

**MITSUBISHI GRAPHIC ARTS SYSTEM**

**EP-12**

# CONTENTS

<b>CHAPTER 1. OUTLINE</b> .....	2
1. Introduction .....	2
2. Specifications .....	3
<b>CHAPTER 2. OPERATION</b> .....	4
1. General Construction .....	4
2. Processor .....	4
3. Automatic Cleaner-liquid Supplier for Squeegee Roller .....	5
4. Auxiliary Control Panel .....	5
5. Main Control Panel .....	6
6. Jam Detector .....	7
7. Positioning Originals .....	7
8. Lens .....	8
9. Photography Section .....	8
10. Loading FAXMASTER LOM-II .....	8
11. Safety Circuit .....	10
<b>CHAPTER 3. PHOTOGRAPHING</b> .....	11
1. Procedure of Photography .....	11
2. How to Determine Standard Exposure Time .....	11
<b>CHAPTER 4. MAINTENANCE</b> .....	12
1. Inspection at Start-up .....	12
2. Inspection at Shut-down .....	12
3. Maintenance Cycle Chart .....	12
4. General Maintenance .....	12
5. Troubles and Remedies .....	16
6. Ordering and Replacement of Parts .....	17
(Appendix) Electrical Diagram	
Circuit Diagram	

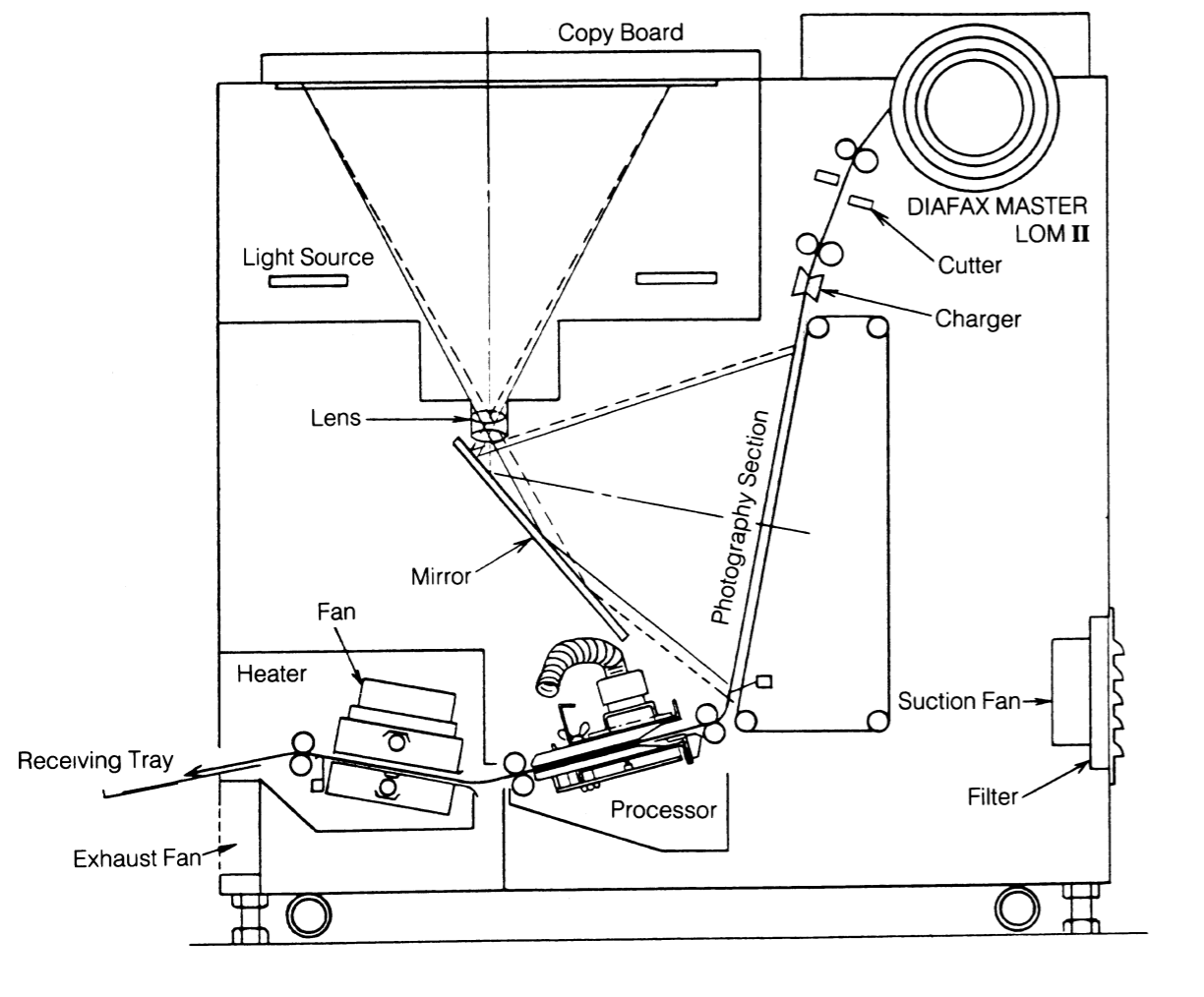
# CHAPTER 1. OUTLINE

## 1. Introduction

We at Mitsubishi are very grateful to you for your selecting the DIA FAXMASTER EP-12 Electrostatic Platemaker. The DIA FAXMASTER EP-12 is an electrostatic platemaker capable of producing offset masters up to A3 size directly from originals with a simple operation, in combination with DIA FAXMASTER LOM-II. The suggestions in this manual will aid in obtaining maximum performance from this equipment. Operation of the unit will be facilitated by a knowledge of its various components. These are identified on Page 3 and their purposes are described below. For information on printing methods, please refer to separate booklet, "DIA FAXMASTER Technical Guide".

Know thoroughly how the machine and each part functions under normal circumstances. Grasp accurately the nature of any malfunction before taking a corrective measure. Following is a check list for unusual conditions.

### Process of Platemaking



## 2. Specifications

Item	Specifications
Master Width	254mm(10"), 279mm(11"), 305mm(12"), 310mm(12 1/4")
Master Length	300~480 mm, Digital Setting (1 mm Increments)
Maximum Image Area	279 x 420 mm
Subject Holder	Foam Rubber Copyboard Chart
Magnification	100% and 95%, switching type
Lens	f=210 mm (Fixed Focus)
Exposure	Stationary, Digital Setting (0.1 Second Increments)
Light Source	Halogen Lamps, 500 W x 4 Lamps
Processing Speed	26~30 Seconds/Plate
Developing Method	Jet-spray Liquid Toner System
Toner Replenishment	Automatic Replenishment System with Liquid Level Alarm Lamp
Drying	750 W x 2 Heat Lamps
Dimensions	110 cm (Width) x 65 cm (Length) x 116 cm (Height)
Weight	190 kg
Power	1 φ, 100 V, 2.2 KW, 50/60 Hz

●Specifications are subject to change without notice.

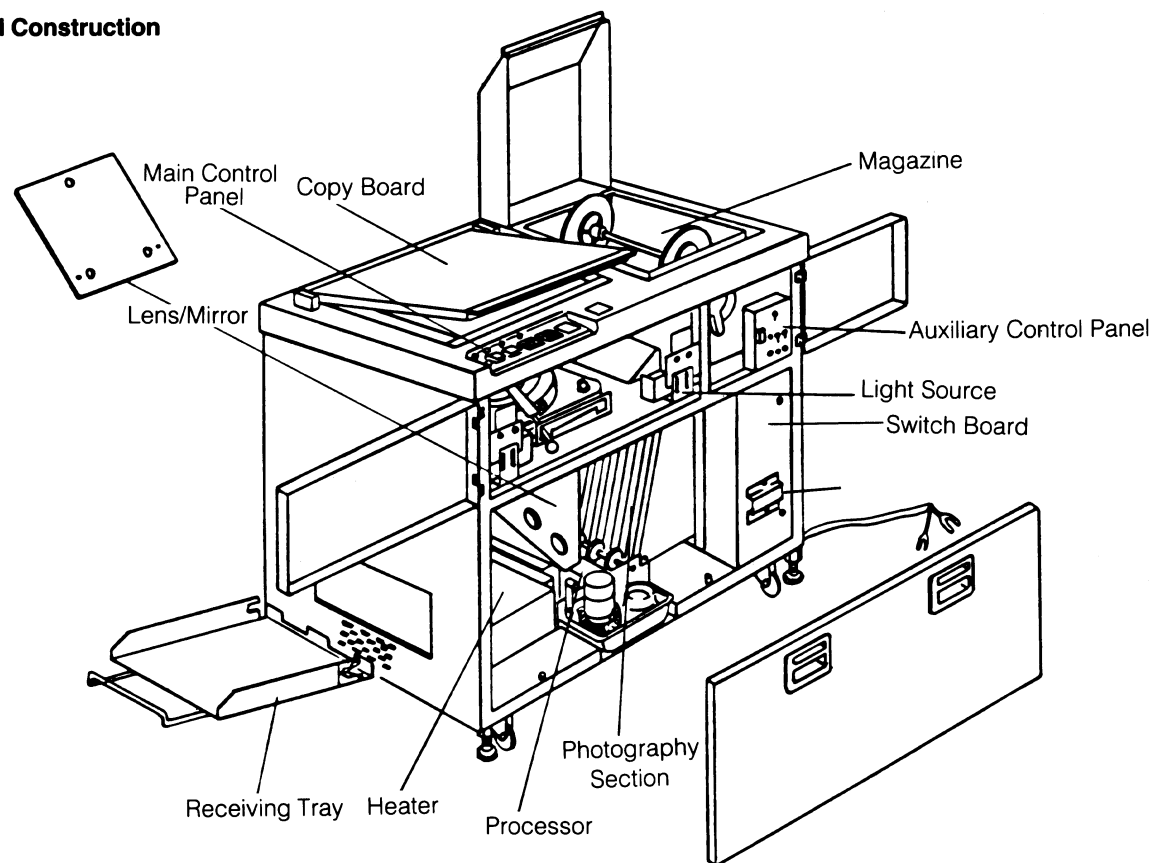
[Setting Conditions]

①Select a room which is well ventilated throughout the year and kept at temperatures of 18°C ~ 25°C and humidities of 45% ~ 75%

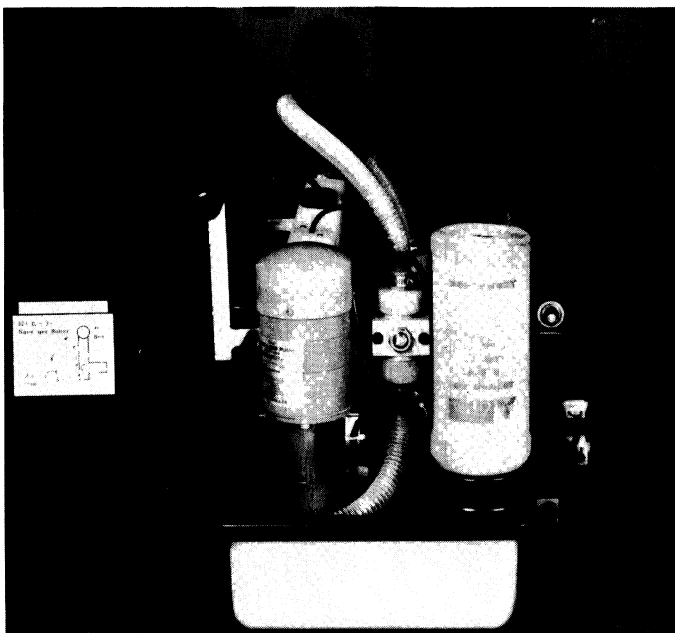
②Avoid a place which may be exposed to direct sunlight.  
③Leave at least 10cm of space behind the main body.

## 1. General Construction

General Construction



## 2. Processor



One undiluted solution for toner. Shake the bottle well before putting the solution into processing tank.

- Pour four bottles of toner in the filling spout. Tear the aluminum seal with a claw attached to the pouring spout and toner will be easily poured. Place a 5th bottle of toner in the toner replenishment stand which is located next to the pump as shown in the photograph. The purpose of the 5th bottle is to replenish the toner automatically as the supply in the tank is consumed. When the liquid level in the processing tank dropped because of consumption of liquid, a liquid shortage alarm lamp (DEV. CL. SUPPLY — orange-colored) will be turned on by the action of a built-in float sensor. Replenish new solution. Continuous use with the alarm lamp on may not only result in deteriorated picture quality due to poor circulation of toner, but also may possibly cause pump troubles. When the processed plates numbered 1,500 or when over one month have passed after putting in toner, replace the liquid in the processing tank with new one irrespective of the number of plates processed.

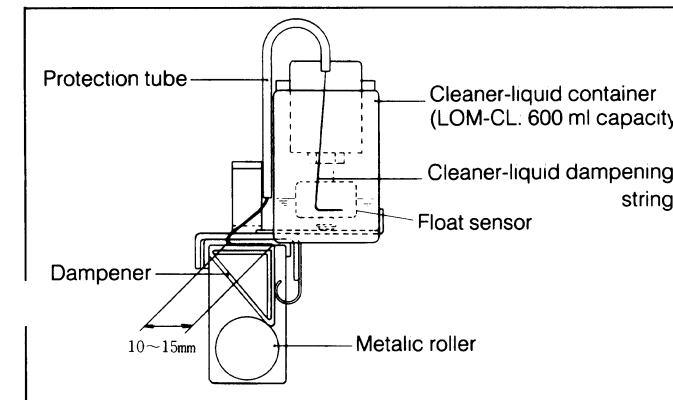
### Caution in handling chemicals

- ① Be careful never to drink or get into eyes processing chemicals. (In case of such accidents check with a doctor.)
- ② When chemicals splash onto skin or cloths immediately wash with running water.
- ③ Use chemicals properly according to instruction.
- ④ Keep chemicals out of reach of children.

## 3. Auto-matic Cleaner-liquid Supplier for Squeegee Roller

- Consumptions of cleaner-liquid and repositioning or replacing intervals of the dampener will be as follows as a standard, somewhat variable according to circumstances of machine installation.

		Standard
Consumption of cleaner-liquid	Summer	About 60 ml daily
	Winter	About 30 ml daily
Dampener	Changing position	Every 2 weeks
	Replacement	Every 2 months



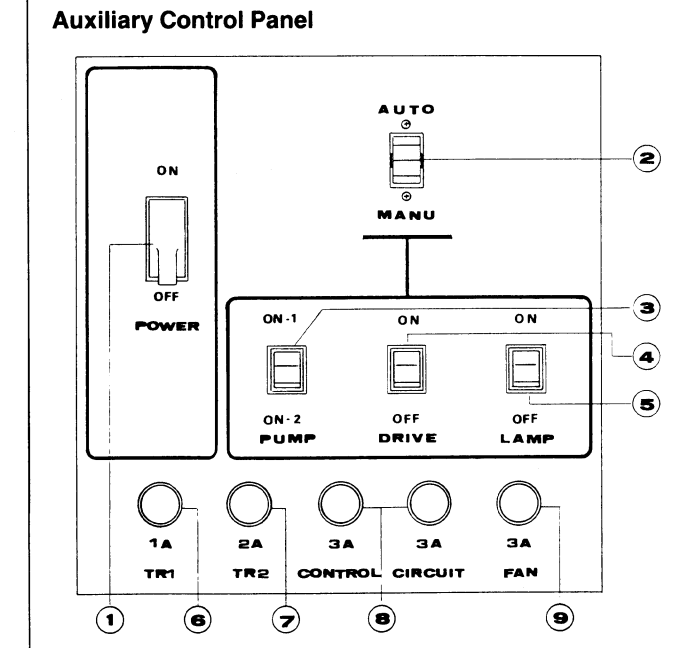
This device keeps the metallic roller clean by continuously supplying cleaner liquid (LOM-CL) to dampener cloth, thereby preventing stains on plates caused by toner stuck to the roller. Remove the cap, pour cleaner-liquid into its container (capacity: 600 ml), and put back the cap. Cleaner-liquid will be supplied to the dampener through the dampening string.

Note: It takes time to fully dampen the dampener when it is new. When fitting a new dampener, therefore, dampen it with cleaner-liquid beforehand.

- When cleaner-liquid in its container runs short, a liquid shortage alarm lamp (DEV. CL. SUPPLY — orange-colored) on the main control panel will be turned on by the action of a built-in float sensor. Replenish cleaner-liquid. Continuous use with the cleaner-liquid running short may possibly result in the following troubles:
- ① Stains will be produced on plates at an about 82-mm pitch.
  - ② Start will be difficult or impossible even if the start button is depressed.
  - ③ An alarm buzzer will be sounded even if the master is not jammed.
  - ④ Master cut size will become shorter than the preset size.

When option rubber rollers, mentioned later, are used instead of metallic ones, be sure to use them with the cleaner system at normal condition, or they will be worn out in a relatively short time.

## 4. Auxiliary Control Panel



This panel is located behind the top right cover of the machine. To gain access to the panel, simply open the cover

### ① Power Switch

The power switch in the Auxiliary Control Panel is the first switch to be activated when using the machine. In effect, it is a circuit breaker.

### ② Mode Selector Switch

For platemaking this switch should be in the AUTO position. In the manual position (MANU), only the individual switches as described below can be operated. The machine will not function in manual position.

### ③ Pump Switch

This switch is operable only when the mode selector switch is in the manual (MANU) position.

- ON-1: This position would be used only when the machine has not been used for a prolonged period of time (for example, more than one week). It activates the pump which will agitate the toner assuring uniform development of the plates. Three or four minutes should be sufficient time.
- ON-2: In this position, the pump will discharge the toner from the processing tank. The switch will not remain in this position unless there is pressure on the squeegee roller.

Note: For resetting the thermo-switch, be sure to cut off the power source in advance, being careful of high temperature parts. The reset switch, a white push-button, is visible at the front when the upper part of heaters is opened.

**④ Drive Switch**

This switch will operate the vacuum back belts squeegee rollers, plate eject rollers, etc. and is normally used to clear plate jams.

**⑤ Lamp Switch**

This switch will illuminate all four lamps. It is used when additional lighting is required on the subject holder, i.e. cleaning of the glass.

**⑥ TR2 (Glass tube fuse for the control board transformer, 1A)**

When the cap is removed, a 1A glass tube fuse for protection of the control circuit appears. Do not use any fuse whose capacity is not equal to the indicated capacity.

**⑦ TR2 (Glass tube fuse for the 24VDC transformer, 2A)**

When the cap is removed, a 2A glass tube fuse for protection of the 24VDC circuit appears. Do not use any fuse whose capacity is not equal to the indicated capacity.

**⑧ Control Circuit Fuses**

Each of these caps contain a 3 amp fuse. These fuses should be checked when either the power or control circuit switches do not operate.

**⑨ Fan Fuse**

This is also a 3 amp fuse and should be checked when the fans fail to work.

**⑩ Master Length Control**

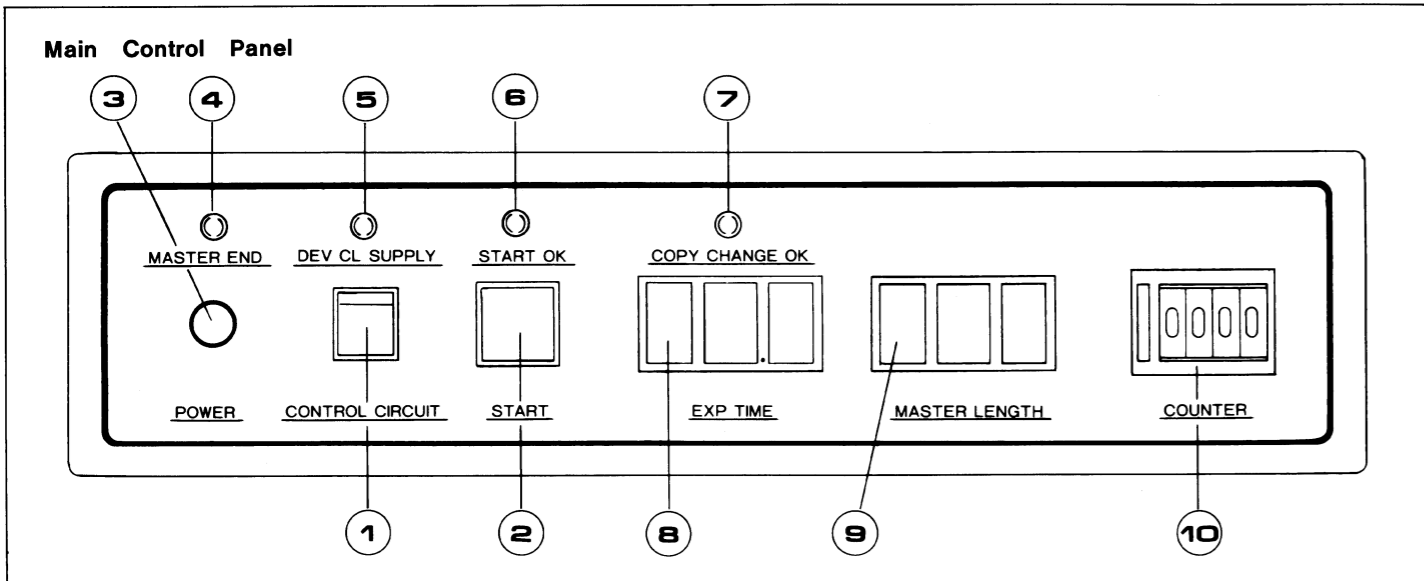
The desired plate length is pre-set increments of 1 mm within the range of 300 mm to 499 mm.

Note: ① The machine will not function if the plate length is set at 299 mm or less or 500 mm or more.  
 ② The Master Length is set in mm for this machine. If the English system of units is used in your country, use a conversion table.

**⑩ Plate Counter**

Indicates the number of plates which have been made. Depressing the re-set button will return the counter to zero. The re-set button is a little recessed from the surface of control panel to avoid mishandling. For resetting, push it in with a sharp-pointed rod or the like.

**5. Main Control Panel**



**① Control Circuit Switch**

The machine will become operable by setting this switch to ON after the POWER switch on the auxiliary control panel has been turned on.

**② Start Switch**

Depressing this button will start a series of motions of feeding, cutting, electrification, developing, drying, and removing papers.

Note: When START OK (start OK lamp — green-colored) is off, or when MASTER END (master end lamp — red-colored) is on, the start button will not function.

**③ Power Light (Orange)**

This light will automatically illuminate when the control circuit switch is activated and indicates that the machine is ready for operation.

**④ Master End Light (Red)**

If this light is illuminated, the machine will not function. When lit, it indicates either the end of a roll of FAXMASTER LOM-II or FAXMASTER LOM-II is not loaded properly.

Note: If the Master End Light illuminates after the start button has been depressed, it indicates that a plate has jam-

med in the exposure area. In this even open the processor cover, remove the plate, turn off the control circuit switch and then turn it on again.

**⑤ Developer, Cleaner Supply Shortage Alarm Lamp (Orange)**

Shortage of the toner (LOM-ED) or cleaner-liquid (LOM-CL) in their containers will be detected by float sensors, thus turning on the DEV. CL. SUPPLY lamp.

When it is lit, be sure to check the shortage, and supply each liquid. Subsequent use with the lamp on may possibly result in various troubles. (Refer to 2 and 3, mentioned earlier.)

**⑥ Start OK Lamp (Green)**

The green light extinguishes when the start button is pushed. When the light reilluminates, the machine is ready for the next plate.

**⑦ Copy Change OK Light (Green)**

This light will extinguish when the start switch is depressed. When it reilluminates, the original can be changed.

**⑧ Exposure Timer**

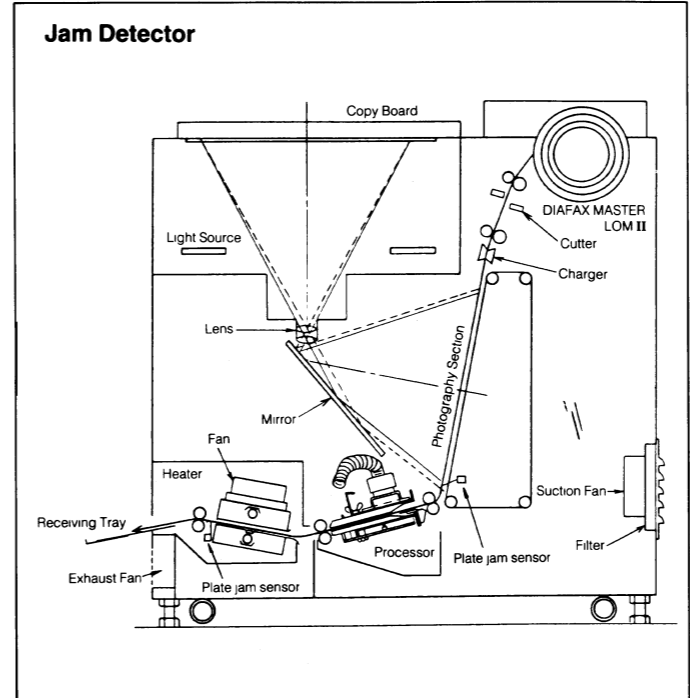
The desired exposure time is pre-set in seconds and tenth of seconds.

**6. Jam Detector**

An alarm buzzer sounds if a master paper jams in one of the following situations:

- ① The plate did not reach the exposure area within 5 seconds after it was cut.
- ② After exposure, the plate did not go through the plate jam sensor within 4 seconds after the alarm buzzer is activated, the machine will reset to its normal operational state).

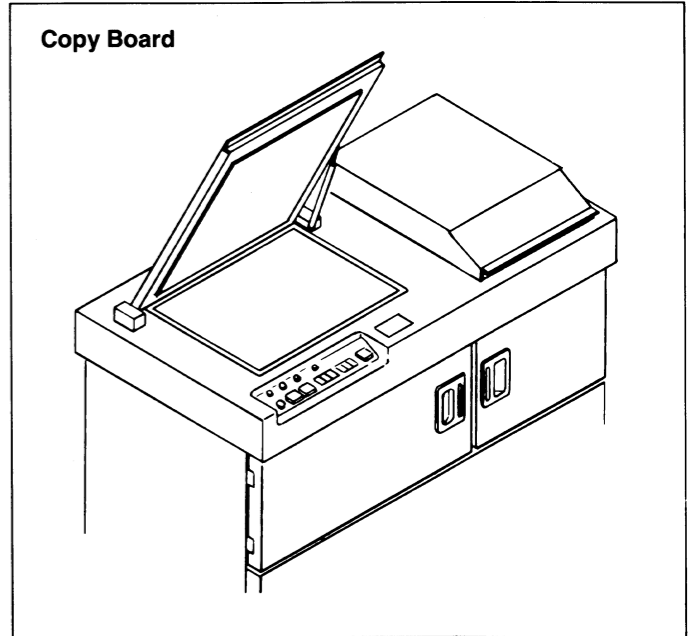
If the alarm sounds, the following areas should be checked for the source of the jam.



Magazine / Cutter / Exposure Area / Processor / Heater / Receiving Tray

Be especially careful not to fail to remove a jammed master at the heater part. Negligence may lead to overheating.

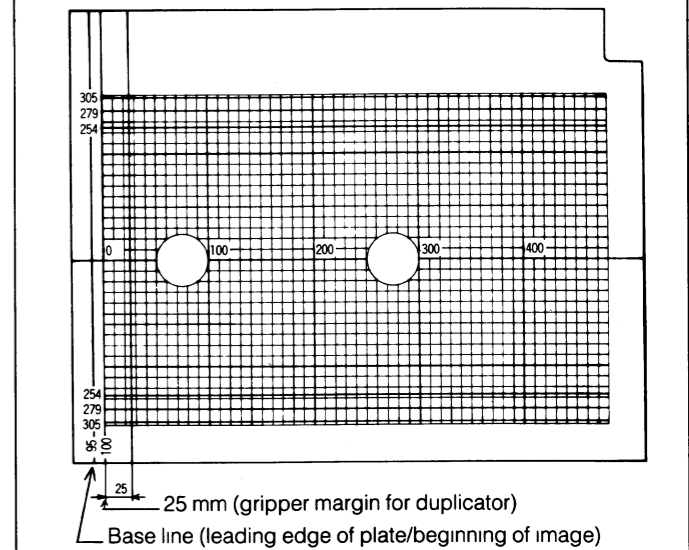
**7. Positioning Originals**



**Copy Board**

- ① Lift the copy board cover. Spring action holds the cover at any desired heights
- ② Lifting the cover automatically turns on the preview lamp
- ③ Place the original face down on the glass.
- ④ Close the cover.

**Positioning Chart**



Note: Rough handling of the cover may cause malfunction of the spring action

## Positioning Chart

A translucent positioning chart is provided with the unit. The chart should be placed on top of the original. The original should always be centered with the center line of the positioning chart. In positioning the original allowance must always be made for the press gripper margin.

## 8. Lens

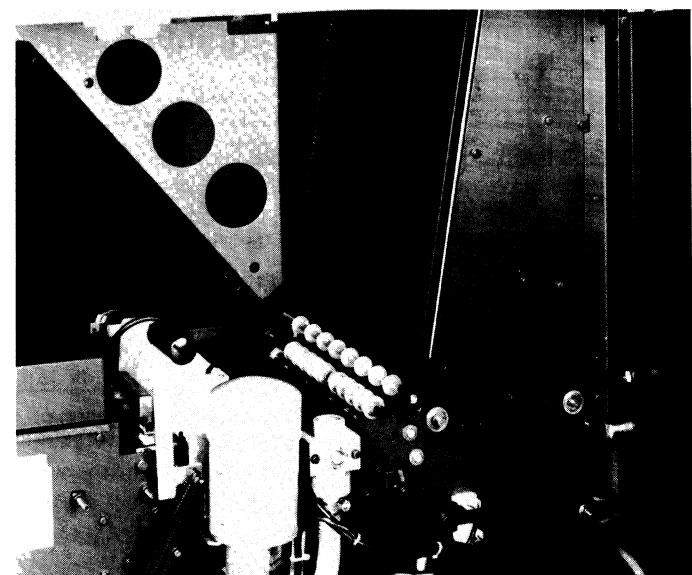
The lens used for EP-12 is  $f=210\text{mm}$ , fixed aperture. For changing over the 100% and 95% magnifications, the lens will move vertically by operating a handle axle located in the light source section.

When the handle axle is at the right slot, 100% photographing will result, while 95% will result at the left slot.



The lens should be capped and the mirror covered if the unit is not to be used for one week or more. Never touch the lens or the mirror with the hands.

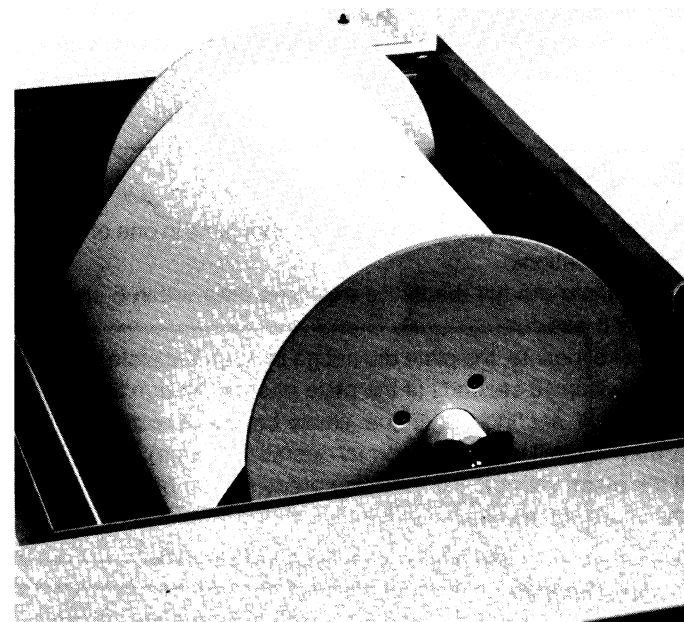
## 9. Photography Section



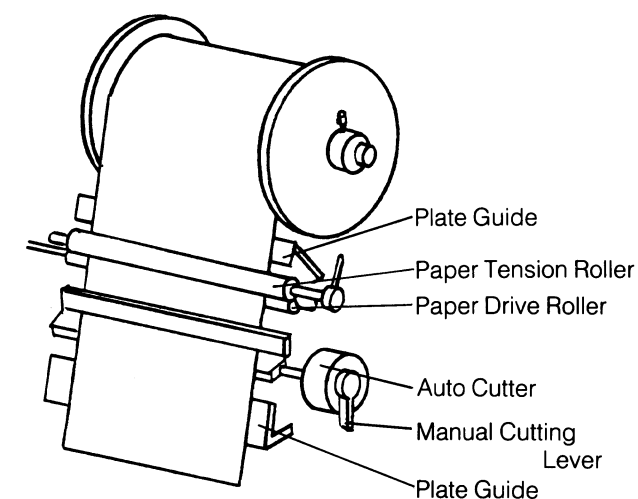
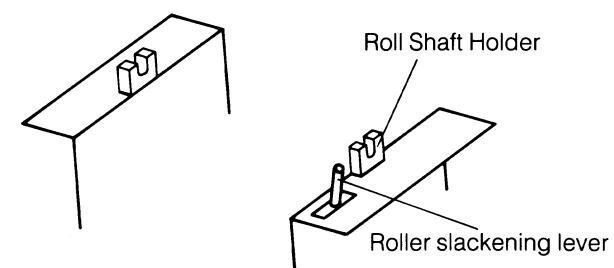
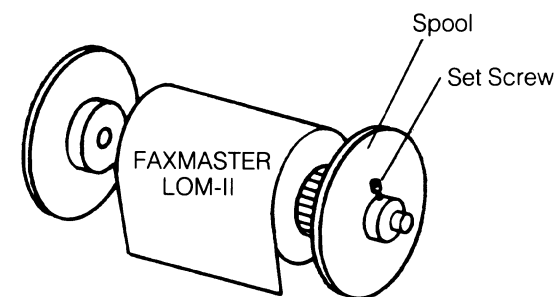
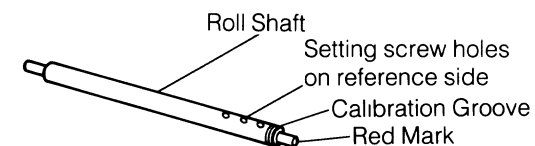
Depressing the Start Switch will automatically advance and position the plate in the exposure position. The pre-set exposure time will be automatically activated.

And the charger (electrification) will not function after the position where the leading edge of master has turned on the micro switch that is located a little above the inner part of the photographing surface.

## 10. Loading FAXMASTER LOM-II



### Loading master paper



### A. Loading master paper

- ① Fixed the spool of reference side (with a red mark) with a setting screw into the spool shaft (on the red mark side) by adjusting to its calibration line. When a 310-mm (12 1/4") wide master is used, adjust the spool to the end face of spool shaft instead of the calibration line, and use the screw setting hole on the back side of the spool shaft.
- ② Insert the master into the roll shaft.
- ③ Insert the opposite side spool into the shaft and screw up.
- ④ Fix the spool end to the roll shaft.
- ⑤ Slacken the roller and set it at the roller free position. Pass a master between two rollers along the master inserting guide until its edge comes to the top of plate guide.
- ⑥ Set the roller slackening lever at "Roller Set".
- ⑦ Open the Auxiliary Control Panel cover and cut the leading edge of the roll by moving the manual cutting lever in the direction indicated by the arrow.  
In case of manual cut, the lever may be hard to return in some cases. Be sure to return it to its original position by hand.
- ⑧ Remove the strip cut from the roll.
- ⑨ Close the Auxiliary Control Panel cover and the magazine cover.

## 11. Safety Circuit

The EP-12 is equipped with a safety circuit in order to ensure the operator's safety. Therefore, it can not be powered up unless it is completely ready for operation

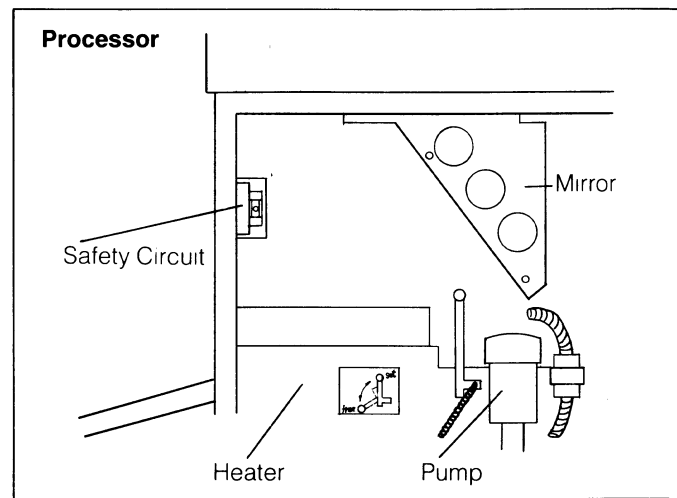
The safety circuit detects:

- ① Whether the cover of the Auxiliary Control Panel is open or closed
- ② Whether the light source cover is open or closed
- ③ Whether the processor cover is open or closed

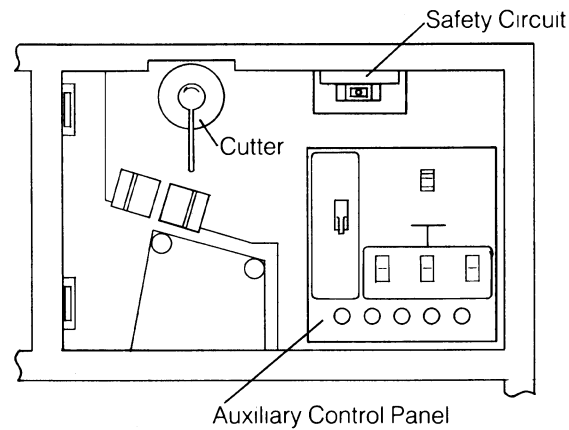
The machine is energized when all three microswitches are on, that is all the covers of the Auxiliary Control Panel, light source and processor are closed. A key for each cover which enables the microswitch to be turned on with the cover open is supplied for inspection or servicing

When inspecting or repairing the machine using these keys, enough care should be taken to avoid hazards

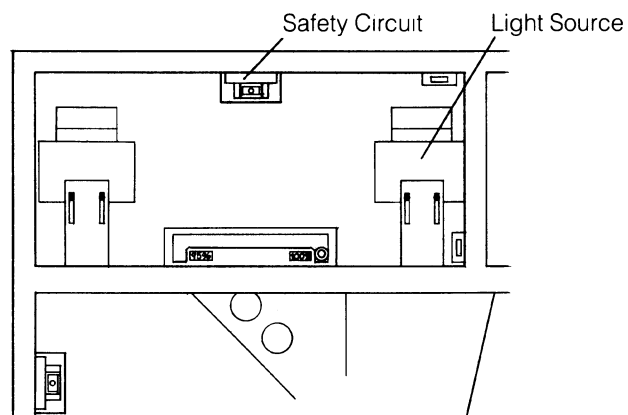
When the machine has been turned off by this safety circuit and then reset, the machine is warmed up until it is ready for fixing, and then can be started.



**Auxiliary Control Panel**



**Light Source**



## 1. Procedure of Photography

Turn on the POWER switch on the Auxiliary Control Panel.

- ① Turn on the CONTROL CIRCUIT switch on the main control panel.  
The photographing procedure can not be started until the heater and drive have been warmed up and are ready for fixing.
- ② In the fixing section, the built-in electro-thermostats work so as to keep the internal temperatures of the upper and lower portions at 170°C and 150°C respectively. When the machine is ready for fixing, the start OK pilot lamp lights when the internal temperature set for the lower portion is reached (150°C).
- ③ If toner isn't fixed well at a low room temperature, adjust the temperature with the dial.
- ④ The fan located above the heater works after completion of exposure until paper output. Also, the waste heat fan at the bottom of the fixing section works after completion of exposure until completion of paper output.
- ⑤ If toner isn't fixed well at a low room temperature, turn off the fan.
- ⑥ Gently open the copy cover frame and load the copy.
- ⑦ Set the specified master length with the master feed length control.
- ⑧ Set the exposure time with the exposure timer.  
For continuous platemaking under the same conditions, the operator has only to take above steps (7) and (8) once and no further operation is required.

⑨ Depress the START button.

⑩ Then, when the whole process is over, the master is in the master output tray.

Make sure that:

- ① The MASTER END pilot lamp (red) is out and the buzzer is not sounding.
- ② The mode selector switch on the sub-control-panel in the front cover is at AUTO.
- ③ The START OK pilot lamp (green) is ON.
- ④ The DEV. CL. SUPPLY (alarm for developer/cleaner low-liquid-level) lamp (orange) is out.

## 2. How to Determine Standard Exposure Time

Since DIAFAX MASTER LOM-II uses an emulsion of zinc oxide, its sensitivity may vary with its manufacture lot.

The lot number is indicated on the outer box. Be sure to check sensitivity when using a master with a different lot number. Insufficient exposure will cause fat images or a fouled ground, while excessive exposure will result in thin images or plugging back ground toning. The high-quality performance of DIAFAX MASTER LOM-II can be fully displayed by properly adjusting exposure time.

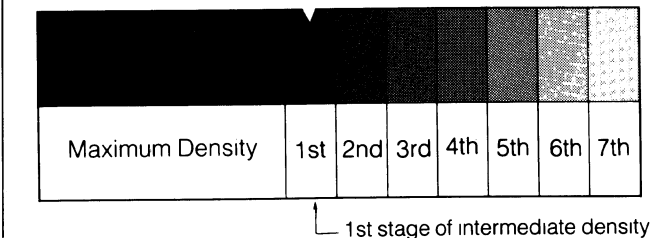
### How to Determine Standard Exposure Time

- ① EP-12 is provided with test charts. By using these charts, standard exposure time can be decided.

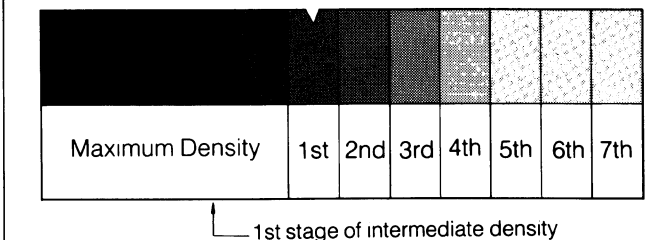
- ② Standard exposure time will be the position where the first stage of intermediate density matches the stage with a V cut on the test chart, that is, the portions denser than the above position will be judged as maximum density (5 stages), and those thinner than the above can be matched to up to the 7th stage. The standard exposure time is referred to as the standard exposure time
- ③ With the standard exposure time of test charts as a standard, the optimum exposure time for originals is obtained. For materials containing typed or phototypeset letters: exposure time should be increased by 10% to 15%. For materials with dots: exposure time should be increased by 20% to 30%. For ruled or pencil-written materials: exposure time should be decreased by 10% to 20%. (Exposure should be variable with the size lines and the type of pencil.)
- ④ Each test chart is affixed with an image judging chart, which is to be used for checking focuses. Expose rather longer than the standard exposure time, the focus will be correct if the 8 lines/mm portion on the image judging chart has been reproduced. (The image judging chart, a reproduction, does not indicate absolute values, hence, use it as a guide for checking the focus.

### How to Determine Standard Exposure Time.

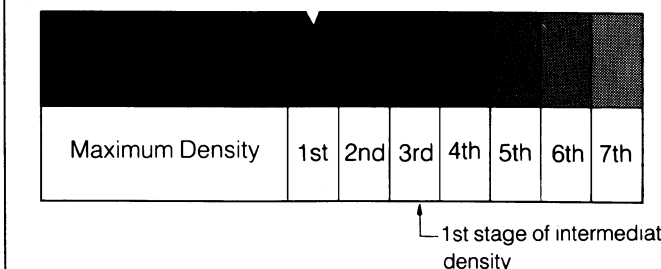
- <Standard Exposure>
- 5 stages of maximum density
  - 7 stages of intermediate density



- <Over Exposure>
- less than 4 stages of maximum density
  - 8 stages or more of intermediate density



- <Under Exposure>
- 6 stages or more of maximum density
  - 6 stages or less of intermediate density



## 1. Inspection at start up

- ① Turn on the power switch on the Auxiliary Control Panel and the Control Circuit Switch on the Main Control Panel.
- ② Be certain that the lens cap and mirror cover have been removed.
- ③ Check to be certain that there is sufficient toner in the tank.
- ④ Depress the start button on the control panel to be certain that the unit is functioning properly
- ⑤ Check the subject holder glass to be certain that it is clean and has no scratches

## 2. Inspection at Shut down

- ① Turn off Control Circuit Switch on Main Control Panel and Power Switch on the Auxiliary Control Panel.
- ② If you will not use the machine for some time, cap the lens and cover the mirror. Also, put a vinyl cover over the machine.
- ③ Release the squeegee roller pressure, remove the metal (upper) roller by grasping the handle and wipe the rollers with a cloth dampened with dispersant.

## 3. Maintenance Cyle Chart

Cleaning of squeegee rollers	Every 500 plates or every two weeks
Repositioning of dampener at squeegee parts	Every two weeks
Replacement of dampener at squeegee parts	Every two months
Cleaning of developing plate	Weekly
Cleaning of developing vat	When the whole liquid is replaced
Cleaning of corona wires	Every 500 plates
Replacement of corona wires	Every 3,000 plates
Cleaning of glass at copy board	Daily (before commencing work)
Cleaning of lens and mirror	Monthly
Cleaning of plate eject roller	Monthly
Cleaning of air filter	Monthly

## 4. General Maintenance

### A. Cleaning of Subject Holder

A daily check should be made to be certain that the glass is clean as any dirt or fingerprints will show on the plate. If necessary, dampen a soft cloth with a glass cleaner and wipe the glass. Do not leave cleaner residue on the glass surface.

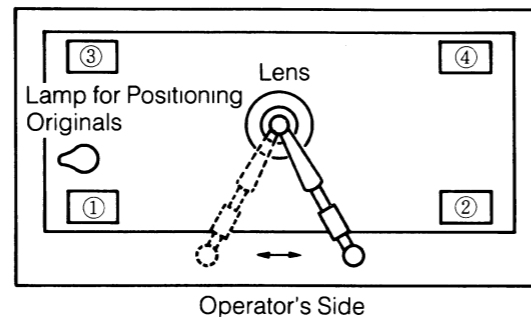
### B. Cleaning of the Lens and Mirror

Dirt and dust on the lens and mirror will spot the plate. Lens and mirror surfaces are very fragile and should be handled with care to keep them free of dirt any scratches. Dust the mirror with an air brush (supplied with your unit) at least once a month and more often if required. If the dust cannot be removed by the air brush, gently wipe the surfaces with lens paper dampened with either industrial ethyle alcohol or lens cleaner liquid.

### C. Changing of Halogen Lamps

Both the reflectors and lamps must be cool before attempting to change the lamps.

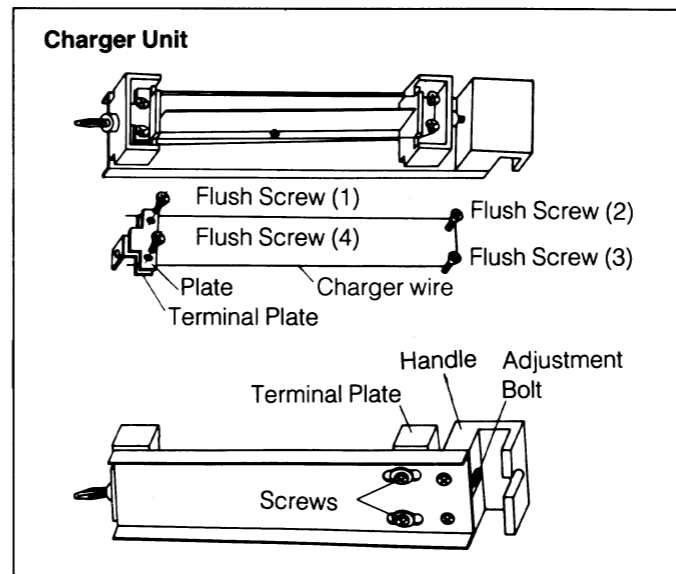
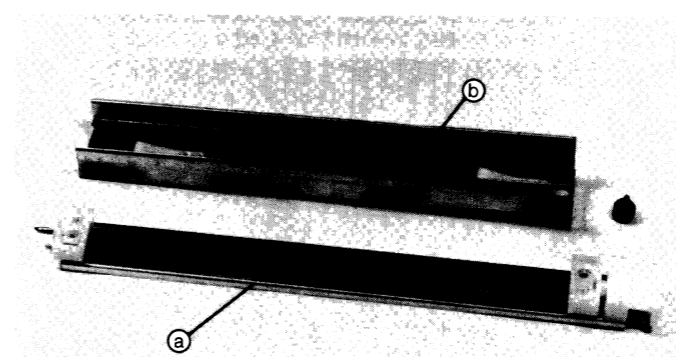
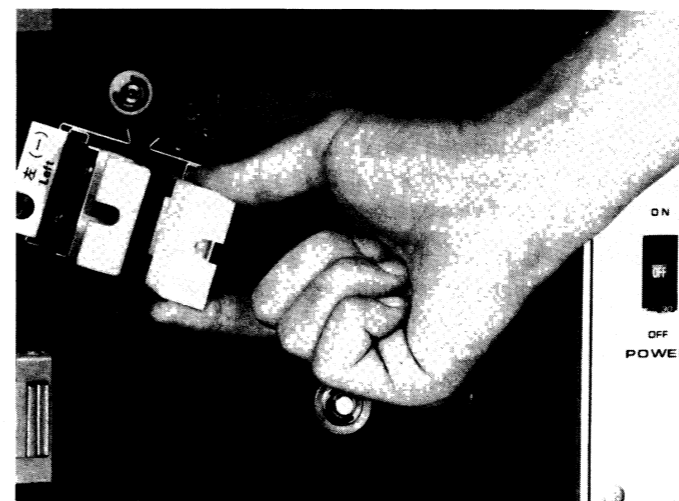
- ① Remove the copyboard glass.
- ② Cap the lens so that it will not pick up dust from the lamps.
- ③ Do not handle lamps with bare hands. Always wear glove or use a clean, dry cloth.
- ④ Hold the lamp and push to either side until the opposite end is free of the socket. Care should be exercised in removing the lamps so that the reflector angle will not be altered as this will affect light distribution.
- ⑤ Fingerprints and oily dirt on lamps will make them translucent. Clean lamps with lens paper dampened with ethyle alcohol, if necessary.
- ⑥ Figure below shows the location of the lamps.



### D. Coronas

Corona wires are made of special metal (tungsten 0.07 mm) and prolonged use without cleaning may cause oxidization, breakage, uneven charge, etc.. Include corona cleaning in your daily routine. If uneven charge occurs when corona is clean, the corona wires should be changed. To clean the corona, the following procedure should be observed.

- ① Open the Auxiliary Control Panel cover and switch off the power.
- ② Pull out coronas (-) and (+) Coronas (A) will slide out.
- ③ To remove (B) coronas, the black plastic topped screw must be removed.
- ④ Gently clean the corona wires with alcohol using the brush provided or a soft cloth. Make it a habit to also clean the corona box when you clean the wires. To change the corona wires, the following procedure should be observed.
  - 1) Loosen (do not remove) the two screws in the elongated slots on the back of the corona
  - 2) Unscrew the adjustment bolt 5 or 6 turns.
  - 3) Loosen screws 1 and 4 and remove the old corona wire.
  - 4) Starting at screw position 1, insert one end of wire between the terminal plate and the plate with sufficient wire projecting to enable you to hold the end of the wire while threading around screws 2, 3 and back to 4, inserting the wire between the terminal plate and plate as at screw position 1.
  - 5) Tighten screws 1 and 2. Snip off ends of protruding wire.
  - 6) Tighten adjustment bolt to take up slack in the corona wire. Continue to tighten adjustment bolt SLOWLY while gently flicking with fingertip until the flicked wire emits a high sound. Tightening too much will snap the wire and too little will allow vibration during charging resulting in uneven charge on the plate.
  - 7) Tighten 2 screws in the elongated slots.



### E. Cleaning of Sliding Part of Exposure-Section Belt

If shifting or slanting of upper part of the image is often seen of the produced plate, or unusual sound is heard at exposure-section when master plate is fed, clean the sliding part of exposure-section belt.

#### Method of cleaning

- ① Raising the rubber belt and clean the sliding part with car wax.
- ② Remove completely the wax with dry cloth.

### F. Cleaning of Processor

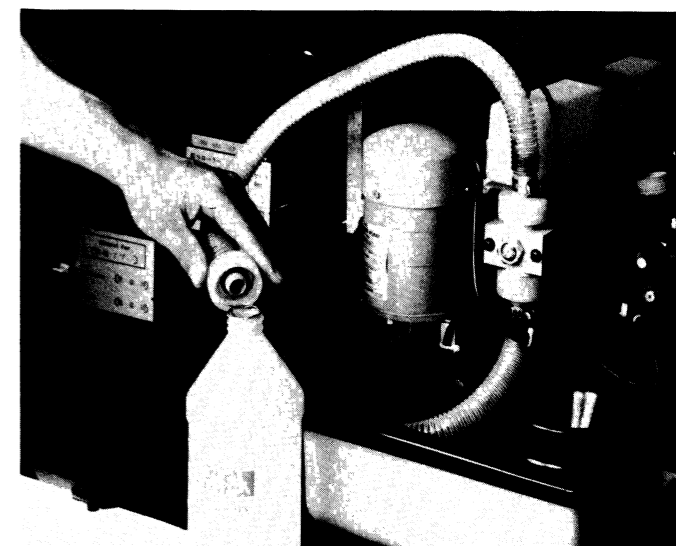
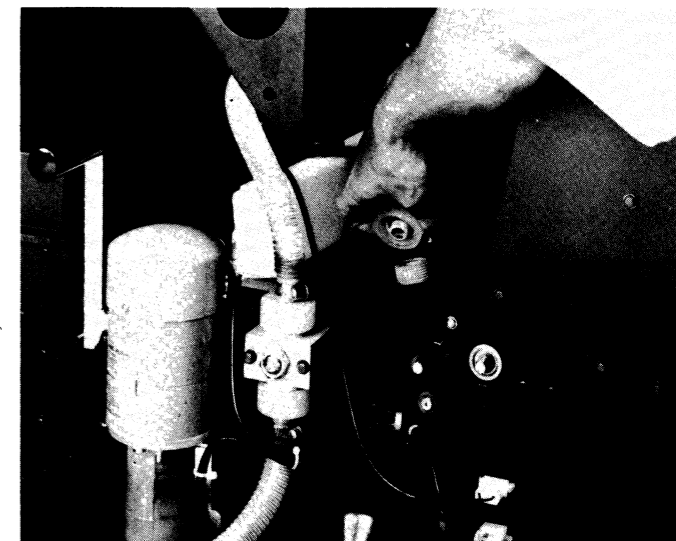
It is important to keep the processor clean for best plate results. Clean the processor as described below:

#### Discharging of Toner

- ① Disconnect the lower solution supply pipe from the threaded joint.
- ② Insert the end of the hose into an empty container.
- ③ Turn the power on at the Auxiliary Control Panel and set the Mode Selector on manual (MANU). Turn on the Control Circuit Switch on the Main Control Panel.
- ④ Depress the pump switch on the Auxiliary Control Panel to ON-2 position. This will discharge toner from the tank into the empty container.

Note: In the ON-1 position, the Pump Switch will circulate toner. Setting it at ON-1 when you want to discharge toner will cause an overflow.

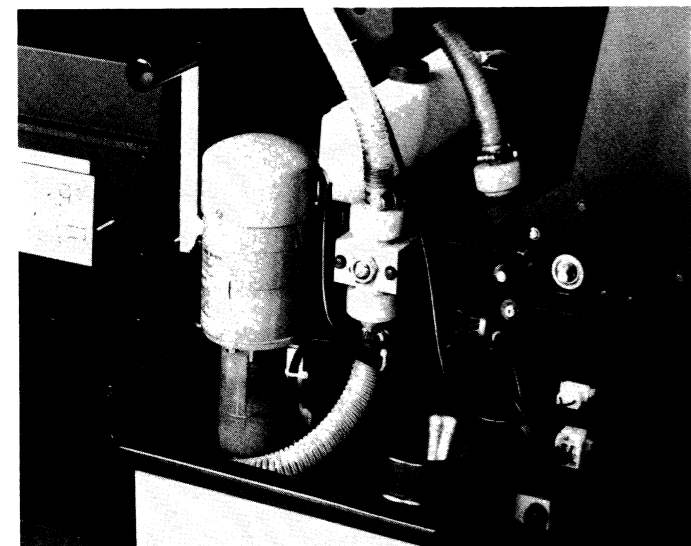
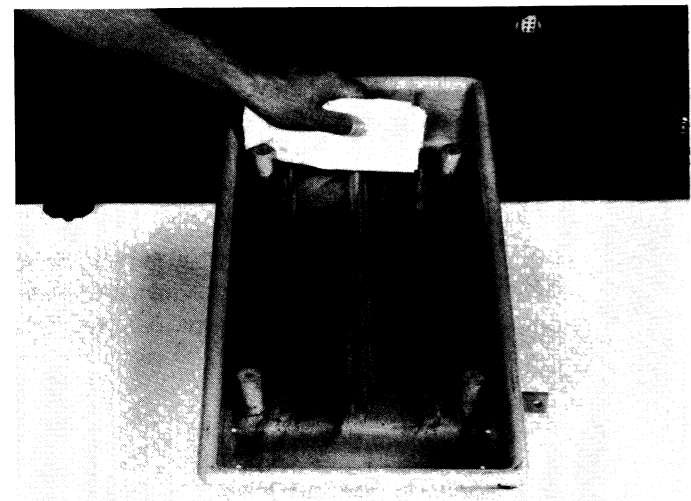
- ⑤ Remove the black plastic topped screw, then remove the toner pump and hose assembly.
- ⑥ Remove the black plastic topped screw which is located at the right side of the processor tank.
- ⑦ Pull out the processor tank.





### Cleaning the Processor Tank

- ① Remove the processor cover by removing four black plastic topped screws. Clean inside of processor tank with a cloth
- ② Remove the solution supply pipit above the developing plate from the threaded joint.
- ③ Loosen 2 screws and detach applicators by lifting them up.
- ④ Clean the top and the bottom of the applicators with a cloth.
- ⑤ Return the applicators, processor and pump to their original positions
- ⑥ Circulating 2 ℓ of cleaner (CL) in the tank will remove toner residue from the system.
- ⑦ Discharge cleaner (CL) in the same way as toner.



### G. Squeegee Rollers

If plates begin to scum or you have made more than 500 plates, the squeegee rollers should be cleaned as follows:

- ① Turn the roller pressure handle 90 degrees to the free position.
- ② Lift up and remove the metal squeegee roller.
- ③ Remove the rubber roller similarly.
- ④ Clean the rollers with a cloth dampened with cleaner.

Note: ① Do not scratch the rollers.  
② When setting the squeegee rollers after cleaning, pay attention to the right direction of drive gears.  
③ When POWER switch is turned or with the roller pressure handle at its free position, a buzzer will sound to tell the handle is free. In that event, turn off the POWER switch and reset the handle.  
④ The pump will not work when the roller pressure handle is in the free position.



### H. Heater

The heater is of the air heating type and built-in electro-thermostats work for uniform toner fixing so that the heater turns on and off auto-matically to regulate the internal temperature of the heater. (The internal temperature of the upper portion is set to 170°C and that of the lower portion to 150°C ) The fan located above the heater also runs after completion of exposure until completion of paper output, providing even heat distribution for better fixing results.

If a problem in fixing toner occurs because of atmospheric condition, regulate the temperature with the dial on the switchboard cover.

Standard temperature setting:

TH1 — upper electro thermostat 170°C

TH2 — lower electro thermostat 150°C

In cold districts, when the ambient temperature is below 10°C, stop the exhaust fan above the heater for better fixing results. The stop switch is provided on the front side of the fixing section. When the ambient temperature reaches a usual level, turn on the fan.

Furthermore, in case of internal overheat (226°C), a thermofuse as a safety device detects the overheat and turns off the heater. If the heater does not turn on (the thermofuse is blown due to overheat or the heater lamp is burnt out) or the alarm buzzer sounds, inspect the heater and replace the fuse or lamp.

[Inspecting Procedure]

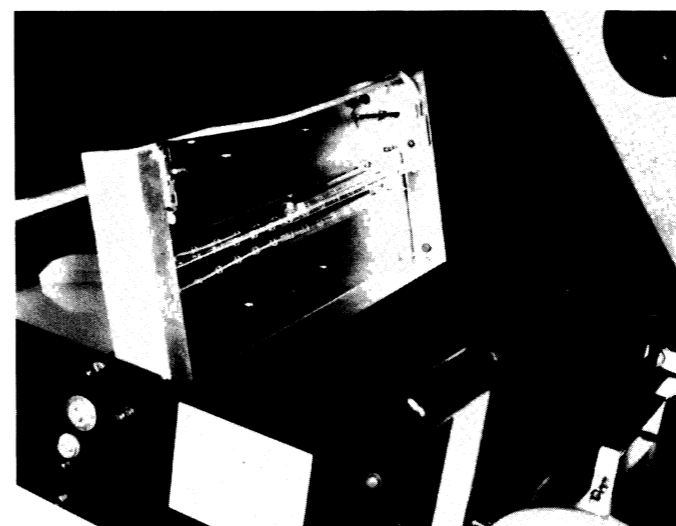
- ① Remove the ornamental screws on the heater cover to remove the cover.
- ② Turn the heater mounting block counterclockwise.
- ③ Remove the upper cover.
- ④ Remove the lower cover similarly. Then, replace the thermofuse or heater lamp if necessary.

Note: ① Before replacing the thermofuse, be sure to turn off the power.

Note: ② Replace the heater after all its parts have cooled down

Note: ③ Hold the heater lamp with a dry clean cloth or glove. Don't hold it with bare hands.

Note: ④ The heater lamp base is of the spring type which fits into the socket. Carefully replace the heater lamp since its spring pressure is strong.



### I. Cleaning of Air Filter

The suction fan is fitted with an air filter to clean the air inside so that the lens and mirror can be kept clean.

Air change is interrupted when the filter is clogged, causing a dangerous condition because of temperature rise inside the machine and also because of dense vapor of petroleum solvent included in toner.

Do not fail to clean the filter at least once a month.

If it was found too dirty at the time of cleaning, increase the number of times of cleaning accordingly.

### J. Oiling

Oil the following parts once a month.

- ① Drive chain
- ② Subject holder spring

### K. Disposal of Used Liquids

The toner LOM-ED and cleaner LOM-CL are petrolic solutions. The etching solution LOM-OH contains potassium ferrocyanide. Therefore, handle it with special care.

Used liquids should be consigned for disposal to a company licensed to dispose of industrial waste matter. (Ask our distributor for the list of licensed companies )

## 5. Troubles and Remedies

Know thoroughly how the machine and each part functions under normal circumstances. Grasp accurately the nature of any malfunction before taking a corrective measure. Following is a check list for unusual conditions.

	Discriptions of trouble	Cause	Remedy (Check item)
1.	Power is not on	<ol style="list-style-type: none"> <li>1. Power is not supplied to EP-12</li> <li>2. POWER switch in auxiliary control panel is off</li> <li>3. The safety switch is working.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn on the power source</li> <li>2. Turn on POWER switch</li> <li>3. Close the right and left light source covers and the processor cover completely.</li> </ol>
2.	Machine does not start	<ol style="list-style-type: none"> <li>1. Master is not loaded (master end)</li> <li>2. AUTO-MANU switch in auxiliary control panel is set to MANU</li> <li>3. Squeegee roller and dampener are stucked together</li> <li>4. Setting miss of master feed length</li> <li>5. Under warming up</li> <li>6. Blown-out fuse in operation circuit (3A × 2)</li> <li>7. Input voltage is low</li> </ol>	<ol style="list-style-type: none"> <li>1. Load master</li> <li>2. Set AUTO-MANU switch to AUTO</li> <li>3. Cleaning of squeegee roller, repositioning of dampener, and supply of cleaner-liquid</li> <li>4. Set master length in the range of 300 to 499 mm</li> <li>5. Wait until warming up is finished</li> <li>6. Replace fuses</li> <li>7. Set voltage at 100 V ± 10%</li> </ol>
3.	Lamps do not light	<ol style="list-style-type: none"> <li>1. Lamps have worn out</li> <li>2. Faulty connection of lamps</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace halogen lamp (500 W)</li> <li>2. Check for right connection of lamps</li> </ol>
4.	Position of image edge deviates or leans	<ol style="list-style-type: none"> <li>1. Large contact resistance between master feed belt and adsorbing surface (metal)</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean adsorbing face at photographing part</li> <li>2. Replace VB belt</li> </ol>
5.	Uneven development	<ol style="list-style-type: none"> <li>1. Insufficient amount of toner</li> <li>2. Sticking of toner to the spout on developing plate</li> <li>3. Uneven corona charging</li> <li>4. Entrance roller gets wet while master passes through developing section</li> </ol>	<ol style="list-style-type: none"> <li>1. Supply toner or adjust its flow rate</li> <li>2. Clean developing plate</li> <li>3. Clean or replace corona wires</li> <li>4. Adjust developer flow rate</li> </ol>
6.	Failure to image	<ol style="list-style-type: none"> <li>1. Corona wires were broken</li> <li>2. Light leaking from outside</li> <li>3. Limit switch for charger cut use is rubbing against VB belt, causing its ON condition</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace corona wires</li> <li>2. Fix light leaky part</li> <li>3. Adjust attachment of limit switch on photographing face (VB)</li> </ol>
7.	Cutter does not work Master is not cut completely	<ol style="list-style-type: none"> <li>1. Low supply voltage</li> <li>2. Trouble of cutter</li> </ol>	<ol style="list-style-type: none"> <li>1. Check supply voltage (more than 90 V)</li> <li>2. Check if manual cut is possible, then call for service man</li> </ol>
8.	Heater does not work	<ol style="list-style-type: none"> <li>1. Broken heater lamp</li> <li>2. Faulty connection of lamp</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace heater lamp</li> <li>2. Check lamp connection</li> </ol>
9.	Pump does not work	<ol style="list-style-type: none"> <li>1. Squeegee roller pressing handle is not set</li> <li>2. Faulty connection of pump plug socket</li> </ol>	<ol style="list-style-type: none"> <li>1. Set handle</li> <li>2. Reset plug socket</li> </ol>

Note: Always turn Power (camera switch) off when checking any electric circuit, e.g. changing fues.

## 6. Ordering and Replacement of Parts

There are varieties of component parts; some of them can be replaced by customers once new parts are obtained while some others must be replaced by a service man. When ordering parts, indicate the following.

- ① Whether only the parts are required or whether installation (replacement) is also required.
- ② Details of entries in the guarantee card or plates applies to the machine:
  - Type of machine (EP-12)
  - Machine number
- ③ Required parts name, number of prices and delivery date
- ④ Rubber rollers for the squeegee part are available as an op-

tion. By replacing the metallic roller with the rubber one, the plate image density will be improved, and halftone as well as thin lines will be clearly reproduced, and also unevenness in maximum density portions will be minimized. However, special attention should be paid to its handling for the reason that if the cleaner device is not functioning normally, the rubber roller may worn out in a short time, resulting in faultysqueegee action. We include this rubber roller in consumables.

Note:①Specifications are subject to alteration without advance notice, as a result of improvements.

Note ①It must be understood that, when the user makes any improvements by himself or use our machine in conjunction with other manufacturer's products, the user bears the responsibility.

# EP-12 ELECTRICAL DIAGRAM

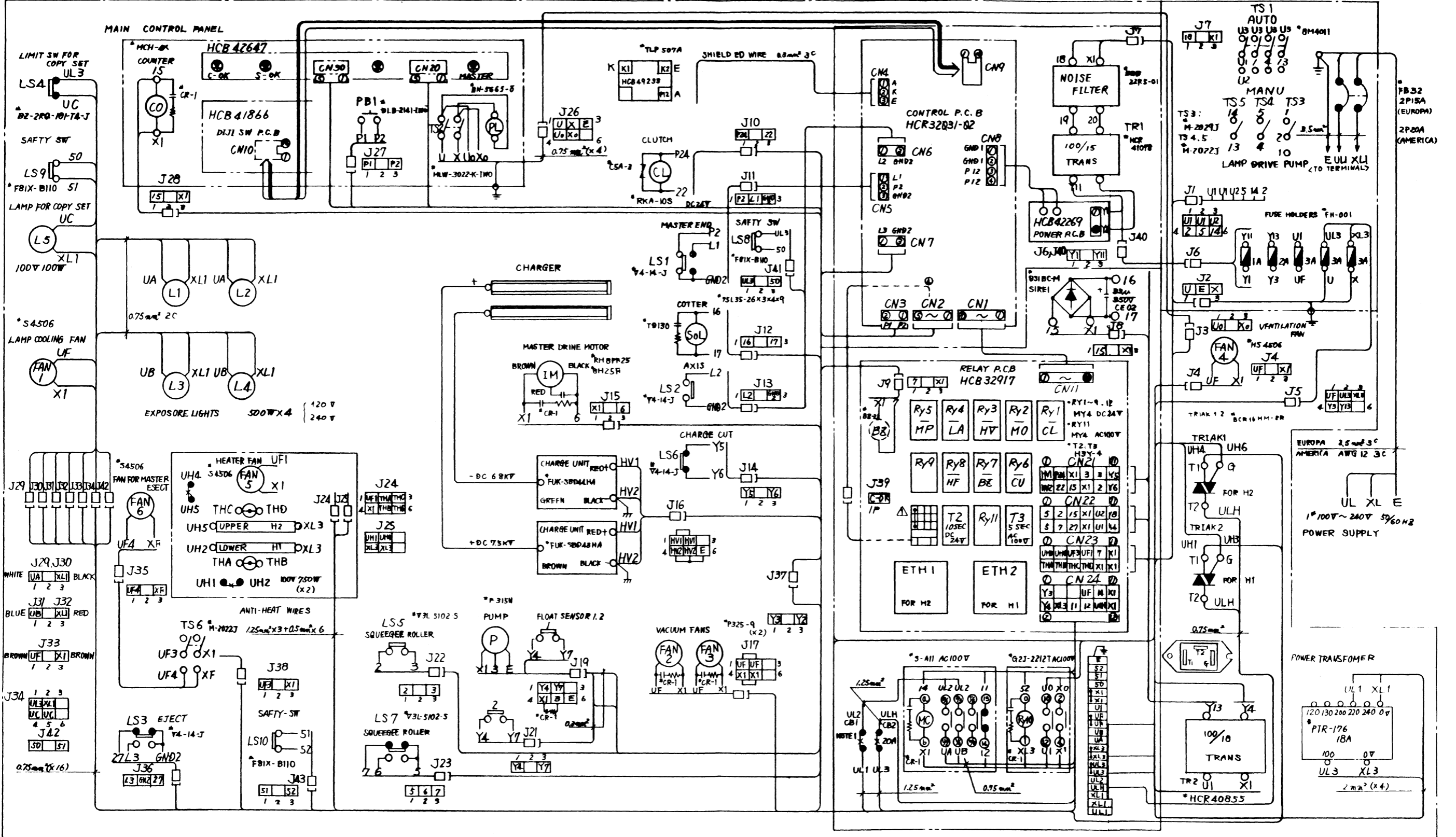
1	Y7
2	
3	
4	
5	Y3

1	P24
2	P24
3	S-OK
4	C-OK
5	M-LS

1	CL	6	CU
2	HO	7	HF
3	HV	8	BE
4	LA	9	P24
5	MP	10	GN2

1	GN2	6	MP
2	P24	7	LA
3	BE	8	HV
4	HF	9	HO
5	CU	10	CL

SUB CONTROL PANEL  
(BOTTOM VIEW)



NOTE: CB1 10A (EUROPA)  
20A (AMERICA)

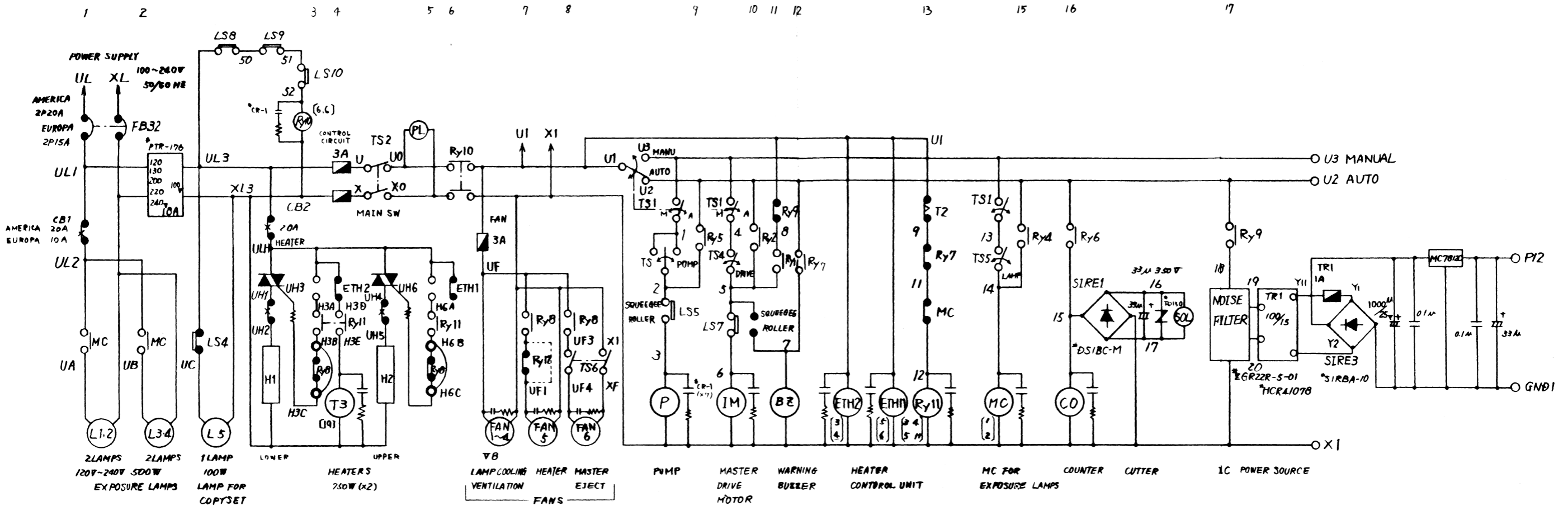
REFERENCE DIA

HCS31749  
HCS31567

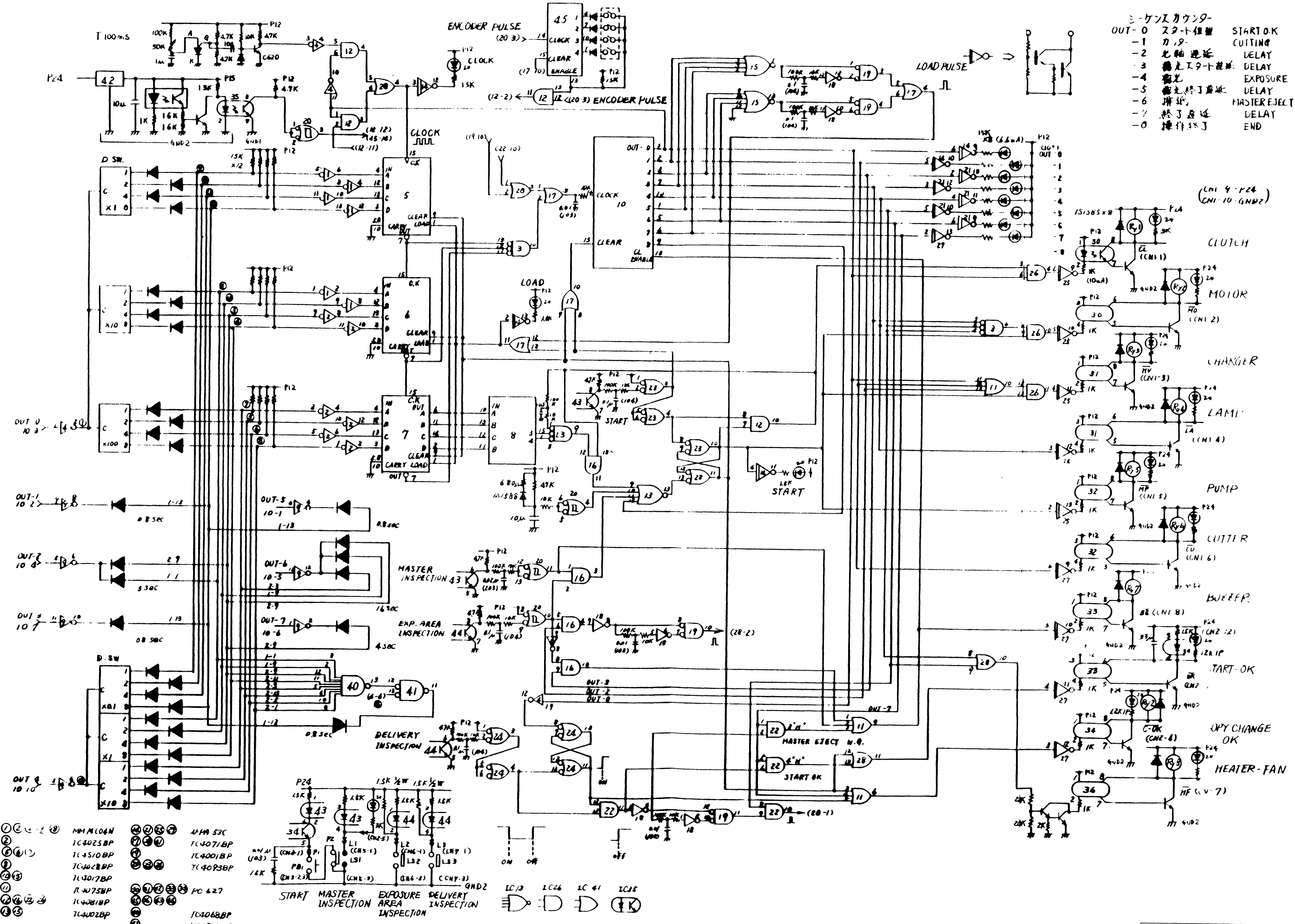
- 1 指差のワイヤは0.5mm<sup>2</sup>(V5F)を使用。
- 2 輸送先の電源に応じて、N.F.印、入力端子を逆にする。
- 3 回路、端子の配線は別紙で行う。
- 4 カラ本体、パネル部、各工ユニットは確実にアースする。

DWG NO. HCW31491

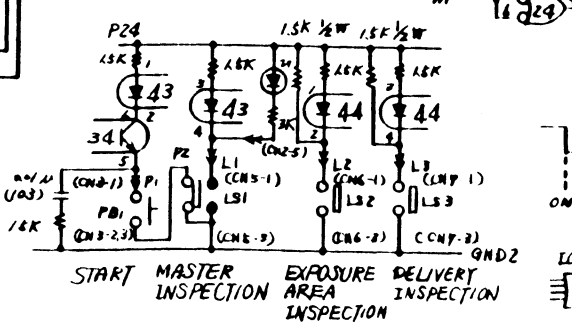
# EP-12 CIRCUIT DIAGRAM



- ミーケンスカウンタ-
- OUT-0 スタート位置 START O.K
  - 1 カリヤ CUTTING
  - 2 光軸遅延 DELAY
  - 3 露光スタート遅延 DELAY
  - 4 露光終了遅延 EXPOSURE DELAY
  - 5 露光終了遅延 EXPOSURE DELAY
  - 6 排紙 MASTER EJECT
  - 7 終了遅延 DELAY
  - 8 操作終了 END



- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ 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
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