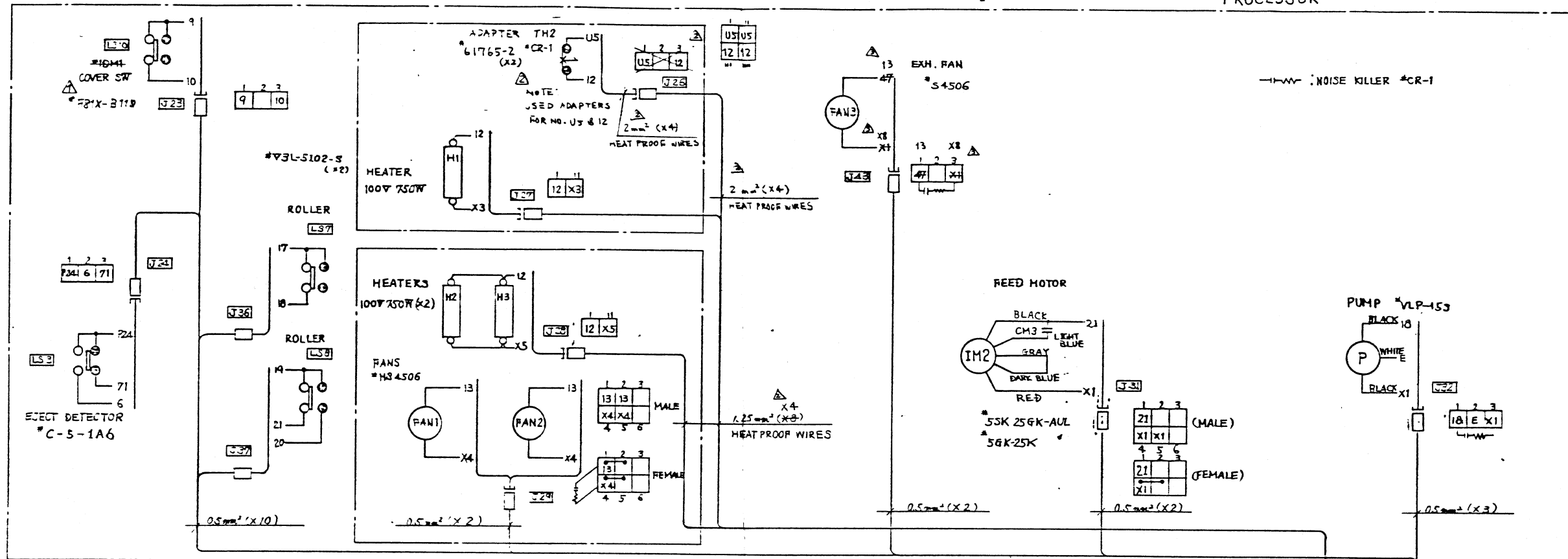


DESIGN		TITLE	CONNECTION DIA
DRAWING	<i>Y. Kimura</i>		REAR CASE
CHECKED			
APPROVED	Y. KIMURA		
DATE	JAN 31 '84		
MODEL	CF-151-B4	DWG NO.	HCZ 31155

SYM	REVISION	DATE	APPROVED

DWG NO. HCR 31156

PROCESSOR

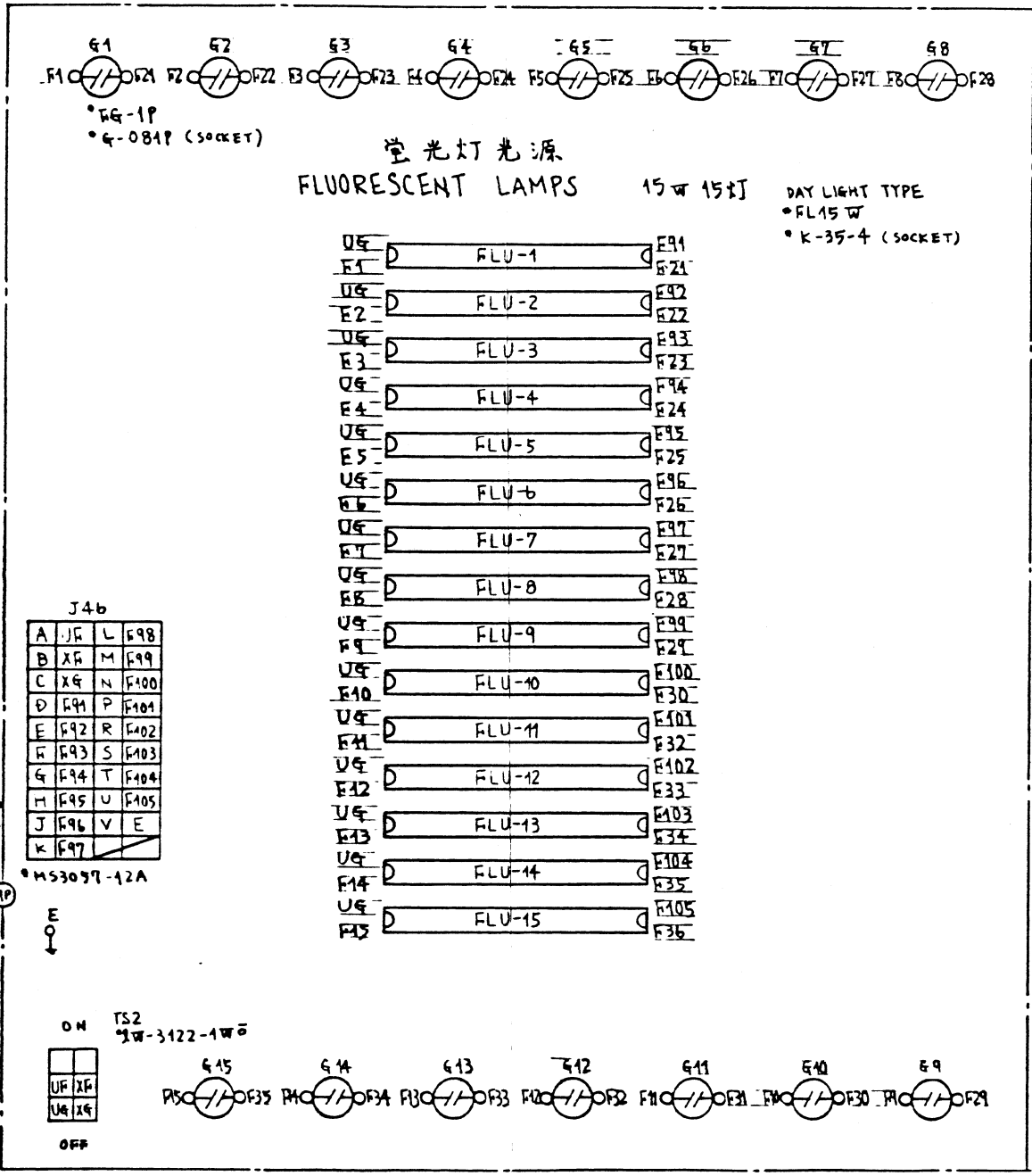
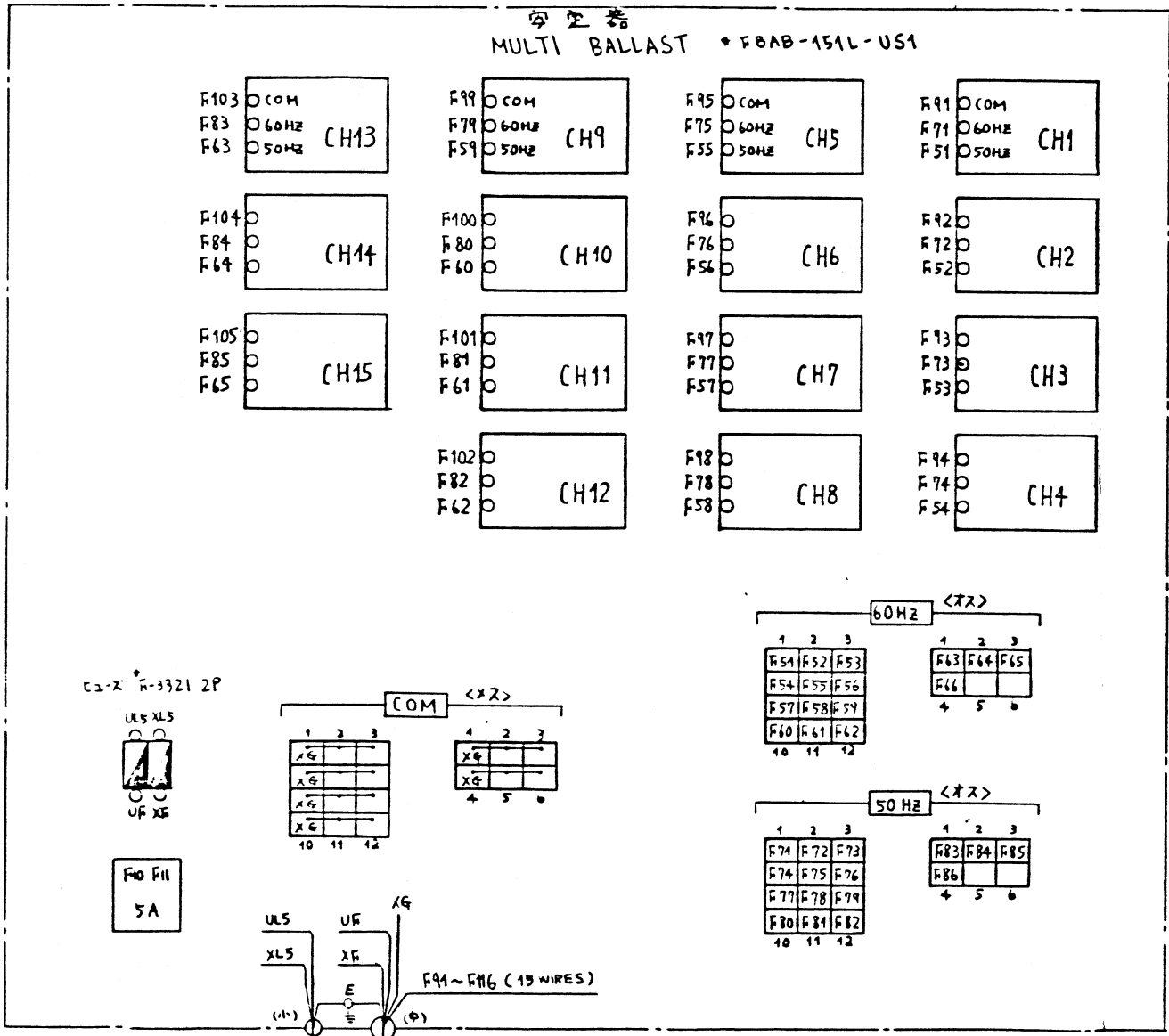
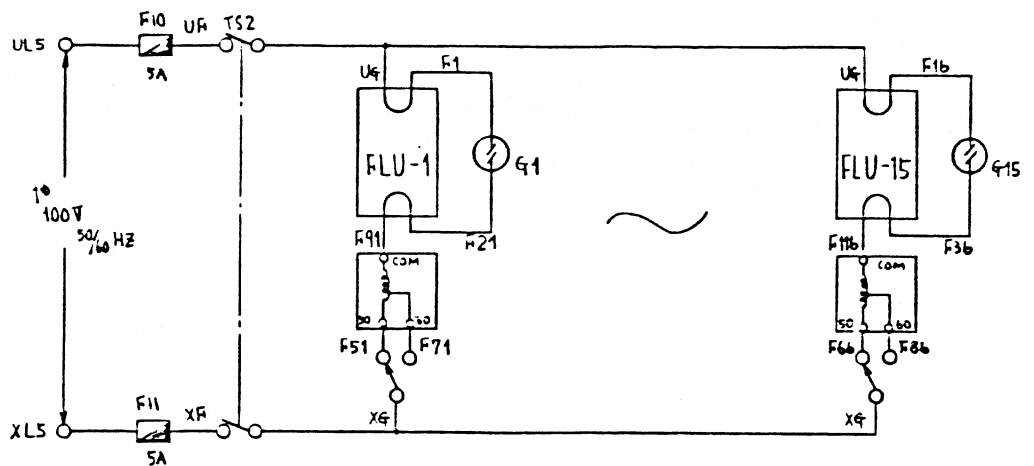


POWER SUPPLY  
1\*100V~240V

2.5mm² 3C (V.P-E)  
AWG#12 3C (U.L)  
5.5mm² 2C+2mm² 1C

△	※3772の動作変更	83030-1641~	'84.5.17	M.HATTORI
△	ADDED ADAPTERS	83030-1631~	'84.5.15	M.HATTORI
△	*DM1 → *F81X-B11R	84030-2501~	'84.4.13	A.F
SYM	REVISION	DATE	APPROVED	

DESIGN	TITLE
DRAWING: <i>M.Hattori</i>	CONNECTION DIA
CHECKED: Y.KIMURA	PROCESSOR
APPROVED:	
DATE: JAN 31 '84	
MODEL: CF-151-B4	DWG NO. HCR 31156



配電盤 9-31Vへ

製作上の注意: 指定以外は 0.5 mm<sup>2</sup> を使用.

DESIGN		TITLE	711 BOX部 結線図
DRAWING	<i>Y. Kimura</i>	DATE	APR 15 '83
CHECKED		MODEL	CF-151-24 CP-119-B4
APPROVED	Y. KIMURA	DWG NO.	HCZ 31094
REVISION		DAIIPPON SCREEN MFG CO. LTD.	