SILVER MASTER PLATEMAKER

CP-800S

SERVICE MANUAL

ELECTRICAL

SCREEN DAINIPPON SCREEN MFG. CO., LTD.

Contents Page

1 Electrical System Troubleshooting

The electrical circuits in this unit are different from conventional relay system or IC system sequence circuits, as the unit incorporates a microcomputer A feature of this computer-type sequence is that, when shifting to the next mechanical movement, data entering the computer is processed by computer programs in order to properly drive the motors and other parts of the system

Features

1 In addition to repair methods for conventional electrical circuits, the data signal circuits which transfer information to the microcomputer have to be checked Furthermore, to check these data signals, the unit is provided with LED (Light Emitting Diode) lamps on the PCBs

2 As previously described, computer programs process data entering the computer before the system proceeds to the next step Therefore, if for some reason signal data does not enter the computer, it will await the data signal while the system remains stationary at the previous process

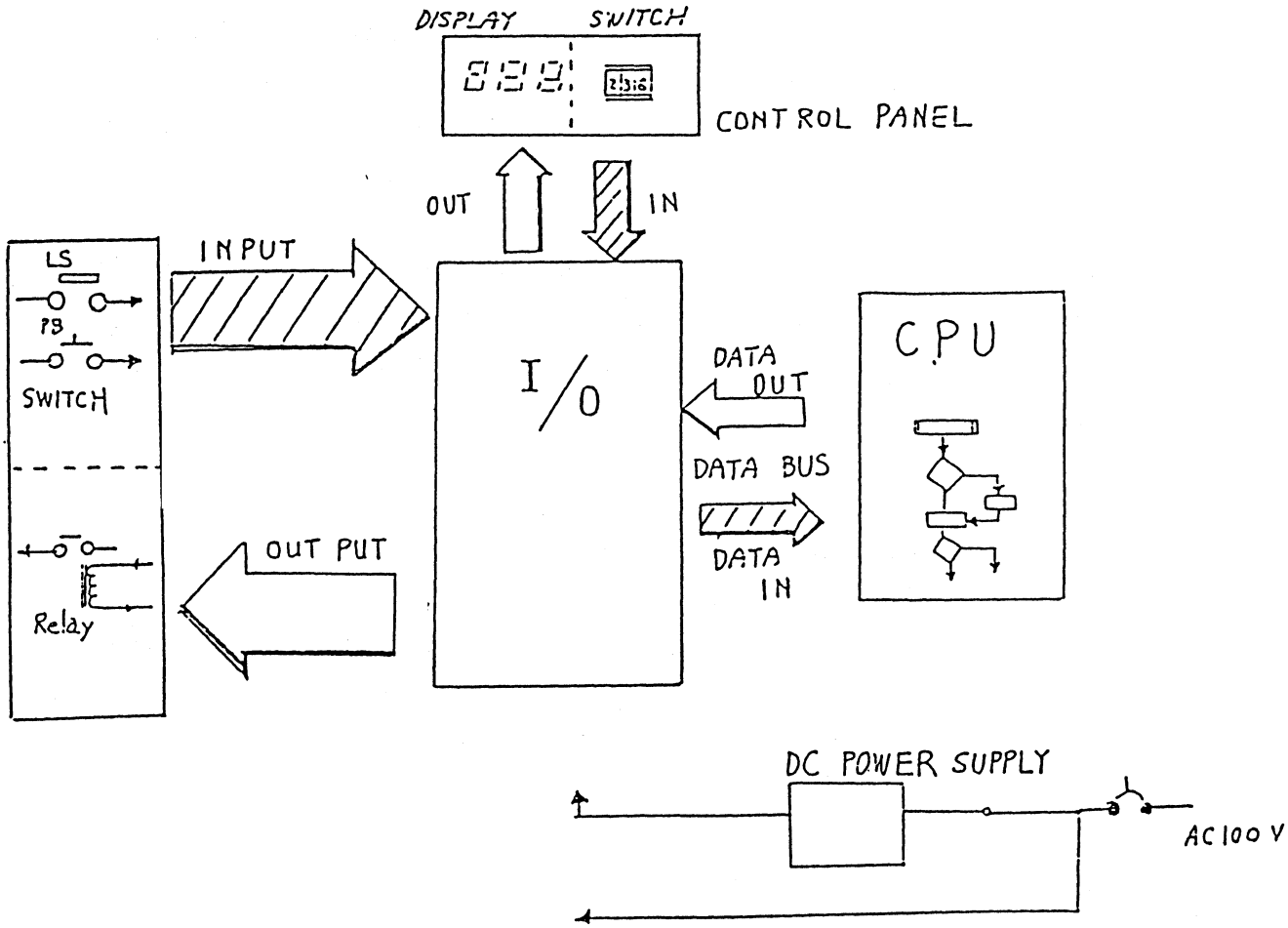
3 When the power switch is turned on, the reset signal is output by the computer in order to move all mechanisms to their origin points

4 Refer to program flowcharts for repairs, determining at which program flowchart process the system stopped

5 In this Service Manual, "I/O" is used as an abbreviation for the PCB circuits which input and output signal data into the computer (input / output ports)

6. In this Service Manual, "CPU" is an abbreviation for the microcomputer PCB (printed circuit board).

7. Following is a general outline of the system



2 Determining Malfunctions

1 If a malfunction occurs, first confirm the selection of all switches

2. All malfunctions have some relationship to the power source Therefore, inspect the power source before proceeding

3 Inspect to confirm that 100 VAC, 200 VAC are being properly input through the power cord

4 Inspect to confirm that the fuses in the switchboard are not burnt out (Turn off the power source prior to inspecting) If a fuse is burnt out, it is a sign of an interior malfunction Turn the power source off completely and carefully inspect the system

5 Because a microcomputer is built into the system, it must be connected to a power source of sufficient electrical capacity. If this is not done, the following computer-related problems may result

(1) A few seconds after the light source turns on, exposure, and total camera operation, may stop

(2) When the light source turns on, the operation of the camera may become irregular

(3) When the dryer turns on, improper operation may result
The above conditions may arise if computer programs fail to maintain correct operation Turn off the power for about 5 seconds, then turn it back on and reset the system

6. For malfunctions, refer to the flowcharts

7 When replacing PCBs, please note that there are data setting switches on I/O PCBs Before replacing, you must use the dip switches to set the previous data on the new PCB

3. Electrical Circuit Check

The voltage inspections and continuity test methods using testers that are described in this Service Manual are described here.

The measuring equipment used for general service is as follows:

1. Tester

A Circuit tester or digital-type tester

Functions. 1 Capable of measuring over a range of 0~1000 VAC

0-- 1000 VAC.

2 Capable of measuring over a range of 0~500 VDC

3 Capable of measuring over a range of 0~10 Mohm

B. In order to carry out the continuity test, the tester must have a buzzer, either a battery type (with a built-in of about 3 V), or an electronic buzzer.
(The resistance measurement function of the tester can be used in place of the buzzer.)

2. Voltage Mesurement

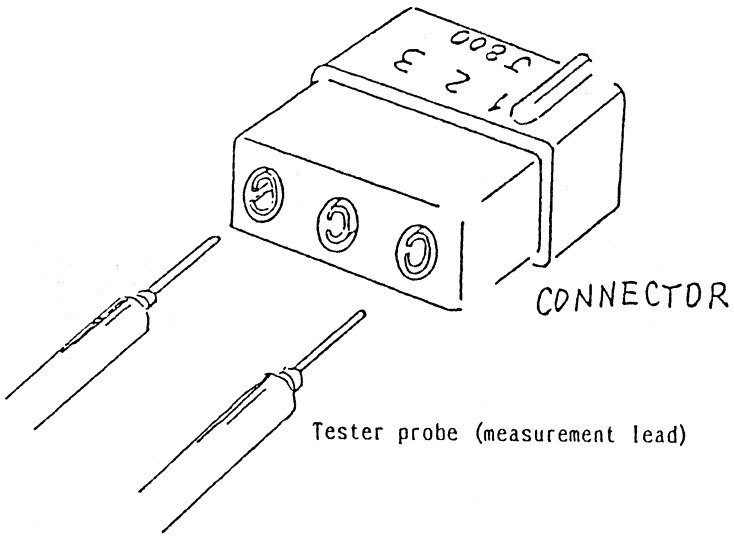
1) Voltage measurement between connector pins and/or sockets

Measure by inserting the tester probes between pins, as shown in the diagram

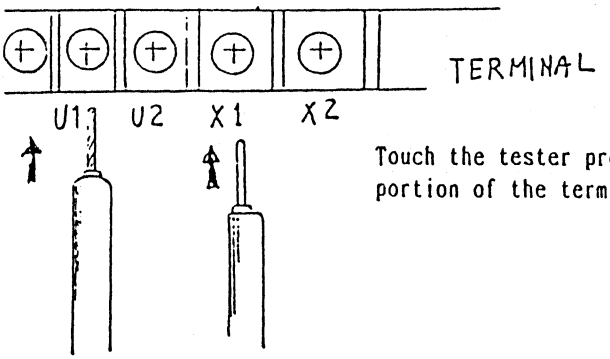
Caution

(1) The tip of the tester probe is electrically charged Be careful to prevent electric shocks or short circuits

(2) Adjust the measurement range of the tester prior to measuring.



2) Measurements between terminals



Touch the tester probe to the electrically charged portion of the terminal plate.

3. Countinuity Check

1) This procedure is followed when a tester is used for checking for faulty connections or broken wires.

2) The power source must be turned off prior to measuring Failure to do so may damage the tester

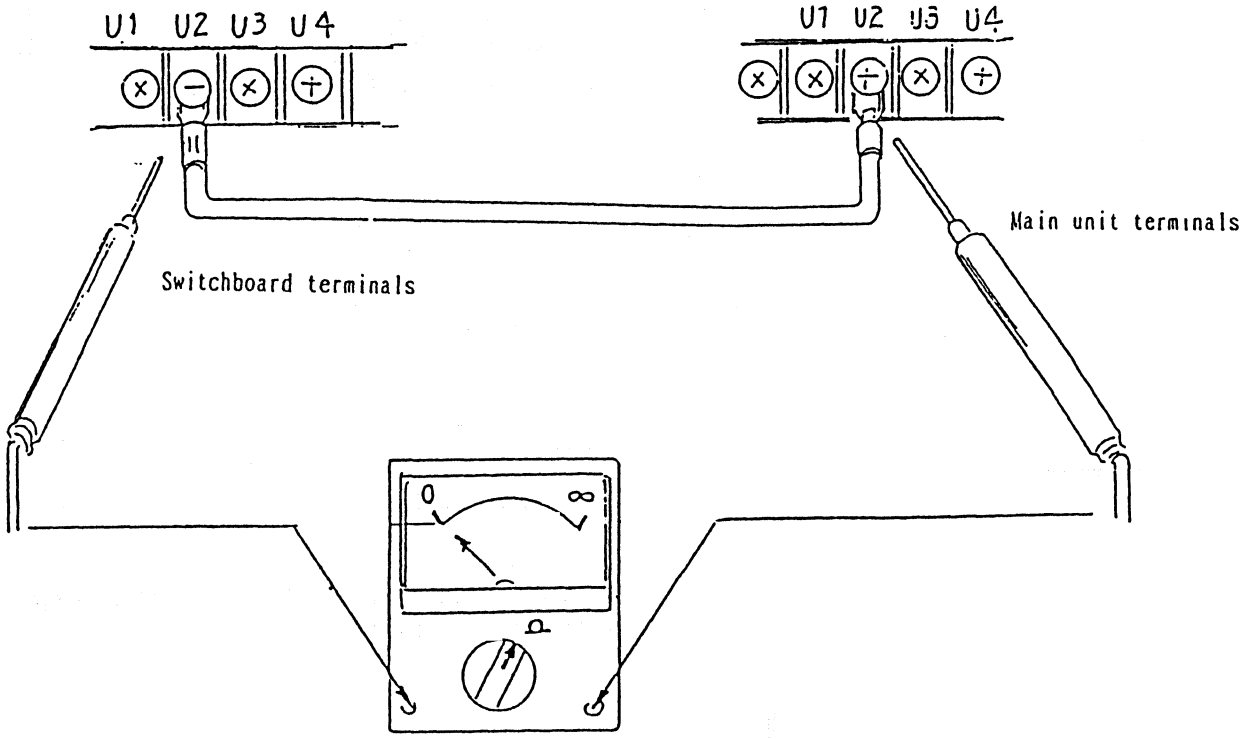
Tetter prepatation

A) Set the tester to the low resistance range

B) Calibrate the needle of the tester to 0 orm

This completes preparations for testing

(1) Inspecting faulty connections between terminals



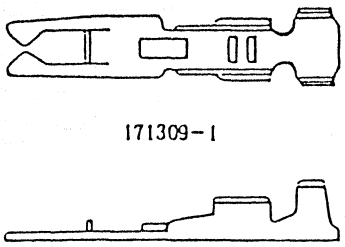
When the resistance is 0 ohm, as shown in the diagram, there is a good connection between the two U2 terminals. If the needle registers 2 ohm or greater, it indicates a faulty connection.

4 Connector Problems

Check for faulty connector contacts using the following procedure

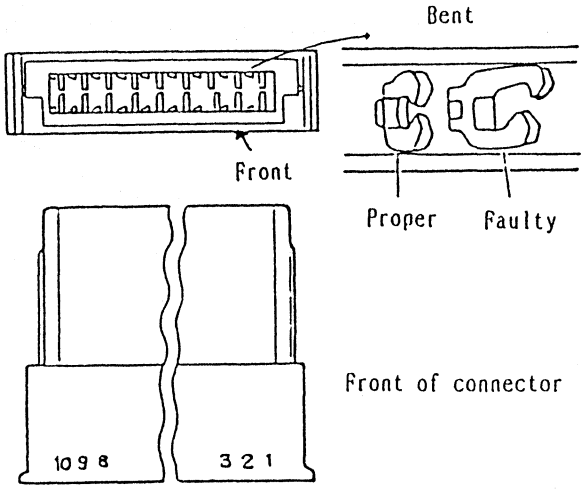
A Points to check for loose couplings on tuning fork type connectors

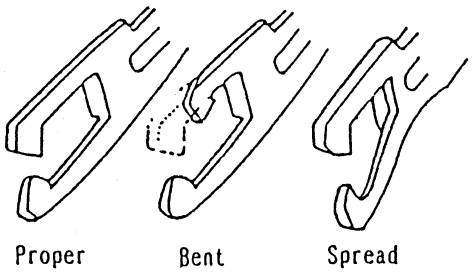
(1) New pin



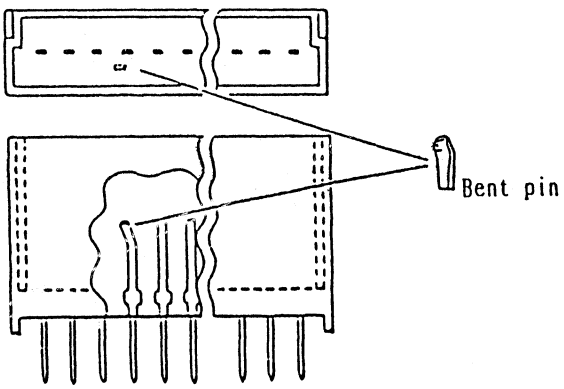
(2) Faulty pin

When inspected from the front, connectors that are bent as shown in the diagram at the right are defective and may form faulty connections

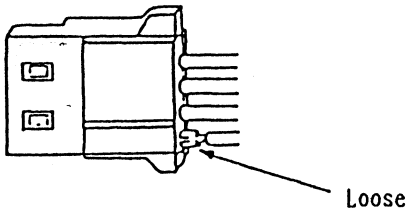




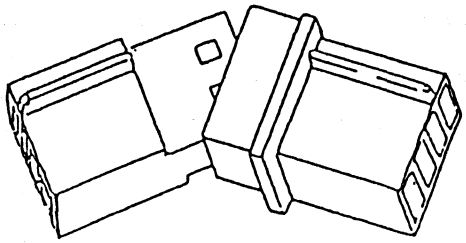
(3) Also check the connector pins on the PCB side in the same way, as they may also be bent as shown in the diagram



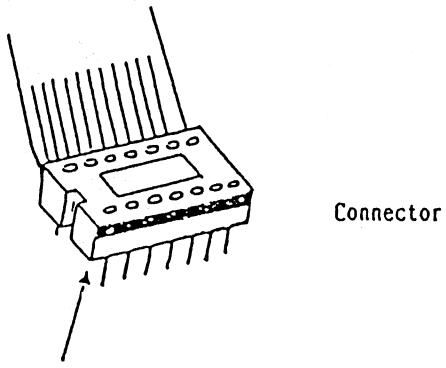
(1) Check to see if the AMP-type connectors are latched properly as pins may become disconnected from connector housing cases, as shown in the diagram



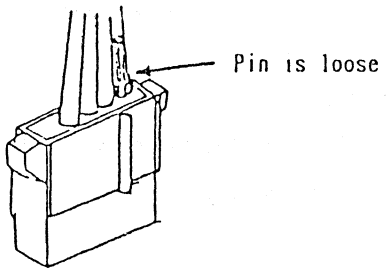
(2) When inserting connectors, make sure they are aligned properly they should not be connected out of alignment, as shown in the deagram.



(3) Flat cable connector pins are easilu bent They must be plugged in carefully



(4) As shown in the diagram, connectors may not be latched properly, causing the wires to be disconnected from pins Check as before



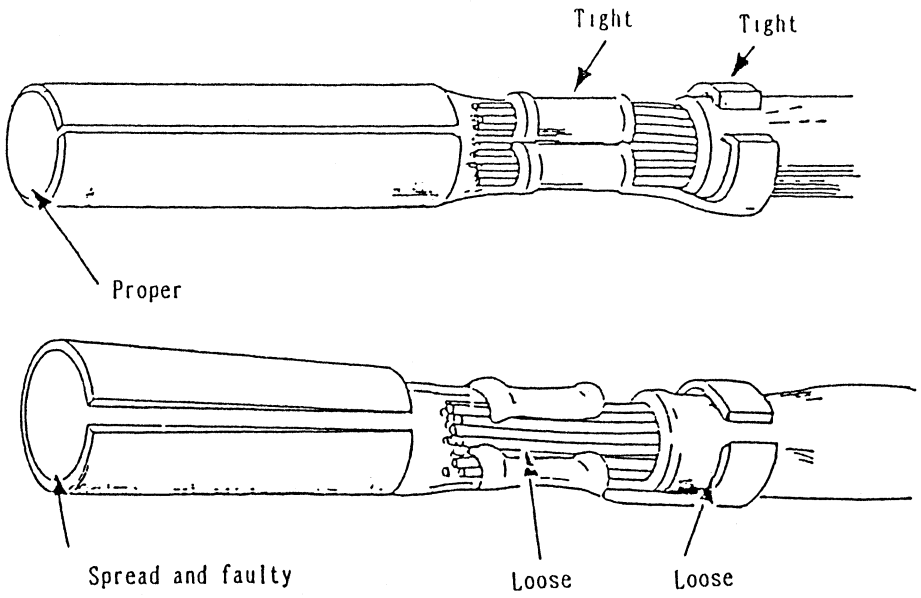
B Faulty connections for AMP type connectors

The diagrams below show both faulty and proper connections of the connector pin

The upper diagram shows the proper condition

A widened socket protion, as shown in the lower diagram, may cause a faulty connection

Correct any misshapen sockets



5. Maintenance Dip Switches

Manual operation switches are attached to PCBs (Input PCBs) in the main unit and are used when performing maintenance.

Precautions

1 The switches can only be used when the microcomputer and other PCB circuits are functioning properly.

2. In terms of precaution 1 above, the switches cannot be used when the computer, I/O or panel PCBs are malfunctioning

3 The switches are used to check relay circuits and for checks under a load condition.

4. Befor using the switches, set the AUTO/MANUAL switch in the switch box inside the main unit to MANUAL.

5 All the switches must be turned off after using the dip switches.

6 If the carrier touches the safety limit switch, turn off switch No 6 immediately

7 Do not turn on more than one switch at the same time. Turn them on individually. Never have two switches ON at the same time

8 Only 8 types of movements can be checked.

Computer address	Switch number and selection		Mechanism moved and operation	Effekt
In 05 HEX (hexadecimal number) Port 01H	8	ON	Master motor operates (ON)	1 Motor stops when master is fed to chuck vacuum point 2 When cutter is not at its origin point, the motor does not activate 3 The motor stops after operating for 21 6 seconds
		OFF	Master motor is stopped	
02H	7	ON	Master feed motor clutch operates (ON)	No effect
		OFF	Master feed motor clutch stops (OFF)	
04H	6	ON	Carrier motor moves toward the processor ◁ (Transfers master to processor)	1 Master motor also operates (ON) 2 In 21 6 seconds, master motor stops (OFF) 3 Unless axis stopper is at its origin point, motor does not operate 4 When carrier reaches chuck vacuum point, motor stops 5 While carrier safety switch is in operation, motor does not operate
		OFF	Carrier motor stops ◁	
08H	5	ON	Carrier motor moves toward its origin point ▷	1 Unless axis stopper is at its origin point, motor does not operate 2 Motor stops at chuck vacuum point 3 Motor is stopped with carrier at its origin point, or stops when carrier reaches its origin point
		OFF	Carrier motor stops ▷	
10H	4	ON	Axis stopper motor Moves toward contact point	While carrier motor is in operation, stopper motor is stpped
		OFF	Axis stopper motor Moves toward origin point	
40H	2	ON	Chuck vacuum valve is ON	No effect
		OFF	Chuck vacuum valve is OFF.	
80H	1	ON	Master discharge motor is ON (operates)	No effect
		OFF	Master discharge motor is OFF (stops)	

6. Power Supply Check

The power supply is checked by the switchboard terminals and the power supply PCB

1 Light Source Voltage Check

A power supply transformer for the light source is built into the main unit

1) The switchboard voltage must match the voltage for the transformer input tap
2) As the transformer output for the lamp is 200 V, the current across VL1 and WL1 should be 200 VAC (when NFB1 is ON).

2. Camera Operation Circuits And Processor Power Supply Source

The power supply voltage for the camera and the processor section is 100 V. There is a transformer built into the main unit.

1) Check the tap voltage on the transformer input side
2) The voltage on the transformer output side should be 100 V
3) When NFB1 is ON, the voltage across terminals UL1 and XL1 should be 100 VAC

3. Check The Voltage Across The Switchboard And The Main Unit Terminals. They Should Be 100 VAC.

1) UL17 -- XL17 Transformer input power source for the microcomputer DC power supply
2) UL1 -- XL1 Processor 100 VAC power supply
3) U1 -- X1 Power supply for the master motor, cutter motor and lens motor; MC4 must be ON
   (When main unit safety switch is ON)
4) U2 -- X2 Power supply for vacuum copy pump/axis stopper motor, MC4 must be ON.

4. DC Power Supply Check

1) +5 VDC for CPU I/O PCB
2) -5 VDC for CPU I/O PCB
3) -12 VDC for CPU I/O PCB
4) +12 VDC for photosensor and RY36

See separate pages

5) +24 VDC for relay and microswitch circuits (P24 -- E24)

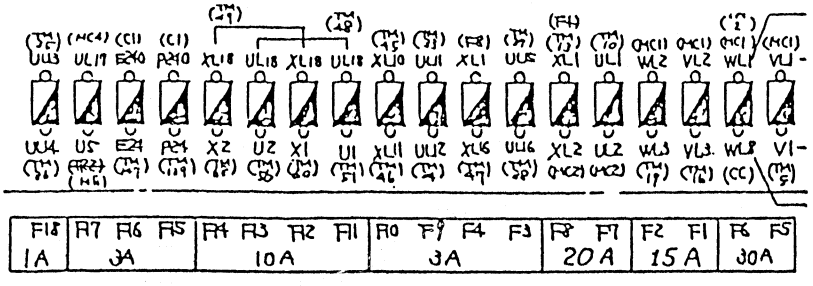
This +24 VDC power supply operates the I/O PCBs, input PCBs ank relays

It is particularly important.

7 Fuse check

When a fuse blows, the following related equipment becomes inoperable.

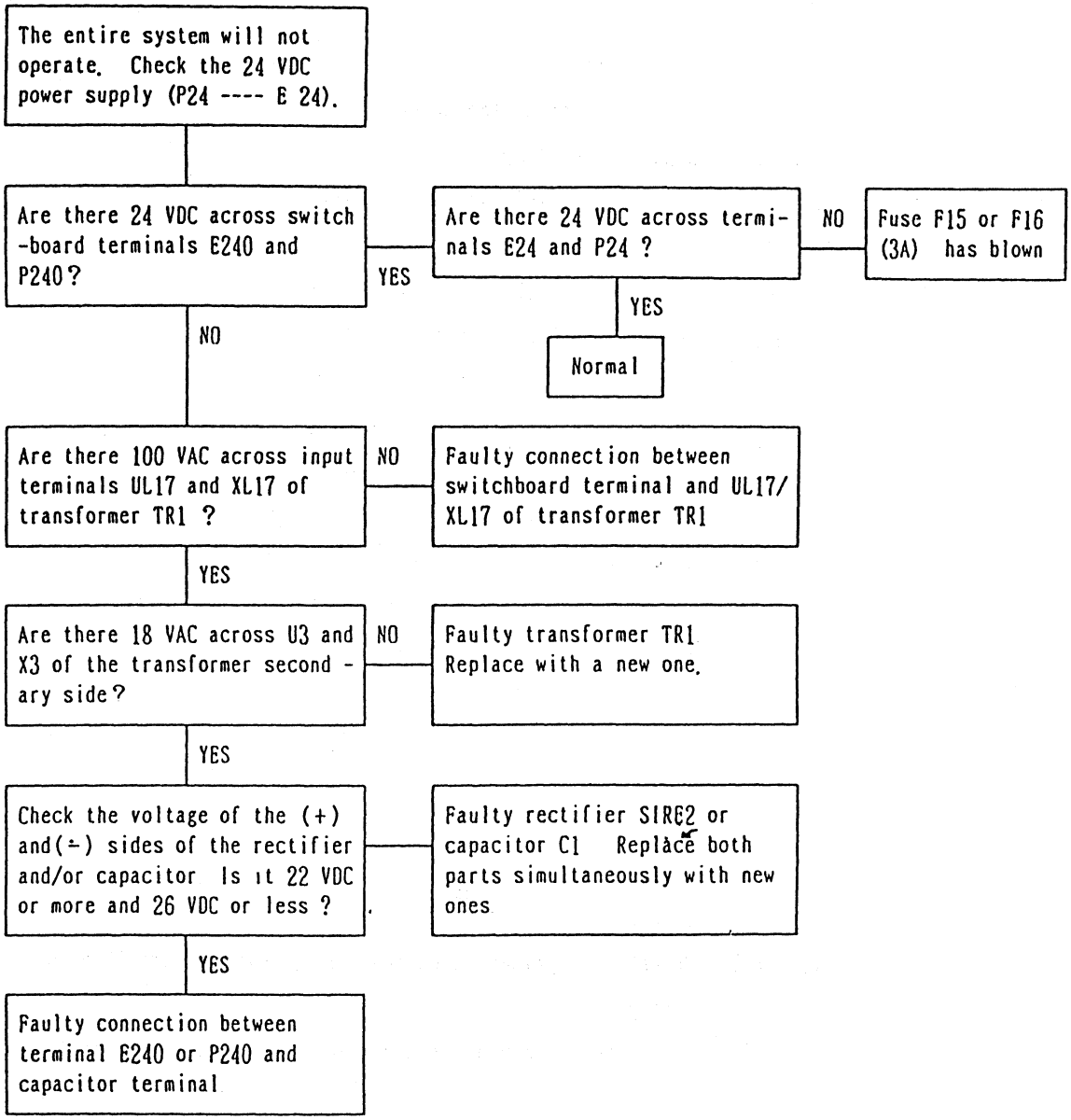
Fuse No	Amperes	Terminal	
F1, F2	15A	VL3, WL2	Drier heater
F3, F4	3A	UL16, XL16	Processor, drier fan motor
F5, F6	30A	V1, W1	Light source lamp
F7, F8	20A	UL3, XL3	Processor, developing tank heater
F9, F10	3A	UL12, XL11	Processor drive motor
F11, F12	10A	U1, X1	Chuck relay RY13 Master motor RM1
			Chuck relay RY29 Carrier motor RM2
			Chuck relay RY25 Carrier safety relay RY35
			Cutter reverse rotation relay RY26 Cutter motor RM3
			Buzzer, Setter (cutter) motor RM4
			Lens board motor RM5
F13, F14	10A	U2, X2	Chuck motor RM7 Optical axis motor RM8
			Vacuum pump motor VP2 , Vacuum valve SV1
			Mirror defogger FAN5-1～4
F15, F16	3A	P24, E24	24 VDC power supply
			I/O PCB input signal circuit and microswitch signal circuit
			I/O PCB output signal circuit and output relay circuit
			(If these 24 VDC power fuse for the relays blow, all circuits will become inoperable and all operation will stop)
F17, F18	3A	U5, XL17	Transformer primary side 100-V input for computer DC power supply
			(If these fuses blow, the computer will become inoperable)

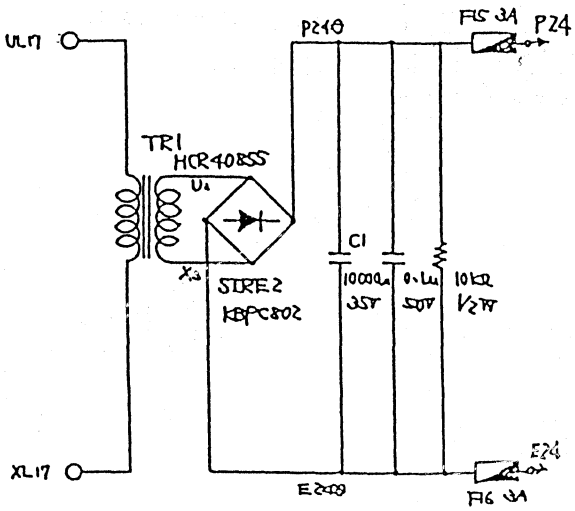


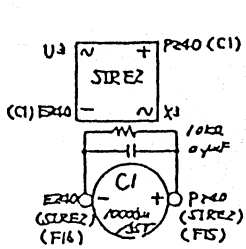
Fuse positions inside switchboard

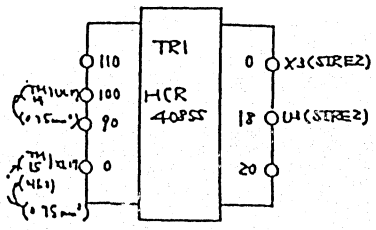
Relay 24 VDC circuit check

This is the power source used to (1) operate the output relays in accordance with signals output by the I/O PCB, and (2) turn the I/O PCB microswitches ON/OFF. If there is a malfunction in this power supply, the entire system will stop operating



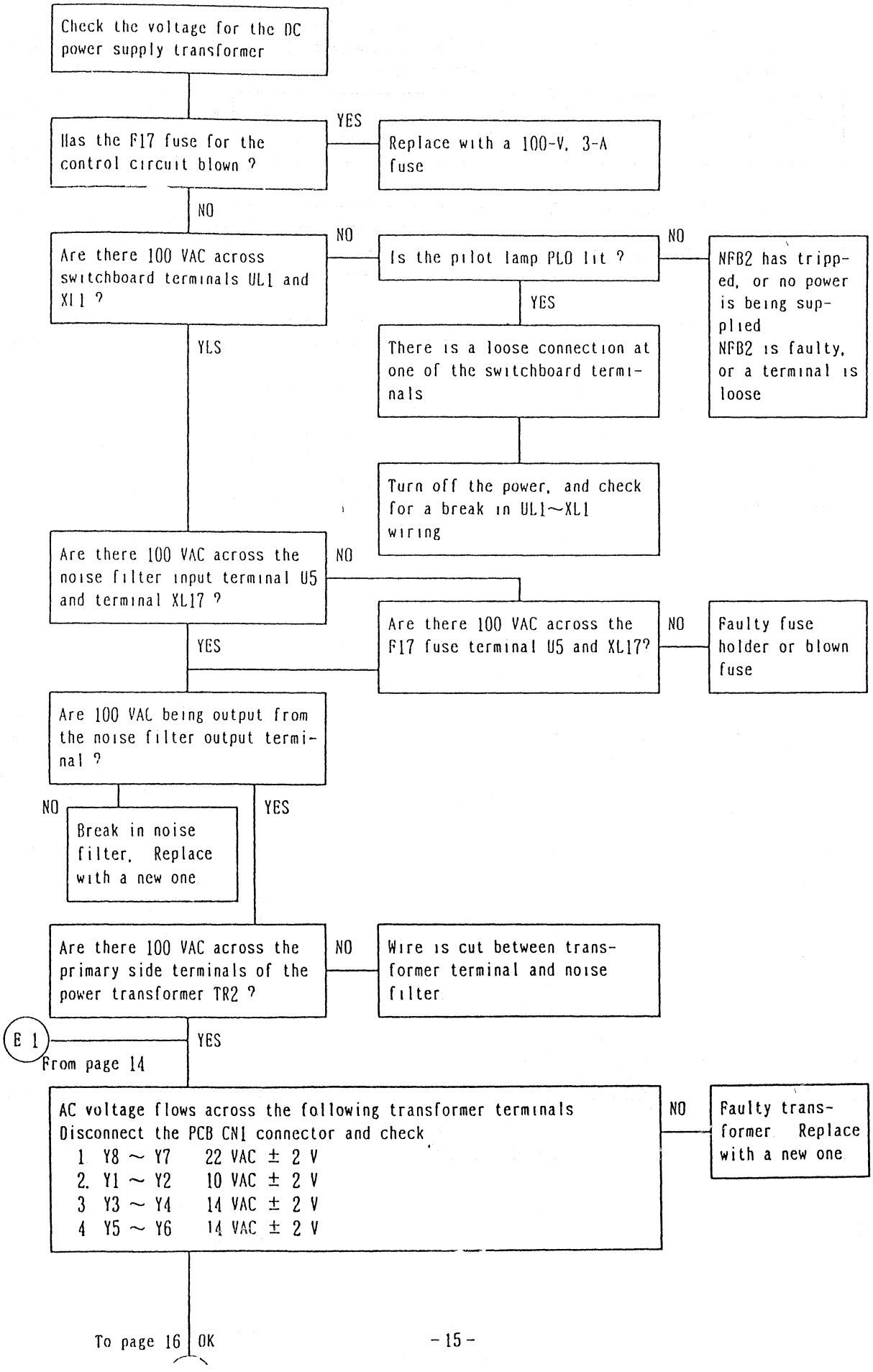






8 Checking the power supply PCB -- - Flowchart

Before checking the power supply PCB, check the following voltages which are supplied to it



Checking the DC Power Supply PCB For The Computer.

Check the DC voltage across the PCB check pin and ground.

Note : Refer to the PCB diagram for check points
Disconnect connectors CN3 and CN4, test for standard voltage range

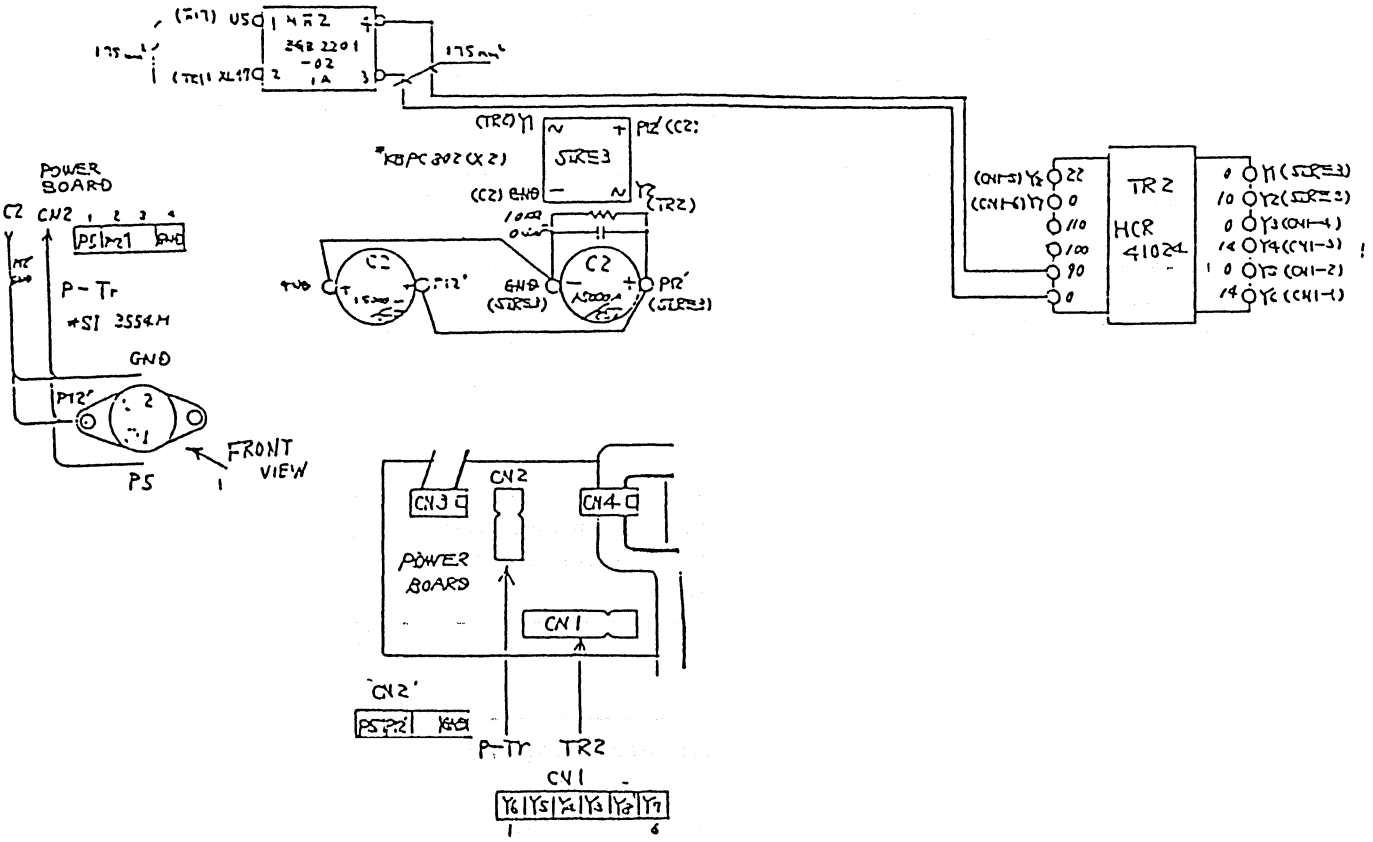
Frome page 15 (P 1)

Are there +5 VDC across check pin P5 and ground ?
- NO → Read section on checking +5 VDC power supply circuit → (P 2) To page 17
- OK

Are there +12 VDC across check pin P12 and ground ?
- NO → Read section on checking +12 VDC power supply circuit → (P 3) To page 18
- OK

Are there −12 VDC across check pin N12 and ground ?
- NO → Read section on checking −12 VDC power supply circuit
- OK

Are there −5 VDC across check pin N5 and ground ?
- NO → Read section on checking −5 VDC power supply circuit. → (P 4) To page 18



9 +5 VDC Power Supply Circuit

Check the DC voltage across check pin P5 on the power supply PCB and ground

P 2

Is there DC voltage between P5 and ground ?

NO

Are there 12 VDC across C2 capacitor terminal P12 and ground ?

Faulty rectifier SIRE3 or broken wire between transformer and rectifier

YES

Is it higher than the reference value ? Lower than the reference value ? At the normal value ?

HIGHER OR LOWER

OK

HIGH

Is the +12 VDC abnormally high or low ?

The output voltage is too high (16 V)

Faulty rectifier SIRE3 or transformer

OK

LOW

DC 10V ~14V

Faulty capacitor C2 or rectifier SIRE3

Are 10~14 VDC being applied between the power regulator outer case (3) and ground pin (2) ?

NO

Broken wire in ground or P12. Faulty soldering on transistor

YES

Faulty power regulator Replace with a new one

NO

Are there +5 VDC across power regulator ground pin 2 and output pin 1 ? Is it within the normal range ?

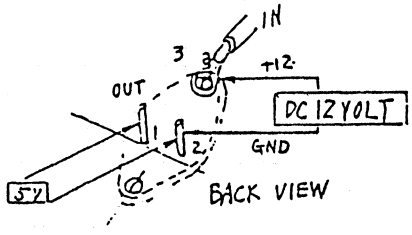
YES

If 5 V is not obtained as a result of these flowchart operations, there is a short circuit in the CPU or the 5-V circuit of the I/O PCB

Faulty contact in CN2 connector number 1 or number 4 Or broken wire in ground or P5

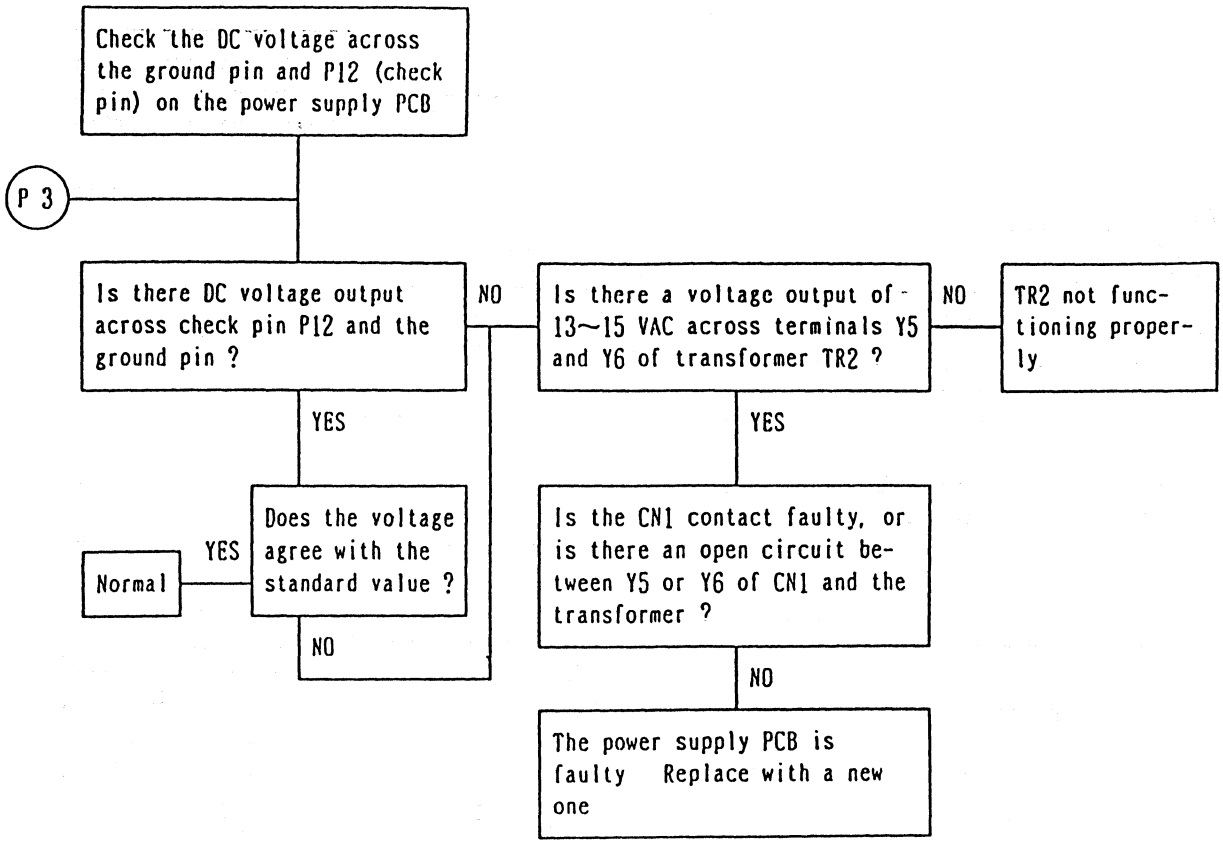
OK

Break in power supply PCB pattern. Replace power supply PCB

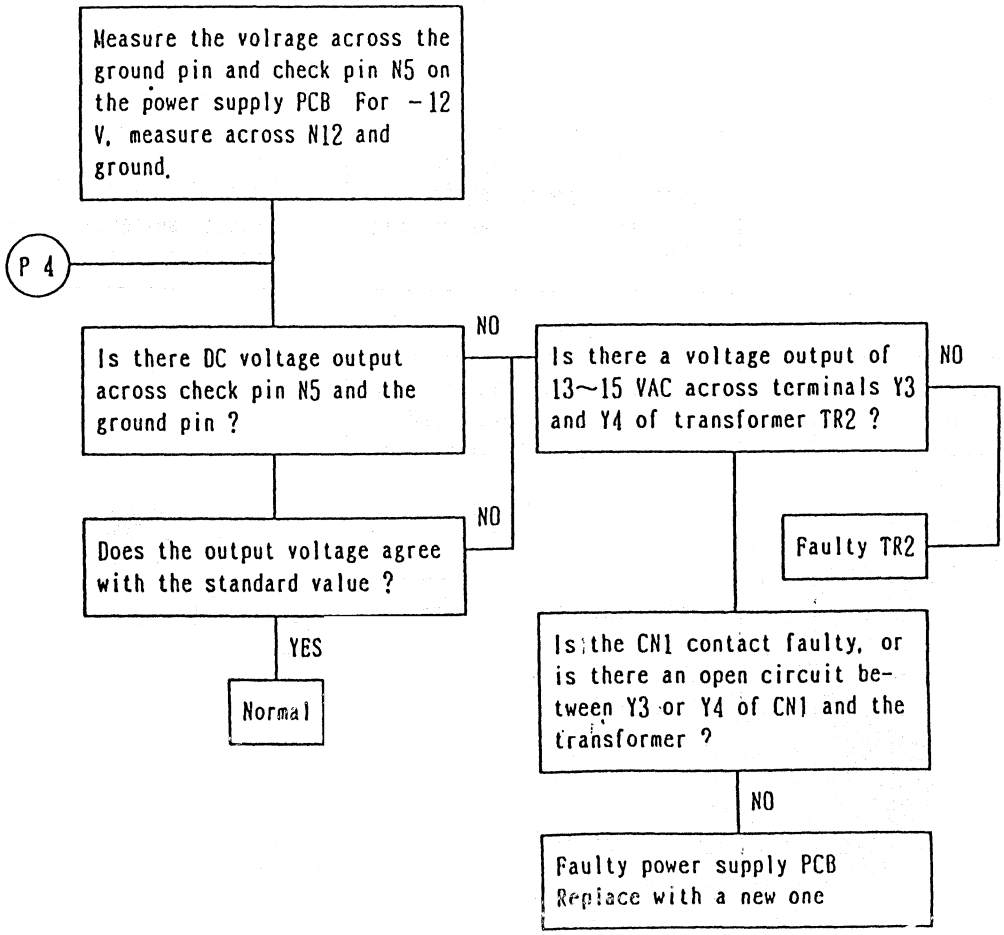


Power Regulator

10 12 VDC Power Supply Circuit check



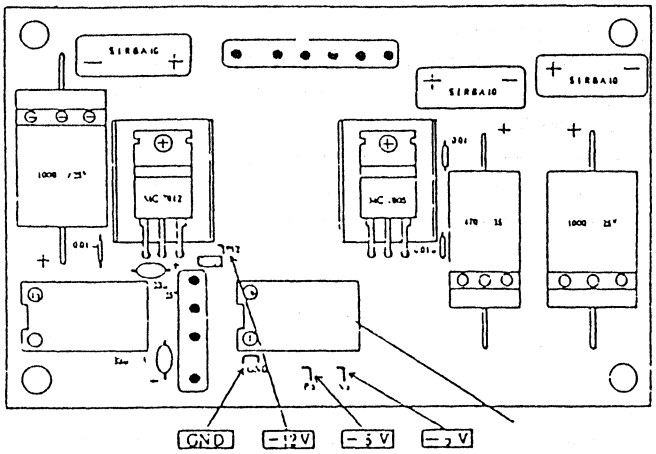
-5 VDC And -12 VDC Power Supply Circuit check



11 Power Supply PCB Check Points

+5 V, −5 V, +12 V, and −24 V Checks

(Power Supply PCB)



+5 V −5 V +12V	For IC	Separate Power supply PCB

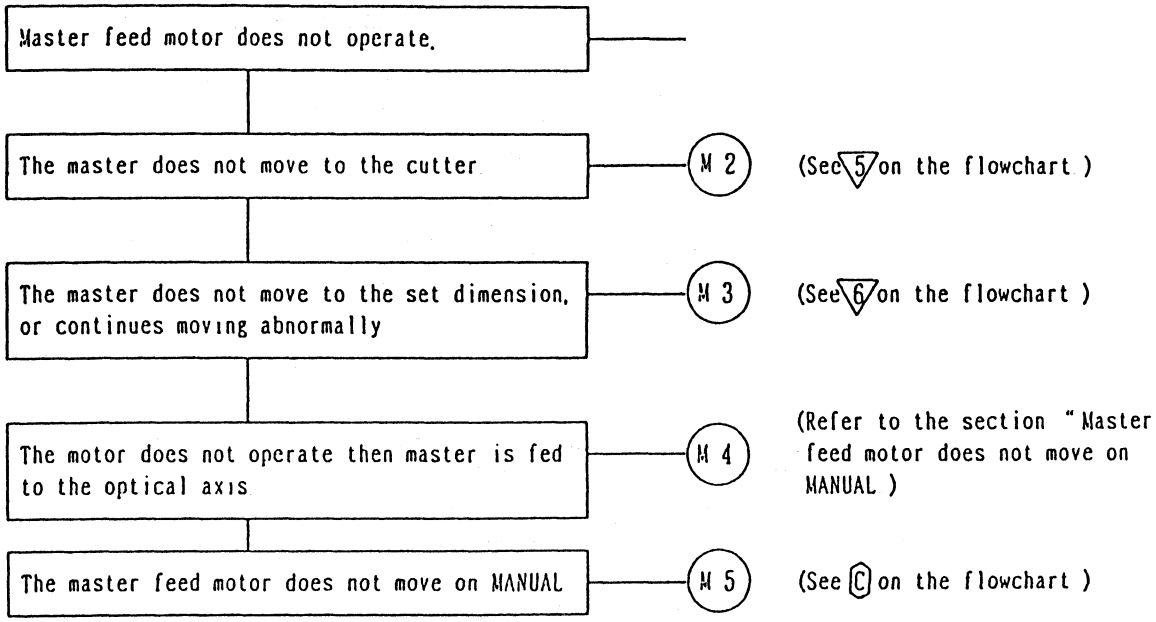
1 Disconnect connectors CN3 and CN4, and then check

2 Voltages should be within the ranges given in the following table

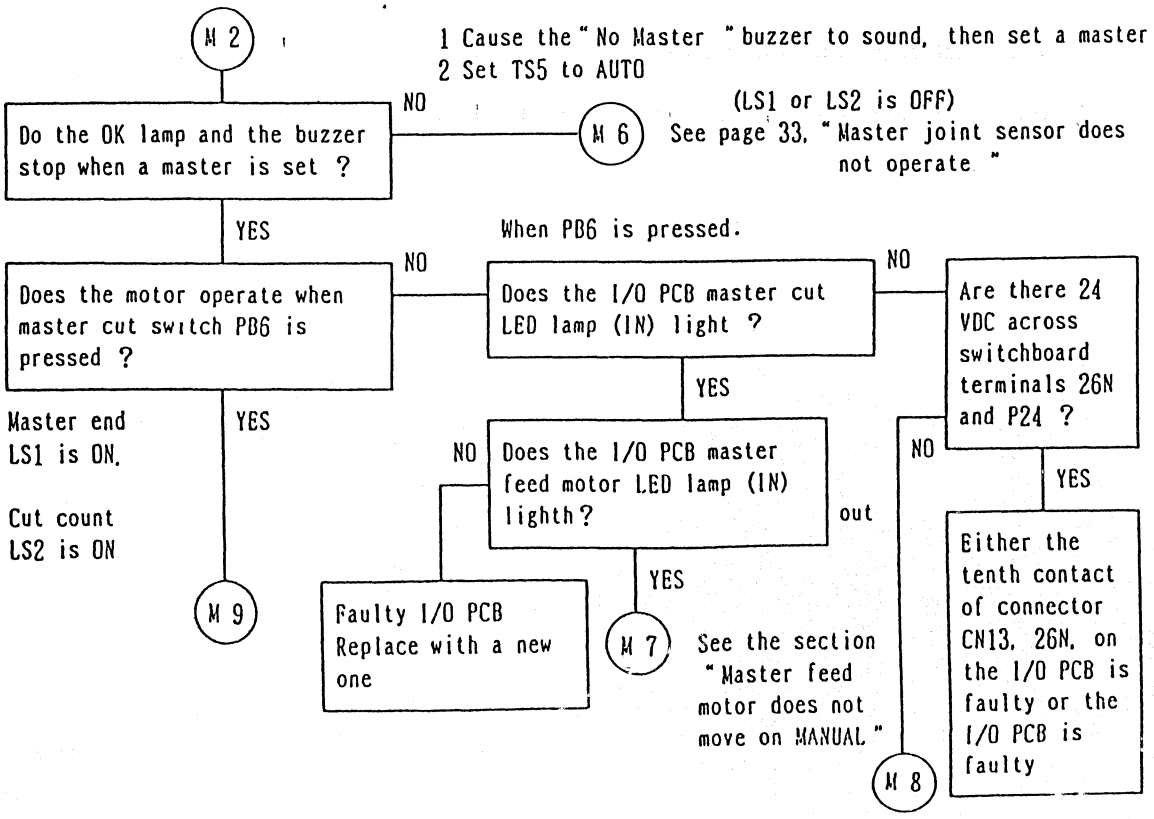
12. Master motor does not move automatically

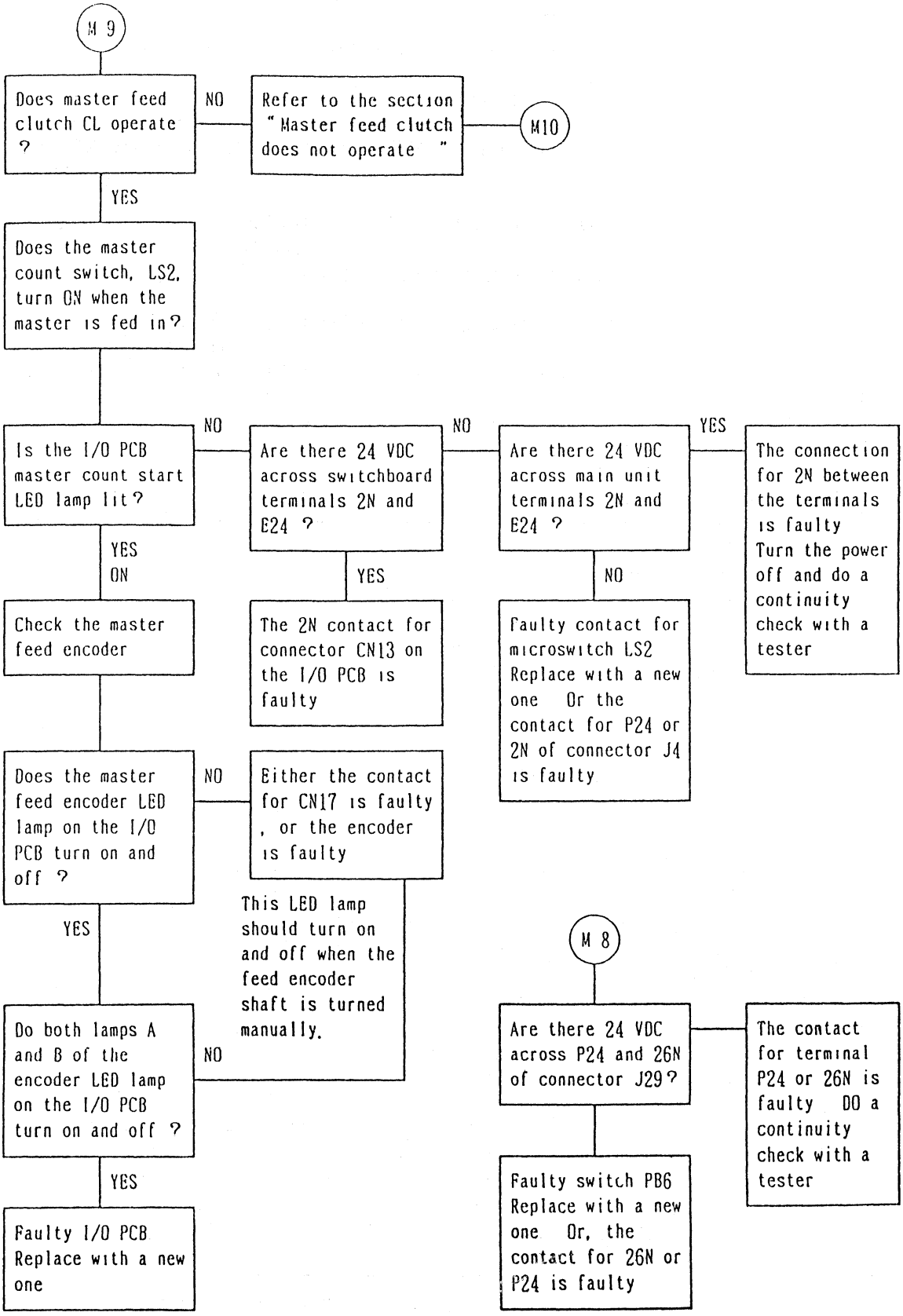
The master motor performs the following three types of functions (numbers 1, 2 and 3 below)

1. When the master set push-button switch PB6 is pressed, it moves the master to the cutter edge
2. After cutting is finished, it moves the master (by chucks) to the optical axis
3. It feeds the master to the set dimensions
4. The encoder pulse for the master feed length is counted by the computer.
5. Read page 11 of the Operation Manual for information concerning the master joint detection operation.
6. The microcomputer system must be normal. (A manual cut operation should be performed.)
7. The system must be reset Refer to the reset procedure for turning on the power source in the flowchart



Use dip switch No 8.




M 9
Does master feed clutch CL operate ?
NO
Refer to the section " Master feed clutch does not operate "
M10
YES
Does the master count switch, LS2, turn ON when the master is fed in?
Is the I/O PCB master count start LED lamp lit?
NO
Are there 24 VDC across switchboard terminals 2N and E24 ?
NO
Are there 24 VDC across main unit terminals 2N and E24 ?
YES
The connection for 2N between the terminals is faulty Turn the power off and do a continuity check with a tester
YES
ON
YES
NO
Check the master feed encoder
The 2N contact for connector CN13 on the I/O PCB is faulty
Faulty contact for microswitch LS2 Replace with a new one Or the contact for P24 or 2N of connector J4 is faulty
Does the master feed encoder LED lamp on the I/O PCB turn on and off ?
NO
Either the contact for CN17 is faulty , or the encoder is faulty
This LED lamp should turn on and off when the feed encoder shaft is turned manually.
YES
M 8
Do both lamps A and B of the encoder LED lamp on the I/O PCB turn on and off ?
NO
Are there 24 VDC across P24 and 26N of connector J29?
The contact for terminal P24 or 26N is faulty DO a continuity check with a tester
YES
Faulty switch PB6 Replace with a new one Or, the contact for 26N or P24 is faulty
Faulty I/O PCB Replace with a new one

15. Master is not fed the set amount

M 3

Before proceeding, make sure that the master is being fed as far as the cutter blade

See 6 on the flowchart.

1. The chuck must be at its origin point. → RY25 relay: OFF; LS12: ON. → I/O PCB chuck origin point LED: ON.
2. The carrier must be at its origin point. → LS7·ON → I/O PCB master carrier origin point LED· ON.
3. The axis stopper must be at its origin point → LS25·ON. → I/O PCB axis stopper LED lamp ON.
4. The pressure plate must be at its origin point. → LS15 OFF. → I/O PCB setter origin point LED lamp· ON
5. The cutter must be at its origin point. → RY27· ON. → I/O PCB cutter origin point LED lamp: ON
6. The main unit safety limit switch must be at its origin point. → LS14: ON. → I/O PCB main unit safety LED lamp ON
7. The vacuum copy pump must be ON → RY20 ON
8. Reflection sensor must be ON

Press exposure switch P85

Does the exposure start LED lamp on the input PCB light ?

NO → Are there 24 VDC across 25N and E24 on the terminal plate ?

NO → Faulty contact for switch PB5 Replace with a new one

YES → The contact for the 8th contact of connector 32, 25N, on the input PCB is faulty

YES
ON

Is the master set digital switch value being input to the input PCB ?
Check with the input PCB LED lamp.

OK

M 9

Faulty contact for CN38 or CN39 Remove the connector and then reconnect it
Or faulty input PCB Replace with a new one

Or

Faulty digital switch Change the digital switch on the panel

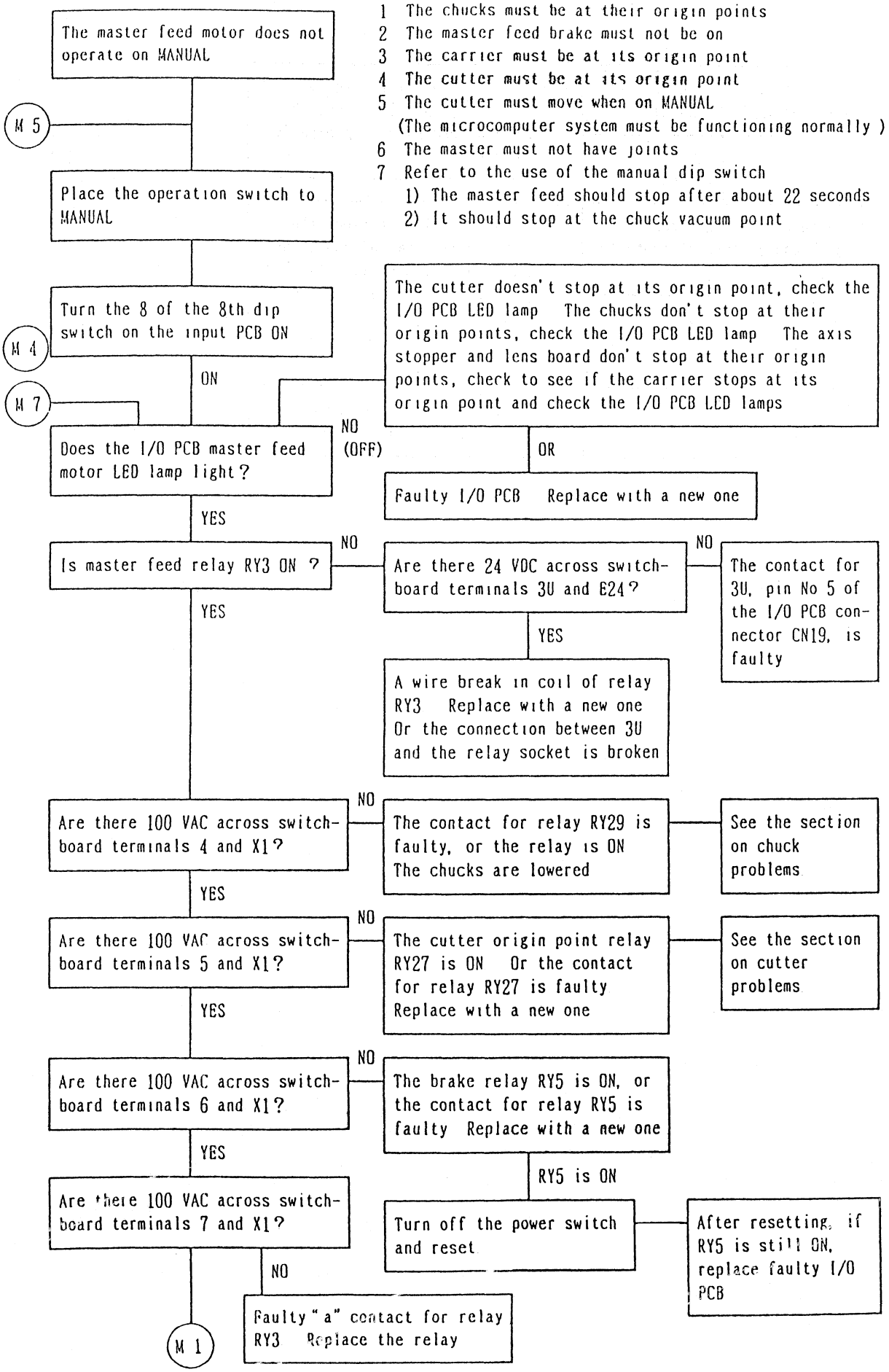
Is the set value on the input PCB LED lamp correct?

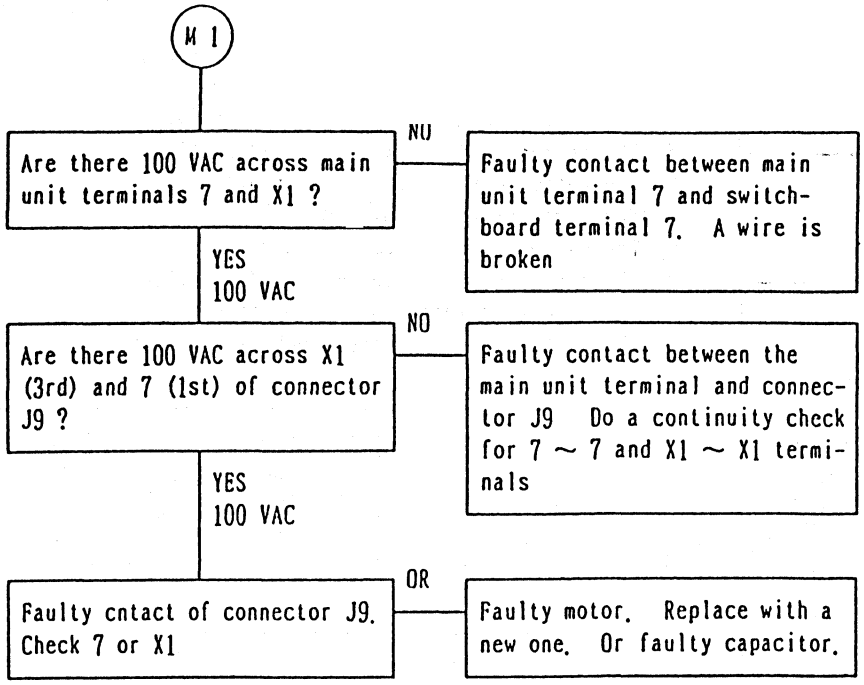
NO

OK

Either the I/O PCB or the CPU is faulty, replace the faulty part

14 Master feed motor does not operate on MANUAL

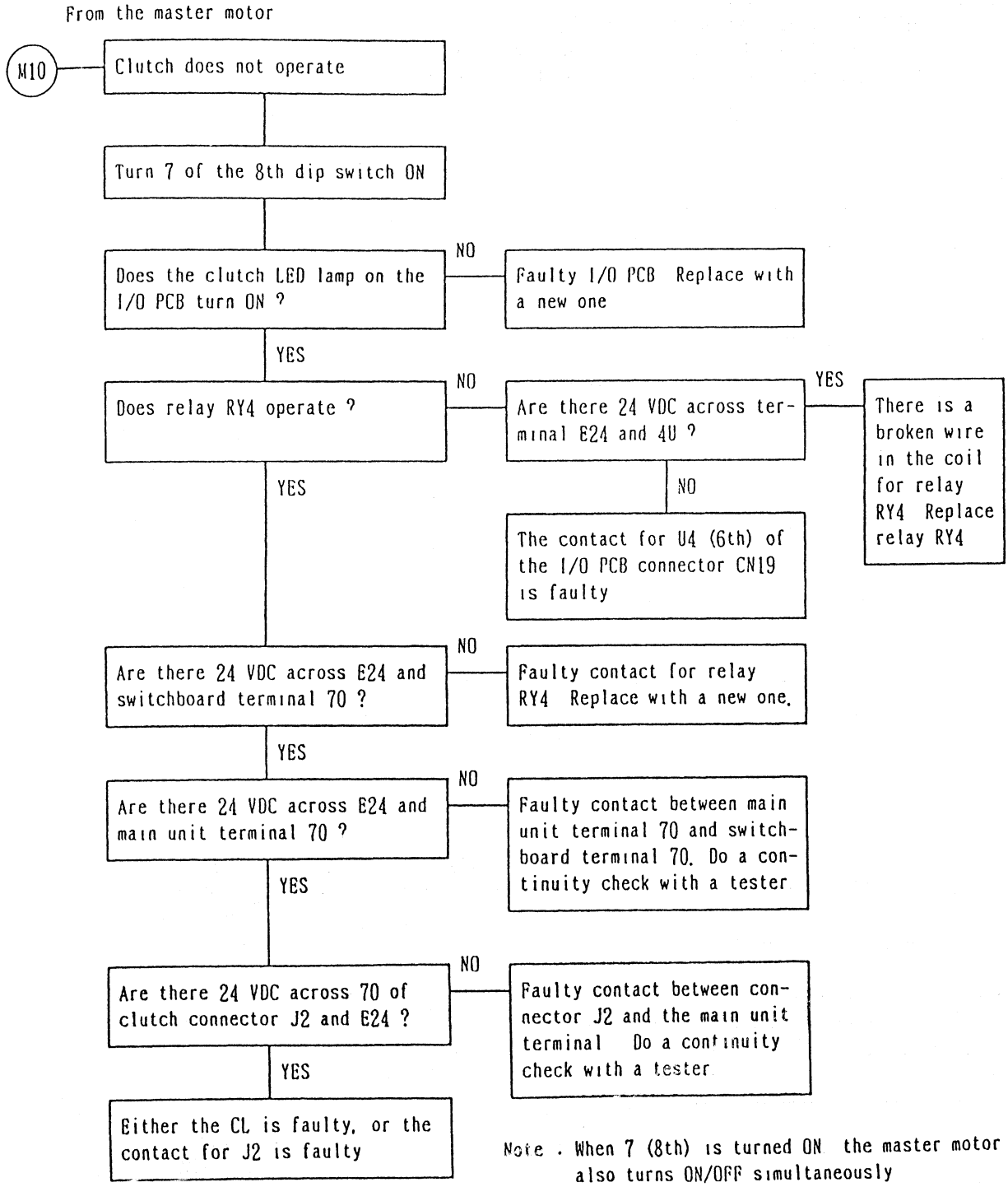



M 1
Are there 100 VAC across main unit terminals 7 and X1 ?
NO
Faulty contact between main unit terminal 7 and switch-board terminal 7. A wire is broken
YES
100 VAC
Are there 100 VAC across X1 (3rd) and 7 (1st) of connector J9 ?
NO
Faulty contact between the main unit terminal and connector J9 Do a continuity check for 7 ~ 7 and X1 ~ X1 terminals
YES
100 VAC
Faulty cntact of connector J9. Check 7 or X1
OR
Faulty motor. Replace with a new one. Or faulty capacitor.

15 Master feed clutch does not operate

Check Points

1 The master feed clutch CL operates when the master is fed to the cut surface
2 The master feed clutch CL operates when the master is fed as far as the set amount
3 When the master moves as far as the optical axis, only the master motor operates
4 TS5 is set to MANUAL Then, using the input PCB 8th dip switch, operation is checked by operating in the manual mode Number 7 of the 8th dip switch is turned ON/OFF
5 Manual cutting operations must be normal
6 The joint sensor and the master feed motor must be operating normally



Note . When 7 (8th) is turned ON the master motor also turns ON/OFF simultaneously

16 Cutter Motor Does Not Operate

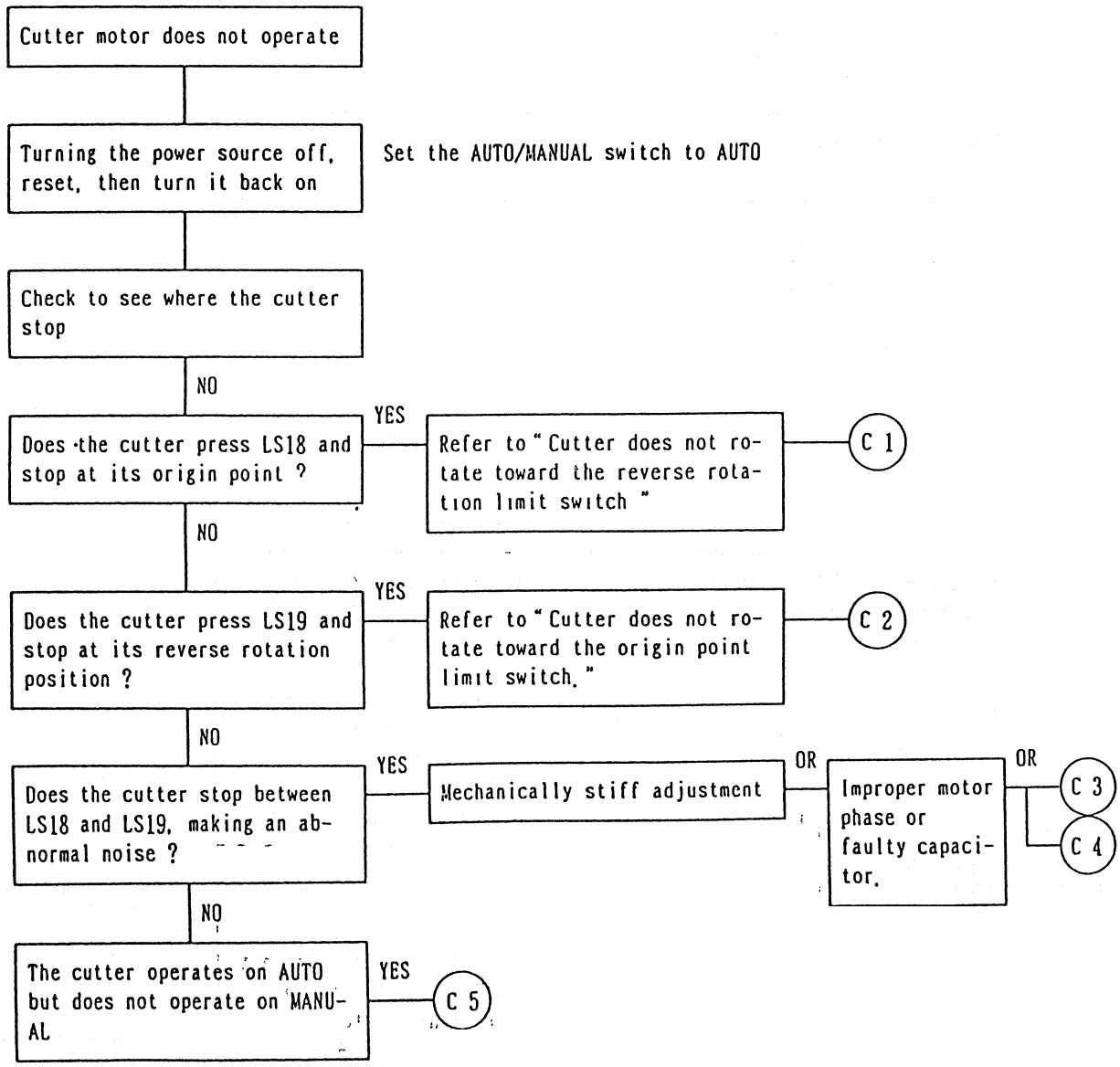
1 When the cutter motor does not operate, use the manual switches to perform checks When PB3 is pressed, the computer receives a signal and a signal is output to the I/O PCB that turns on the cutter relay RY-7

2 Follow the same procedure as above when the motor does not operate on AUTO For AUTO, the computer determines the condition through programs and operates RY-7, without any relation to the PB3 (MANUAL) cut switch.

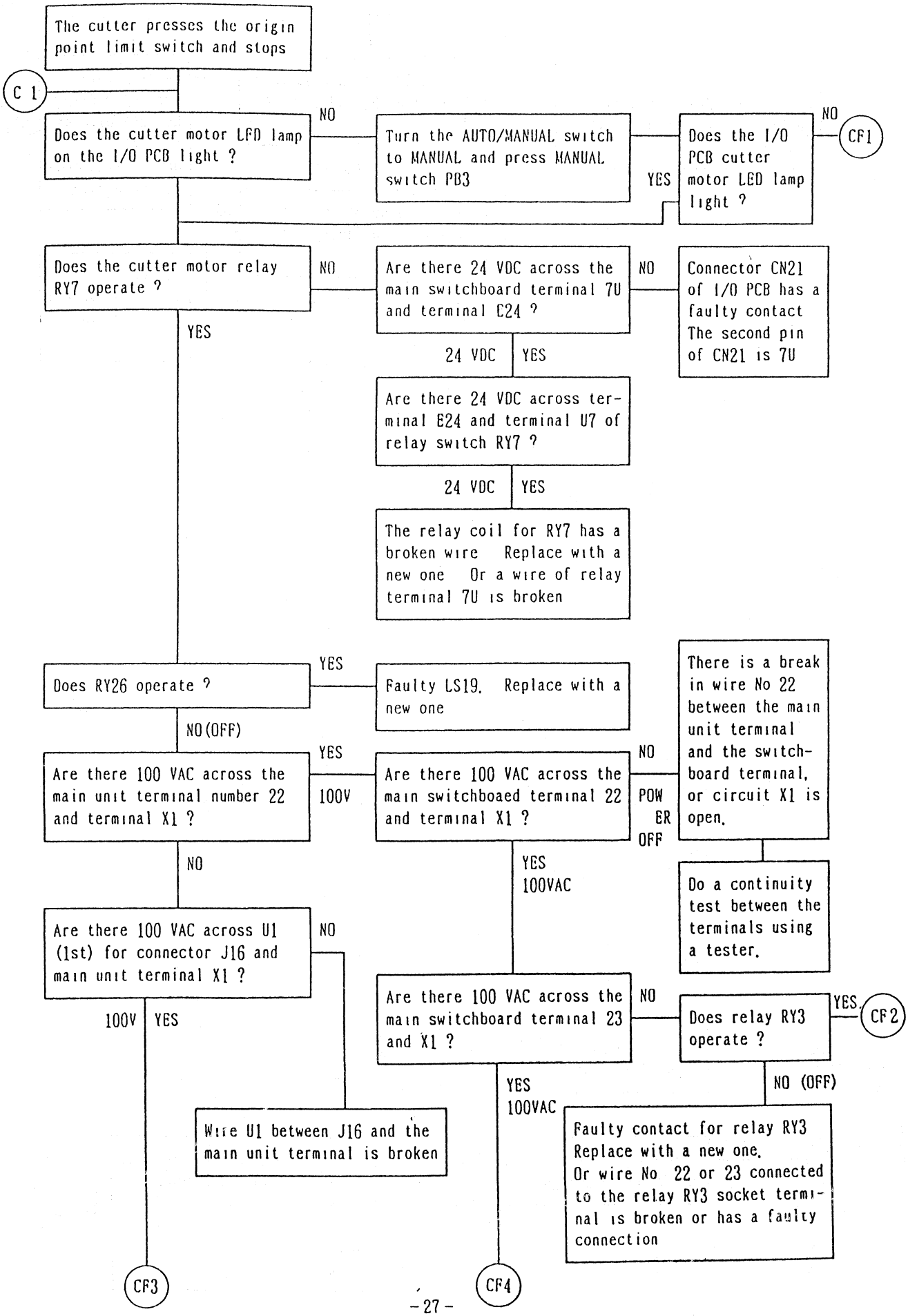
3 The CPU, I/O and RY-7 are used for both AUTO and MANUAL

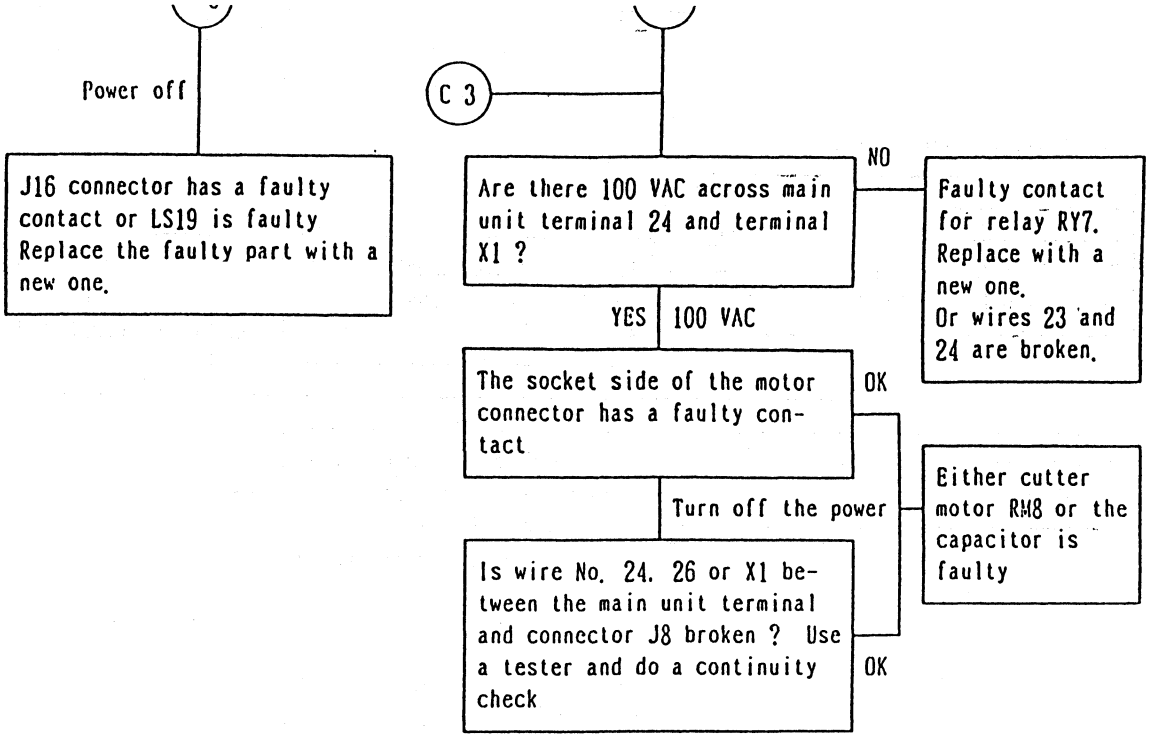
Check Point

1 100 VAC must be supplied to U1 and X1
2 The master feed and relay RY3 must be turned off
3 Main unit safety microswitch LS14 must be turned on.



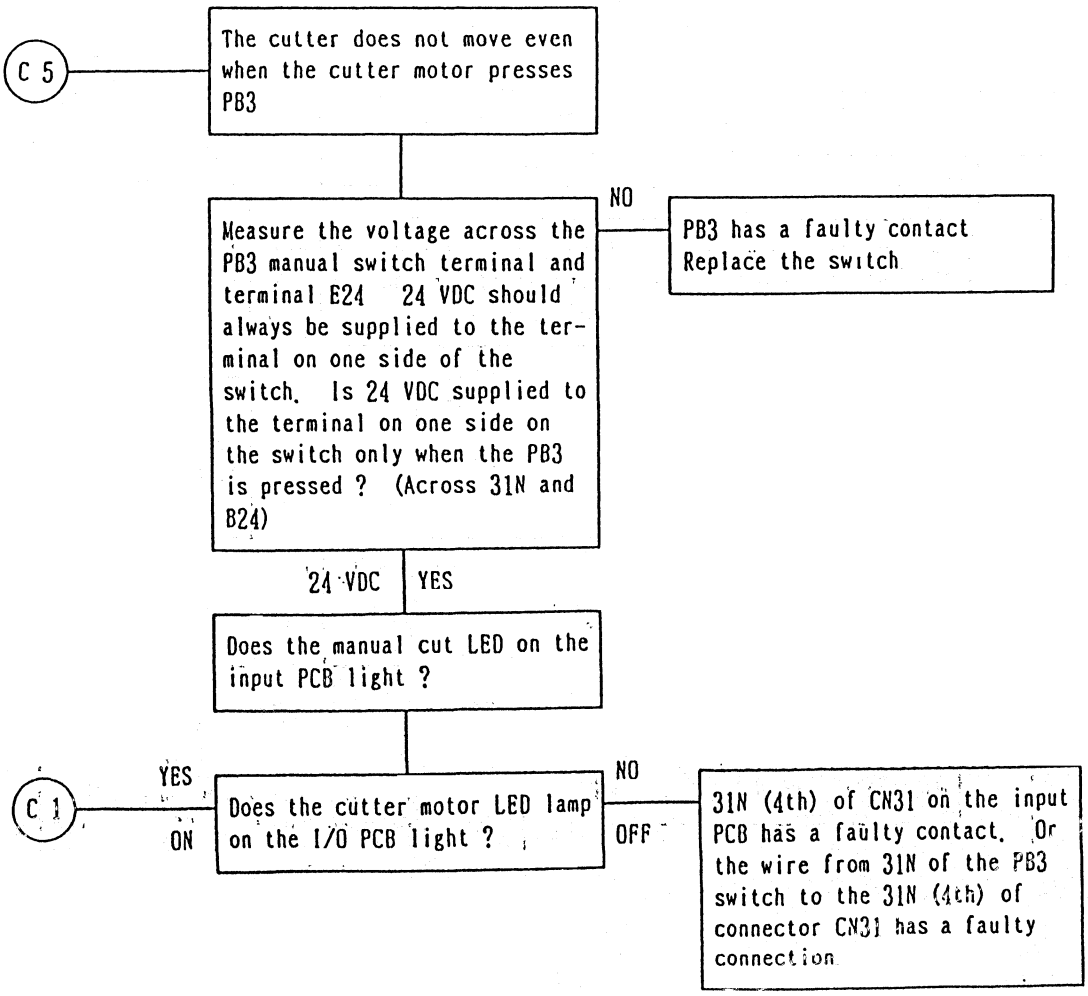
17 Cutter Does Not Rotate Toward The Reverse Rotation Limit Switch



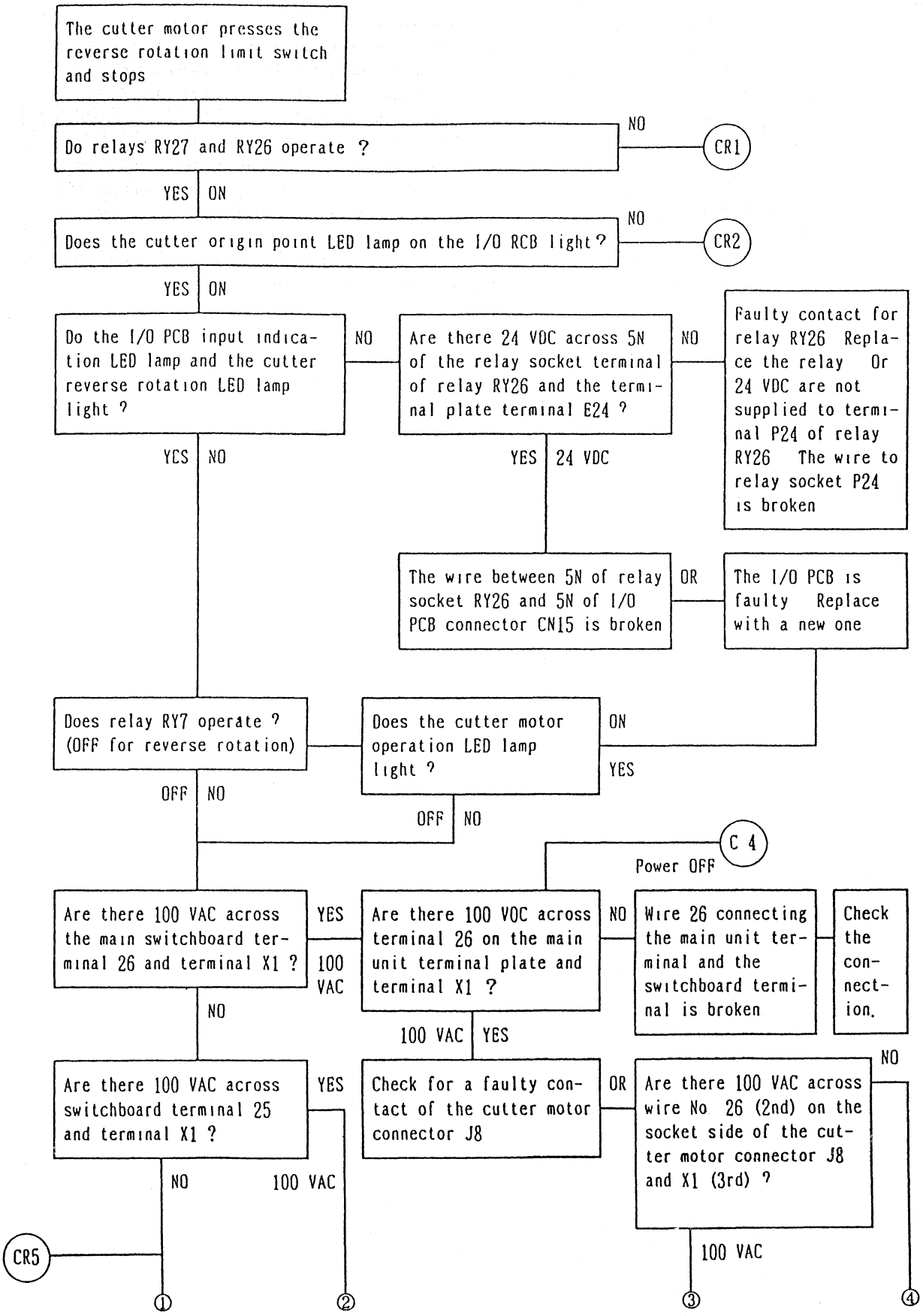


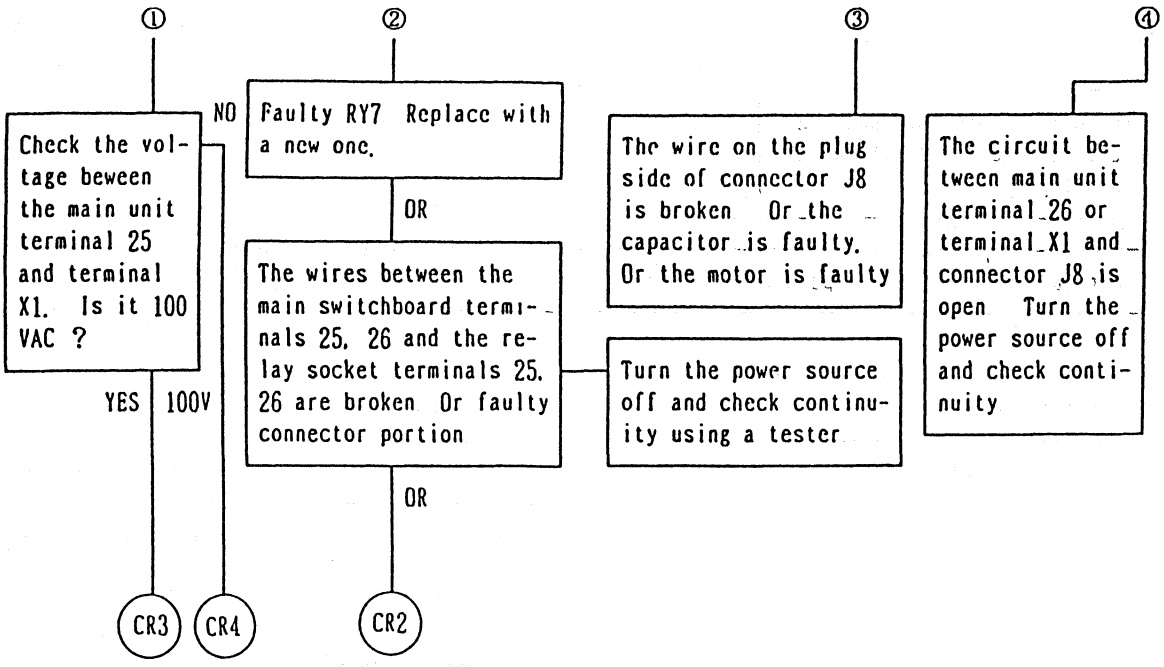
19 The cutter motor does not operate on MANUAL

Check · Set the AUTO/MANUAL switch to MANUAL The cutter must press the origin point limit switch and stop.

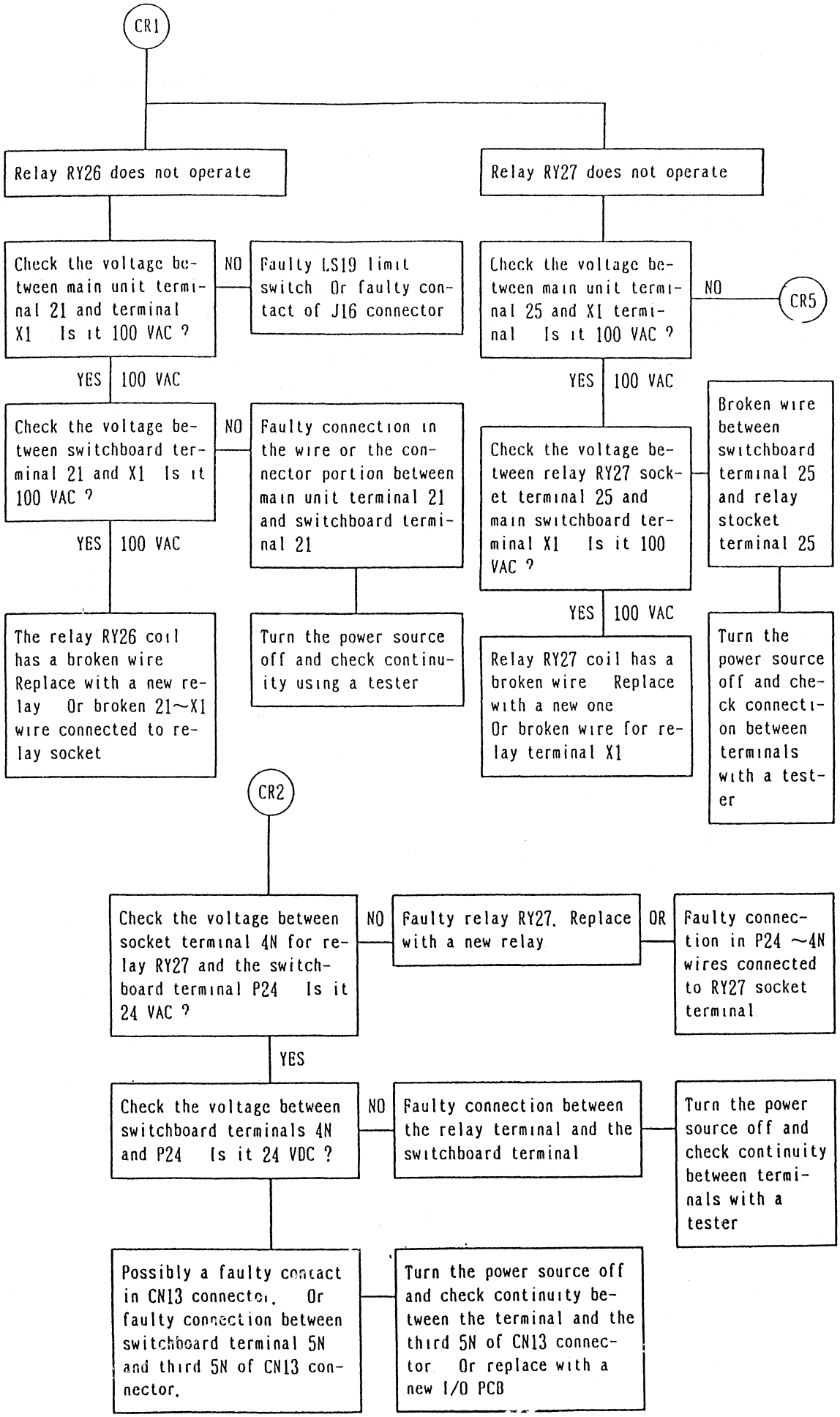


18 The Cutter Motor Does Not Reverse Rotate (Does Not Return To Its Origin Point)




①
②
③
④
Check the voltage beween the main unit terminal 25 and terminal X1. Is it 100 VAC ?
NO
Faulty RY7 Replace with a new one.
OR
The wires between the main switchboard terminals 25, 26 and the relay socket terminals 25, 26 are broken Or faulty connector portion
OR
Turn the power source off and check continuity using a tester
The wire on the plug side of connector J8 is broken Or the capacitor is faulty. Or the motor is faulty
The circuit between main unit terminal 26 or terminal X1 and connector J8 is open Turn the power source off and check continuity
YES
100V
CR3
CR4
CR2

To page 31.


CR1
Relay RY26 does not operate
Relay RY27 does not operate
Check the voltage between main unit terminal 21 and terminal X1 Is it 100 VAC ?
NO
Faulty LS19 limit switch Or faulty contact of J16 connector
Check the voltage between main unit terminal 25 and X1 terminal Is it 100 VAC ?
NO
CR5
YES
100 VAC
YES
100 VAC
Check the voltage between switchboard terminal 21 and X1 Is it 100 VAC ?
NO
Faulty connection in the wire or the connector portion between main unit terminal 21 and switchboard terminal 21
Check the voltage between relay RY27 socket terminal 25 and main switchboard terminal X1 Is it 100 VAC ?
Broken wire between switchboard terminal 25 and relay stocket terminal 25
YES
100 VAC
YES
100 VAC
The relay RY26 coil has a broken wire Replace with a new relay Or broken 21~X1 wire connected to relay socket
Turn the power source off and check continuity using a tester
Relay RY27 coil has a broken wire Replace with a new one Or broken wire for relay terminal X1
Turn the power source off and check connection between terminals with a tester
CR2
Check the voltage between socket terminal 4N for relay RY27 and the switchboard terminal P24 Is it 24 VAC ?
NO
Faulty relay RY27. Replace with a new relay
OR
Faulty connection in P24 ~4N wires connected to RY27 socket terminal
YES
Check the voltage between switchboard terminals 4N and P24 Is it 24 VDC ?
NO
Faulty connection between the relay terminal and the switchboard terminal
Turn the power source off and check continuity between terminals with a tester
Possibly a faulty contact in CN13 connector. Or faulty connection between switchboard terminal 5N and third 5N of CN13 connector.
Turn the power source off and check continuity between the terminal and the third 5N of CN13 connector Or replace with a new I/O PCB

19. Master End Sensor Doesn't Operate

Check Point : The master end sensor enables the computer to detect the end of the master. It uses the ON/OFF signal of a microswitch.

Malfunction : The buzzer continues to sound and the master cannot be set

Check by turning microswitch LSI ON and OFF.

When the LED lamp is lit, the buzzer stops

Does the I/O PCB master and LED lamp turn on and off ?

YES

There is no malfunction in the master end detection circuits. Do a mechanical check Check the operation of the switch actuator

NO

OR

Are there 24VDC across switchboard terminal 1N and E24 ?

YES

Faulty contact for 1N (3rd) of I/O PCB connector CN14 Or replace the I/O PCB

NO

Are there 24 VDC across main unit terminal 1N and E24 ?

YES

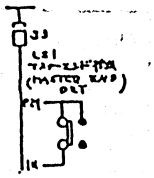
Faulty contact for 1N between switchboard and main unit

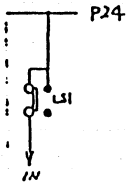
NO

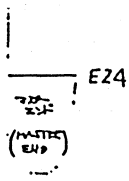
Faulty microswitch LSI Replace with a new one Or connector J3 has a faulty connection

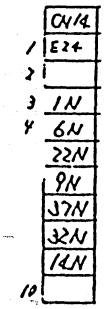
OR

Do a continuity test with a tester between the microswitch terminals and the main unit terminals for 1N and for P25



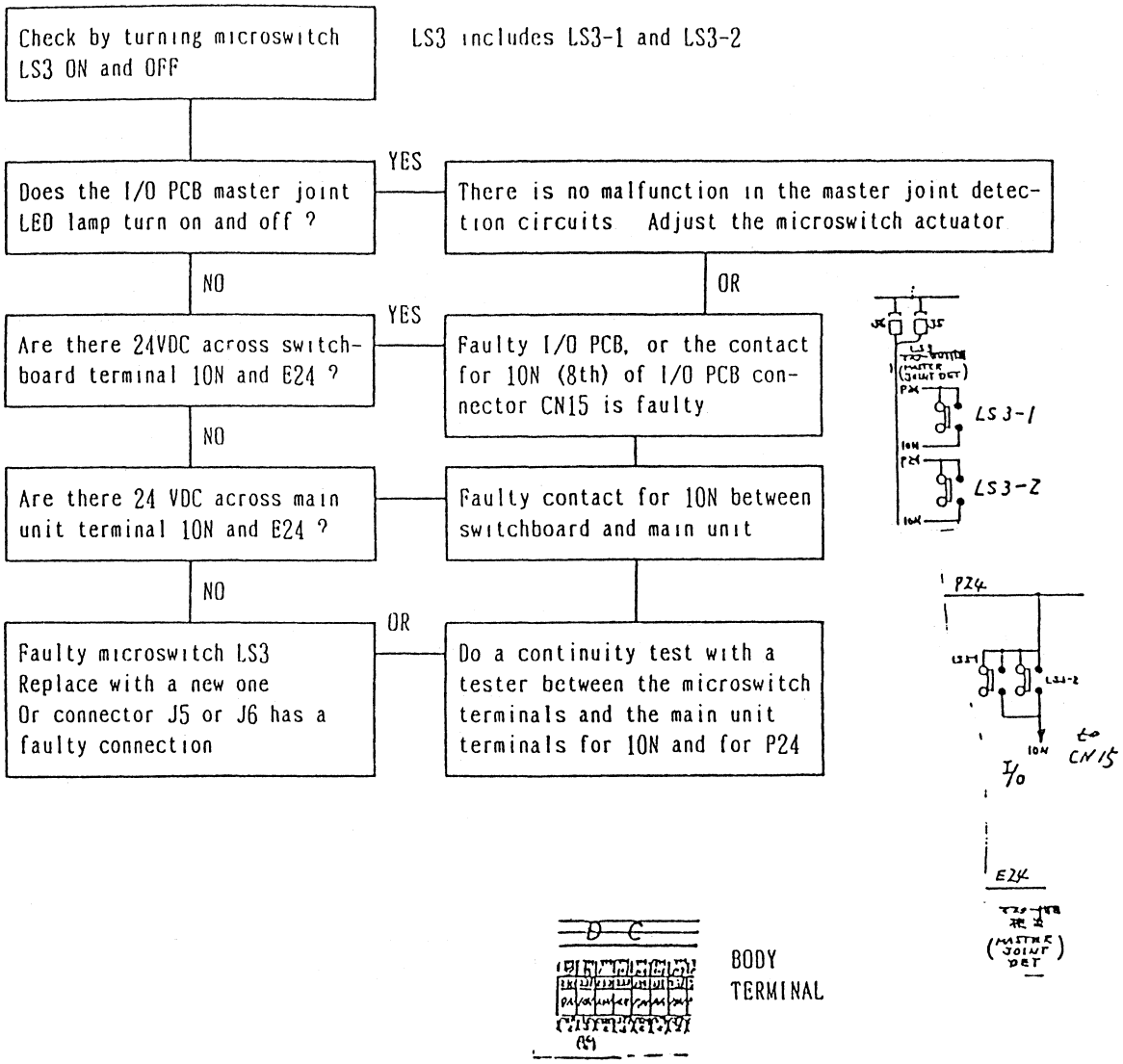






20 Master joint sensor doesn't operate
(Buzzer doesn't stop)

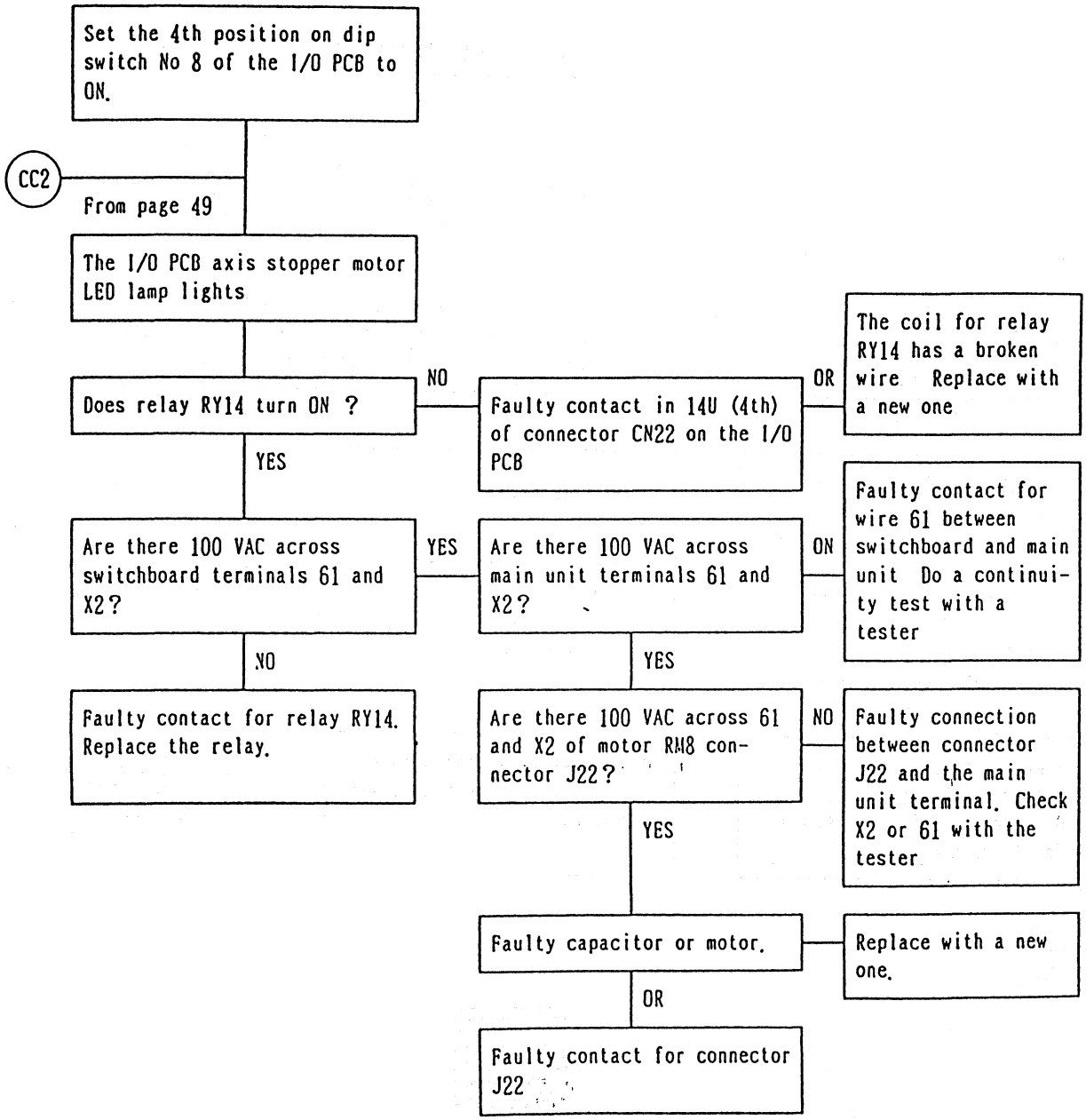
Check points
1. The master joint sensor enables the computer to detect the end of the master It deterts the ON/OFF signal of a microswitch
2. The incoming signal is processed through computer programs, determining at which point in the master feed operation the master joint was detected "MASTER END" is then displayed
3. As the detection hole for the master joint sensor varies with the size of the master, two microswitches are connected in series



21. Axis stopper motor does not operate

Check Points

1. For information on AUTO operation, see page 50
2. For AUTO operation, see ▽7 on the flowchart.
3. The operation check is done with the manual switches (the dip switches on the input PCB).
4. Only the axis stopper motor is assumed to be malfunctioning

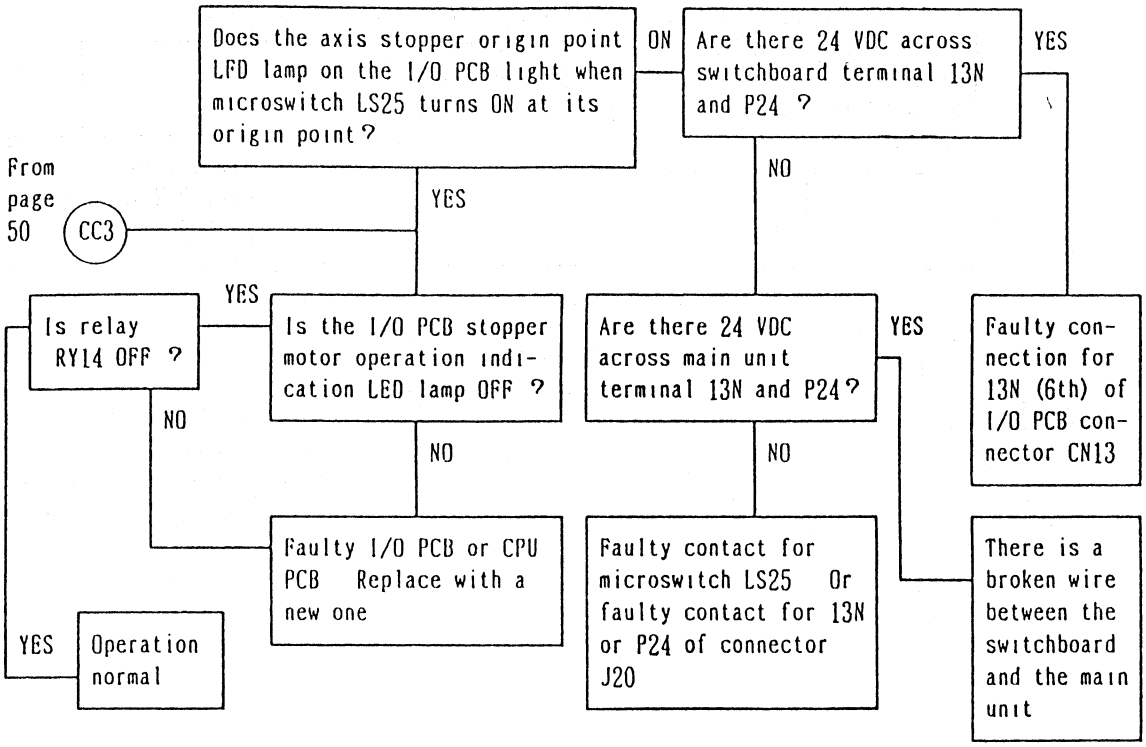


22. Axis stopper motor doesn't stop at the optical axis or origin point.

Check Points

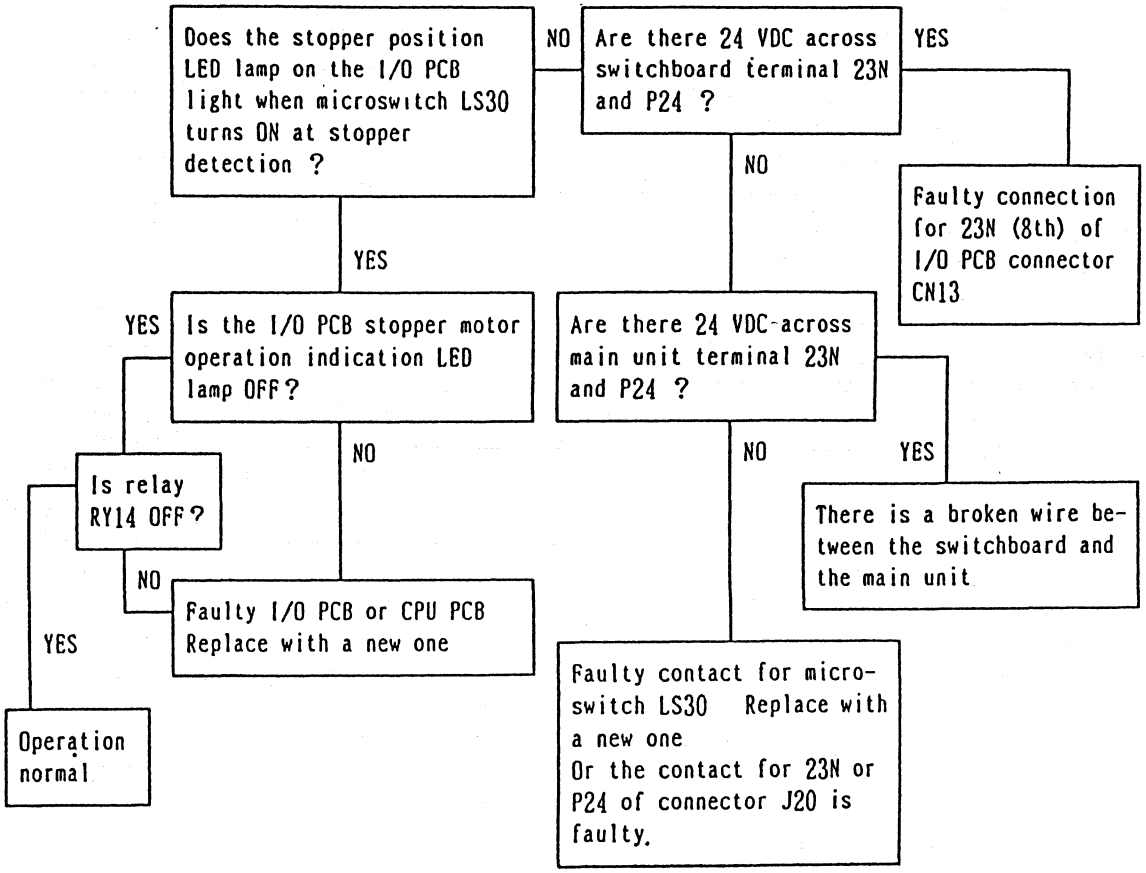
1. Check on MANUAL operation
2. The rest of the system must be functioning properly

Check to see if the microswitch signal is entering the I/O PCB and to see if the motor relay is OFF



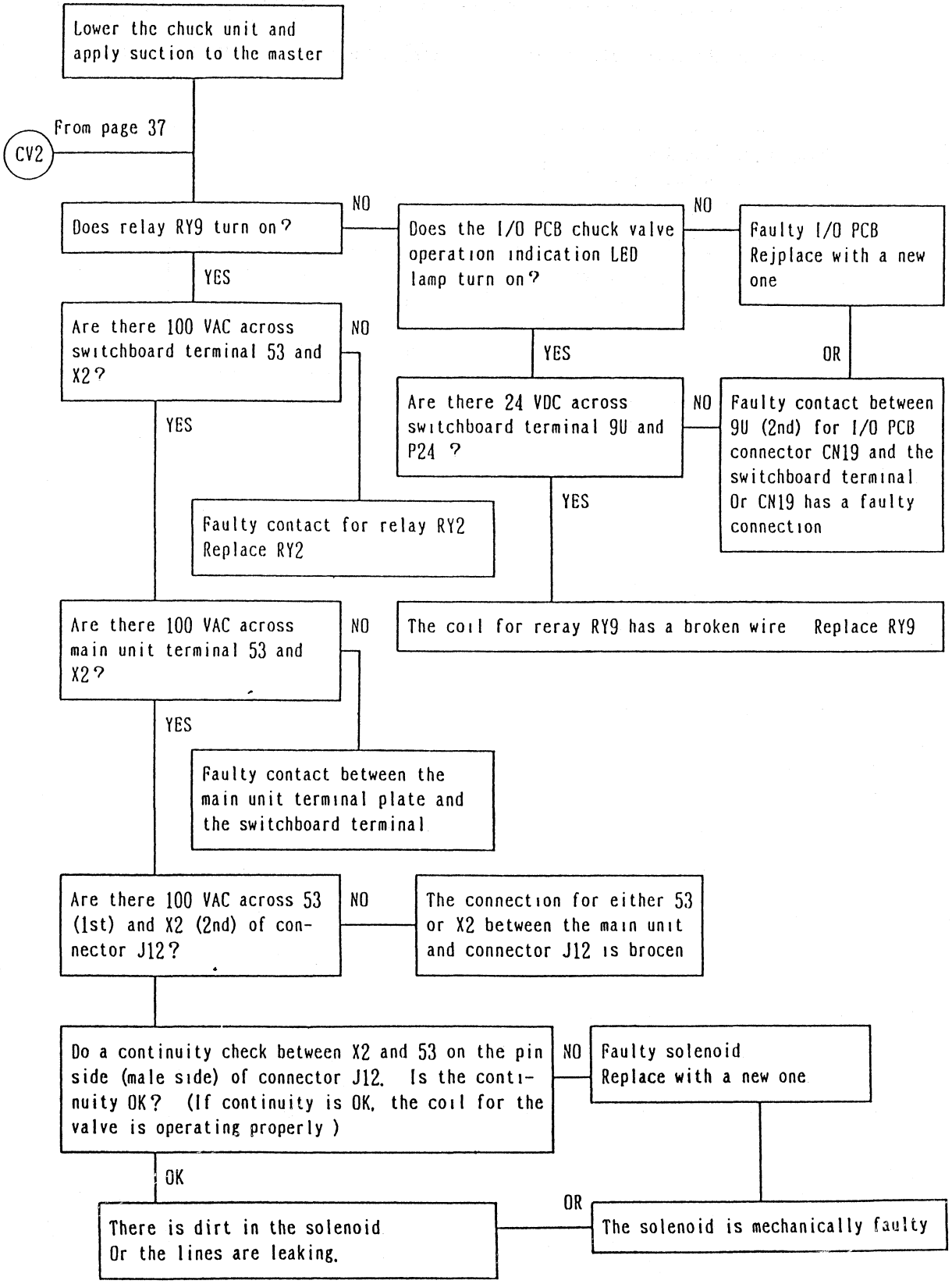
23. Axis Stopper Motor Does't Stop At The Stopper

1. Check with the MANUAL operation switches (dip switch 8)
2. See "Axis stopper motor doesn't stop at the optical axis or origin point



24. The Chucks Do Not Hold The Master

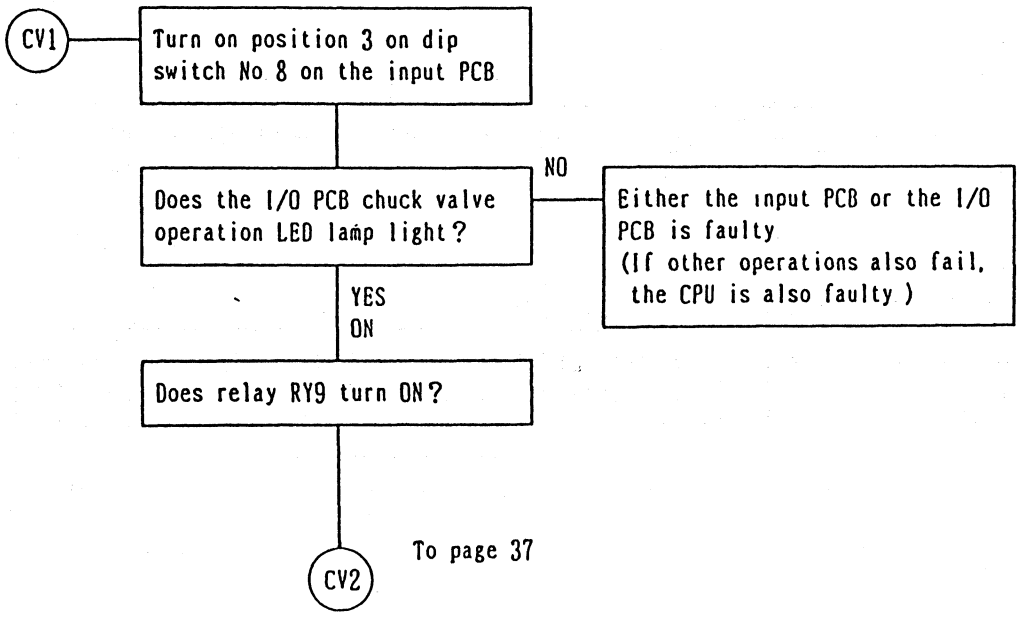
1 The vacuum pump must be operating properly
2. The rest of the system must be operating properly
3 The chukd up/down motor must be operating properly



25. Manual Operation Of The Chuck Suction Valve

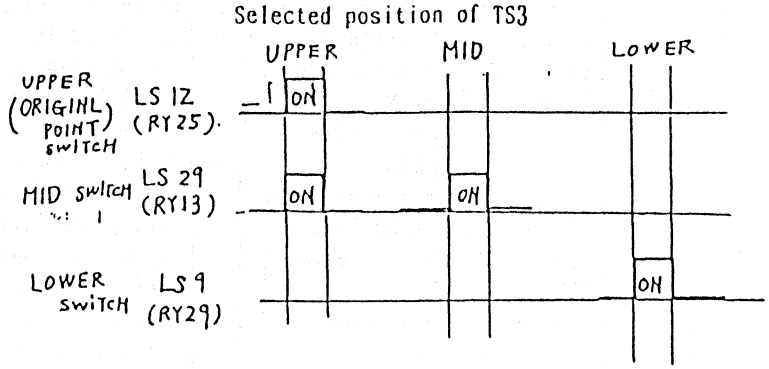
Check Points

1. This can be used to check the function of the CPU and I/O PCB If there are no problems with this operation, it is a sign that the computer is operative (as well as the input PCB).
2. The operation check is done by turning position 3 of dip switch No. 8 of the input PCB on and off.
3. After turning on the power, all conditions up to (A) on the flowchart must be normal.



26 The Chucks Don't Move Up And Down

1 The chuck unit can be moved both manually and automatically
2 The kickers and microswitches are related as follows

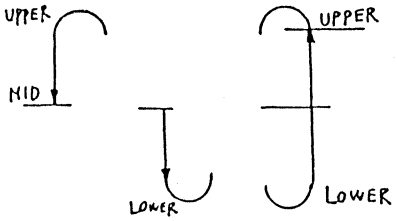


3 As shown above, when LS12 is ON, LS29 is also ON The kickers are adjusted as shown in the above diagram
4 AUTO operation is checked after checking MANUAL operation

The chucks don't operate on MANUAL — CM1 — See CM1, page 39

The chucks don't operate on AUTO — CM2 — See CM2, page 42

The chuck operates the same for AUTO as it does for MANUAL — CM12 — See CM12, page 45



To page 39

CM1 — The chucks don't operate on MANUAL

1 Set TS5 to MANUAL RY28 must be ON
2 100 VAC must be supplied to U2 and X2
3 When on MANUAL, the rotation is toward CW Movement is from up to down (motor rotation in one direction)

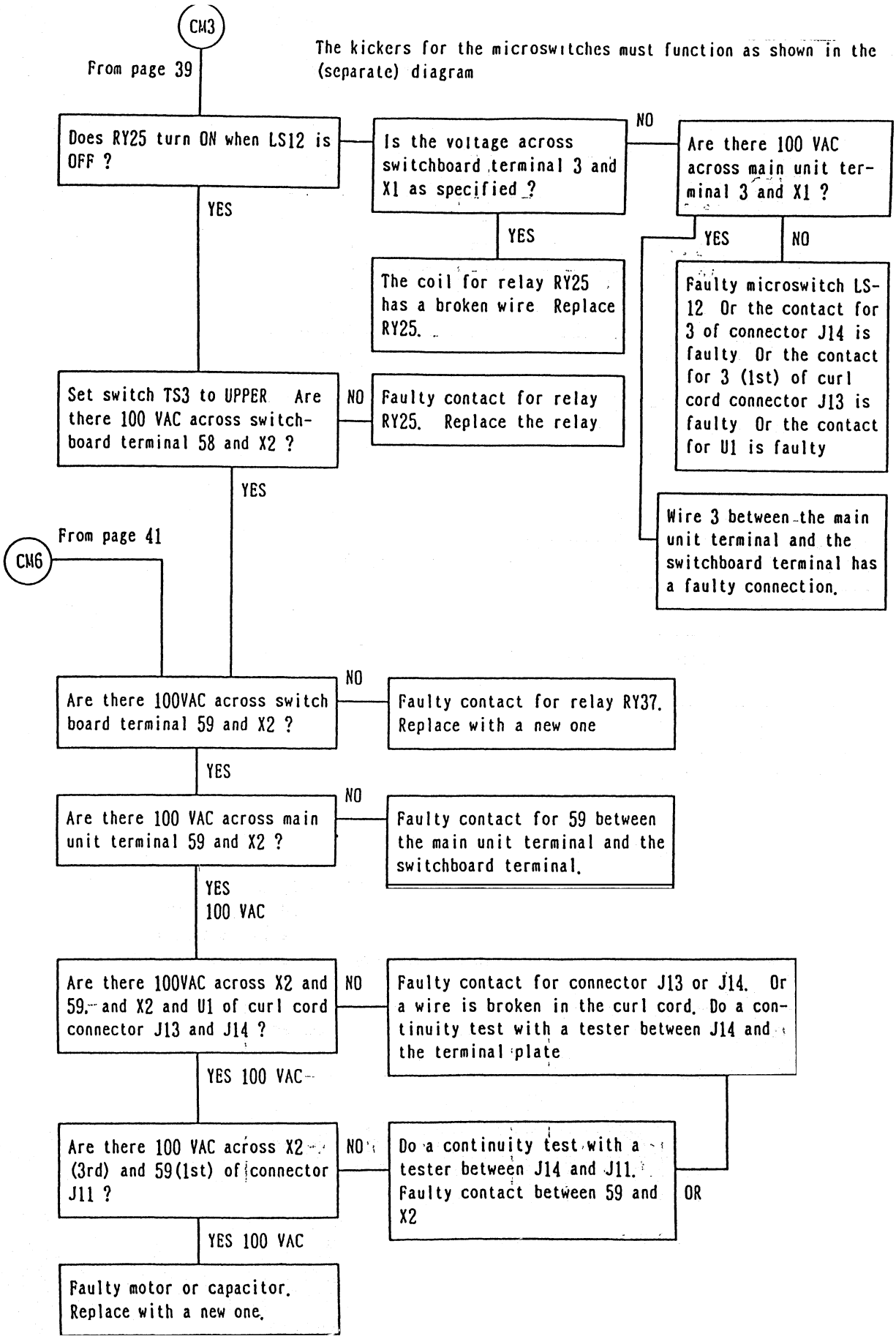
Are there 100 VAC across terminals 54 and X2 ?
NO → Faulty relay RY28 Replace the relay

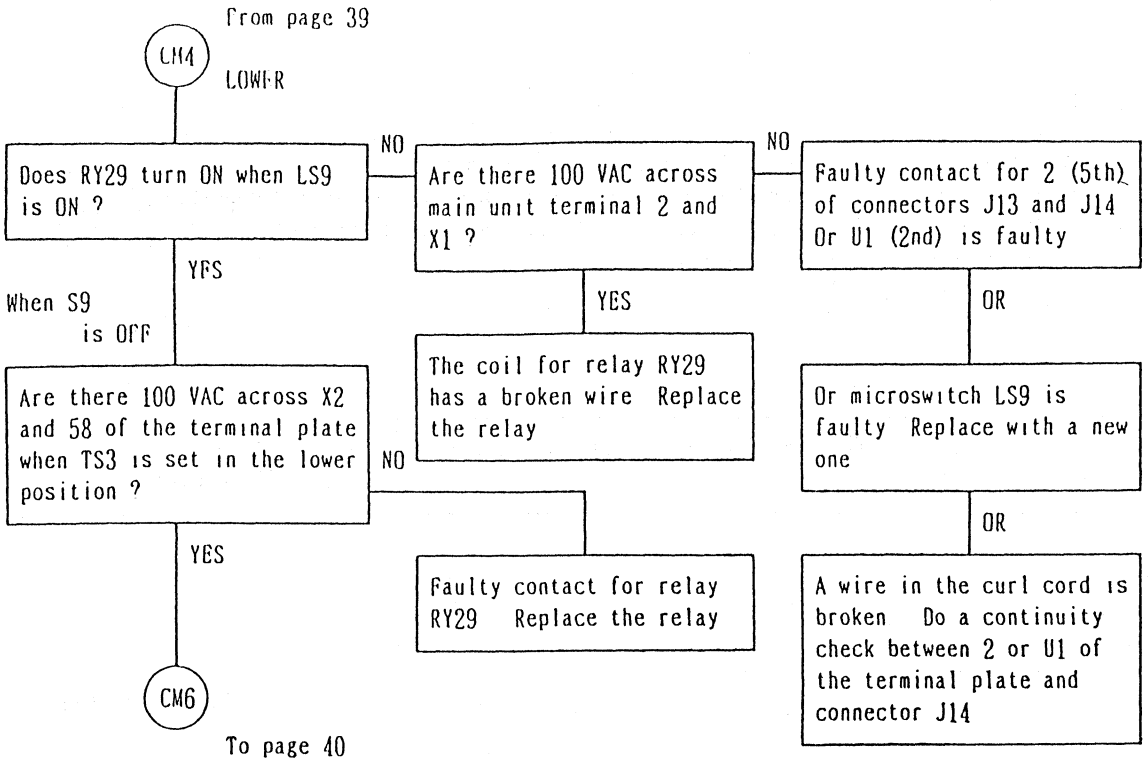
YES

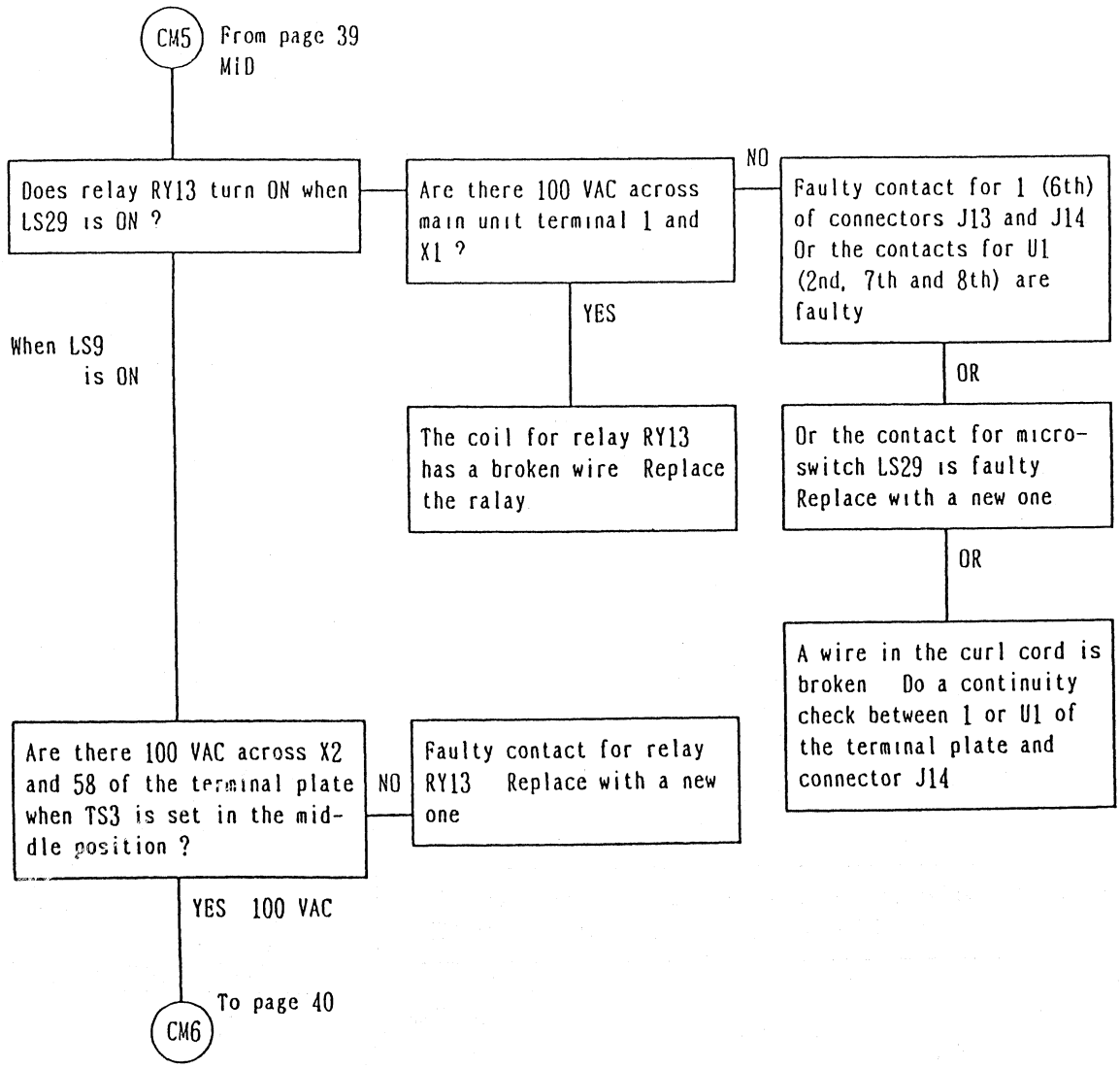
Are there 100 VAC between terminal X2 and terminals 55, 56 and 57 of the terminal beard?
Faulty switch TS3 Replace the switch Or the contact for connector J72 is faulty.

YES 100 VAC

Don't move to the upper position — CM3 To page 40
OR
Don't move to the middle position — CM5 To page 41
OR
Don't move to the lower position — CM4 To page 41


CM3
From page 39
The kickers for the microswitches must function as shown in the (separate) diagram
Does RY25 turn ON when LS12 is OFF ?
NO
Is the voltage across switchboard terminal 3 and X1 as specified ?
Are there 100 VAC across main unit terminal 3 and X1 ?
YES
YES
YES
NO
The coil for relay RY25 has a broken wire Replace RY25.
Faulty microswitch LS-12 Or the contact for 3 of connector J14 is faulty Or the contact for 3 (1st) of curl cord connector J13 is faulty Or the contact for U1 is faulty
Set switch TS3 to UPPER Are there 100 VAC across switch-board terminal 58 and X2 ?
NO
Faulty contact for relay RY25. Replace the relay
Wire 3 between the main unit terminal and the switchboard terminal has a faulty connection.
YES
From page 41
CM6
Are there 100VAC across switch board terminal 59 and X2 ?
NO
Faulty contact for relay RY37. Replace with a new one
YES
Are there 100 VAC across main unit terminal 59 and X2 ?
NO
Faulty contact for 59 between the main unit terminal and the switchboard terminal.
YES
100 VAC
Are there 100VAC across X2 and 59, and X2 and U1 of curl cord connector J13 and J14 ?
NO
Faulty contact for connector J13 or J14. Or a wire is broken in the curl cord. Do a continuity test with a tester between J14 and the terminal plate
YES 100 VAC
Are there 100 VAC across X2 (3rd) and 59(1st) of connector J11 ?
NO
Do a continuity test with a tester between J14 and J11. Faulty contact between 59 and X2
OR
YES 100 VAC
Faulty motor or capacitor. Replace with a new one.


From page 39
CM4
LOWER
Does RY29 turn ON when LS9 is ON ?
NO
Are there 100 VAC across main unit terminal 2 and X1 ?
NO
Faulty contact for 2 (5th) of connectors J13 and J14 Or U1 (2nd) is faulty
YES
When S9 is OFF
YES
OR
The coil for relay RY29 has a broken wire Replace the relay
Are there 100 VAC across X2 and 58 of the terminal plate when TS3 is set in the lower position ?
Or microswitch LS9 is faulty Replace with a new one
NO
OR
YES
Faulty contact for relay RY29 Replace the relay
A wire in the curl cord is broken Do a continuity check between 2 or U1 of the terminal plate and connector J14
CM6
To page 40


CM5
From page 39
MID
Does relay RY13 turn ON when LS29 is ON ?
Are there 100 VAC across main unit terminal 1 and X1 ?
NO
Faulty contact for 1 (6th) of connectors J13 and J14 Or the contacts for U1 (2nd, 7th and 8th) are faulty
YES
When LS9 is ON
OR
The coil for relay RY13 has a broken wire Replace the ralay
Or the contact for micro-switch LS29 is faulty Replace with a new one
OR
A wire in the curl cord is broken Do a continuity check between 1 or U1 of the terminal plate and connector J14
Are there 100 VAC across X2 and 58 of the terminal plate when TS3 is set in the mid-dle position ?
NO
Faulty contact for relay RY13 Replace with a new one
YES 100 VAC
To page 40
CM6

27. The Chucks Don't Operate On AUTO

Check Points

1 The chucks must operate properly on MANUAL
2 The axis stopper must be functioning properly
3 The cutter must operate properly after the master is fed
4. The master joint sensor and the master end sensor must not be in mid-operation.
5 12 VDC must be supplied between terminal P12 and the ground terminal
6 The photosensor must detect the master

Frome page 39

CM2 AUTO

The chucks do not lower from their origin points to the master suction point on AUTO — CM9 To page 46

The chucks do not raise from the master suction point to the middle position on AUTO — CM10 To page 43

For information on movenents for AUTO operation, see page 49. "Carrier doesn't move to the optical axis on AUTO "

Page 42

CM9

See ▽7 on the flowchart

Does the I/O PCB check motor LED lamp CW turn on ?

NO → Check the I/O PCB LED lamp to see if the len board is at its origin point. Check the I/O PCB LED lamp to see if the axis stopper is at its origin point Check the I/O PCB LED lamp to see if the cutter is at its origin point Check the I/O PCB LED lamp to see if the main unit safety switch is on Check the I/O PCB LED lamp to see if the setter (pressure plate) is at its origin point — Chcck to con- firm that these lamp are lit

YES

Does relay RY8 turn on ?

NO → Faulty I/O PCB Replace with a new one

YES

Are there 24VDC across switch- board terminal 8U and P24 ?

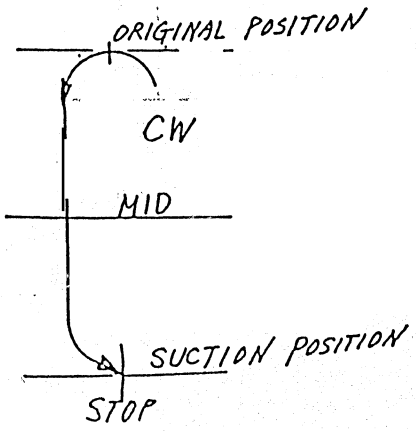
NO → Faulty contact for 8U (1st) of I/O PCB connector CN19

YES

The coil for relay RY8 has a broken wire Replace the re- lay

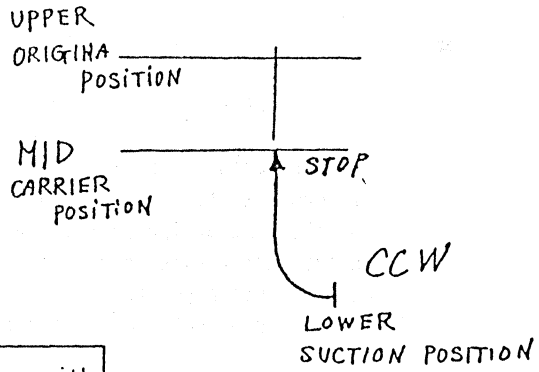
Are there 100VAC across switch board terminal 58 and X2 ?

NO → Faulty contact for relay RY8 Replace relay RY8



To page 41

CM6



From page 42

CM10

The chuck unit stops at the suction point and doesn't raise

YES

Does the I/O PCB chuck motor CCW LED lamp turn on ?

NO → Faulty I/O PCB Replace with a new one.

YES

Does relay RY37 turn ON ?

NO → Are there 24 VDC across switchboard terminal 37U and P24 ?

NO → Faulty contact for 37U (3rd) of I/O PCB connector CN19

YES → The coil for relay RY37 has a broken wire Replace with a new one

YES

Are there 100 VAC across switchboard terminal 69 and X2 ?

NO → Faulty contact for relay RY-8 Replace the relay

YES

Are there 100 VAC across switchboard terminal 60 and X2 ?

NO → Faulty contact for relay RY-37 Replace the relay

YES

Are there 100 VAC across 60 (9th) and X2 (4th) of curl cord connector J14 ?

NO → A wire is broken in the curl cord Or the contact J13 is faulty → Turn off the power and do a continuity test with a tester for 60 and X2

YES

Faulty contact for motor connector J11 (either 60 (2nd) or X2 (3rd)).

OR

Faulty motor or capacitor. Replace with a new one

28. Chuck Up/Down Operation On AUTO Is The Same As On MANUAL. MANUAL Operation is normal.

Check Points: (MANUAL operation must be normal.)

1. After suction is applied to the master by the chuck motor it does not stop at the middle position — CY9
2. The chuck motor lowers from the master carry position (middle) to the master suction operation position, but it does not stop at the suction points. — CY10

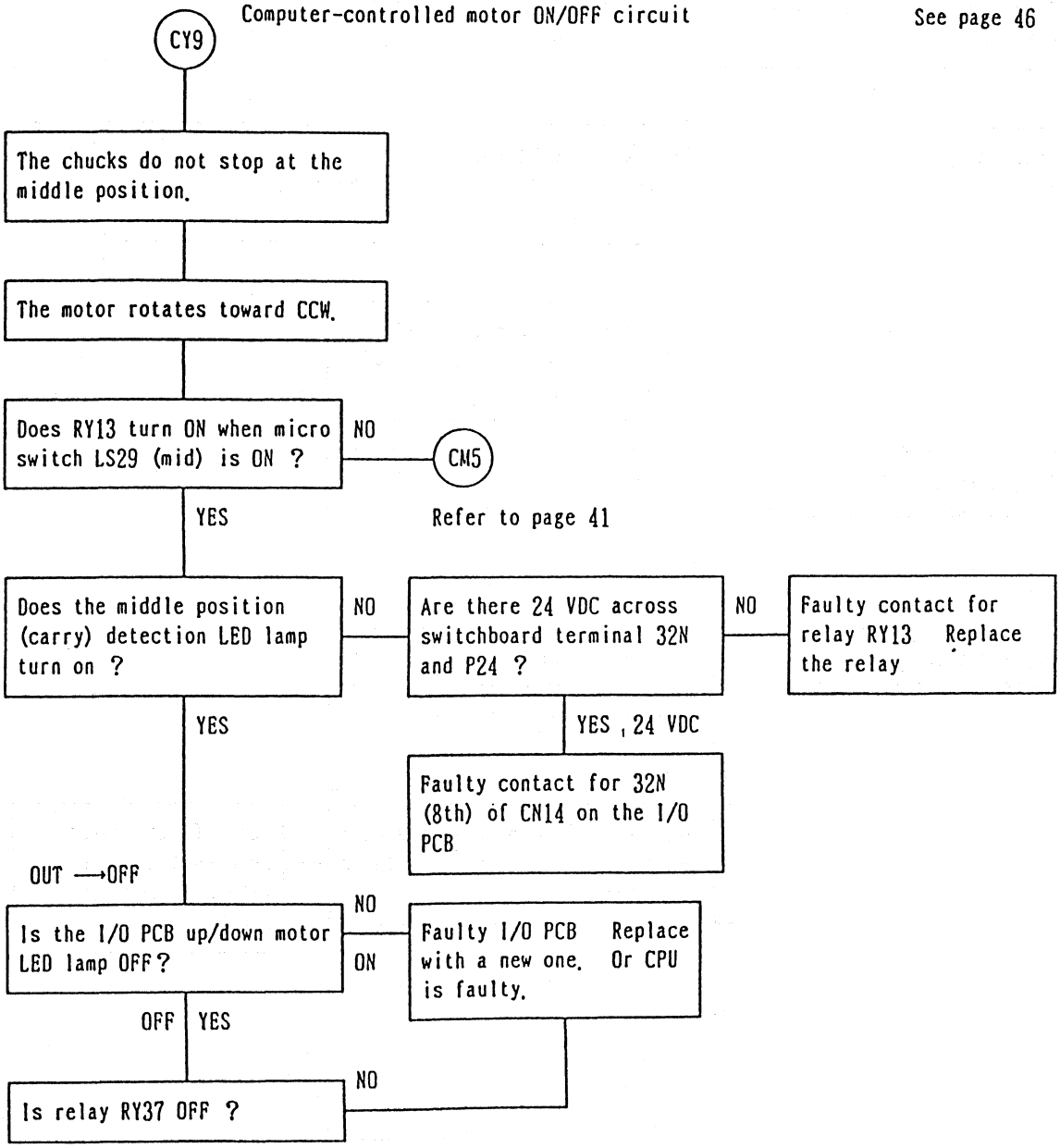
page 44

3 The chucks do not stop at their origin points. — CY11

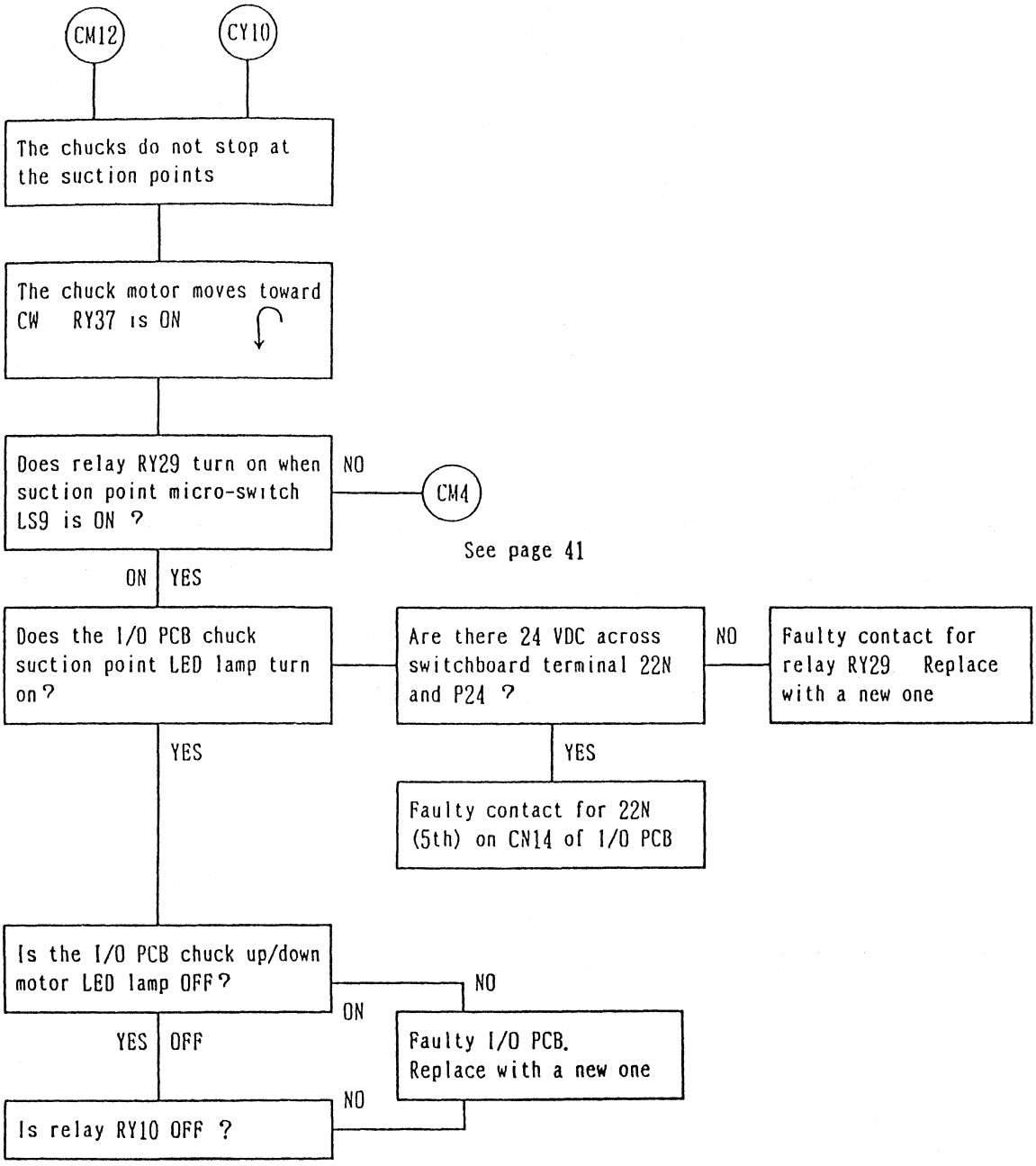
Refer to page 45

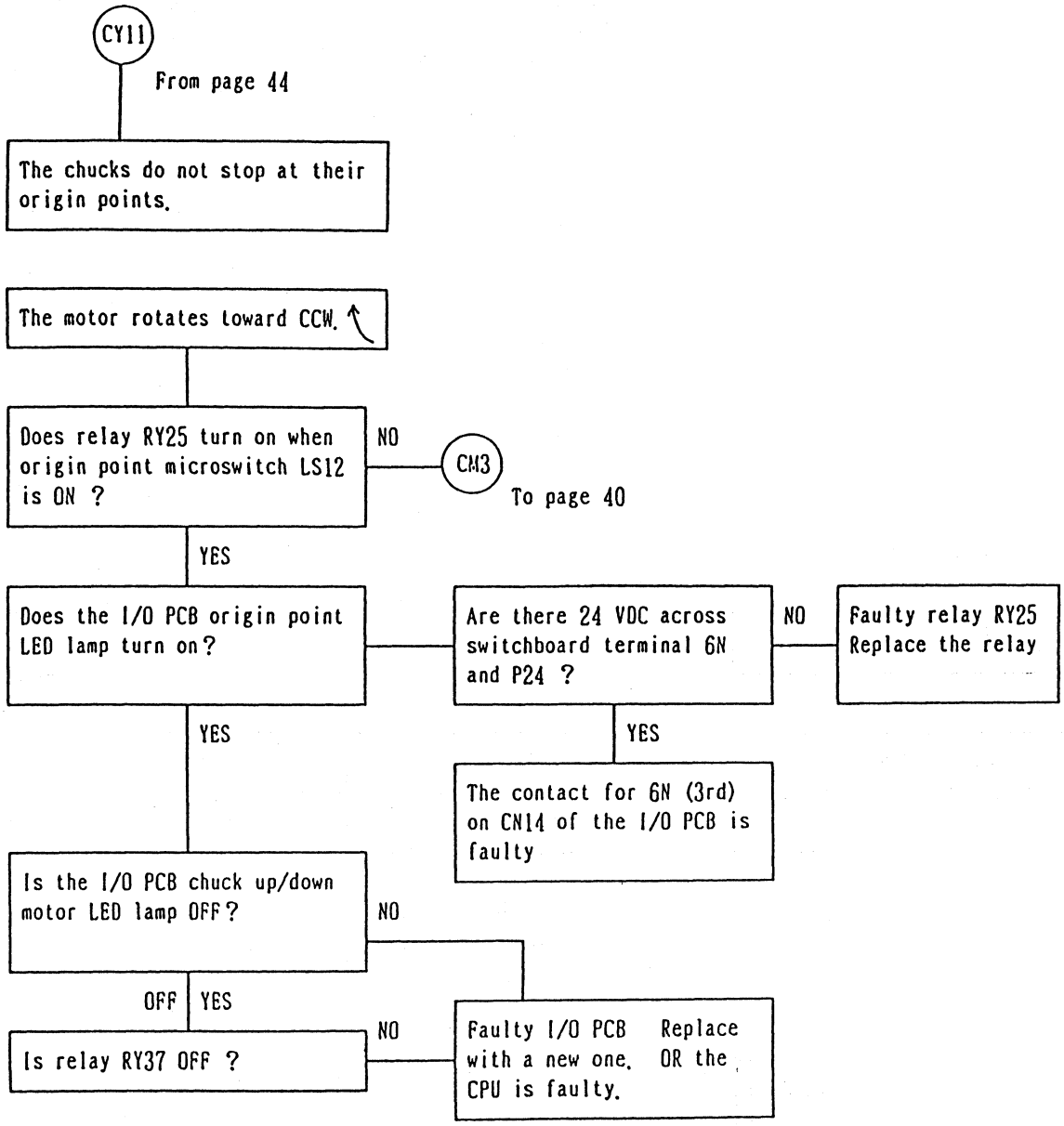
Computer-controlled motor ON/OFF circuit

See page 46



From page 39 From page 44

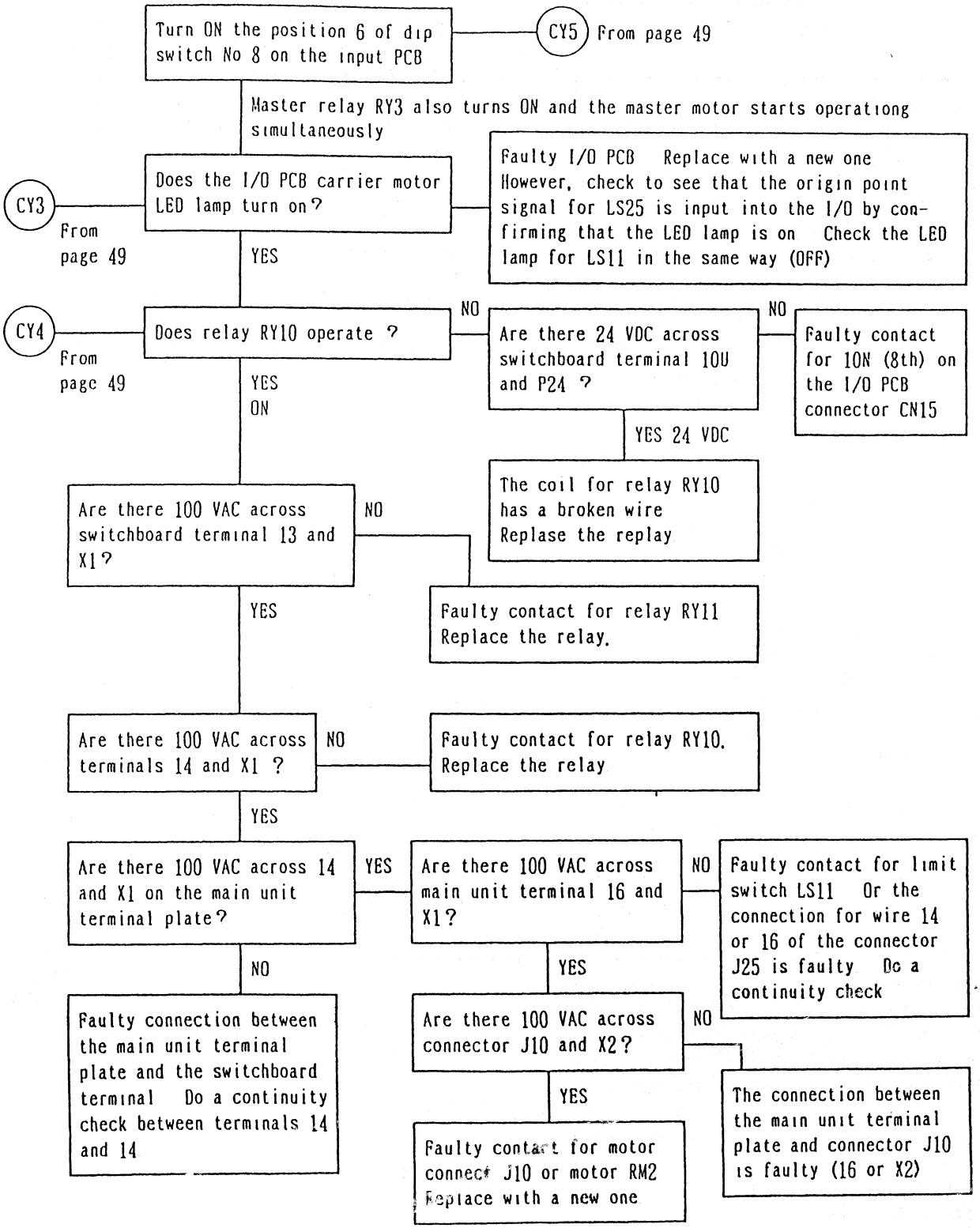



CY11
From page 44
The chucks do not stop at their origin points.
The motor rotates toward CCW.
Does relay RY25 turn on when origin point microswitch LS12 is ON ?
NO
CM3
To page 40
YES
Does the I/O PCB origin point LED lamp turn on?
Are there 24 VDC across switchboard terminal 6N and P24 ?
NO
Faulty relay RY25 Replace the relay
YES
YES
The contact for 6N (3rd) on CN14 of the I/O PCB is faulty
Is the I/O PCB chuck up/down motor LED lamp OFF?
NO
OFF
YES
Is relay RY37 OFF ?
NO
Faulty I/O PCB Replace with a new one. OR the CPU is faulty.

29 The Carrier Motor Does Not Move In The Processor Direction On MANUAL

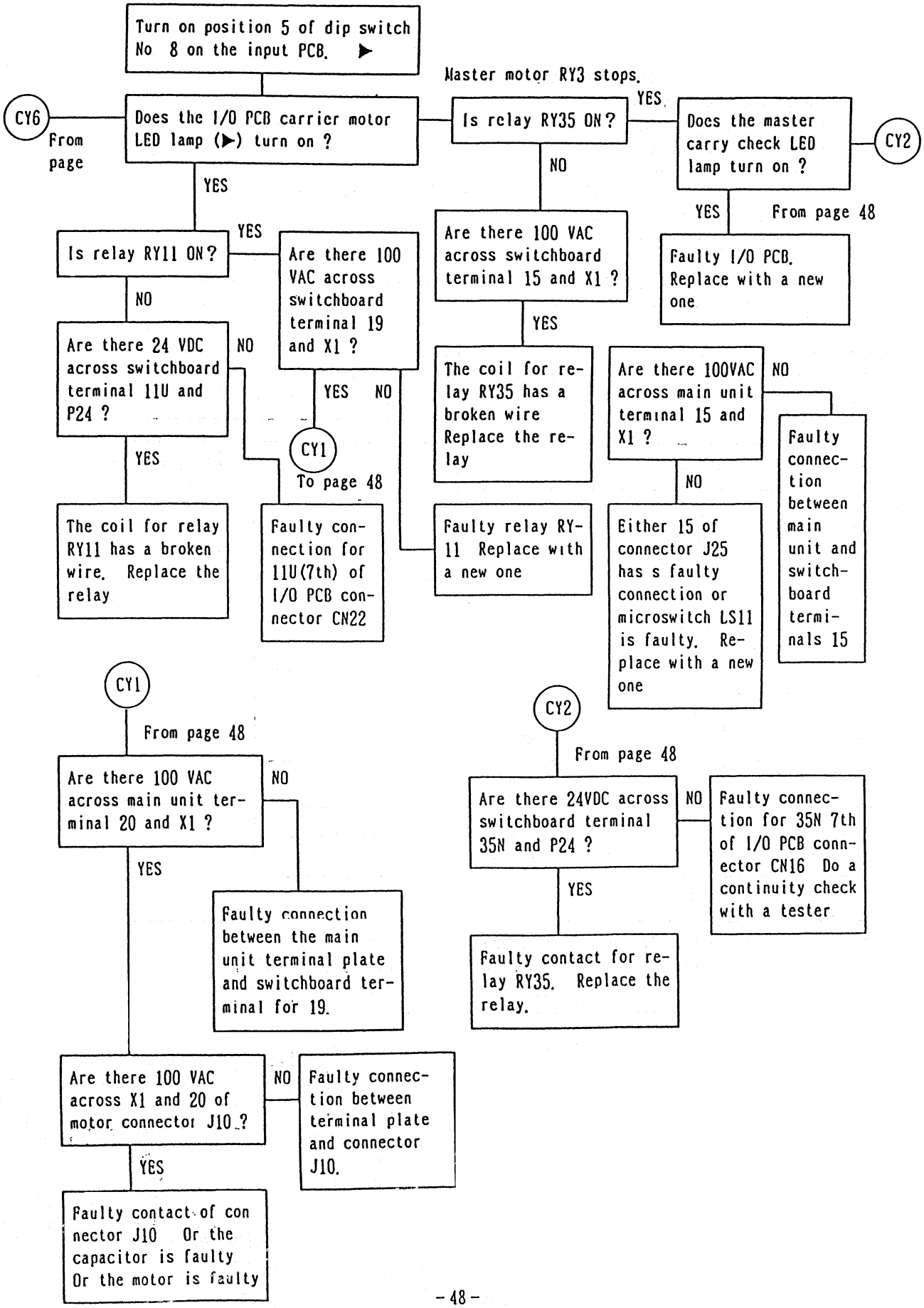
Check Points

1 The axis stopper must press the origin point microswitch and stop
2 Carrier safety switch LS11 must not be ON
3 The carrier stops when it moves to master suction point
4 Stops when the carrier safety switch turns ON (LS11)
5 RY29 does not move when the chucks are at the suction points
6 The microcomputer system must be operative
7 Refer to ⑨ of Ⓒ on the flowchart
8 Relay RY11 must be OFF



30 The Carrier Motor Does Not Return To Its Origin Point Manually.

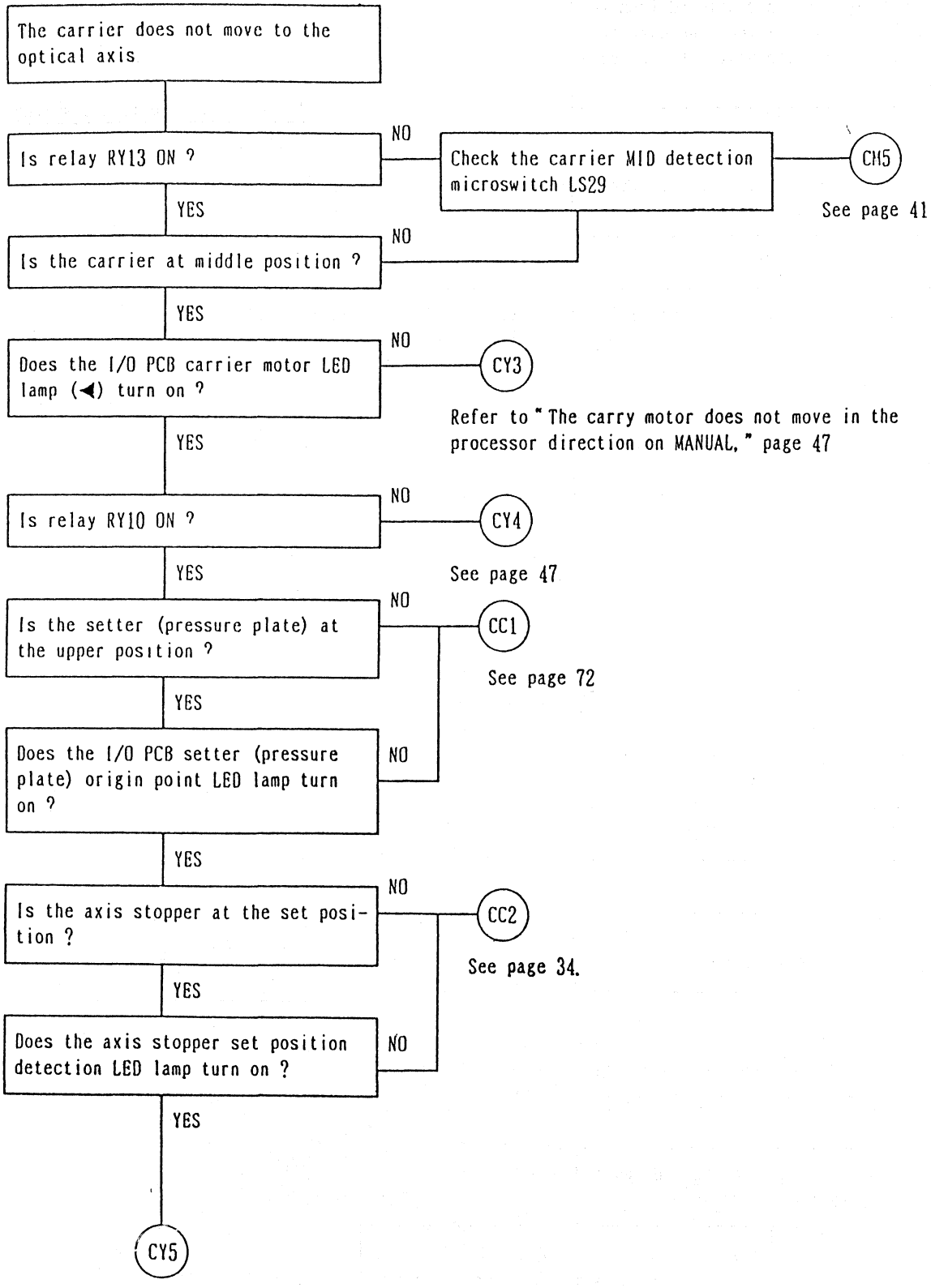
Check Point : The carrier must press safety limit switch LS11 and stop.



31. Carrier Does Not Move To The Axis Stopper Point Point On AUTO

Check Points

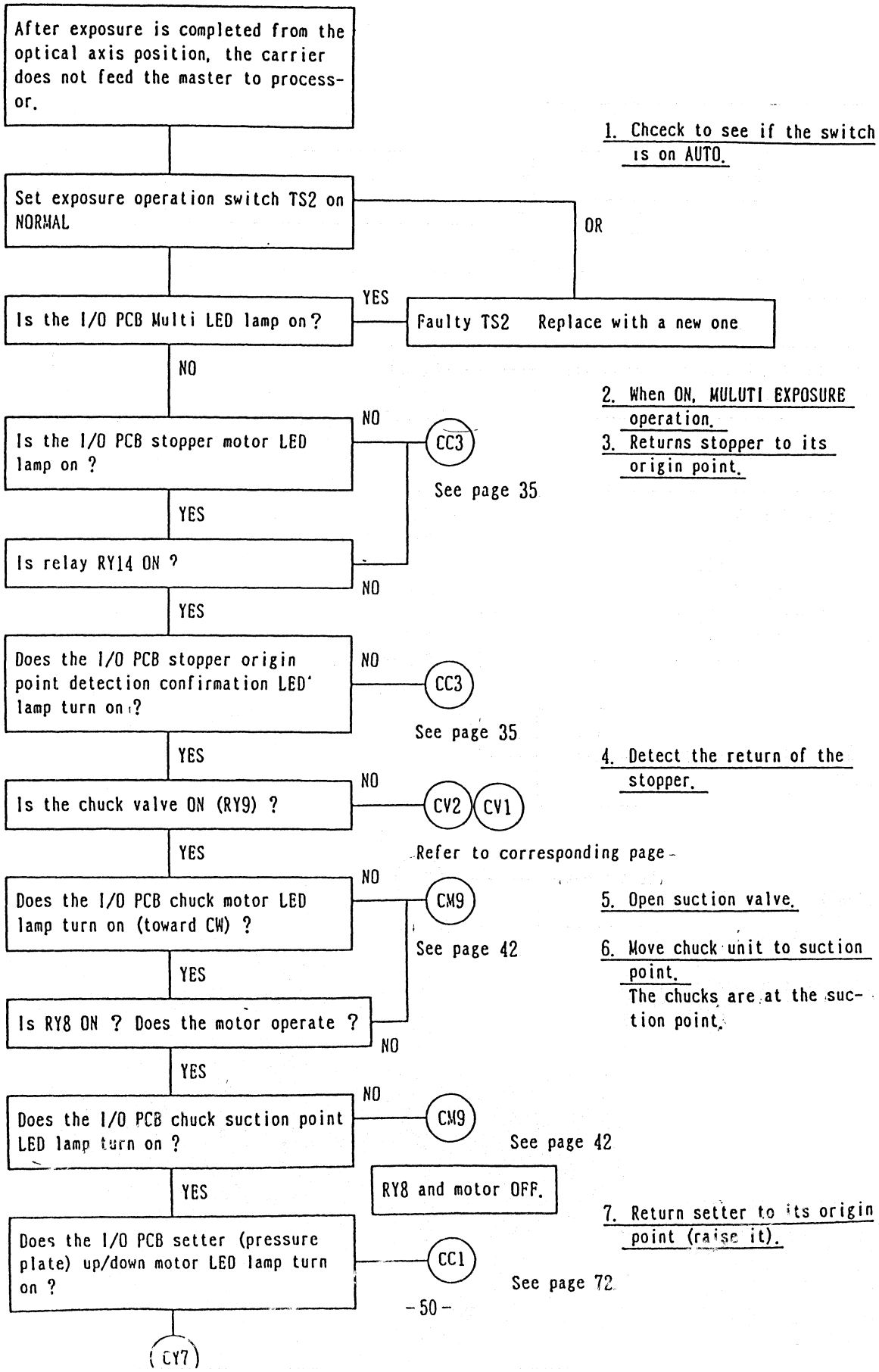
1. After the master is cut, the chucks must raise the master to the carry position
2. The axis stopper is set at the set point
3. The rest of the system must be functioning properly
4. Operations must be on MANUAL (Operation by dip switch)

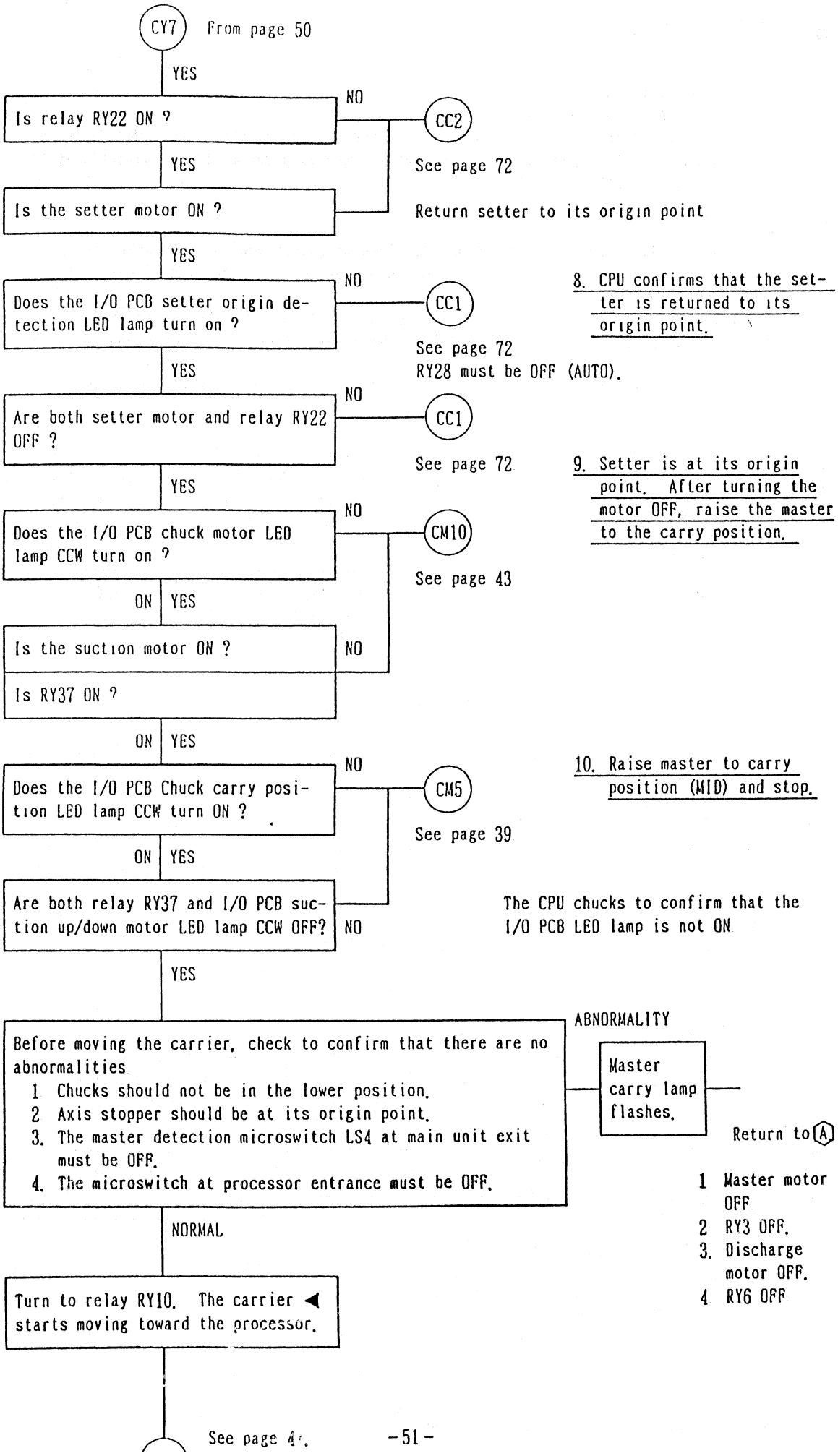


32. The Carrier Does Not Move From Its Axis Stopper Point To Processor Automatically.

Check Points

1. The lens board must move properly toward its origin point and stop at it.
2. Check suction unit must operate properly
3. Carrier operation must be on MANUAL




CY7
From page 50
YES
Is relay RY22 ON ?
NO
CC2
See page 72
YES
Is the setter motor ON ?
Return setter to its origin point
YES
Does the I/O PCB setter origin detection LED lamp turn on ?
NO
CC1
See page 72
8. CPU confirms that the setter is returned to its origin point.
YES
RY28 must be OFF (AUTO).
Are both setter motor and relay RY22 OFF ?
NO
CC1
See page 72
YES
9. Setter is at its origin point. After turning the motor OFF, raise the master to the carry position.
Does the I/O PCB chuck motor LED lamp CCW turn on ?
NO
CM10
See page 43
ON
YES
Is the suction motor ON ?
NO
Is RY37 ON ?
ON
YES
Does the I/O PCB Chuck carry position LED lamp CCW turn ON ?
NO
CM5
See page 39
10. Raise master to carry position (MID) and stop.
ON
YES
Are both relay RY37 and I/O PCB suction up/down motor LED lamp CCW OFF?
NO
The CPU chucks to confirm that the I/O PCB LED lamp is not ON
YES
Before moving the carrier, check to confirm that there are no abnormalities
1 Chucks should not be in the lower position.
2 Axis stopper should be at its origin point.
3. The master detection microswitch LS4 at main unit exit must be OFF.
4. The microswitch at processor entrance must be OFF.
ABNORMALITY
Master carry lamp flashes.
Return to A
1 Master motor OFF
2 RY3 OFF.
3. Discharge motor OFF.
4 RY6 OFF
NORMAL
Turn to relay RY10. The carrier starts moving toward the processor.
See page 4

33. Light Source Does Not Light

Check Points

1 200 VAC power source switch must be ON

2 Halogen lamp must not be broken
Measure across lamp end contacts with the tester set on the ohm range When doing so, infinty should not be indicated. Also, inspect the lamp carefully to confirm that the filament is not broken

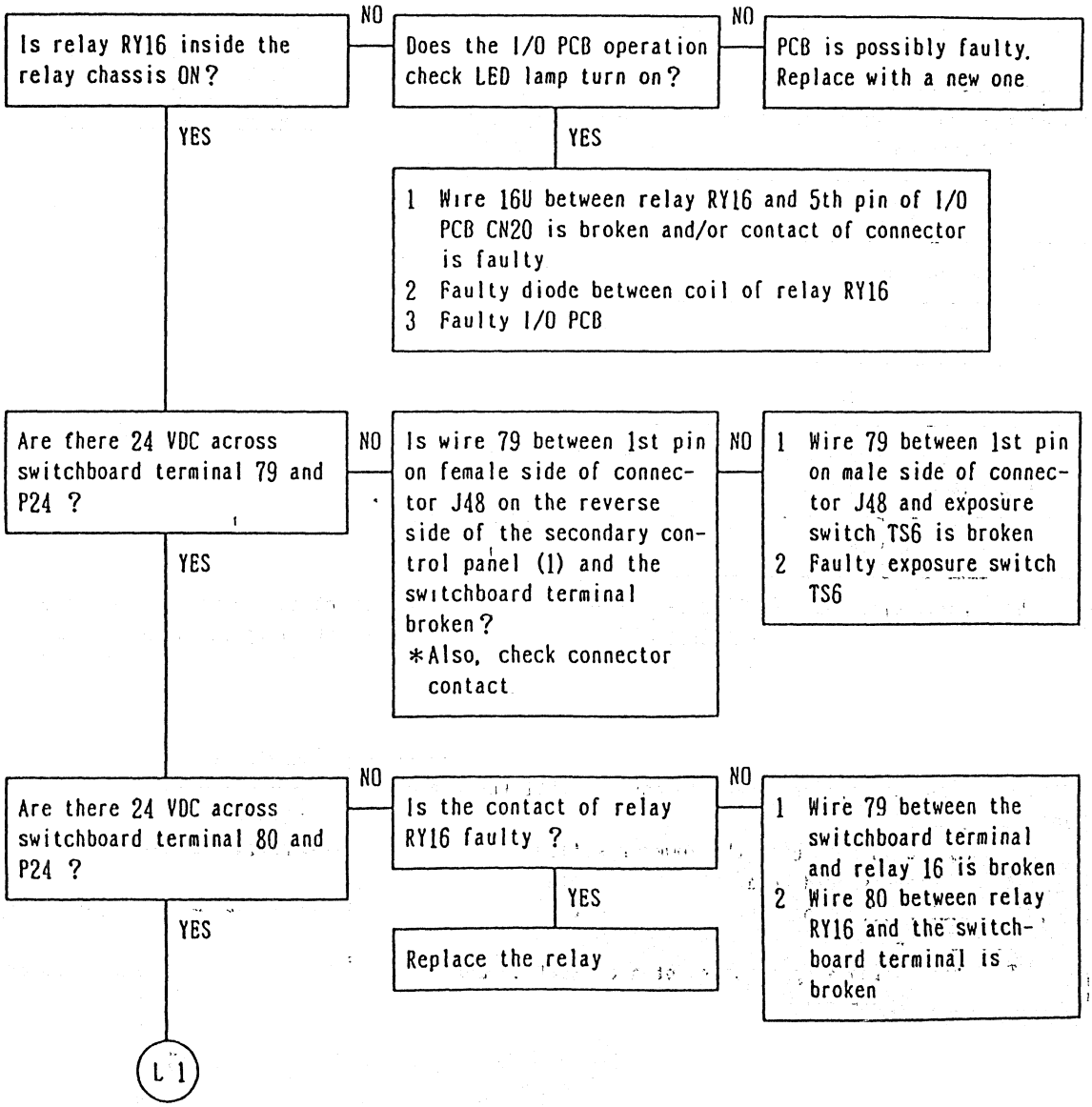
Caution

The lamp should be held with a clean, dry cloth or gloves and not with bear hands Fingerprints or oily spots on the lamp may cause uneven light quality or damage the surface of the lamp

3 The exposure switch on the secondary control panel (1) must not be set to ZERO

4 Confirm that connectors J34 through J38 in the light source section main unit are connected properly

* The following operations and voltage checks should be carried out with the light source lit



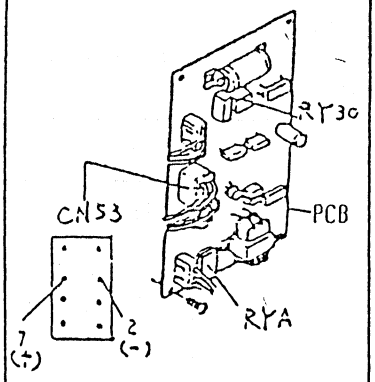
Does relay RY30 of enamel resistor (R1) on light control PCB operate?

NO

1 Faulty contact for 2nd and 7th pin of connector CN53

2 Abnormal wiring between the switchboard terminal and CN53

3 Disconnect connector CN 53 Light control PCB is faulty if there are 24 VDC across 2nd and 7th pins

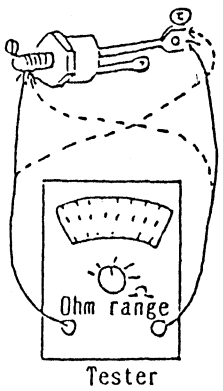


YES

Check to confirm that there are no breaks in wires V1 and W1 between the switchboard terminal and light source section main unit

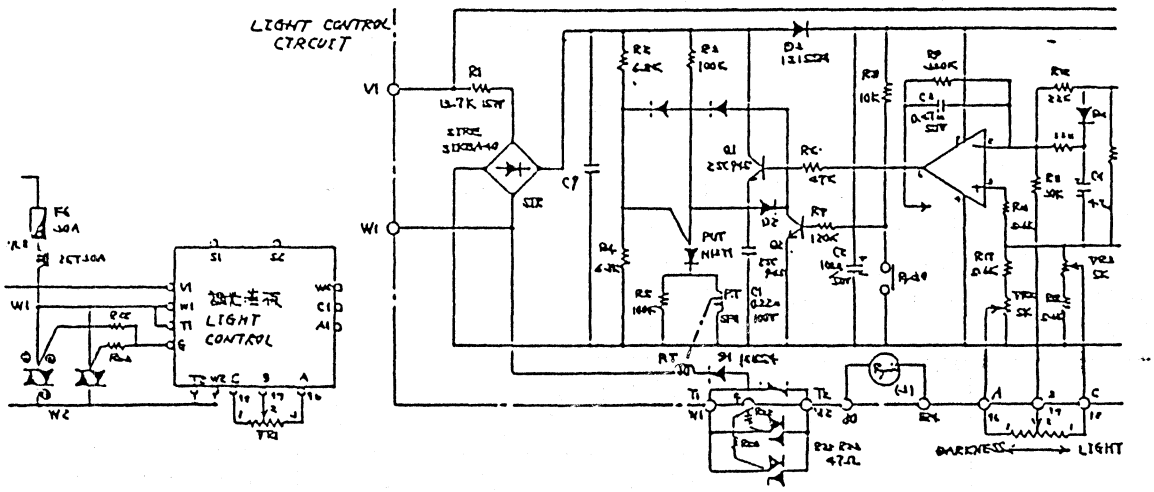
Either TRIAC or light control PCB is faulty if there are 200 VAC across switchboard terminals V1 and W1
Replace with a new one
* When replacing TRIACs, replace both TRIACs at the same time

TRIAC check method

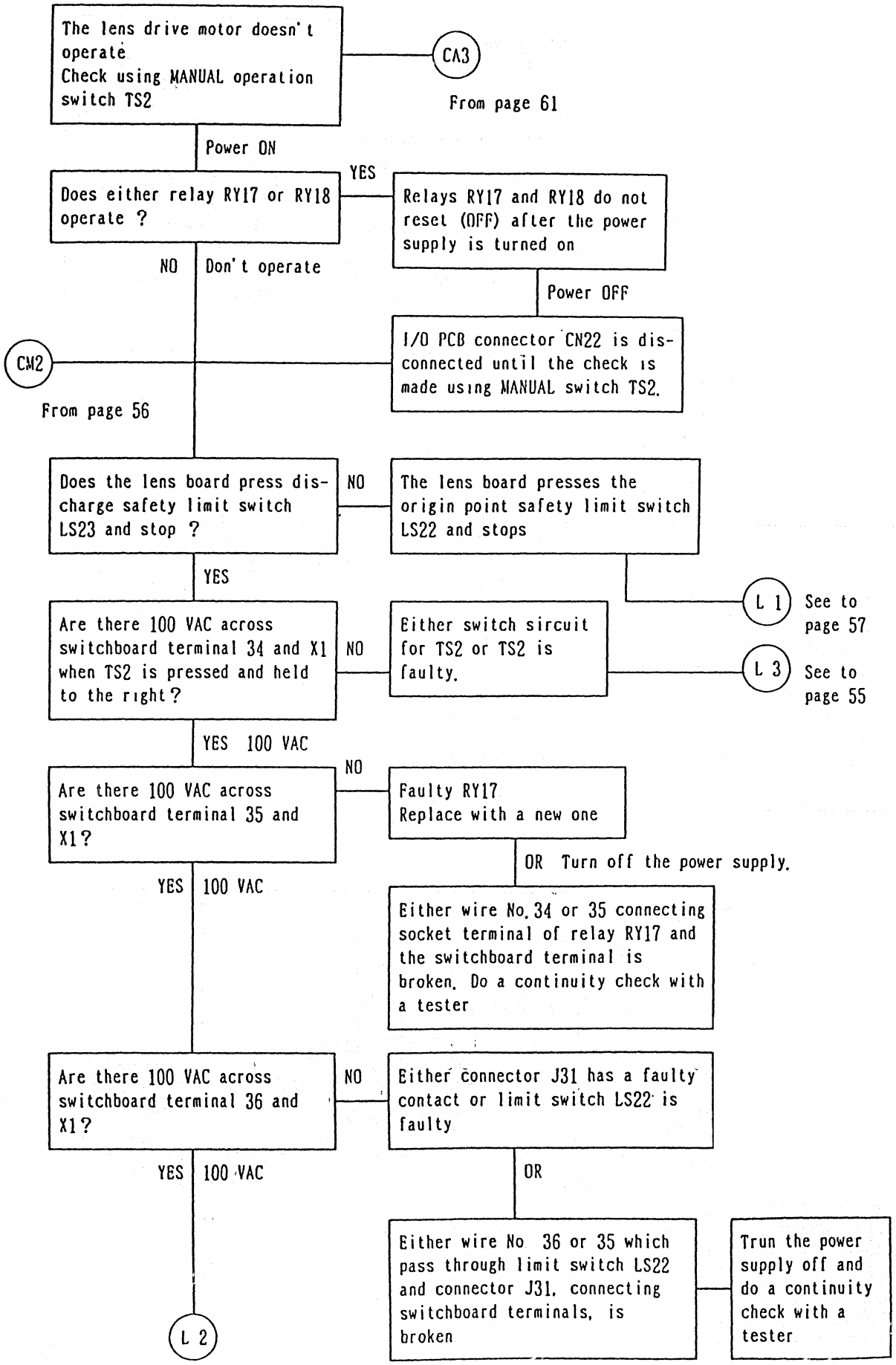


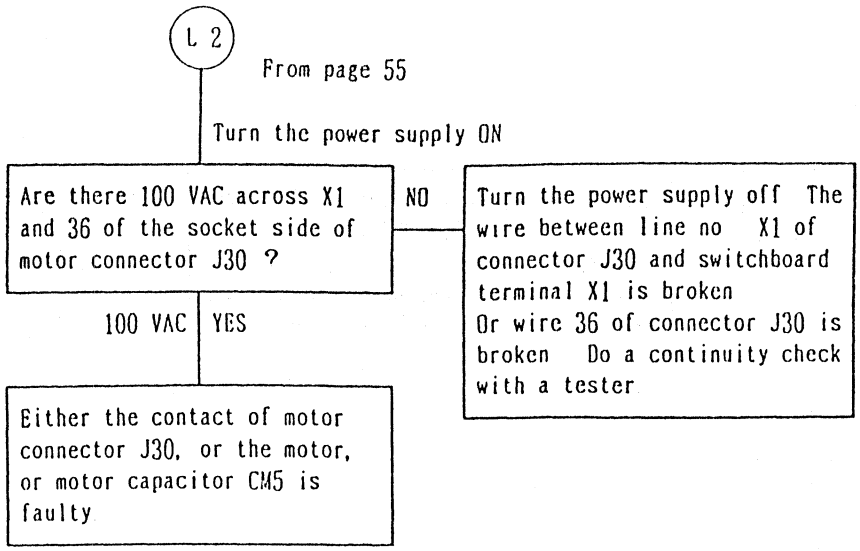
Tester

1. Set the tester to the ohm range for resistance.
2. Measure by touching tester lead wires (1) -- (2) Then, measure, alternating the lead wires, (2) -- (1)
3. The circuit is normal if the ohmmeter doesn't indicate 0 or infinity

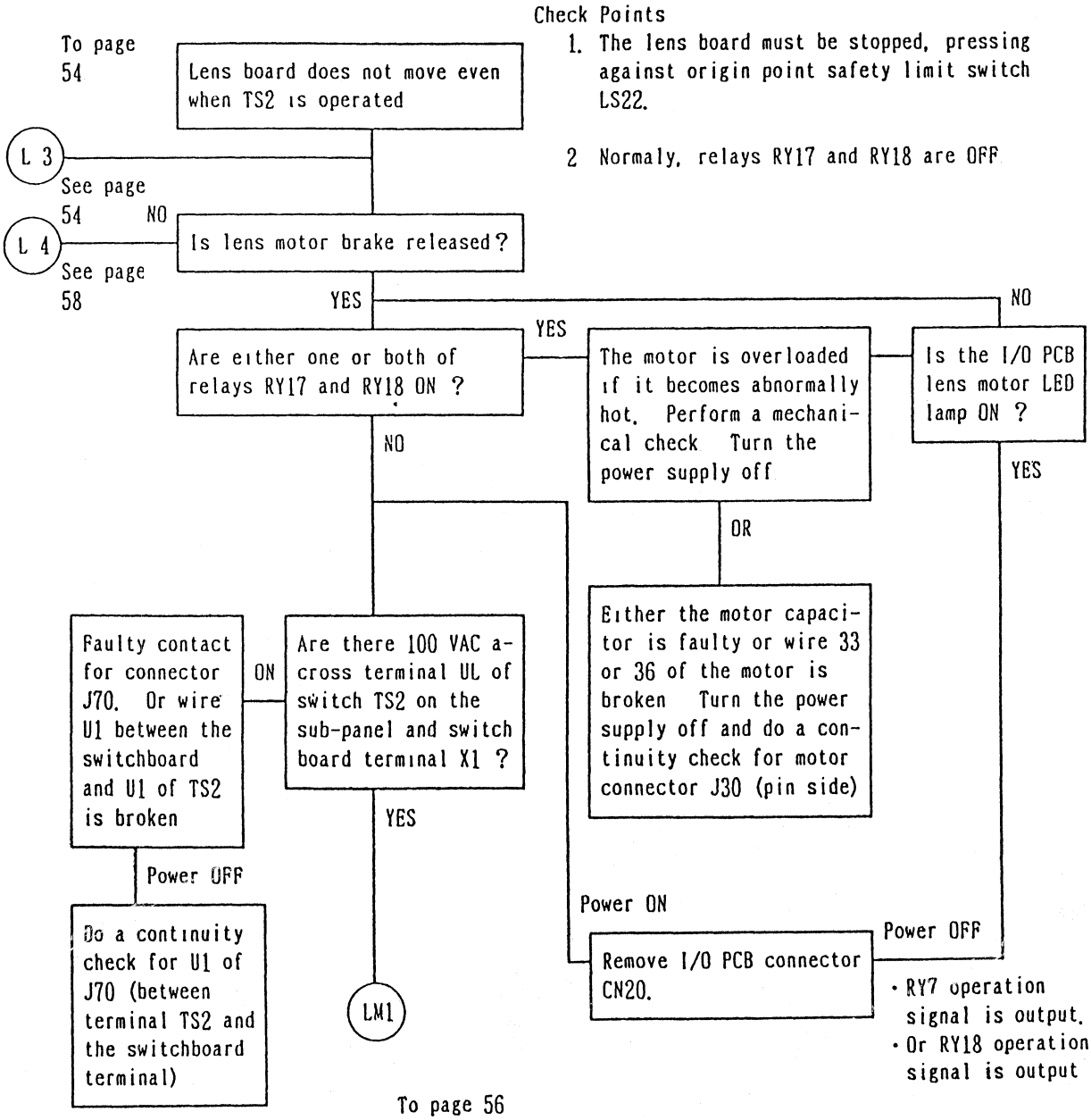


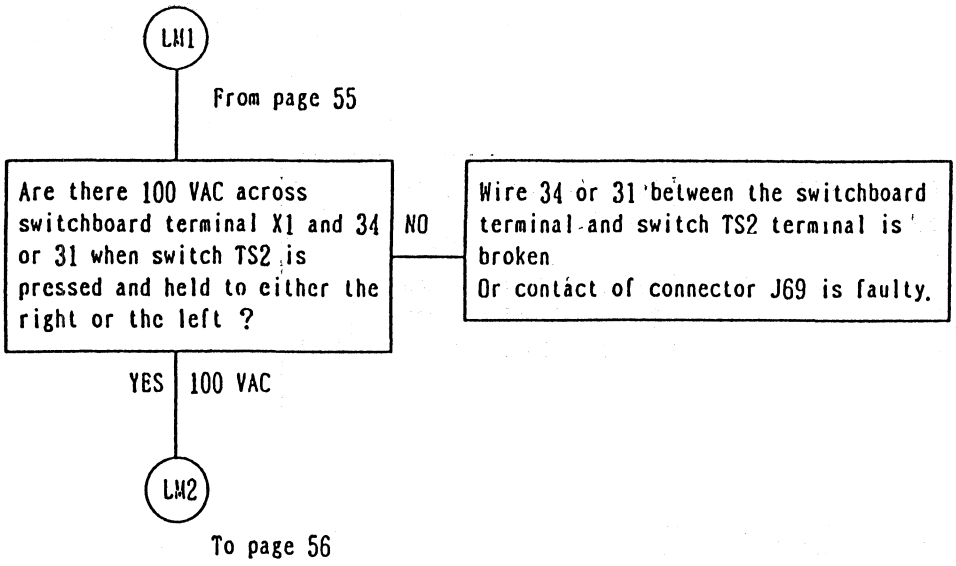
34 Lens Drive Motor RM5 Doesn't Operate On MANUAL



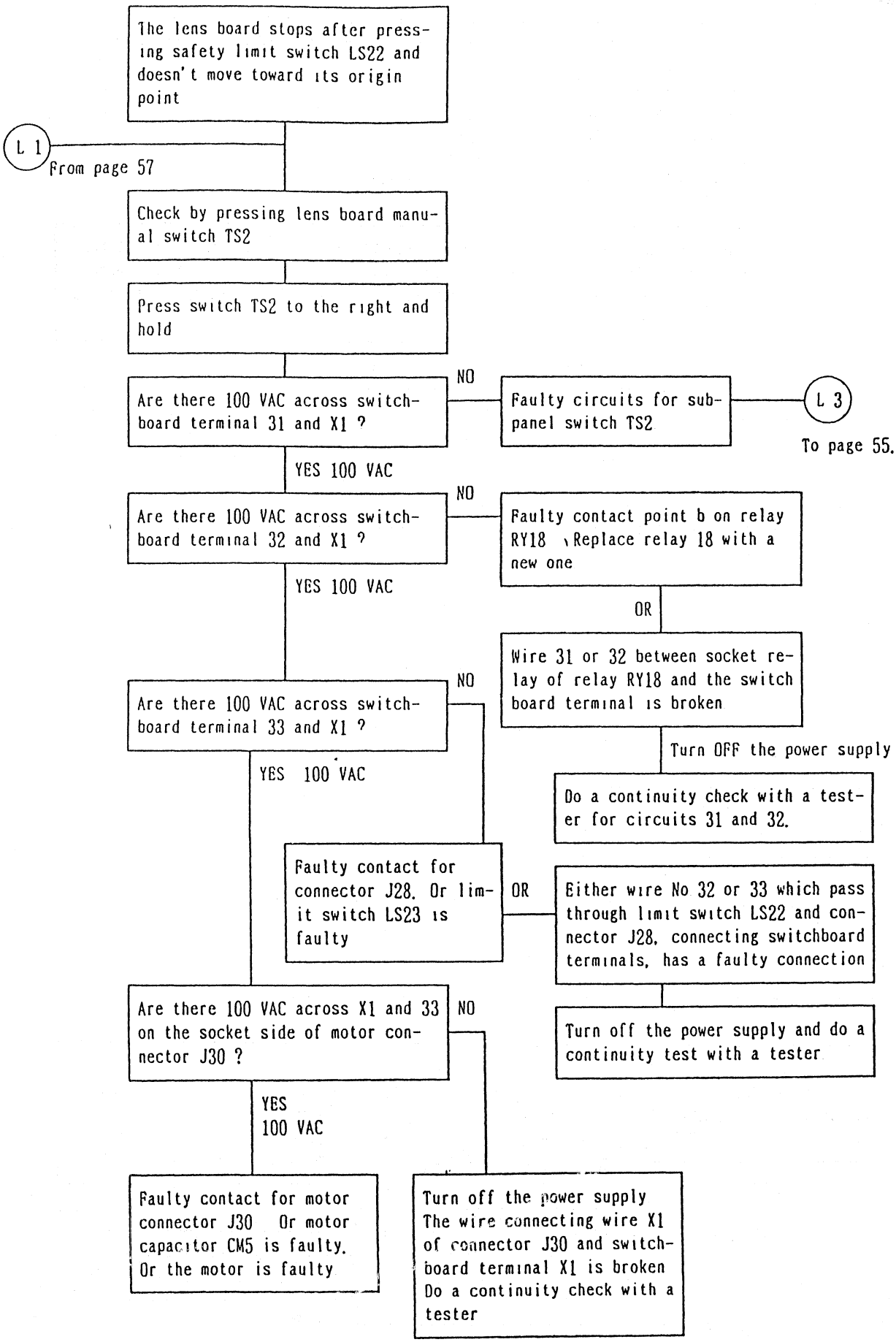


Lens Board Doesn't Move With The Lens Board Manual Operation Switch



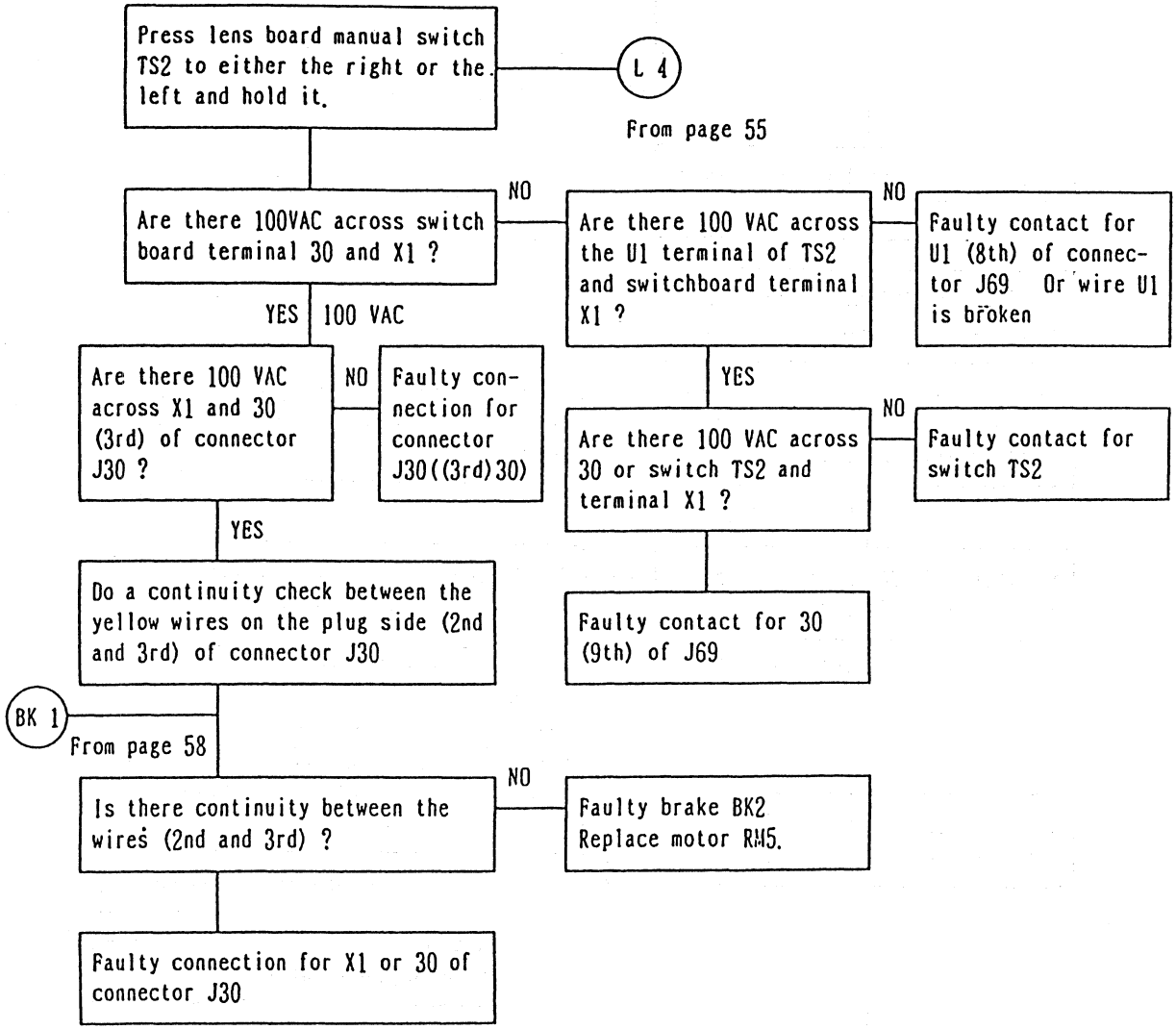

LM1
From page 55
Are there 100 VAC across switchboard terminal X1 and 34 or 31 when switch TS2 is pressed and held to either the right or the left ?
NO
Wire 34 or 31 between the switchboard terminal and switch TS2 terminal is broken
Or contact of connector J69 is faulty.
YES
100 VAC
LM2
To page 56

35 Lens board Presses The Safety Limit Switch And Stops On MANUAL (Stops On The Processor side)



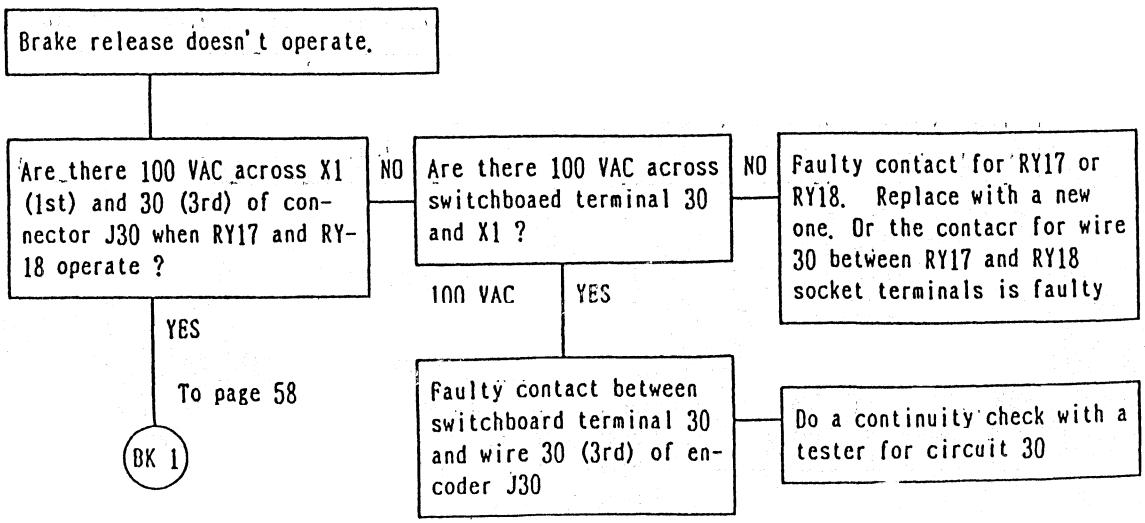
36. Lens Board Motor Brake Release Doesn't Operate (On MANUAL)

1 Set the AUTO/MANUAL switch to MANUAL
2 The check is done by moving the lens board on MANUAL (with the light source off)
3 Before the motor operates, current is sent to the brake coil, releasing the brake



Release Doesn't Operate For AUTO Operation Of Lens Board Drive Motor Brake.

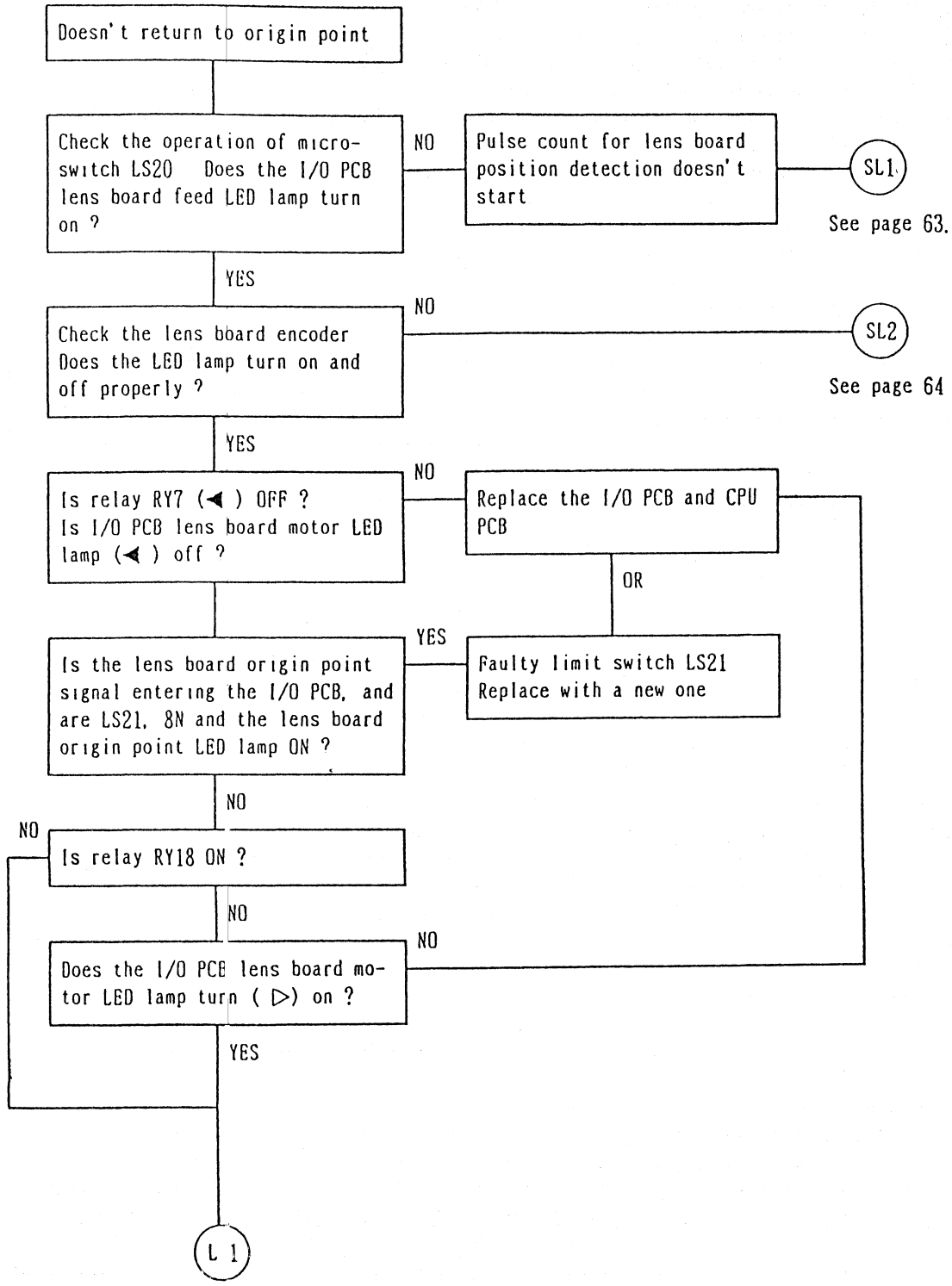
RY17 or RY18 must be operative



37. Lens Board Presses The Safety Limit Switch (Processor Side) And Stops. After Stopping Automatically, It Doesn't Return To Its Origin Point.

Check Points

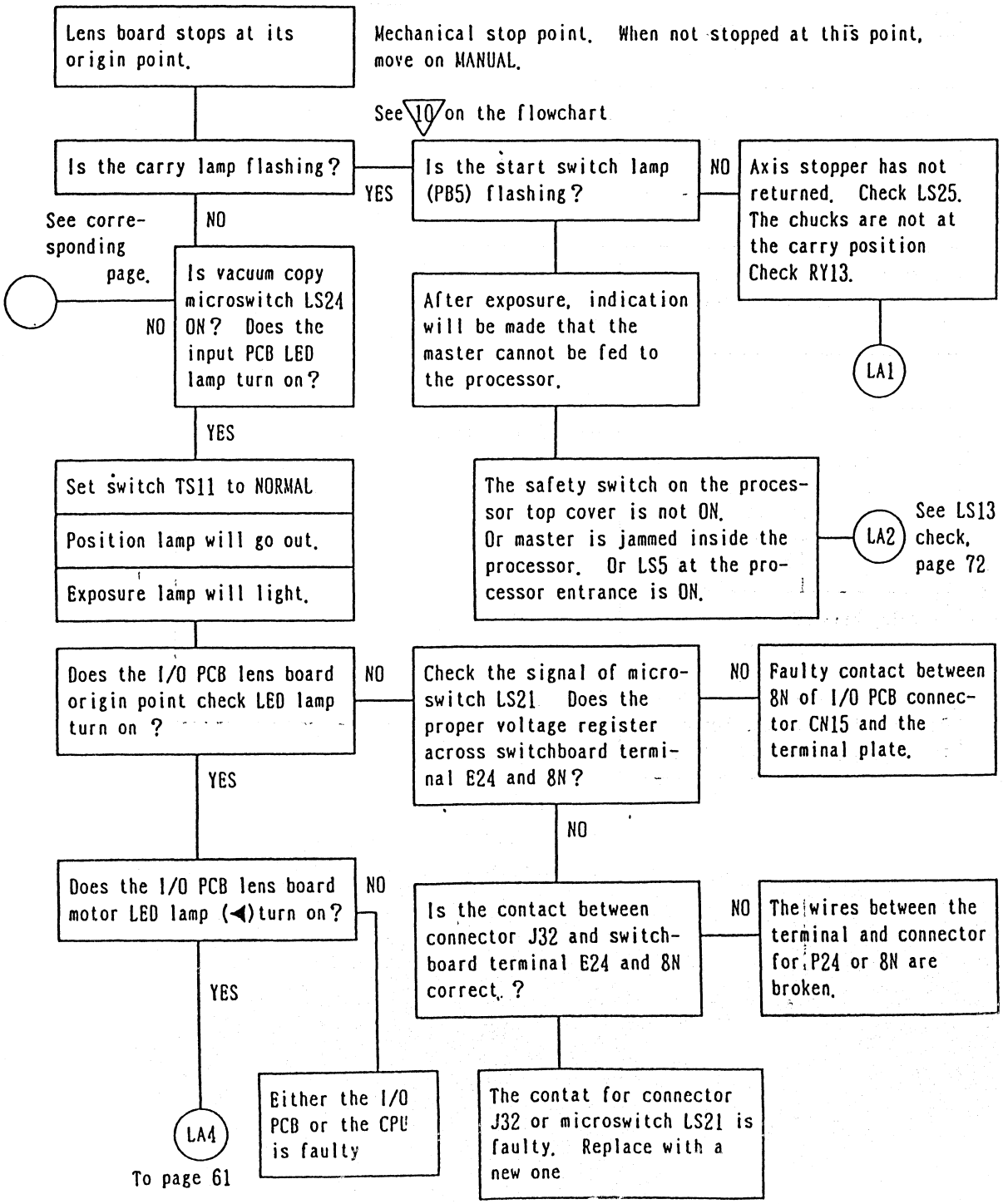
1 The system must operate properly on MANUAL
2 For other points refer to 1 through 8 on page 60

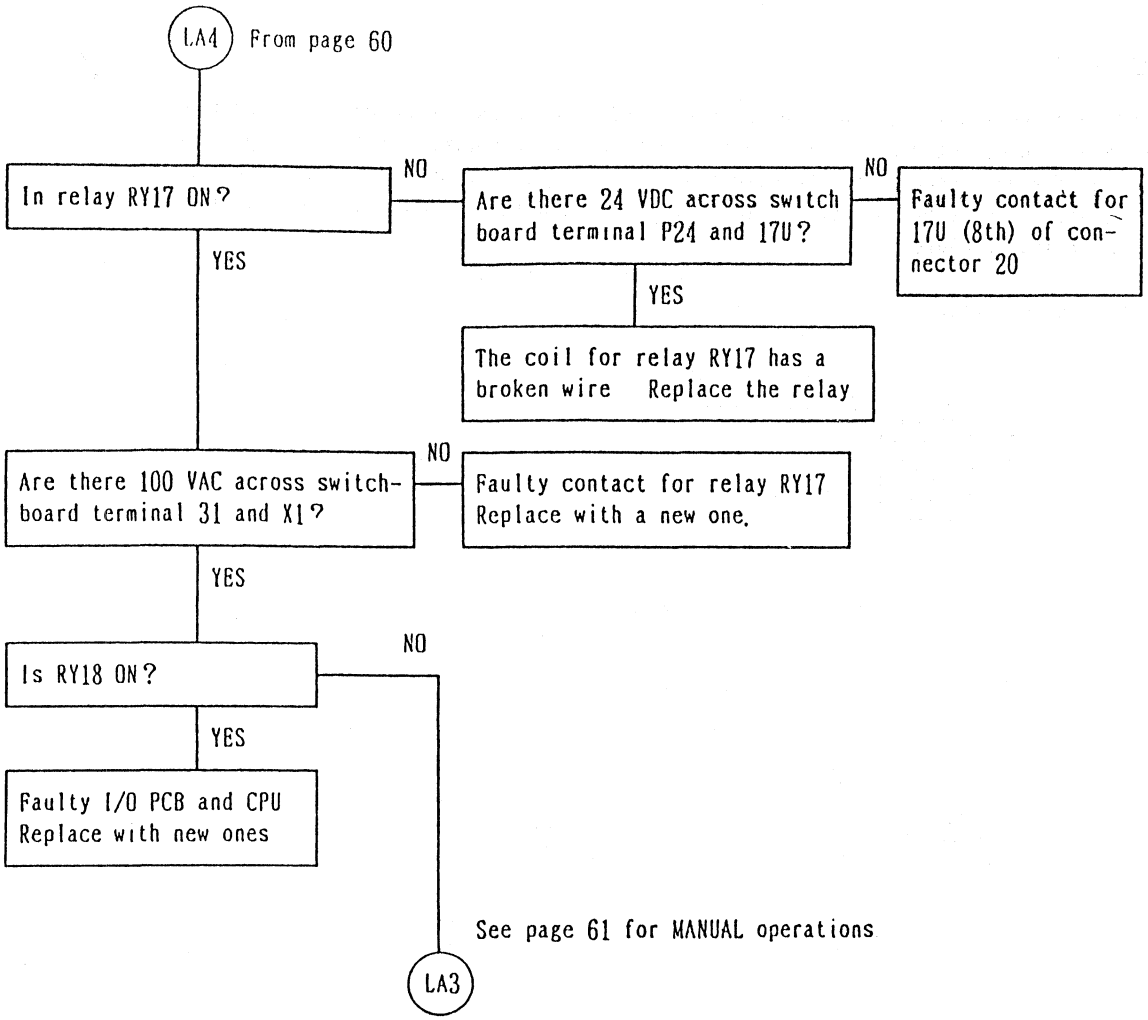


38. Lens Board Doesn't Move Toward The Processor On AUTO.

Check Points

1. The chucks must be in the carry position
2. The setter (pressure plate) must descend and the confirmation signal must enter the I/O PCB. The LED lamp is on
3. The lens board must stop at its origin point.
4. The lens board must operate properly on MANUAL
5. The lens board brake must operate properly.
6. The cutter must operate properly with MANUAL switch PB3 (The computer system must be operative.)
7. Safety limit switch LS22 must not be ON before lens board origin point detection microswitch LS21 is ON
8. The master end and joint sensors must not be activated.

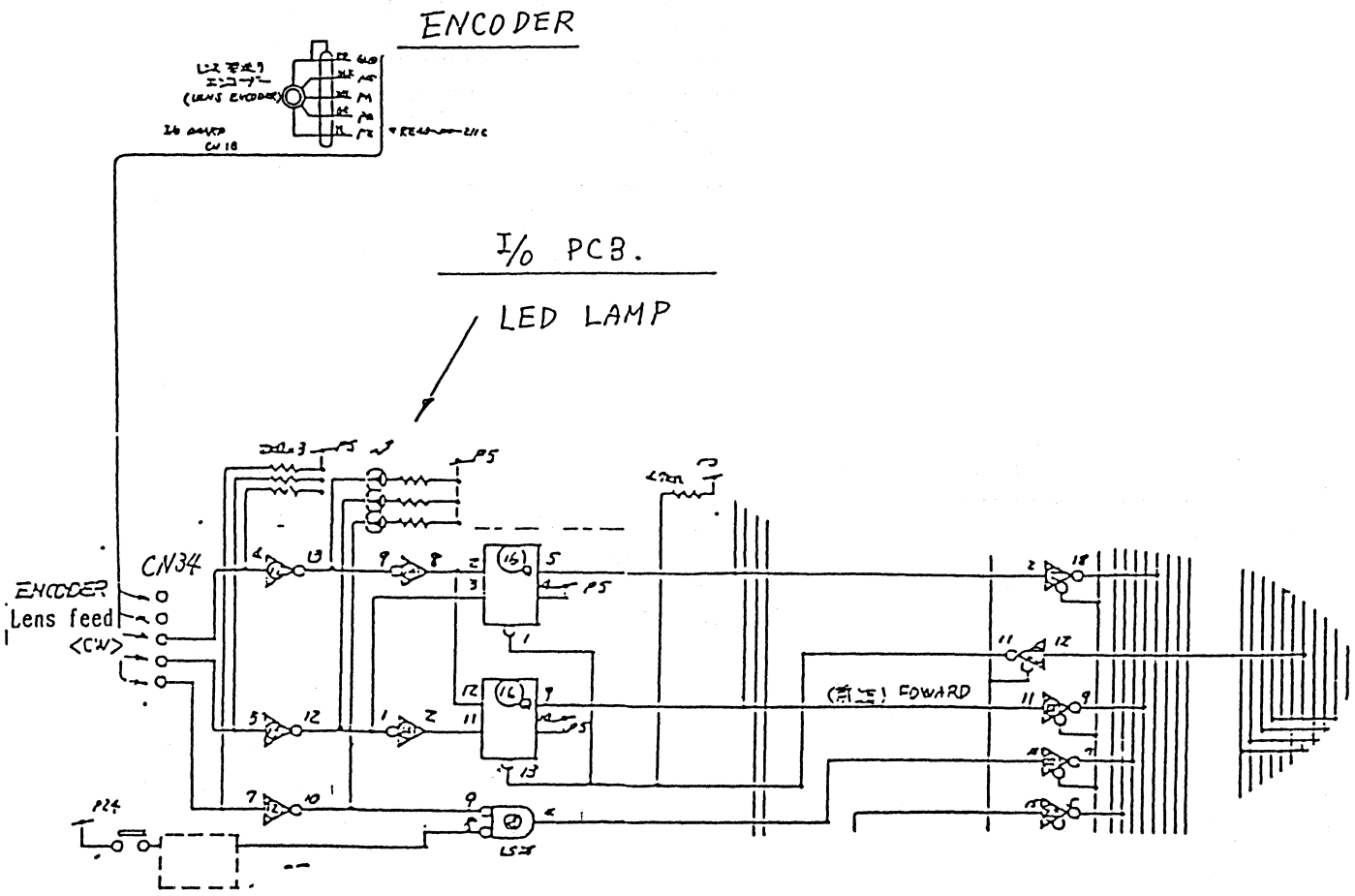



LA4
From page 60
In relay RY17 ON?
NO
Are there 24 VDC across switch board terminal P24 and 17U?
NO
Faulty contact for 17U (8th) of connector 20
YES
YES
The coil for relay RY17 has a broken wire Replace the relay
Are there 100 VAC across switchboard terminal 31 and X1?
NO
Faulty contact for relay RY17 Replace with a new one.
YES
Is RY18 ON?
NO
YES
Faulty I/O PCB and CPU Replace with new ones
See page 61 for MANUAL operations
LA3

39. Slip Detection

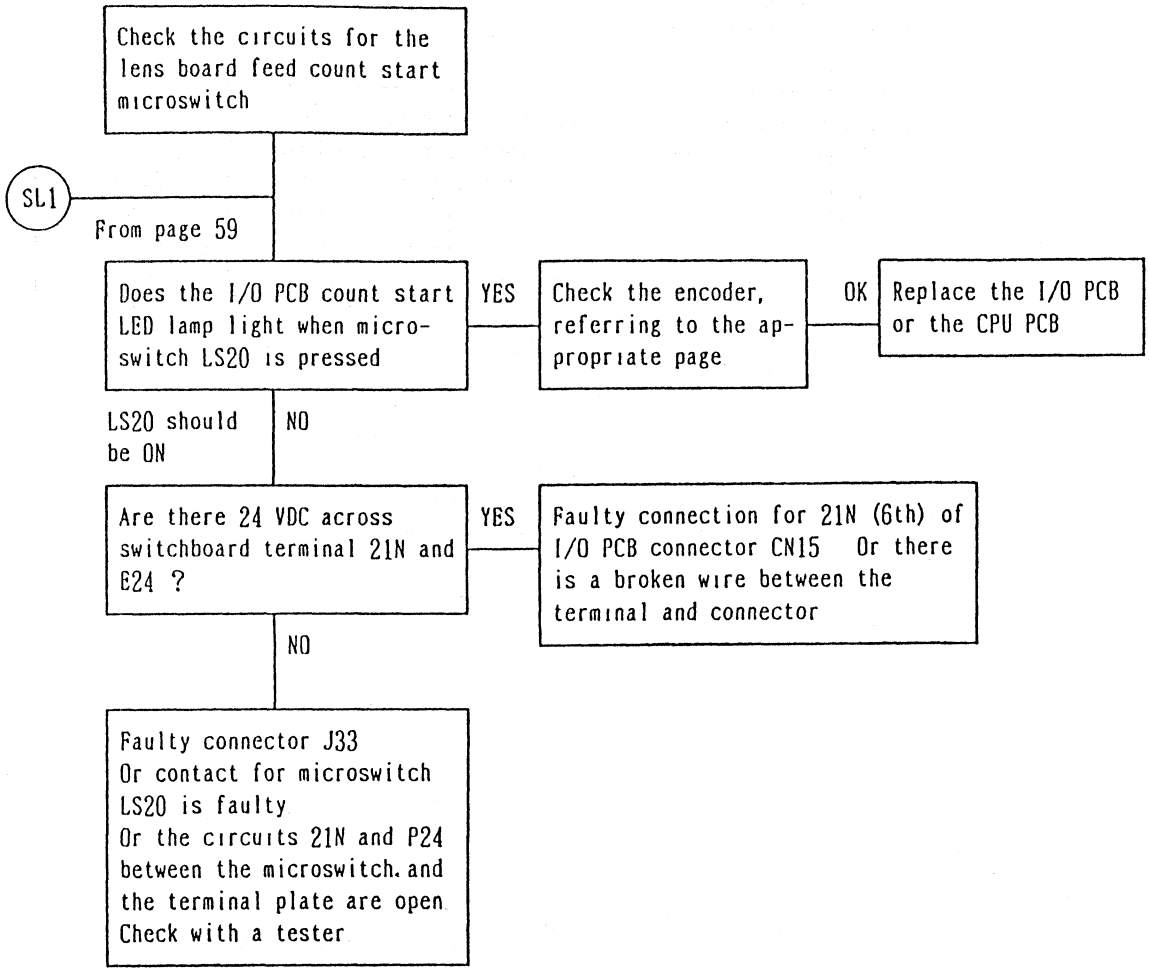
1 Slip detection is done by the computer, which compares the number of encoder pulses per second to detect changes in amount. That is, the computer compares the pulse count for the previous 1-second period with that of the present 1-second period. If the amounts do not agree, the computer considers it as a slip indication and stops the lens board motor and exposure.

2. Encoder circuits



40. Lens Board Doesn't Stop On AUTO Operation
(The lens board doesn't stop in accordance with the master feed length)

Check Point . 1. Check the encoder LED to confirm that the encoder is operating properly



41. On AUTO, The Lens Board Stops Immediately (Within 1 Second) After Starting To Move Toward The Processor.

All check point on page 60 also apply here.

The lens board moves for an instant and then stops

Slip detection is operative

OR

Check to make sure that the movement of the lens board is not mechanically stiff.

The exposure lamp is flashing

From page 59.

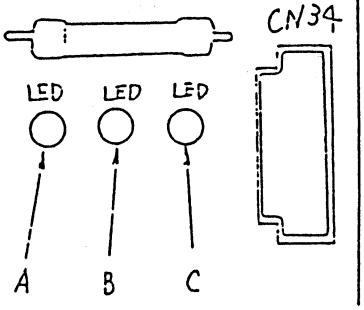
SL2

OR

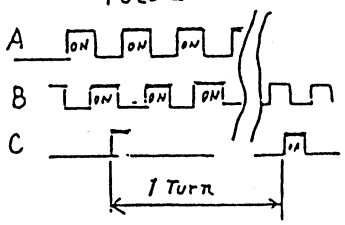
Malfunction in the lens board position detection encoder

ENCODER

I/O . PCB.



PULSE



Check with the I/O PCB lens board encoder LED lamp

Either remove the encoder coupling, or loosen the screw on the outer case of the encoder

Carefully rotate either the outer case of the encoder or the encoder shaft.

If both LED lamps light together properly, it's OK One lamp should light only once for one shaft revolution

NO

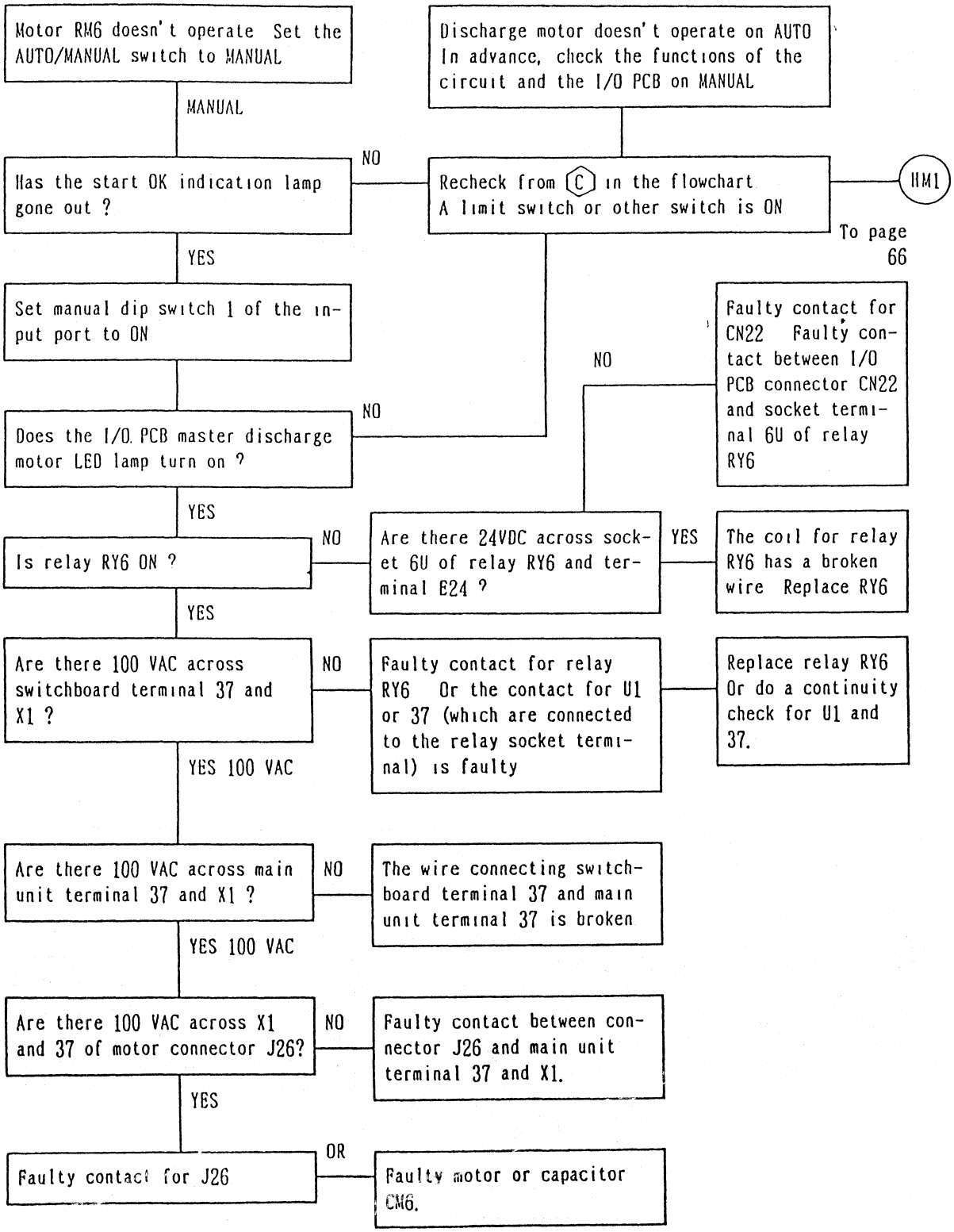
Either the contact for connector CN-34 is faulty, or the lead to the encoder is broken

Faulty encoder. Replace with a new one.

42 Master Discharge Motor Doesn't Operate

Check Points

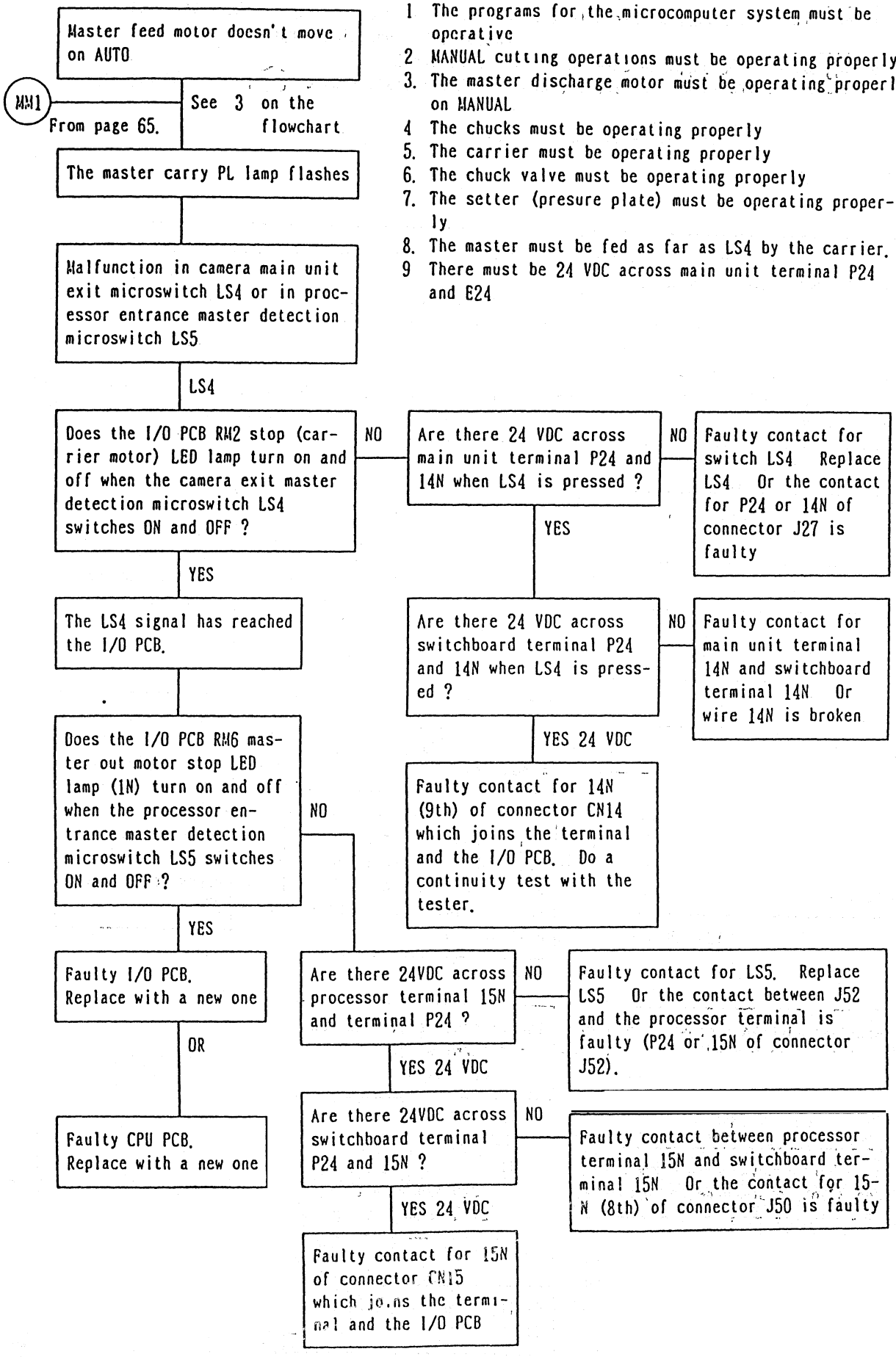
1 CPU and I/O low current circuits must be operating properly, i e , the cutter motor, master feed motor and exposure operations must be operating properly
2 100 VAC must be supplied between terminals U1 and X1
3 Judging by the results of the flowchart MANUAL operation check (C) , only the master dischange motor is inoperative
4 Use the input port dip switches



43. Master Discharge Motor Doesn't Operate On AUTO

Check points

1. The programs for the microcomputer system must be operative
2. MANUAL cutting operations must be operating properly
3. The master discharge motor must be operating properly on MANUAL
4. The chucks must be operating properly
5. The carrier must be operating properly
6. The chuck valve must be operating properly
7. The setter (presure plate) must be operating properly
8. The master must be fed as far as LS4 by the carrier.
9. There must be 24 VDC across main unit terminal P24 and E24



44 Mirror Difogger Fan Doesn't Operate

Check Point 100 VAC must be supplied to U2 and X2

Mirror defogger fan doesn't operate

The fan motor doesn't operate even when push-button PB1 is pressed

Does the panel indicator lamp PL3 light while PB1 is being pressed ?

NO

Faulty contact for connector J74 Faulty contacts for U2 and 66, which are wired from switchboard terminals to PB1, passing through J74. Or the contact for connector J74 is faulty Or the contact point for switch PB1 is faulty. Replace switch PB1.

Are there 100 VAC across switchboard terminal 66 and terminal X2 while PB1 is being pressed ?

YES

YES 100 VAC

Do fan 5-1 and fan 5-2 operate while PB1 is being pressed ?

NO

Are there 100 VAC across switchboard terminal 67 and terminal X2 ?

NO

YES

YES 100 VAC

When PB1 is turned off, the motor for fans 5-1 and 5-2 and PL3 will stop and not rotate

Fan 5-1 won't operate

Fan 5-2 won't operate

Wire No 66 or 67 which connect the switchboard terminal and delay relay socket terminal T1 is broken or has a faulty connection

OR

OR

Faulty delay relay T1 Replace with a new one

Faulty delay relay T1

Faulty PL3 lamp. Or the contact for connector J24 is faulty

The cable that connects switchboard terminals 67 and X2 with lens board terminals 67 and X2 is broken or has faulty connections

NO

Are there 100 VAC across lens board terminal 67 and X2 ?

Are there 100 VAC across main unit terminal 67 and X2 ?

NO

Faulty contact between switchboard terminal 67 and main unit terminal 67.

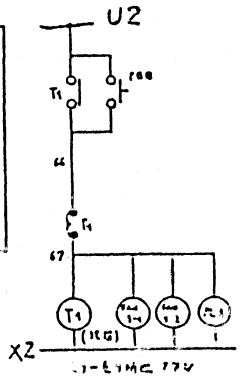
YES

YES 100 VAC

Do a continuity check with a tester between X2 and X2, as well as between 67 and 67

The contact for connector J76 or the motor for fan 5-1 s faulty Replace with a new one

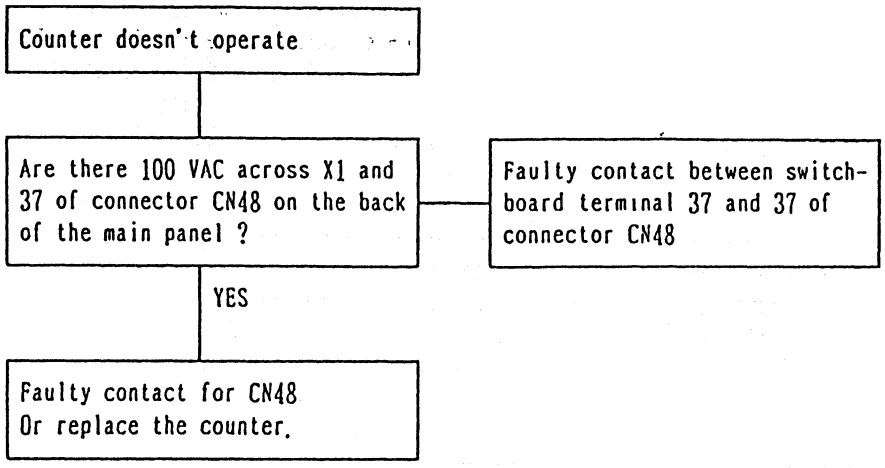
The contact for connector J77 or the motor for fan 5-2 is faulty Replace with a new one.



45 Counter doesn't operate

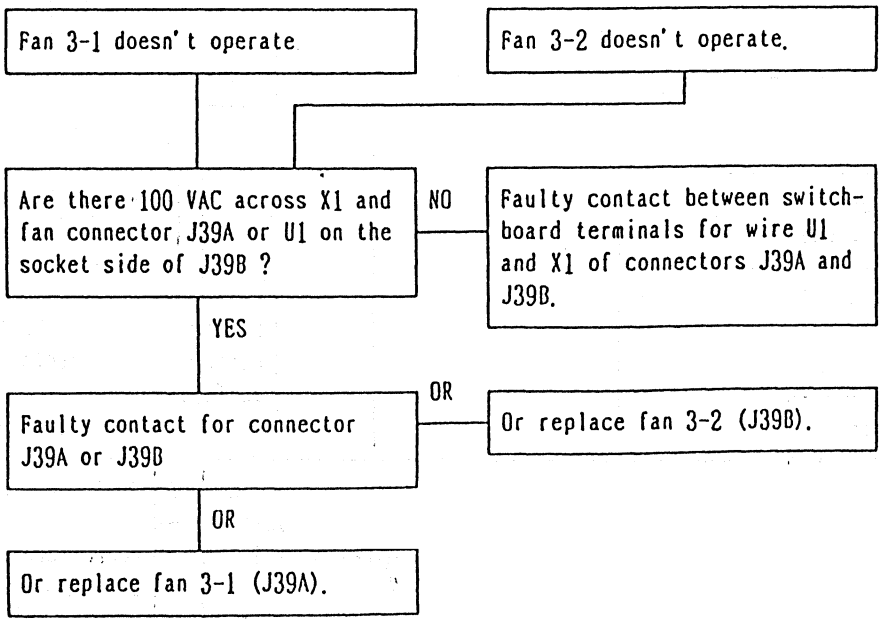
Check Points

1 The ON/OFF function of relay RY6 must be operative.
2 Master discharge motor must be operative.
3. Master discharge motor must move through MANUAL operation switches (dip switches).



Copy Board Cooling Fan Doesn't Operate

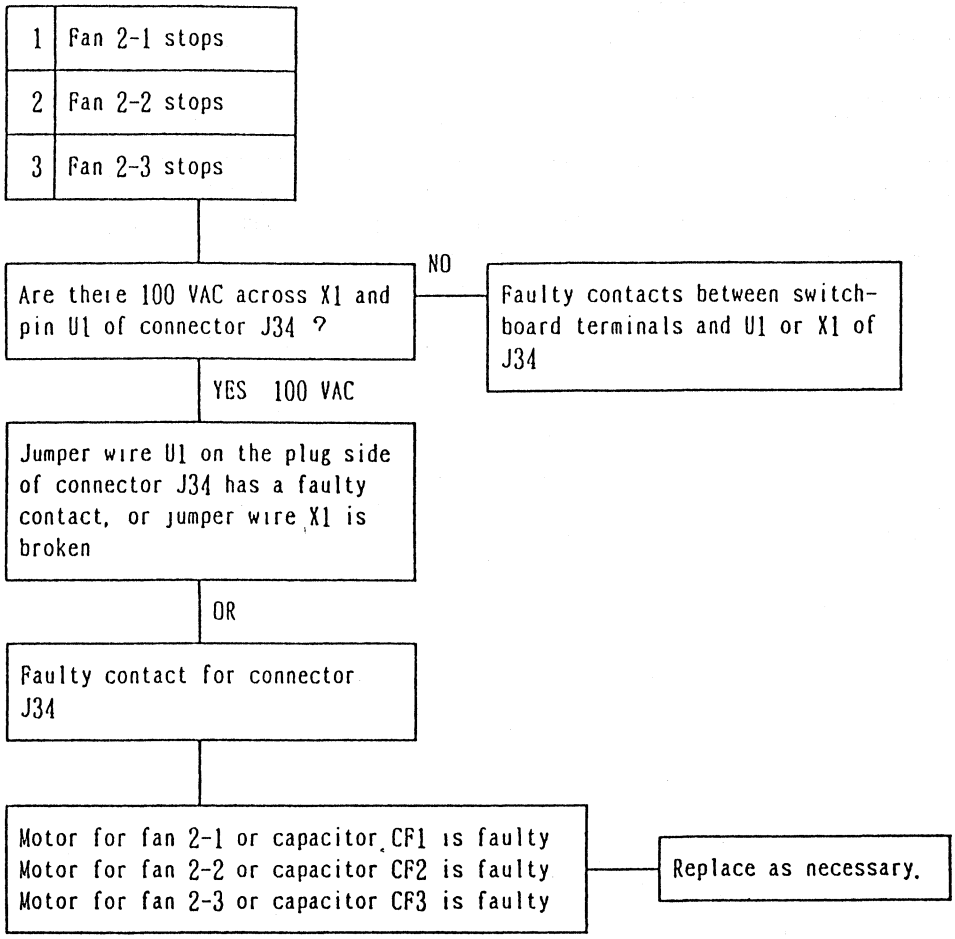
Check Point : 1 The fan should continuously revolve when 100 VAC is supplied across terminal U1 and X1



46 Exhaust Fan Doesn't Operate

Check Points

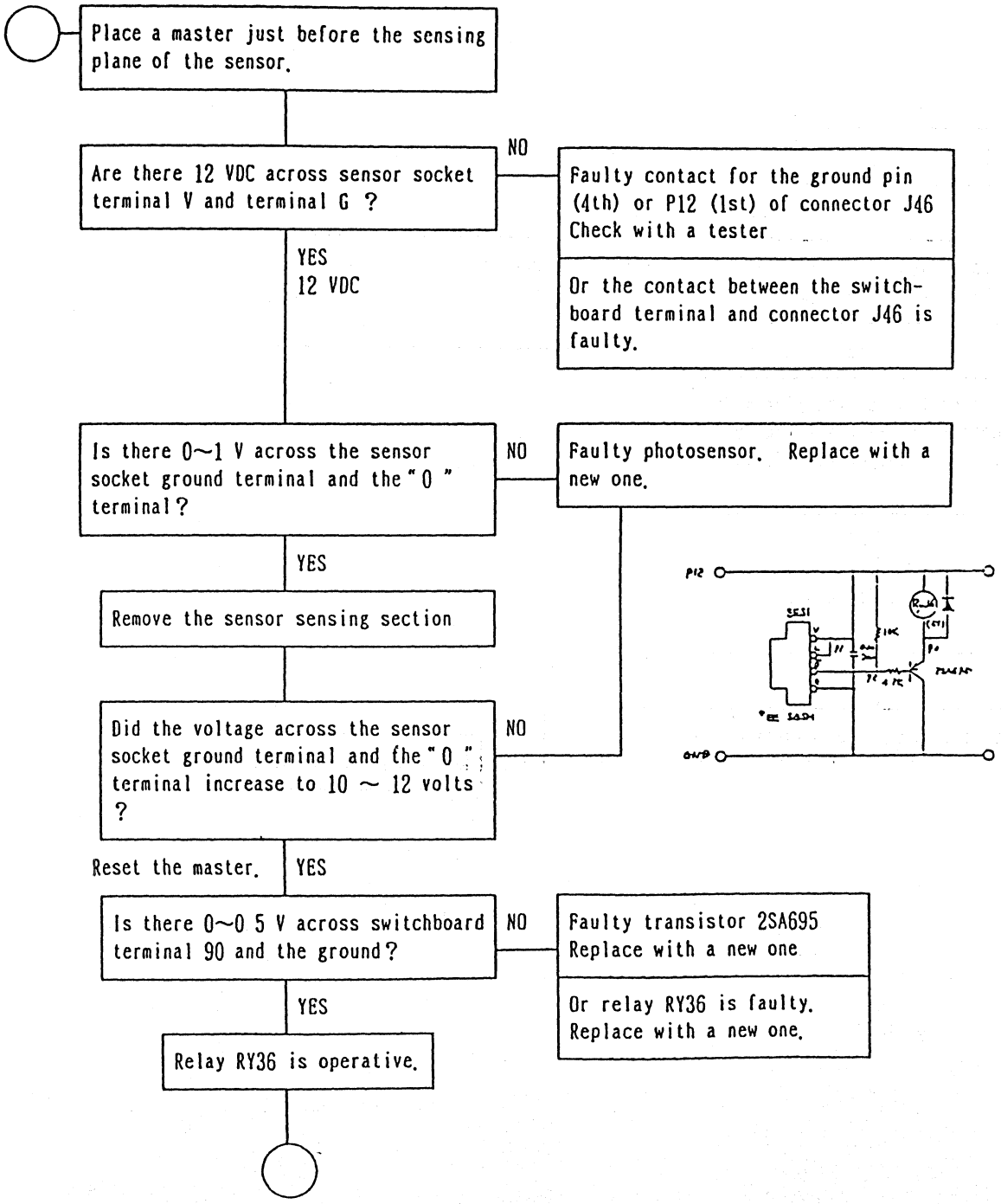
1. Three exhaust fans are connected in parallel through connector J34
2. Because there are three fans, it must be determined which fan is faulty.
3. 100 VAC must be supplied to terminals U1 and X1
4. When power is supplied to the system, the fans should operate continuously.



47. Photosensor Doesn't Operate

Check Points

1. 12 VDC must be supplied between terminal P12 and the ground terminal.
2. When the photosensor detects the master, the circuit between terminal 92 and the ground changes to low resistance, connecting terminal 92 and the ground terminal. RY36 switches ON.

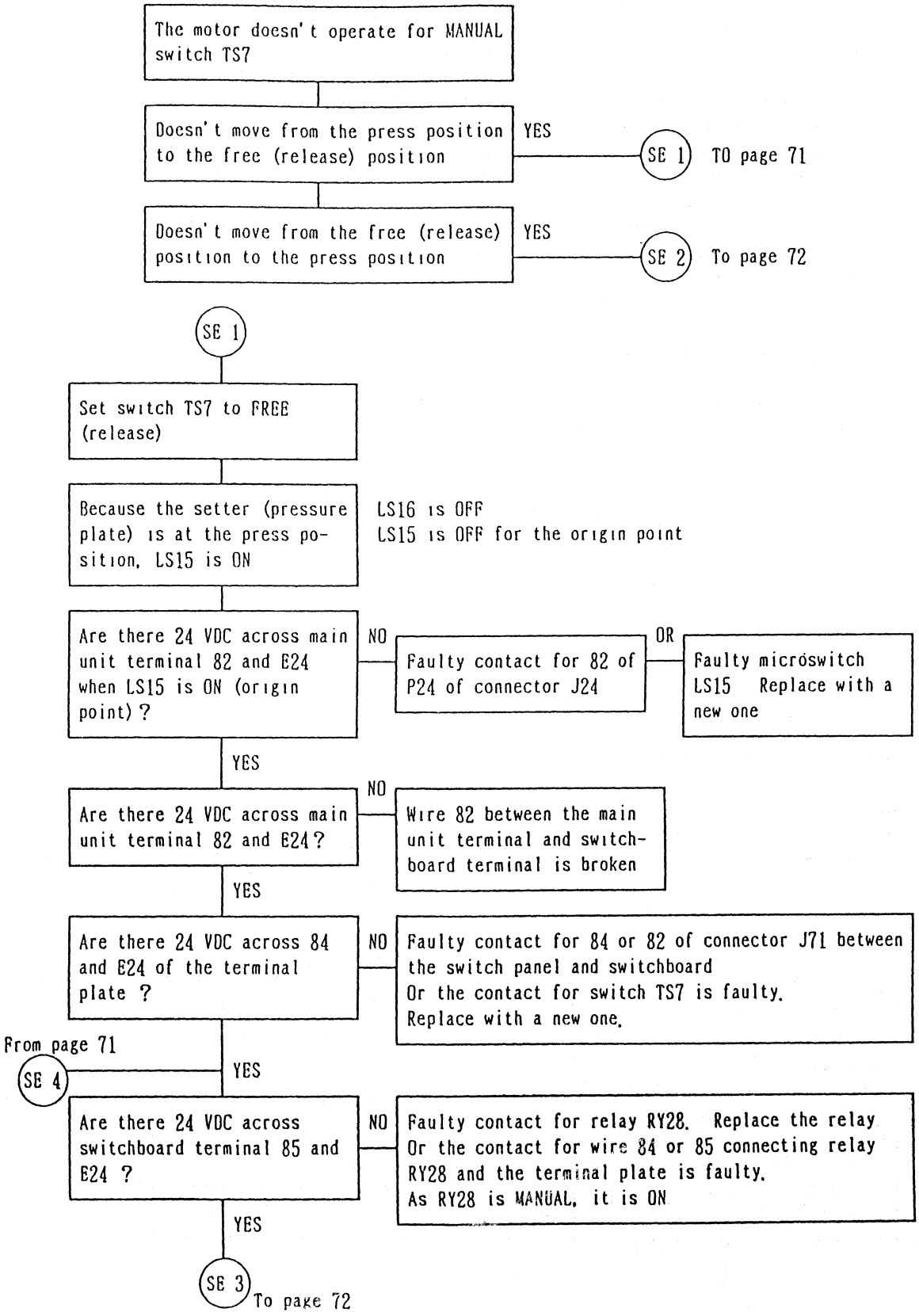


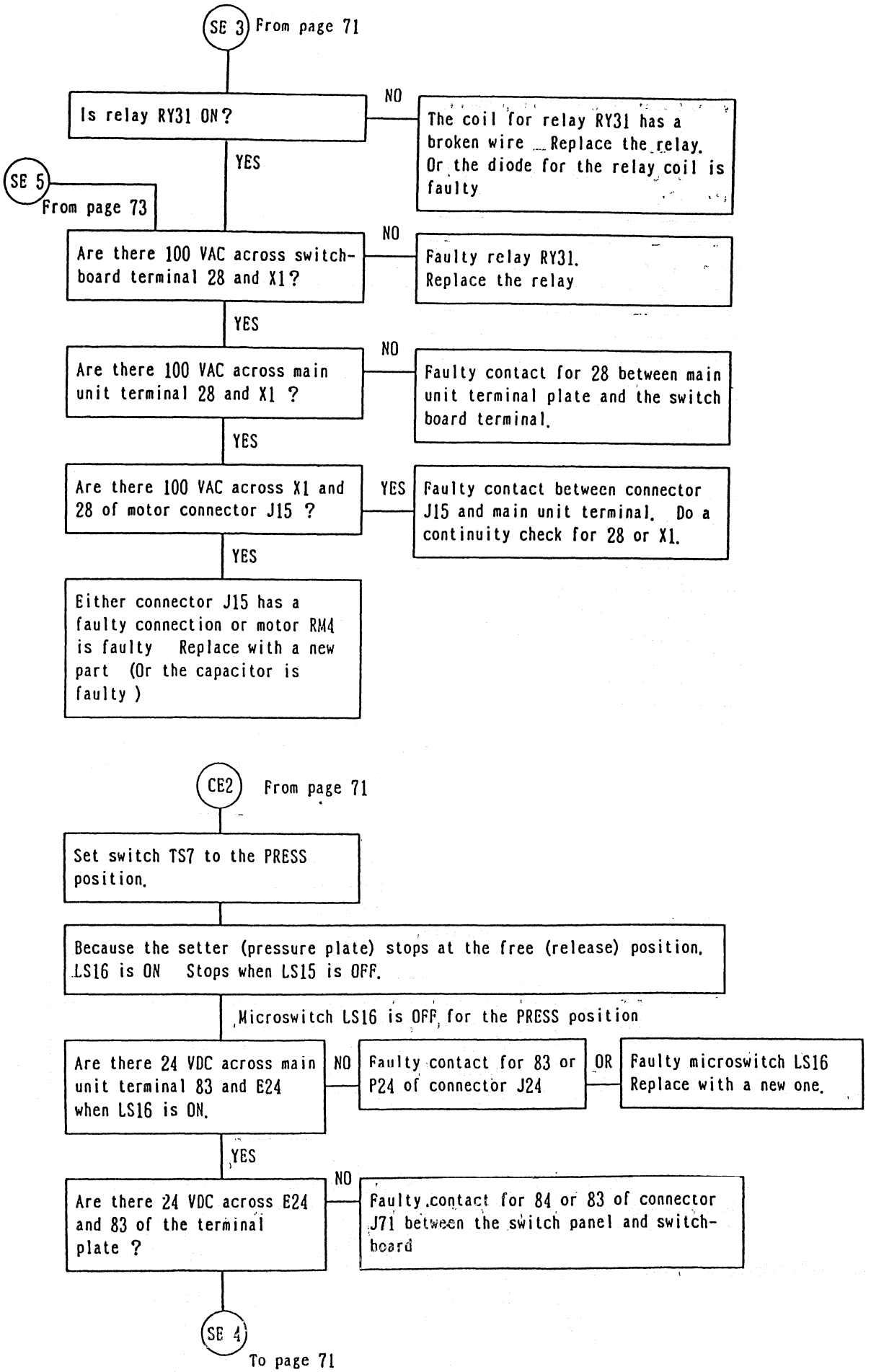
3. If the chucks move to apply suction to the master and a master is not set, they will apply suction to the glass. This sensor is designed to avoid this, as the suction unit may be damaged.
4. This sensor also serves another function. If the cutter edge is broken and exposure is completed without proper cutting of the master, a long master will be fed into the processor. If the photosensor still detects the master 42 seconds after the master presses LS4, the processor motor and the master feed motor will be stopped and the entire main unit will be reset.

48 Sensor Doesn't Operate With The MANUAL Switch

Check Points

1 Set the AUTO/MANUAL switch to MANUAL
2 MANUAL relay RY28 must be operating properly

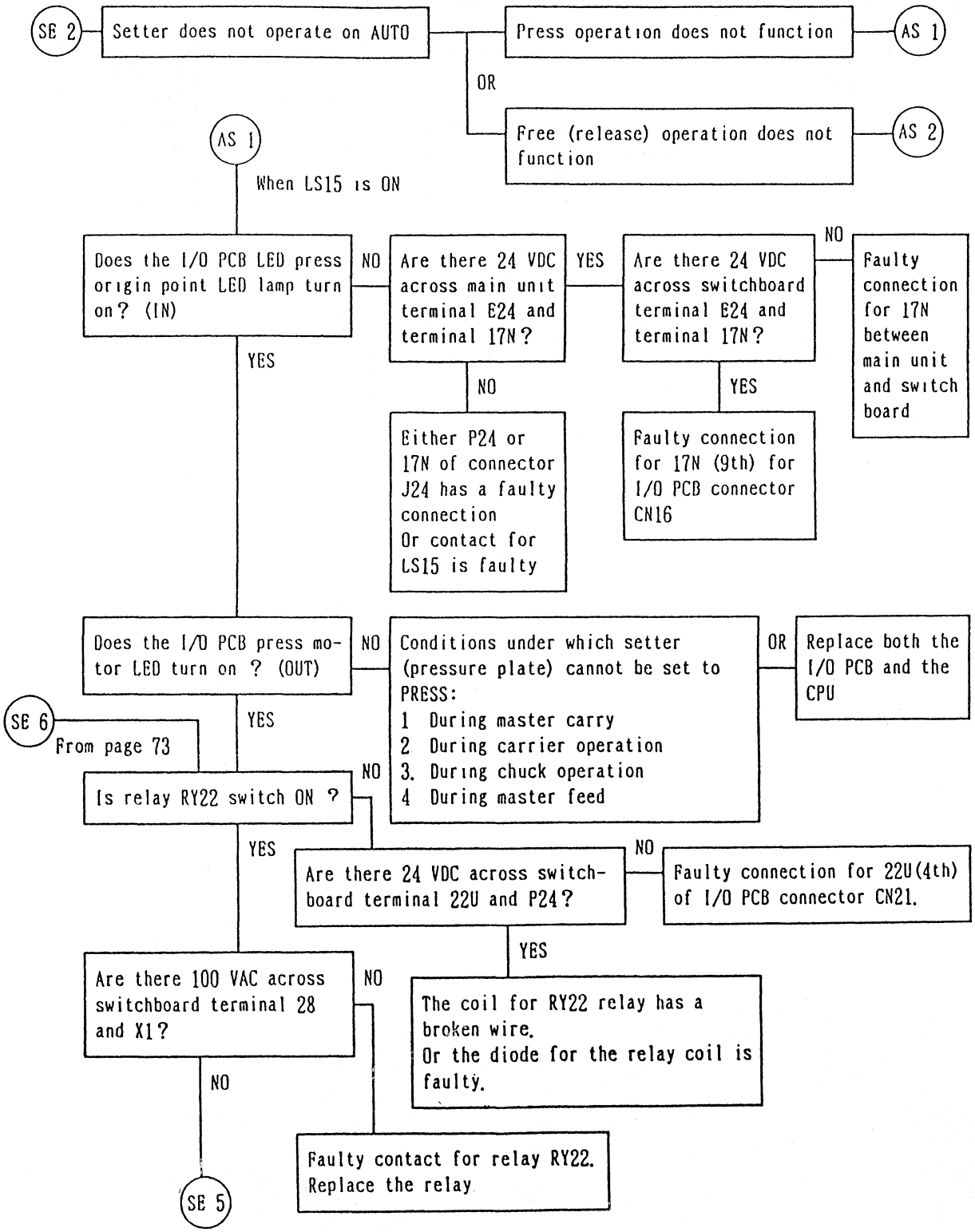



SE 3
From page 71
Is relay RY31 ON?
NO
The coil for relay RY31 has a broken wire Replace the relay. Or the diode for the relay coil is faulty
YES
SE 5
From page 73
Are there 100 VAC across switch-board terminal 28 and X1?
NO
Faulty relay RY31. Replace the relay
YES
Are there 100 VAC across main unit terminal 28 and X1 ?
NO
Faulty contact for 28 between main unit terminal plate and the switch board terminal.
YES
Are there 100 VAC across X1 and 28 of motor connector J15 ?
YES
Faulty contact between connector J15 and main unit terminal. Do a continuity check for 28 or X1.
YES
Either connector J15 has a faulty connection or motor RM4 is faulty Replace with a new part (Or the capacitor is faulty)
CE2
From page 71
Set switch TS7 to the PRESS position.
Because the setter (pressure plate) stops at the free (release) position, LS16 is ON Stops when LS15 is OFF.
Microswitch LS16 is OFF for the PRESS position
Are there 24 VDC across main unit terminal 83 and E24 when LS16 is ON.
NO
Faulty contact for 83 or P24 of connector J24
OR
Faulty microswitch LS16 Replace with a new one.
YES
Are there 24 VDC across E24 and 83 of the terminal plate ?
NO
Faulty contact for 84 or 83 of connector J71 between the switch panel and switch-board
SE 4
To page 71

49 Setter (Pressure Plate) Motor Does Not Operate On AUTO.

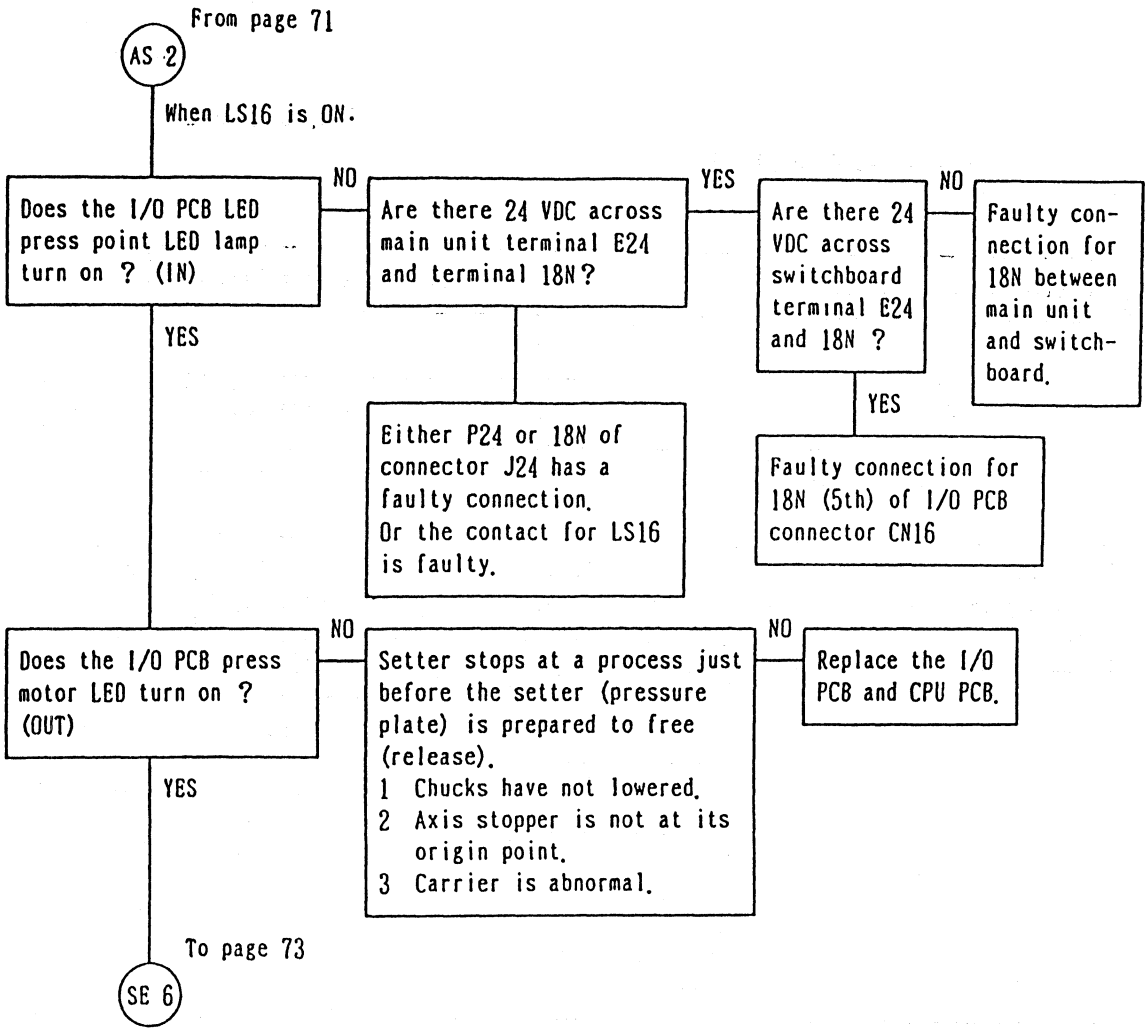
Check Points

1 There must be no abnormalities in the microcomputer system or MANUAL cutting operation
2 The setter (pressure plate) must operate properly for the MANUAL switch
3 When the setter does not operate on AUTO, check hardware first, on MANUAL
4 See flowchart, pages 49~51, for the operating time of the setter.



To page 72

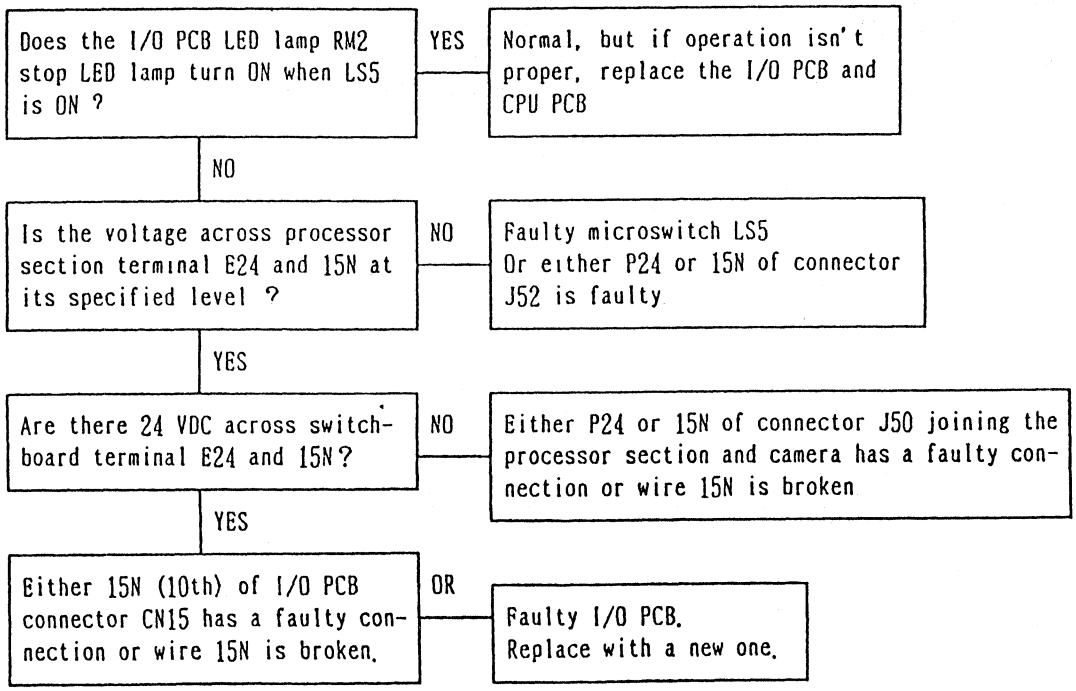
50. Setter (Pressure Plate) Doesn't Free (Release) Properly On AUTO.



51 Processor Entrance Microswitch Does Not Operate (LS5)

Check Points

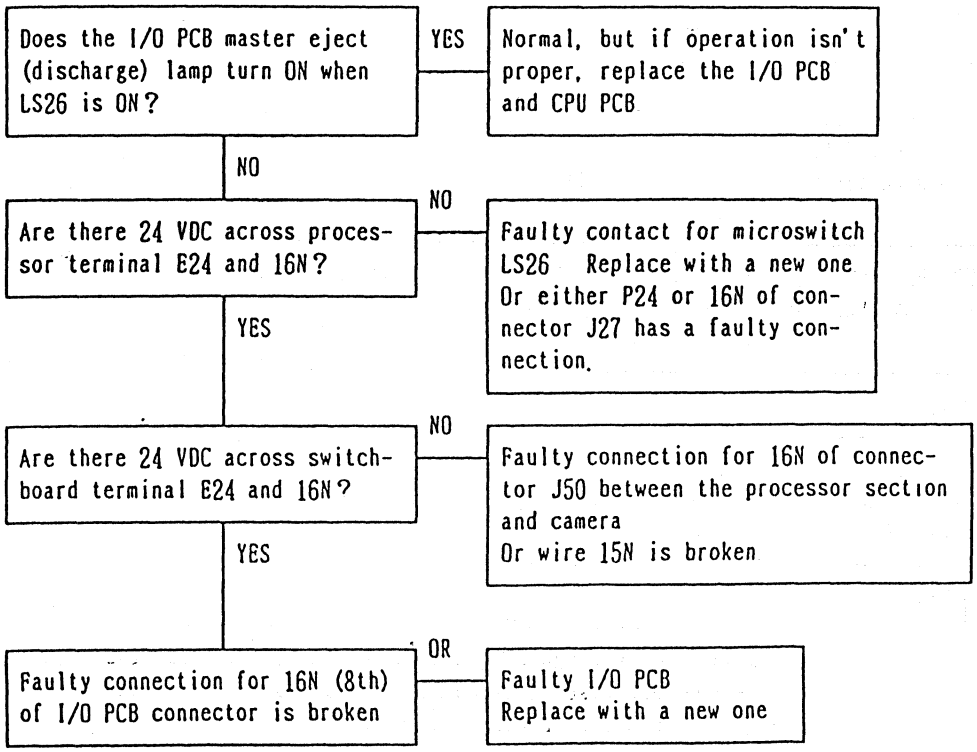
1 The carrier does not move if this switch is already ON
2 The master-out motor does not operate when LS5 is constantly ON
3 The process condition indication lamp in the processor section is controlled by LS5 signals (Computer-controlled software timer starts)
4 Using LS5 signals, it is confirmed that the master has entered from the processor entrance Transport microswitch LS26 switches ON and the computer calculates the length of time until it switches OFF If the LS26 signal does not enter the computer within a set period of time the TRANSPORTER lamp will flash, indicating that a master has jammed in the processor section
5 If the set time has passed after LS5 switches ON and it has not yet switched OFF, the PROCESSOR lamp will flash Or, if a master is in the dryer under the above conditions, the DRYER lamp will flash and the PROCESSOR lamp will go out
6 See (7) on the flowchart
7 Since LS5 is the input signal for I/O PCB, it is only used for connection confirmation of wiring up to the I/O PCB LED
8 If this switch remains ON, the carrier will not move



52. Master Transport Detect (Discharge) Microswitch LS26 Doesn't Operate.

Check Points

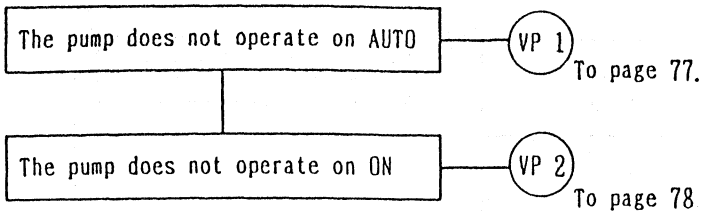
1. After the TRANSPORTER lamp lights, the computer calculates the length of time between when I/O PCB master eject (discharge) lamp turns on and turns off. If the lamp does not turn off automatically within 18 seconds, the transporter lamp will flash, indicating an abnormality in the transporter.
2. If this switch remains OFF, the camera cannot proceed to the next operation. The starting lamp will not light and starting is not possible
3. The TRANSPORTER lamp turns off two seconds after LS26 switches OFF (after the master passes.)
4. The dryer fan and dryer heater are turned off by LS26 signals, but they will remain ON if the next start is made
5. Check to confirm that the microswitch signal is input to the I/O PCB.

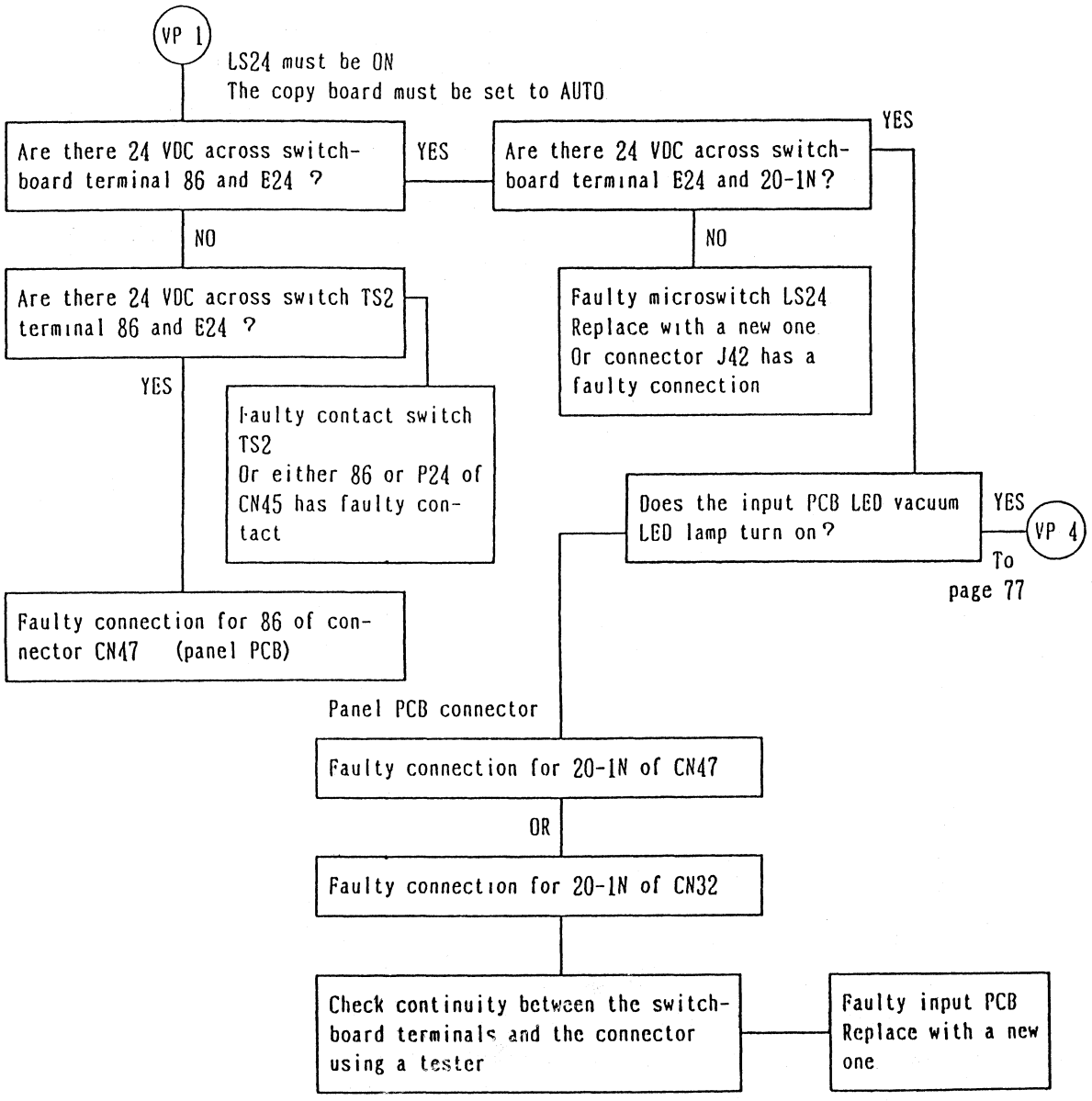


53 Copy Vacuum Pump Operation Cannot Be Changed With Copy Vacuum (C-VACUUM) Pump Switch.

Check Points

1. Sub-panel lamp PL12 lights when the C-VACUUM switch is OFF
2. When the copy board is pulled forward and the C-VACUUM switch is set to AUTO, LS24 switches OFF and sub-panel lamp PL12 turns ON

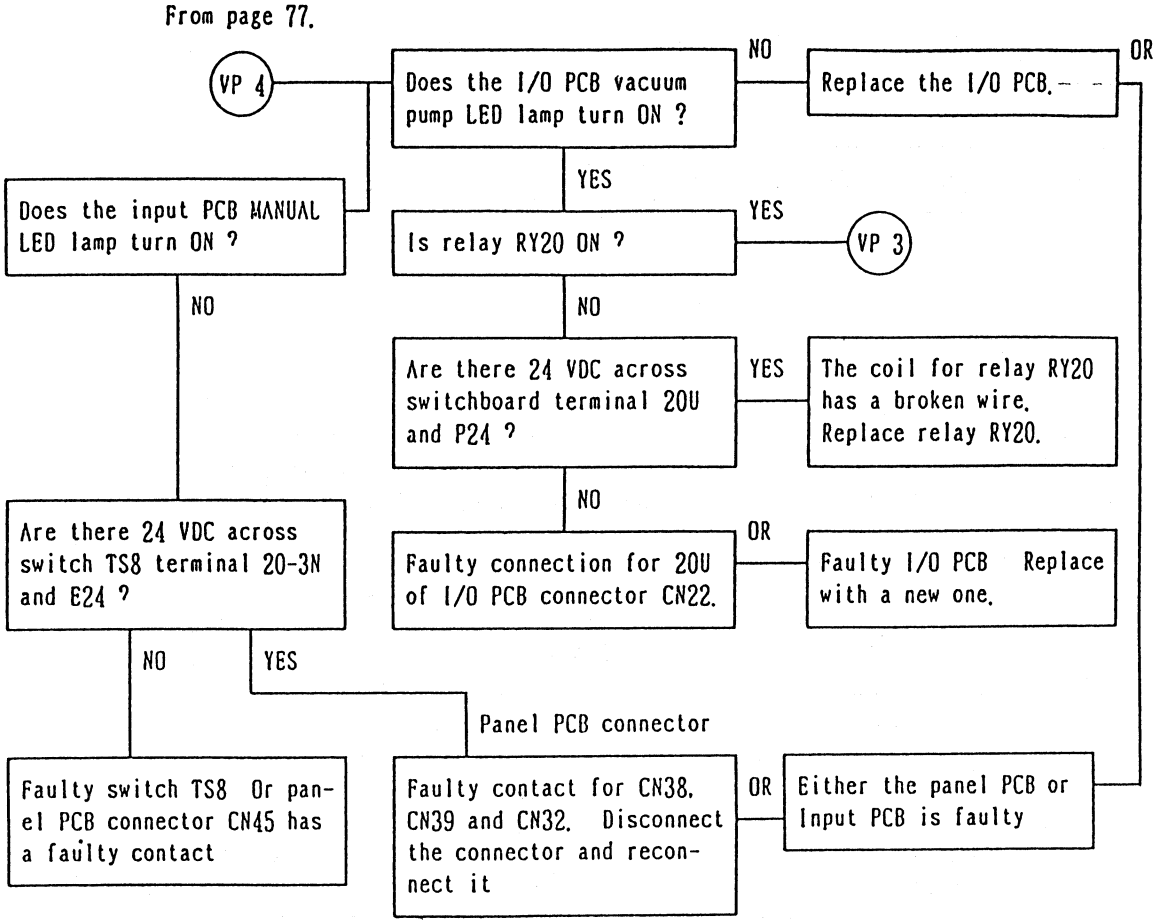


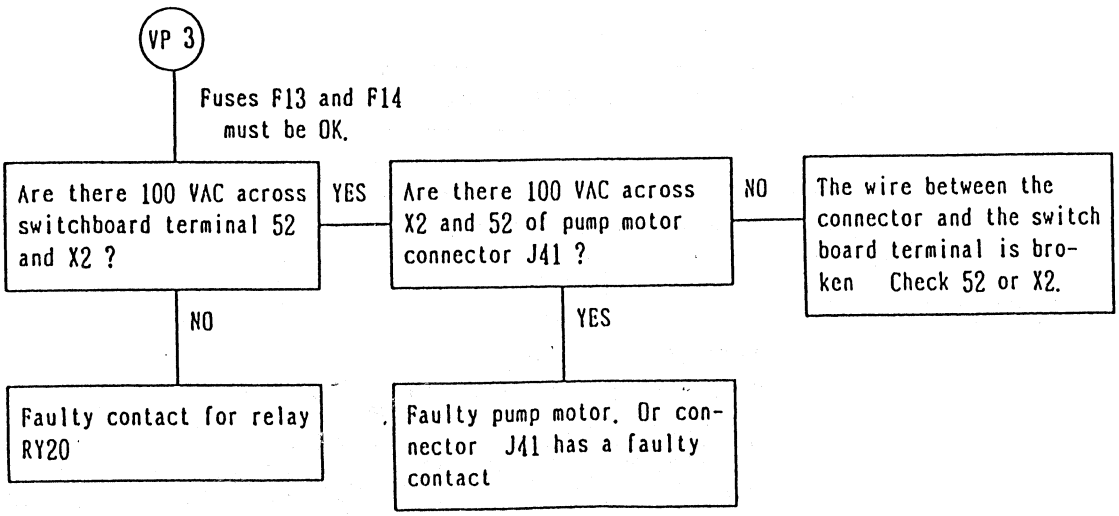


54 Vacuum Pump Does Not Operate.

Check Points

1. The vacuum pump switch must be set to ON.
2. The microcomputer system must be operative.





55 CPU And I/O PCB Malfunctions

Check Points

1 Check the DC power source for the computer first. The power source is the most important factor affecting the computer

2. There are many causes and types of malfunctions that can occur for the CPU PCB and I/O PCB. Are finding the malfunctioning IC can require a great deal of time, it is much more efficient to use input PCBs, I/O PCBs and CPU PCBs as sets for replacing these PCBs

1. CPU operation

1) When the power source is turned on, CPU ICs are forced to reset. Then the program in the CPU is started

2) Next, resetting the entire unit will proceed according to the program

3) The resetting operation continues up to "Ⓐ" on the flowcharts.

4) Then, the master setting is done up to the point on the flowchart where the exposure starter PB5 is pressed, and, if everything operates properly, CPU PCB can be considered operative.

2 Confirming whether CPU and I/O PCB are operative

1) After the above reset is finished, set the AUTO/MANUAL switch to MANUAL.

2) Then, if the operation of cutter MANUAL switch is normal, the computer (CPU) PCB can be considered to be operating according to the program

3) If the feed clutch and the master motor are activated with dip switches, first the CPU and I/O PCB will be activated

4) However, if individual inputs and relay outputs cannot be output or input through the I/O PCB, follow the troubleshooting procedures

3. Cautions when replacing the CPU PCB, I/O PCB and Input PCB

1) The best method is to replace all three PCBs at the same time.

2) If only the CPU PCB is mistakenly replaced, when actually it is the I/O PCB which is damaged, the damaged I/O PCB may ruin the good CPU PCB

3) Replace the 3 PCBs as a set unless the I/O PCB or CPU PCB is definitely determined to be faulty

4) Do not disconnect the CPU or I/O PCB connectors while the power source is turned on.

56. Check Points For CPU PCB, I/O PCB And Input PCB Malfunctions

1 Partial disconnection of flat cable connectors

2 Faulty socket contacts for CPU IC 8085 on the CPU PCB.

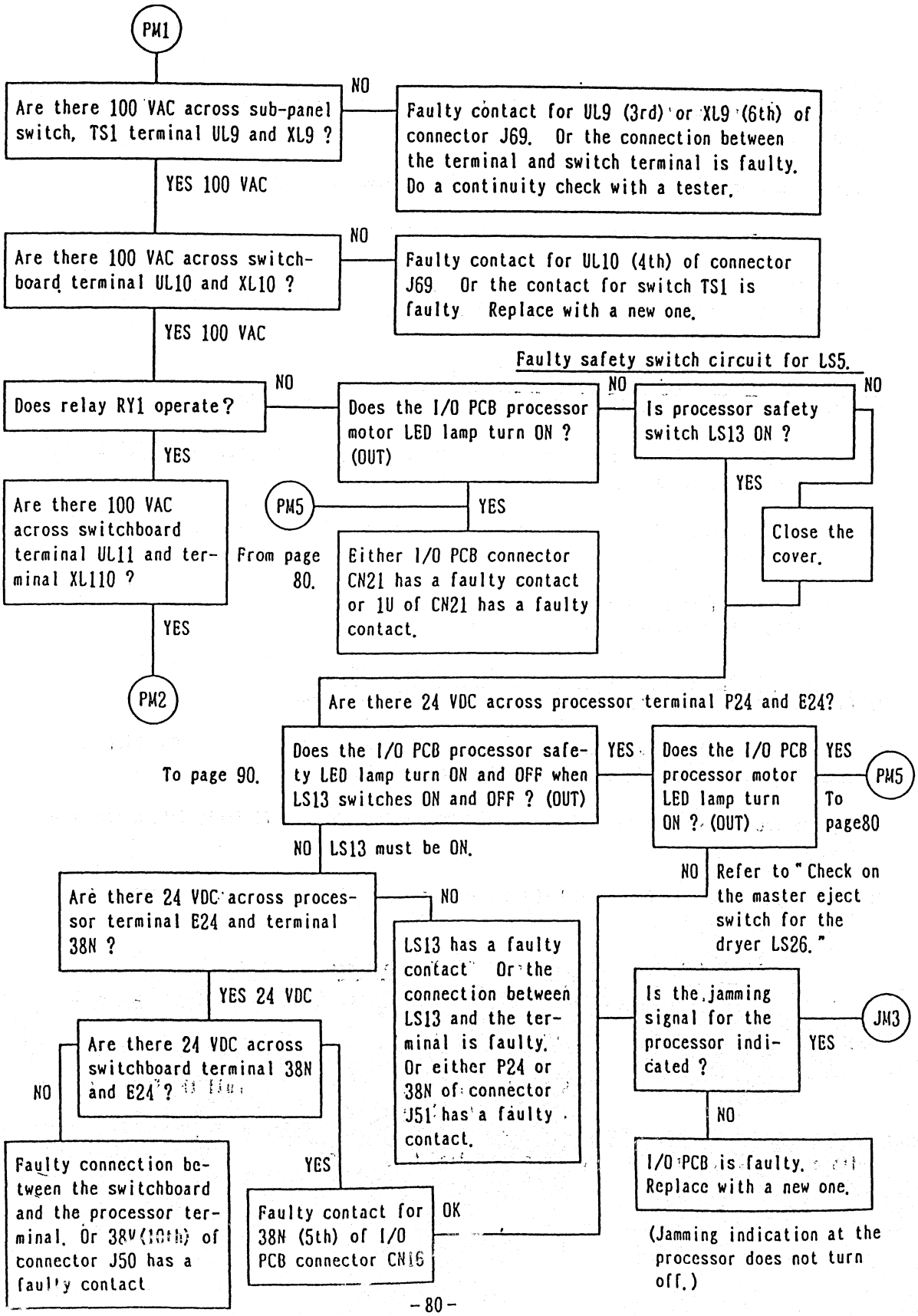
3 Faulty socket contacts for CPU PCB ROM IC which contains programs. Pull the ROM loose from the connector or socket and push it back into place

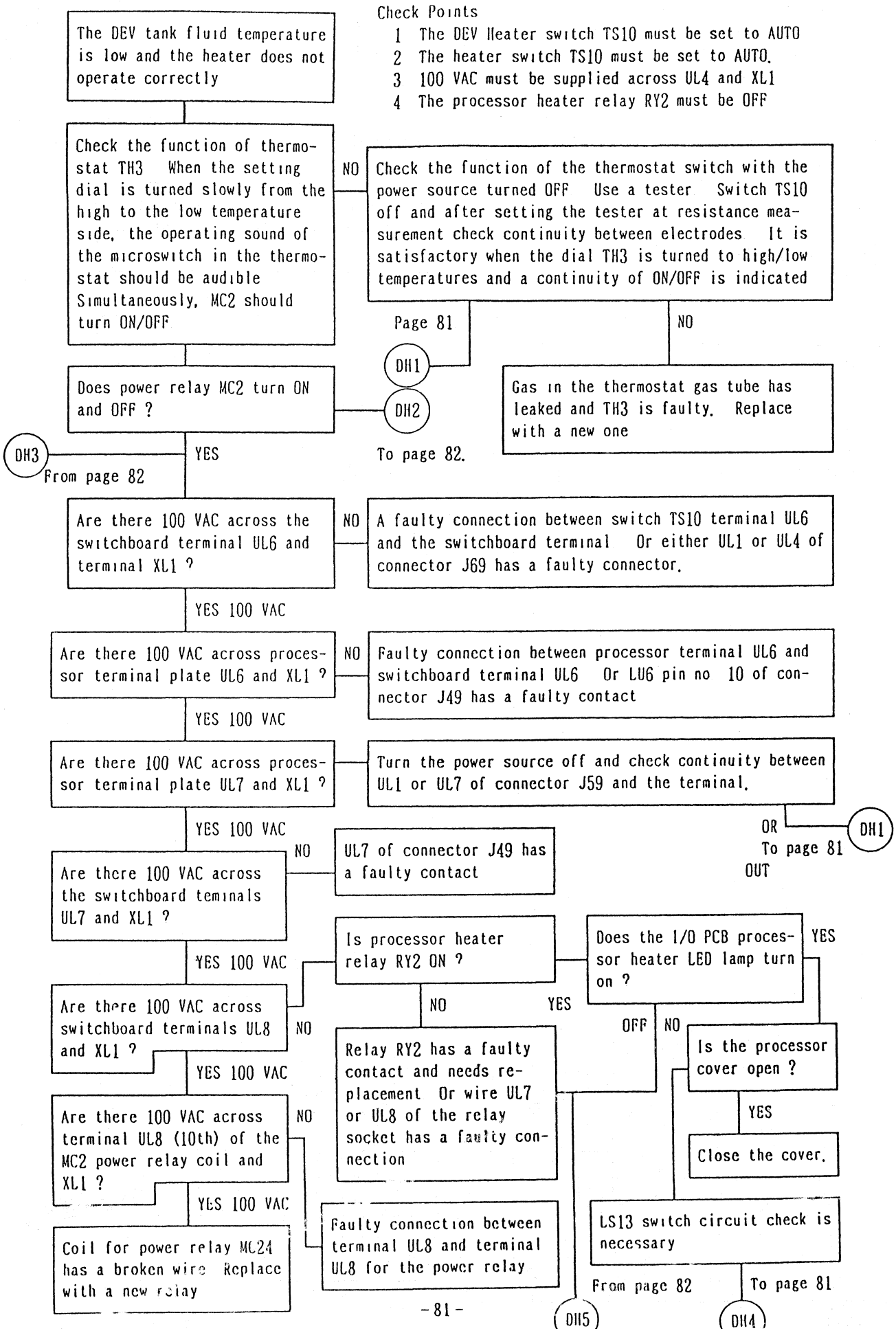
4 Voltage decrease of the DC power source supplied to CPU PCB and I/O PCB

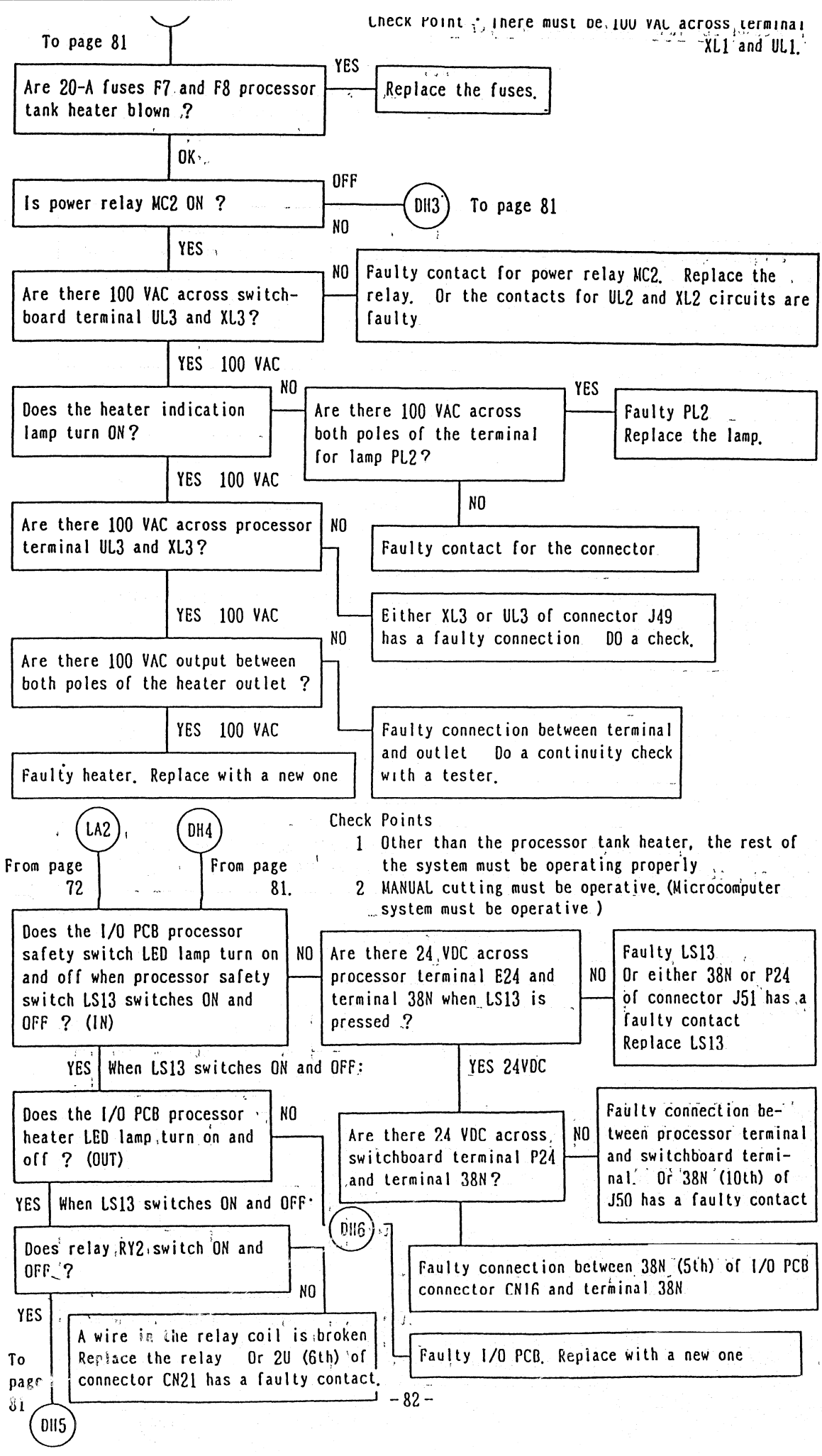
5/ Processor Motor Doesn t Operate On AUTO.

Check Points

1. The processor motor must operate on MANUAL
2. There must be no malfunction in the computer. (Only the processor motor operation is stopped.)
3. 100 VAC is supplied between terminals UL9 and XL9.
4. Set switch TS1 to AUTO and press PB5




The DEV tank fluid temperature is low and the heater does not operate correctly
Check Points
1 The DEV Heater switch TS10 must be set to AUTO
2 The heater switch TS10 must be set to AUTO.
3 100 VAC must be supplied across UL4 and XL1
4 The processor heater relay RY2 must be OFF
Check the function of thermostat TH3 When the setting dial is turned slowly from the high to the low temperature side, the operating sound of the microswitch in the thermostat should be audible Simultaneously, MC2 should turn ON/OFF
NO
Check the function of the thermostat switch with the power source turned OFF Use a tester Switch TS10 off and after setting the tester at resistance measurement check continuity between electrodes It is satisfactory when the dial TH3 is turned to high/low temperatures and a continuity of ON/OFF is indicated
Page 81
DH1
NO
Gas in the thermostat gas tube has leaked and TH3 is faulty. Replace with a new one
Does power relay MC2 turn ON and OFF ?
DH2
To page 82.
DH3
From page 82
YES
Are there 100 VAC across the switchboard terminal UL6 and terminal XL1 ?
NO
A faulty connection between switch TS10 terminal UL6 and the switchboard terminal Or either UL1 or UL4 of connector J69 has a faulty connector.
YES 100 VAC
Are there 100 VAC across processor terminal plate UL6 and XL1 ?
NO
Faulty connection between processor terminal UL6 and switchboard terminal UL6 Or LU6 pin no 10 of connector J49 has a faulty contact
YES 100 VAC
Are there 100 VAC across processor terminal plate UL7 and XL1 ?
Turn the power source off and check continuity between UL1 or UL7 of connector J59 and the terminal.
OR
To page 81
OUT
DH1
YES 100 VAC
NO
UL7 of connector J49 has a faulty contact
Are there 100 VAC across the switchboard teminals UL7 and XL1 ?
YES 100 VAC
Is processor heater relay RY2 ON ?
Does the I/O PCB processor heater LED lamp turn on ?
YES
NO
YES
OFF
NO
Is the processor cover open ?
YES
Close the cover.
Are there 100 VAC across switchboard terminals UL8 and XL1 ?
NO
YES 100 VAC
Relay RY2 has a faulty contact and needs replacement Or wire UL7 or UL8 of the relay socket has a faulty connection
Are there 100 VAC across terminal UL8 (10th) of the MC2 power relay coil and XL1 ?
NO
YES 100 VAC
Faulty connection between terminal UL8 and terminal UL8 for the power relay
LS13 switch circuit check is necessary
Coil for power relay MC24 has a broken wire Replace with a new relay
From page 82
To page 81
DH5
DH4


Check Point : There must be 100 VAC across terminal XL1 and UL1.
To page 81
Are 20-A fuses F7 and F8 processor tank heater blown ?
YES
Replace the fuses.
OK
Is power relay MC2 ON ?
OFF
DH3
To page 81
NO
YES
Are there 100 VAC across switchboard terminal UL3 and XL3?
NO
Faulty contact for power relay MC2. Replace the relay. Or the contacts for UL2 and XL2 circuits are faulty
YES 100 VAC
Does the heater indication lamp turn ON?
NO
Are there 100 VAC across both poles of the terminal for lamp PL2?
YES
Faulty PL2 Replace the lamp.
NO
YES 100 VAC
Are there 100 VAC across processor terminal UL3 and XL3?
NO
Faulty contact for the connector
Either XL3 or UL3 of connector J49 has a faulty connection DO a check.
YES 100 VAC
Are there 100 VAC output between both poles of the heater outlet ?
NO
Faulty connection between terminal and outlet Do a continuity check with a tester.
YES 100 VAC
Faulty heater. Replace with a new one
LA2
From page 72
DH4
From page 81.
Check Points
1 Other than the processor tank heater, the rest of the system must be operating properly
2 MANUAL cutting must be operative. (Microcomputer system must be operative)
Does the I/O PCB processor safety switch LED lamp turn on and off when processor safety switch LS13 switches ON and OFF ? (IN)
NO
Are there 24 VDC across processor terminal E24 and terminal 38N when LS13 is pressed ?
NO
Faulty LS13 Or either 38N or P24 of connector J51 has a faulty contact Replace LS13
YES
When LS13 switches ON and OFF:
YES 24VDC
Does the I/O PCB processor heater LED lamp turn on and off ? (OUT)
NO
Are there 24 VDC across switchboard terminal P24 and terminal 38N?
NO
Faulty connection between processor terminal and switchboard terminal. Or 38N (10th) of J50 has a faulty contact
YES
When LS13 switches ON and OFF:
DH6
Does relay RY2 switch ON and OFF ?
NO
Faulty connection between 38N (5th) of I/O PCB connector CN16 and terminal 38N
YES
A wire in the relay coil is broken Replace the relay Or 2U (6th) of connector CN21 has a faulty contact.
Faulty I/O PCB. Replace with a new one
To page 81
DH5

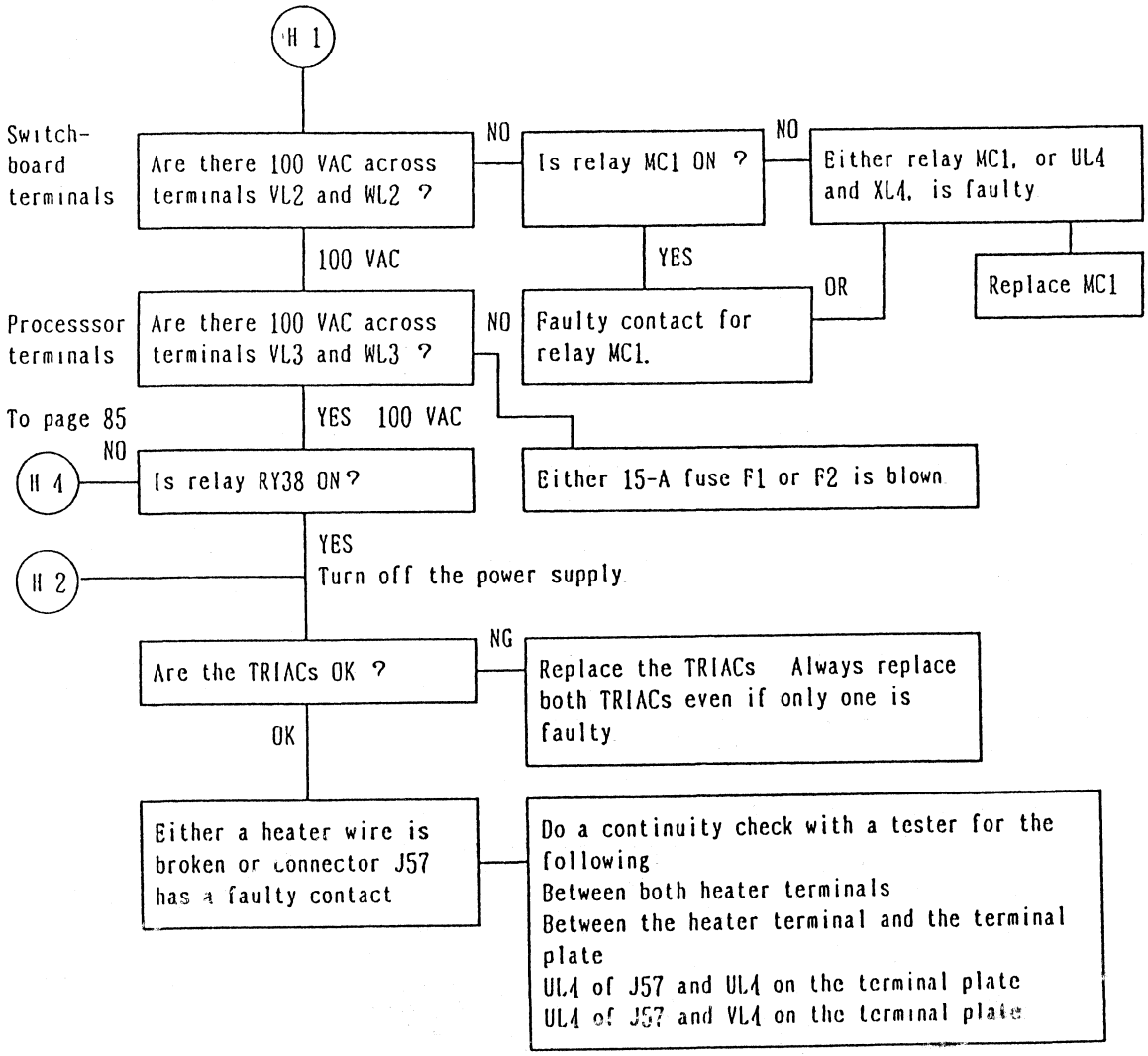
59 Dryer Heater Does Not Operate.

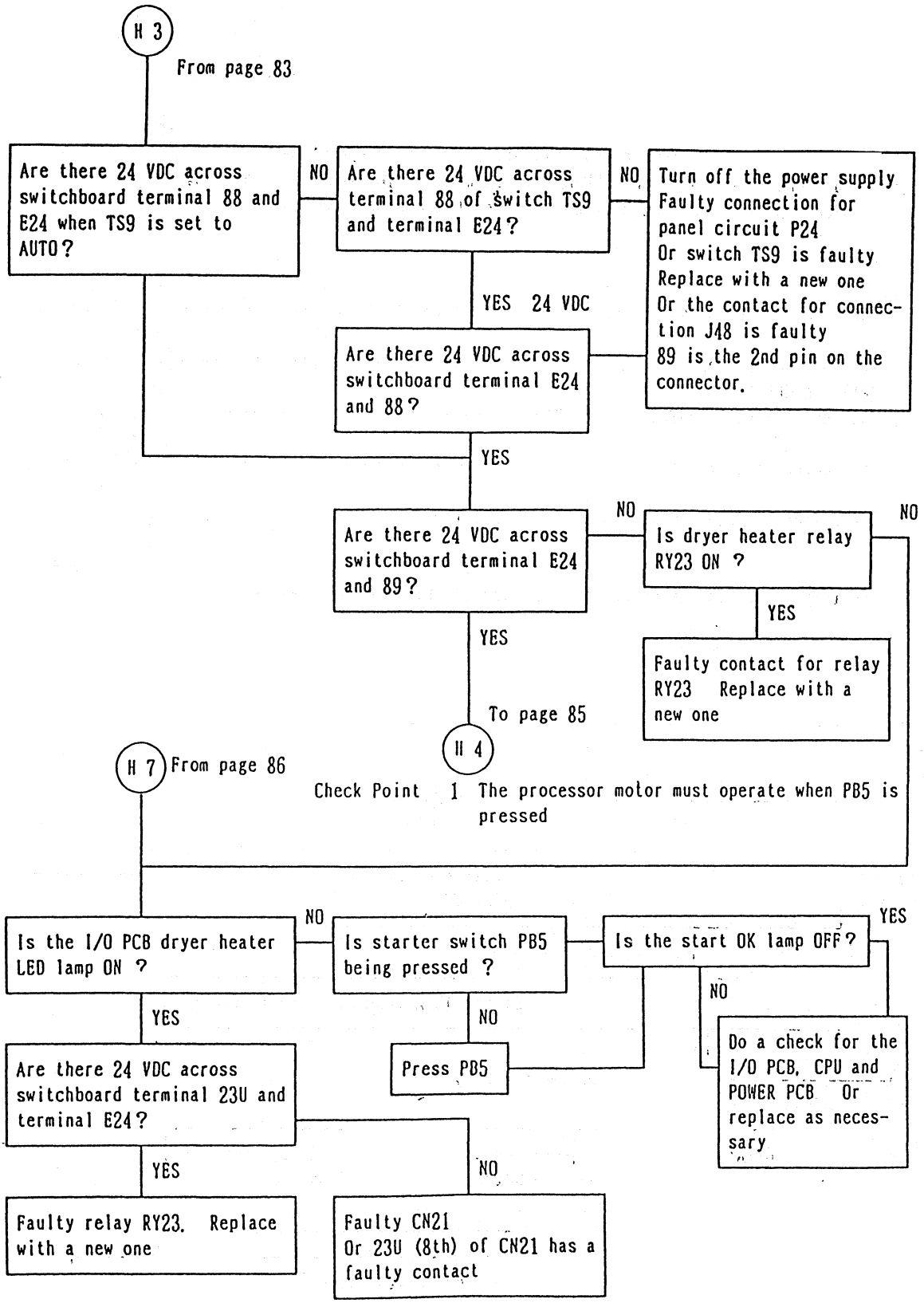
Check Points

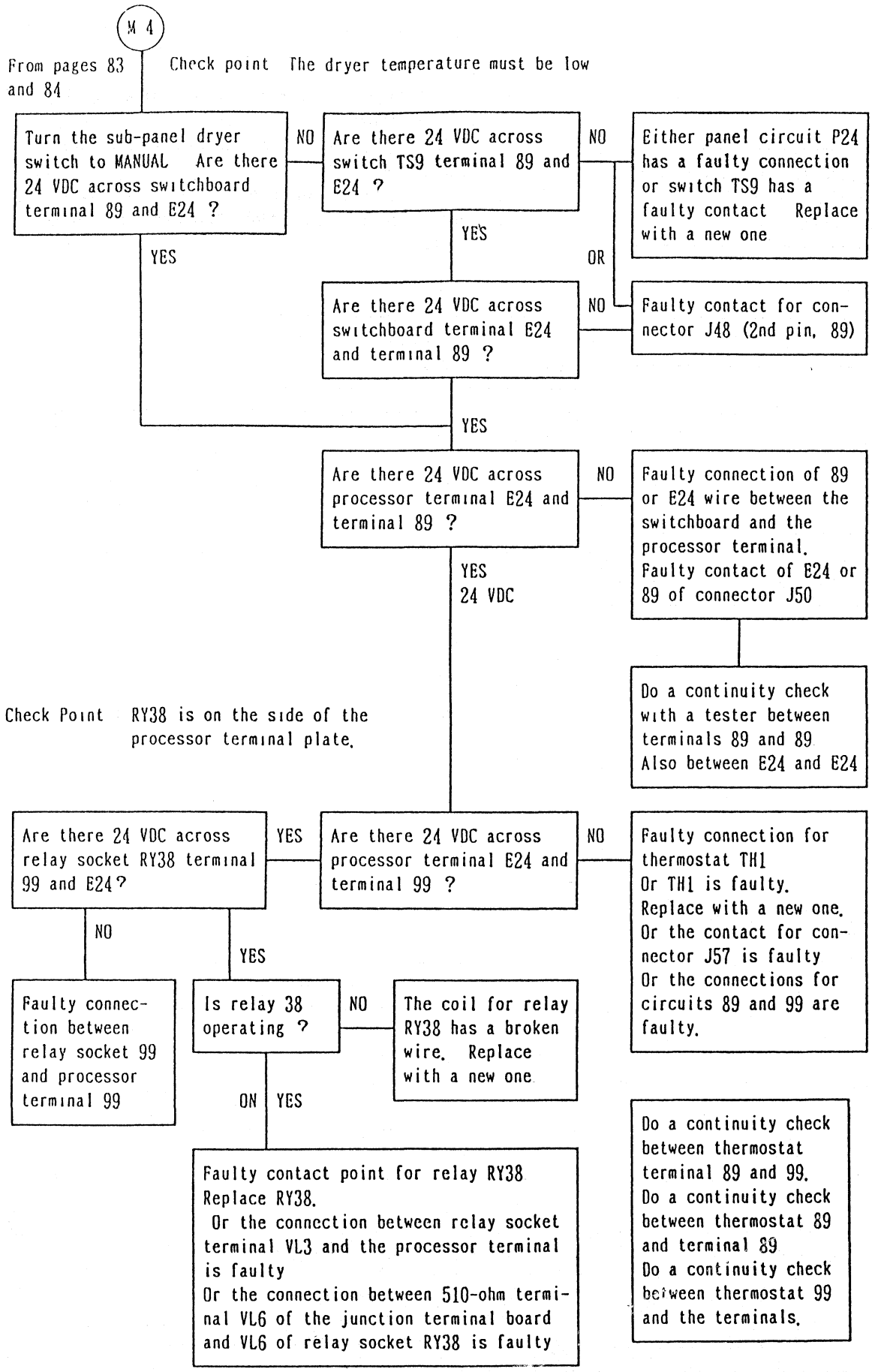
1 There are two ways to operate the dryer heater, either on AUTO or on MANUAL
2 The dryer heater is turned on and off by an electronic switch (TRIAC)
3 When the heater is operated on either MANUAL or AUTO, the CPU (computer) inputs a signal to the input PCB confirming that the dryer heater is operating
4 Circuit checks are done on MANUAL. There must be 100 VAC at UL4 and XL4
5 A power supply of 100 VAC must be supplied between VL1 and WL1

Malfunctions

1 The dryer heater doesn't operate at all on both MANUAL and AUTO — (H 1) To page 83
2 If NFB1 and NFB2 operate, MC1 switches ON and the heater operates (RY38 is OFF) — (H 2) To page 83
3 The heater doesn't operate on AUTO — (H 3) To page 84
4. The heater doesn't operate on MANUAL — (H 4) To page 85
5 The heater operates on AUTO and MANUAL but the dryer fan doesn't operate — (H 5)
6 The temperature in the dryer rises abnormally high — (H 6) To page 86 To page 86




H 3
From page 83
Are there 24 VDC across switchboard terminal 88 and E24 when TS9 is set to AUTO?
NO
Are there 24 VDC across terminal 88 of switch TS9 and terminal E24?
NO
Turn off the power supply
Faulty connection for panel circuit P24
Or switch TS9 is faulty
Replace with a new one
Or the contact for connection J48 is faulty
89 is the 2nd pin on the connector.
YES 24 VDC
Are there 24 VDC across switchboard terminal E24 and 88?
YES
Are there 24 VDC across switchboard terminal E24 and 89?
NO
Is dryer heater relay RY23 ON ?
NO
YES
Faulty contact for relay RY23 Replace with a new one
YES
To page 85
H 4
H 7
From page 86
Check Point 1 The processor motor must operate when PB5 is pressed
Is the I/O PCB dryer heater LED lamp ON ?
NO
Is starter switch PB5 being pressed ?
Is the start OK lamp OFF?
YES
NO
YES
NO
Press PB5
Do a check for the I/O PCB, CPU and POWER PCB Or replace as necessary
Are there 24 VDC across switchboard terminal 23U and terminal E24?
YES
NO
Faulty relay RY23. Replace with a new one
Faulty CN21
Or 23U (8th) of CN21 has a faulty contact


M 4
From pages 83 and 84
Check point The dryer temperature must be low
Turn the sub-panel dryer switch to MANUAL Are there 24 VDC across switchboard terminal 89 and E24 ?
NO
Are there 24 VDC across switch TS9 terminal 89 and E24 ?
NO
Either panel circuit P24 has a faulty connection or switch TS9 has a faulty contact Replace with a new one
YES
OR
Are there 24 VDC across switchboard terminal E24 and terminal 89 ?
NO
Faulty contact for connector J48 (2nd pin, 89)
YES
YES
Are there 24 VDC across processor terminal E24 and terminal 89 ?
NO
Faulty connection of 89 or E24 wire between the switchboard and the processor terminal. Faulty contact of E24 or 89 of connector J50
YES
24 VDC
Do a continuity check with a tester between terminals 89 and 89 Also between E24 and E24
Check Point RY38 is on the side of the processor terminal plate.
Are there 24 VDC across relay socket RY38 terminal 99 and E24?
YES
Are there 24 VDC across processor terminal E24 and terminal 99 ?
NO
Faulty connection for thermostat TH1 Or TH1 is faulty. Replace with a new one. Or the contact for connector J57 is faulty Or the connections for circuits 89 and 99 are faulty.
NO
YES
Faulty connection between relay socket 99 and processor terminal 99
Is relay 38 operating ?
NO
The coil for relay RY38 has a broken wire. Replace with a new one
ON
YES
Do a continuity check between thermostat terminal 89 and 99. Do a continuity check between thermostat 89 and terminal 89 Do a continuity check between thermostat 99 and the terminals.
Faulty contact point for relay RY38 Replace RY38. Or the connection between relay socket terminal VL3 and the processor terminal is faulty Or the connection between 510-ohm terminal VL6 of the junction terminal board and VL6 of relay socket RY38 is faulty

H 6

From page 83

Switch power switch NFB1 and NFB2 OFF, then back ON. (Resetting)

Is relay RY38 ON?

YES

Either CPU or I/O PCB is faulty Replace as necessary.

NO

Turn off the power supply. Do a TRIAC check.

TRIAC faulty

Replace both TRIACs at the same time

Due to a TRIACs malfunction, current flows constantly between terminals VL4 and VL3 and the heater continues operating

TRIAC OK

Faulty abnormal temperature rise protection thermostat TH1. Replace with a new one

Check Points

1. Dryer heater RY38 must be properly controlled by the operation of AUTO/MANUAL switch TS9
2. The AUTO/MANUAL switch must be set to AUTO prior to resetting the power supply.
3. Refer to the corresponding page for the TRIAC check.
4. The dryer fan must be ON (RY38) while the dryer relay is activated.

DF3

From page 87

H 5

From page 83

DF2

From page 87

Is dryer heater operation switch TS9 on AUTO or on MANUAL?

MANUAL

AUTO

Are there 24 VDC across MANUAL/AUTO switch TS9. terminal 36N and E24?

Is dryer heater rilay RY23 ON ?

NO

Refer to "Dryer heater does not operate," page 84

YES

YES

Are there 24 DVC across switchboard terminal 36N and terminal E24?

NO

Faulty contact for switch TS9 Replace the switch. Or the contact for 36N of connector J48 is faulty

NO

Are there 24 VDC across swichboard terminal 36N and terminal E24?

Faulty contact for relay RY23 Replace with a new one

YES 24 VDC

24 VDC YES

Is the dryer operation LED lamp of the Input PCB ON?

NO

Faulty contact for 36N of CN30 Do a continuity check between terminal 36N and 36N of CN30

Or P24 and 36N of sub-panel connectors CN43 and CN42 have faulty connections or faulty contacts. Do a continuity check

OR

YES

Does the I/O PCB dryer fan LED lamp turn on?

NO

Replace either input PCB or I/O PCB.

Replace the CPU PCB

YES

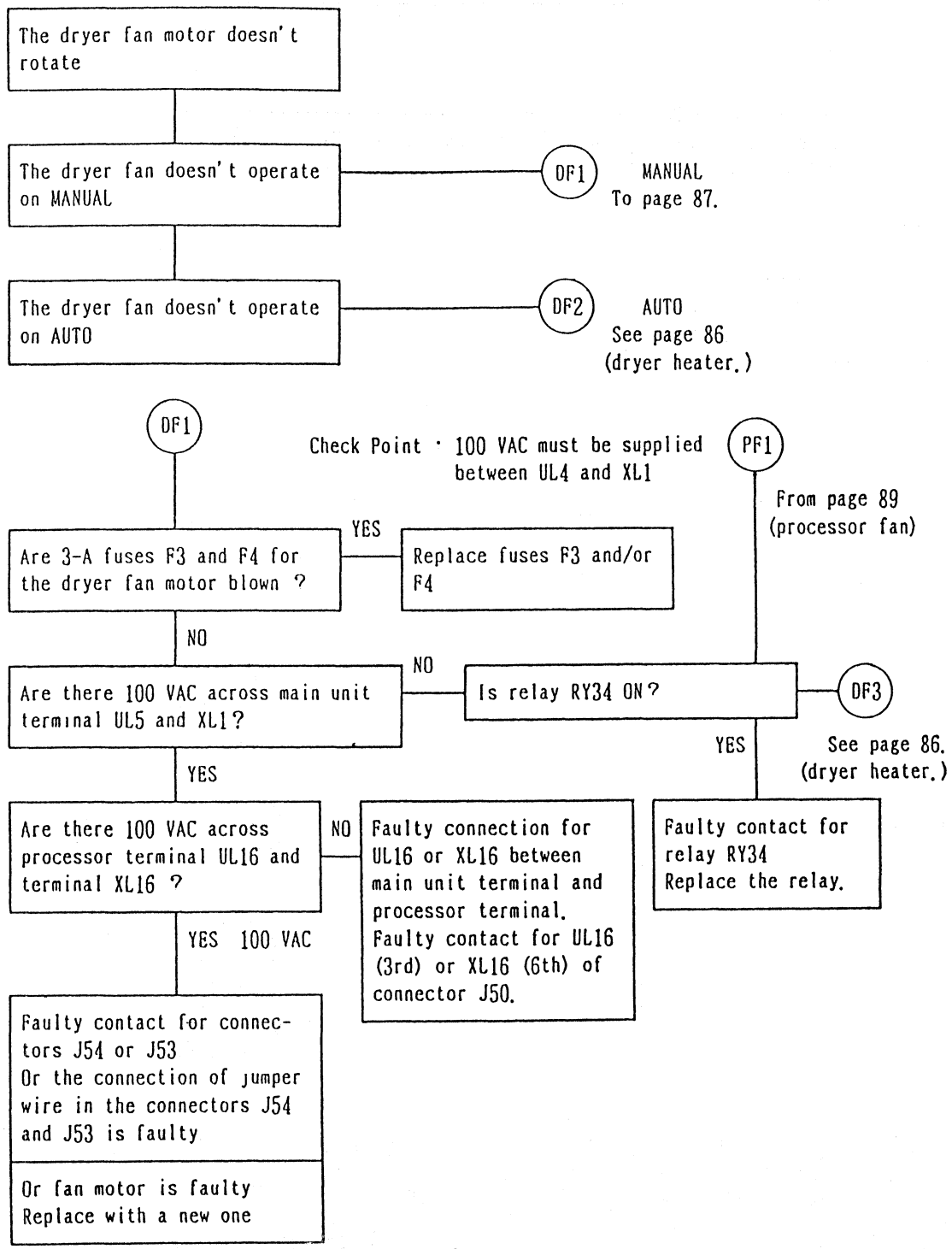
DF4

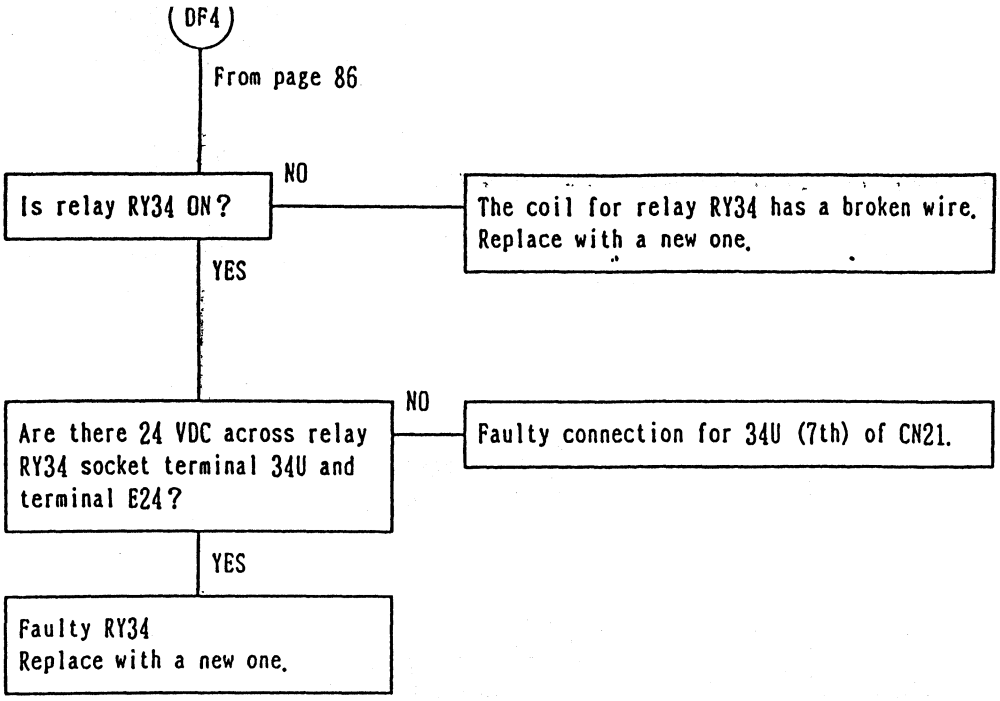
See page 88

60 The Dryer Fan Doesn't Operate.

Check Points

1 Dryer heater relay RY23 must operate properly
2 The dryer MANUAL/AUTO switch circuit must operate properly
3 24 VDC power circuit for P24 or E24 must operate properly.

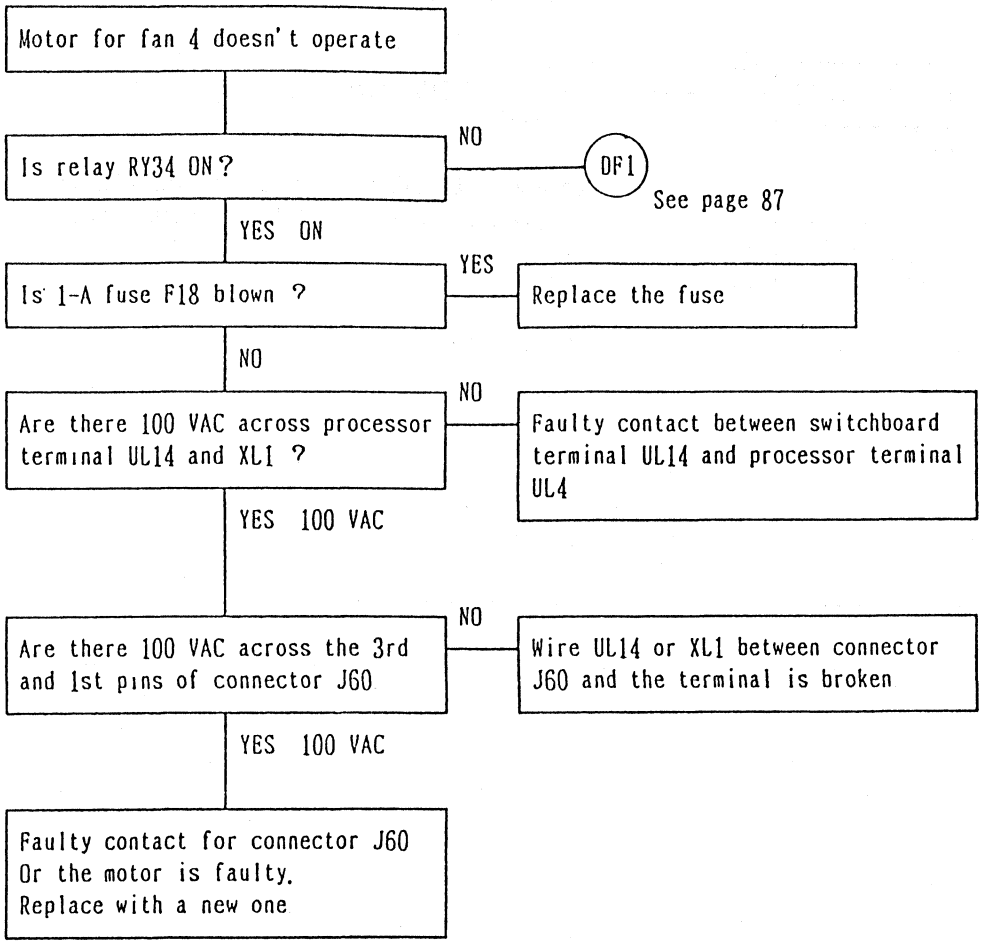


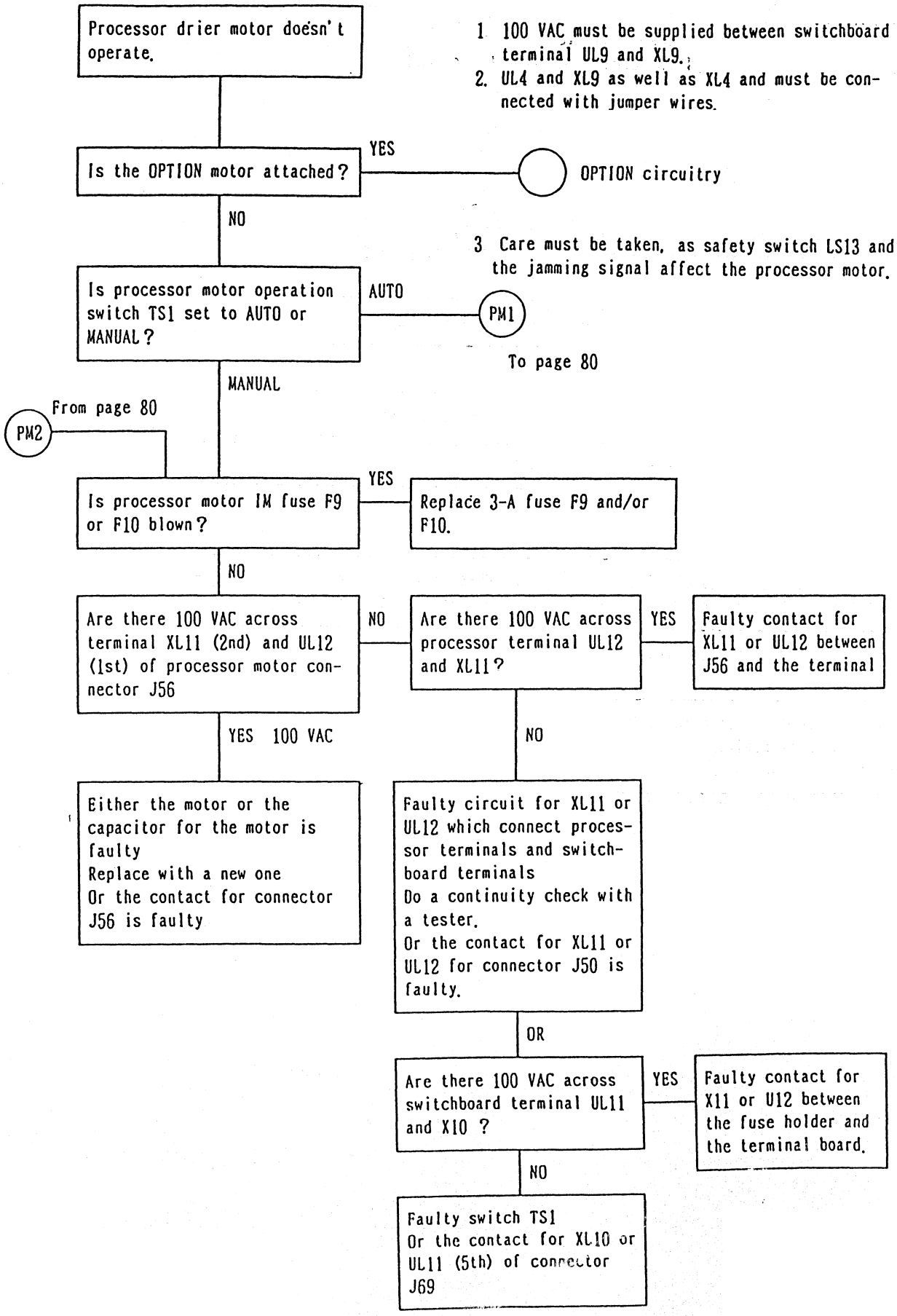

DF4
From page 86
Is relay RY34 ON?
NO
The coil for relay RY34 has a broken wire.
Replace with a new one.
YES
Are there 24 VDC across relay RY34 socket terminal 34U and terminal E24?
NO
Faulty connection for 34U (7th) of CN21.
YES
Faulty RY34
Replace with a new one.

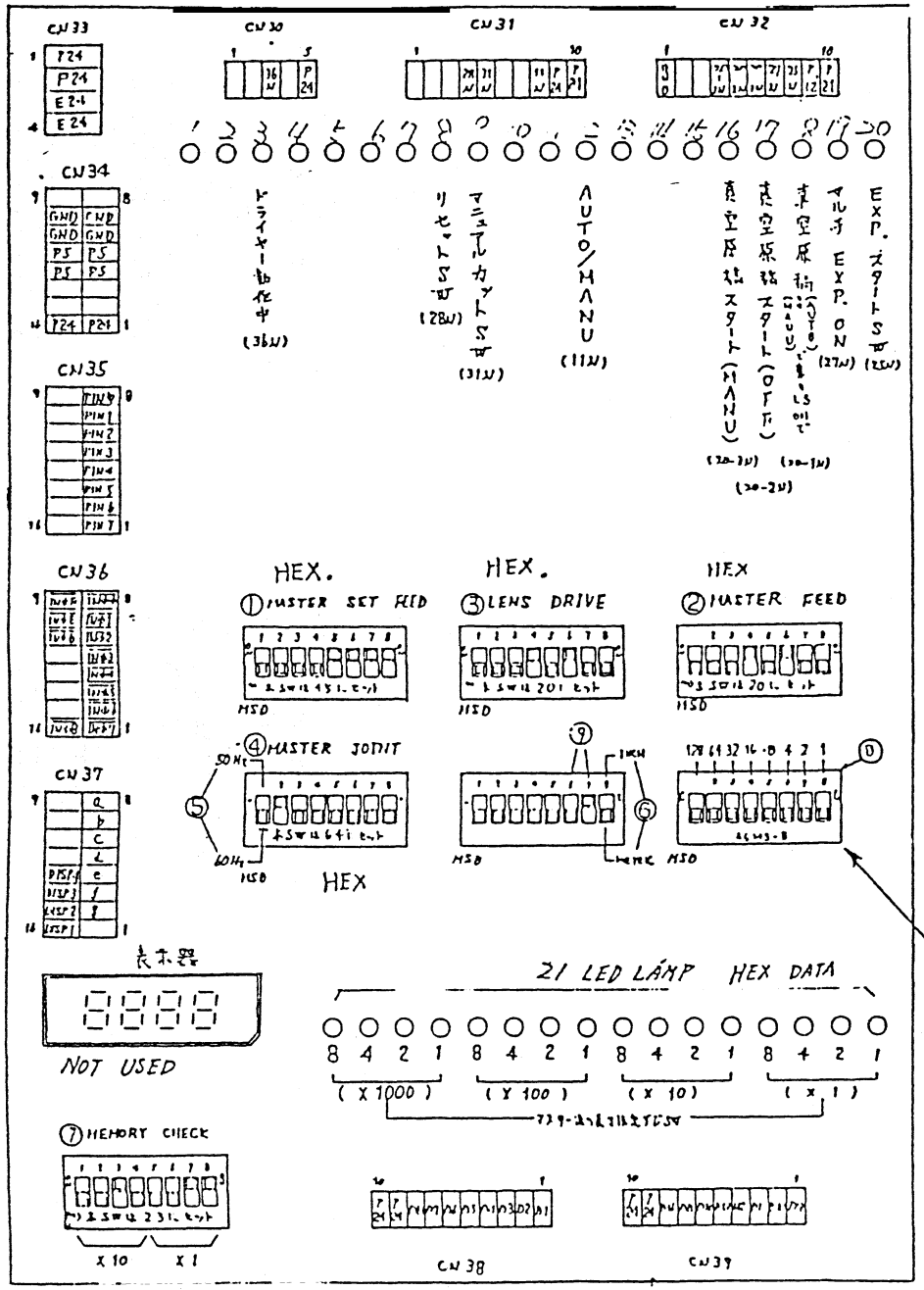
61 Processor fan Doesn't Operate

Check Points

1 See page 87, "Dryer doesn't operate"
2 100 VAC must be supplied between terminal L1 and UL3



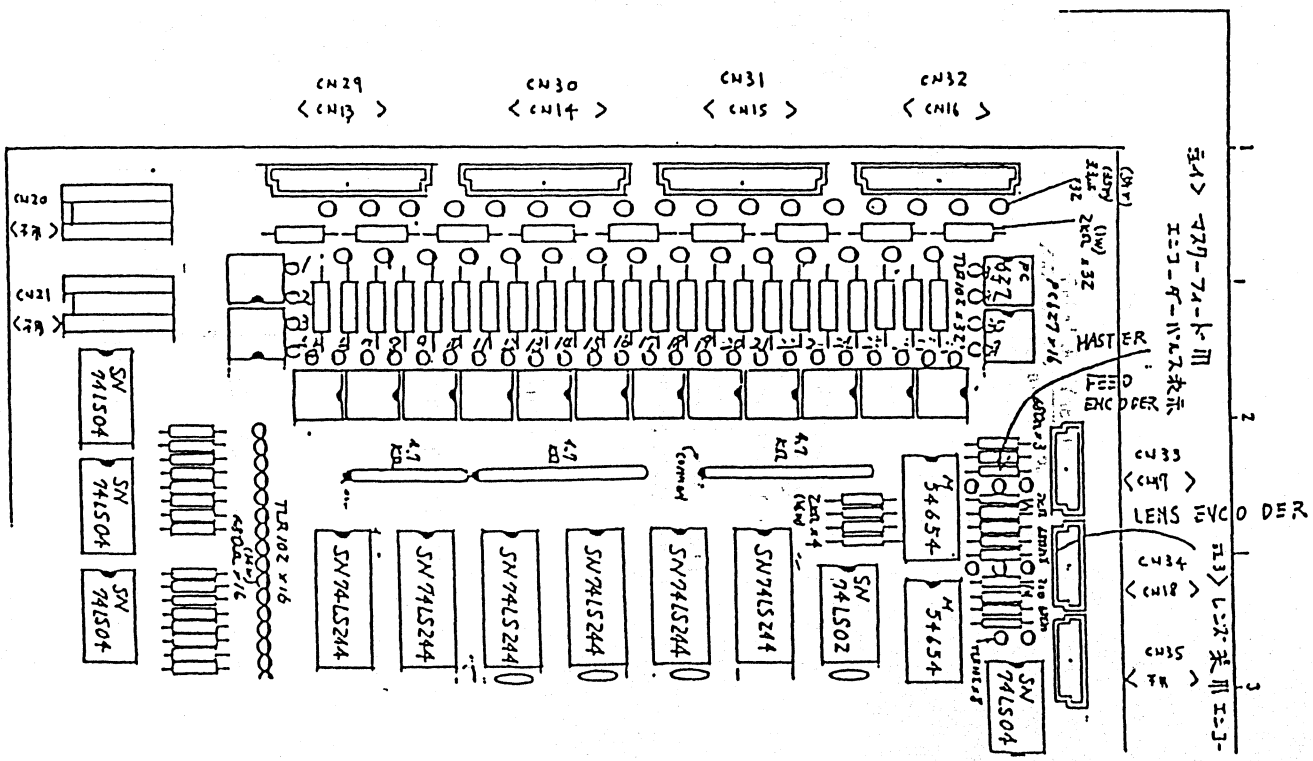

Processor drier motor doesn't operate.
1 100 VAC must be supplied between switchboard terminal UL9 and XL9.
2. UL4 and XL9 as well as XL4 and must be connected with jumper wires.
Is the OPTION motor attached?
YES
OPTION circuitry
NO
3 Care must be taken, as safety switch LS13 and the jamming signal affect the processor motor.
Is processor motor operation switch TS1 set to AUTO or MANUAL?
AUTO
PM1
To page 80
MANUAL
From page 80
PM2
Is processor motor IM fuse F9 or F10 blown?
YES
Replace 3-A fuse F9 and/or F10.
NO
Are there 100 VAC across terminal XL11 (2nd) and UL12 (1st) of processor motor connector J56
NO
Are there 100 VAC across processor terminal UL12 and XL11?
YES
Faulty contact for XL11 or UL12 between J56 and the terminal
YES 100 VAC
NO
Either the motor or the capacitor for the motor is faulty
Replace with a new one
Or the contact for connector J56 is faulty
Faulty circuit for XL11 or UL12 which connect processor terminals and switchboard terminals
Do a continuity check with a tester.
Or the contact for XL11 or UL12 for connector J50 is faulty.
OR
Are there 100 VAC across switchboard terminal UL11 and X10 ?
YES
Faulty contact for X11 or U12 between the fuse holder and the terminal board.
NO
Faulty switch TS1
Or the contact for XL10 or UL11 (5th) of connector J69



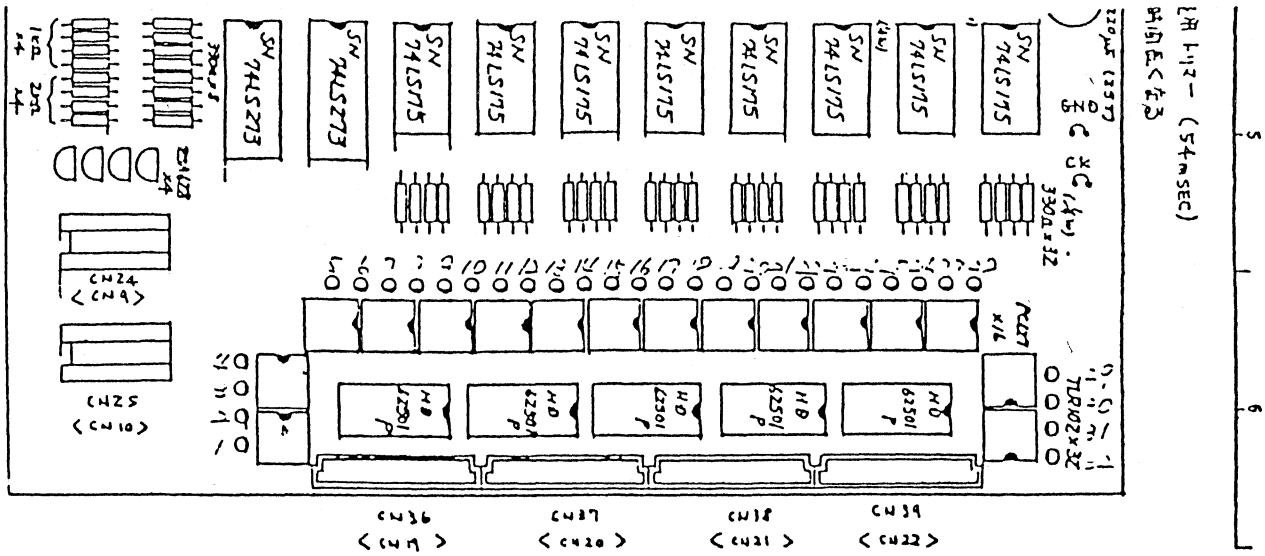
INPUT PCB LED

1.
2
3 DRYER ON
4
5.
6
7
8 RESET SW
9 MANUAL CUT SWITCH
10.
11
12. AUTO/MANU
13.
14.
15.
16. VACUUM START (MANU)
17. VACUUM START (OFF)
18. VACUUM
19. MULTI EXPOSURE
20. EXP START SW
21. FEED LEMGTH VALUE LED FOR MASTER

1 CUTTER O. P
2. CUTTER REVERSE
3 FEED MOTOR STOP CHECK
4. MASTER SET COUNT DOWN
5. MASTER END
6. LENS O. P
7. NAIN BODY SAFETY SW
8 MASTER SET OK
9. STOPPER O. P
10. STOPPER S. P
11.
12. MASTER SET SW
13 CHUCK O P
14 CHUCK CH P
15. MASTER CARRIER O. P
16 CHUCK CARRY. P
17 RM2 STOP
18.
19
20. LENS FEED COUNT DOWN
21. EXP. AXIS. DET
22. MASTER JOINT DET
23. RM6 STOP
24.
25 SETTER S. P
26 PROCESS SAFETY SW
27.
28 SETTER O. P
29 MASTER EJECT
30.
31.
32.



I/O PCB LED LAMP OUTPUT



1 MASTER FEED BRAKE
2
3 MASTER FEED CLUTCH
4 MASTER FEED MOTOR
5 CHUCK PUMP
6 CHUCK MOTOR CCW
7. CHUCK VALVE
8 CHUCK MOTOR CW
9 LENS <
10 LENS >
11 CHUTTER
12 LIGHT
13
14 BUZZER
15
16.
17. DRYER HEATER
18. DRYER FAN
19 PROCESSOR HEATER
20 PROCESSOR MOTOR
21 SETTER MOTOR
22
23
24 MASTER OUT MOTOR
25 MASTER CARRIER <
26 MASTER CARRIER >
27 STOPPER MOTOR
28
29
30
31
32 VACUUM PUMP VALVE

POWER ON

POWER ON RESET

(POWER ON RESET CONTENTS)

1. ALL PILOT LAMPS OFF	Ry23
2. ALL DRYER HEATERS OFF	Ry34
3. ALL DRYER FANS OFF	Ry34
4. PROCESSOR MOTOR OFF (IN)	Ry1
5. SETTER MOTOR OFF (RM4)	Ry22
6. MASTER OUT MOTOR OFF (RM6)	Ry6
7. CUTTER MOTOR OFF (RM3)	Ry7
8. EXPOSURE LIGHTS OFF	Ry16
9. LENS BOARD DRIVE MOTOR OFF (RM5)	Ry17, Ry18 ◁ · ▷
10. VACUUM COPY PUMP AND VALVE OFF	Ry20
11. MASTER FEED MOTOR OFF (RM1)	Ry3
12. MASTER CARRY MOTOR OFF (RM2)	Ry10 · Ry11 ◁ · ▷
13. STOPPER MOTOR OFF (RM8)	Ry14
14. CHUCK MOTOR OFF (RM7)	Ry8 . Ry37
15. CHUCK VACUUM PUMP AND VALVE OFF	Ry9 · Ry21

(MOVE TO ORIGINAL POSITION)

1. CHUCK	Ry25, LS12
2. STOPPER	LS25
3. SETTER	LS15
4. MASTER CARRIER	LS7

A

(SUB CONTROL PANEL G1)

C

MANUAL ← AUTO / MANUAL TS5 → AUTO

LS1 MASTER LOADED? LOADED → MASTER END PL ON → BUZZER SOUNDS Ry19

NONE

LS14 CAMERA SAFTY SW ON? OFF

ON

(STOP SW) STOP SW ON? PB7 OFF

(SUB CONTROL PANEL(3)) ON

Ry20 1. VACUUM COPY PUMP AND VALVE OFF
Ry3, Ry10, Ry11 2. MASTER FEED MOTOR OFF (RM1) 3. MASTER CARRY MOTOR OFF (RM2)
Ry14 4. STOPPER MOTOR OFF (RM8)
Ry8, Ry37 5. CHUCK MOTOR OFF (RM7)
Ry21 6. CHUCK VACUUM PUMP AND
Ry9 VALVE OFF
Ry22 7. SETTER MOTOR OFF (RM4)
Ry6 8. MASTER OUT MOTOR OFF (RM6)
Ry7 9. CUTTER MOTOR OFF (RM3)
Ry16 10. EXPOSURE LIGHTS OFF
Ry17 11. LENS BOARD DRIVE MOTOR
Ry18 OFF (RM5)

CAMERA ALL PILOT LAMPS OFF

5

OFF MASTER END DETECT LS ON? LS1 ON

OFF MASTER SET COUNT START LS ON? LS2 ON

START OK PL OFF

NO 1. CAMERA SAFTY SW ON? LS14
2. MASTER SET OK LS ON? LS6
3. MASTER SET BUTTON ON? PB6
YES

LOADING A MASTER ROLL

MASTER FEED Ry3

FED TO CUTTING PLANE? NO

MASTER FEED MOTOR OFF (RM1) Ry3

1

1

CHECK MASTER LENGTH

NO METRIC 600㎜ ~ 1060㎜? YES ·I· INCH 23.5" ~ 42.0"

LENGTH CHECK PL ON

(START OK CONDITIONS)

1. CHUCK ORIGINAL POSITION?	Ry25, LS12
2. MASTER CARRY ORIGINAL POSITION?	LS7
3. STOPPER ORIGINAL POSITION?	LS25
4. SETTER ORIGINAL POSITION?	LS15
5. CUTTER ORIGINAL POSITION?	LS27
6. CAMERA SAFTY SW ON?	LS14
7. VACUUM COPY PUMP AND VALVE ON?	Ry20

6

NO YES

MASTER JAM IN PROCESSOR?

YES NORMAL CONDITION

15

AUTO START MEMORY IN MASTER JAM DETECTION? YES NONE

START OK PL ON

VACUUM COPY PUMP AND VALVE ON IF C-VACUUM SW ON CONDITION Ry20

START BUTTON DEPRESSED? PB5 NO DEPRESSED

VACUUM COPY PUMP AND VALVE ON IF C-VACUUM SW AUTO CONDITION Ry20

1. PROCESSOR MOTOR ON Ry1
2. DRYER HEATERS AND FANS ON Ry23, Ry34

START OK PL OFF

MASTER IS FED BY THE LENGTH AS SET ON MASTER LENGTH SWITCHES

8

MASTER FEED PL ON

1. CHUCK PUMP ON Ry21
2. CHUCK MOTOR OFF Ry8, Ry37

MASTER JAM SENSOR SS31 ON? Ry36 OFF ON

12

LENS BOARD DRIVE ◁ MOTOR OFF Ry17

AUTO START MEMORY OR IR MASTER SEAM DETECTION? YES NONE

MASTER FEED PL FLASHES

SEAM DETECTED LS3 SEAM NONE

1. MASTER DRIVE MOTOR OFF Ry3
2. VACUUM COPY PUMP AND VALVE OFF Ry20
3. CHUCK VACUUM PUMP OFF Ry21

BUZZER SOUNDS Ry19

MASTER END? LS1 END NO

MASTER END PL ON

AN EXPOSURE CAN BE MADE? CANNOT MADE

AUTO START MEMORY SET

SET 600㎜ (23.6") MASTER FEED DATA

14

MASTER FEED Ry3

NOT YET

MASTER FED ACCORDING TO MASTER LENGTH SW?

YES

20

AN EXPOSURE CAN BE MADE NO EXPOSURE B

21

EXPOSURED

2

2

MASTER FEED FINISH Ry3

END MASTER END? LS1 NO

MASTER CUTTING Ry7, 26

MASTER FEED P.L OFF

POSITION P.L ON

7

LS30 Ry9 Ry29 1. STOPPER IS MOVED TO STOP POSITION 2. CHUCK VALVE ON 3. CHUCK IS MOVED TO SUCTION POSITION [MASTER IS CARRIED TO OPTICAL AXIS]

Ry13 CHUCK IS MOVED TO CARRY POSITION

LS25 STOPPER ORIGINAL POSITION? ORIGINAL POSITION

NO 1. MASTER FEED MOTOR ON Ry3
2. MASTER CARRY MOTOR ◁ ON Ry10

LS10 OPTICAL AXIS DETECT? NO YES

1. MASTER CARRY MOTOR ◁ OFF Ry10
2. MASTER FEED MOTOR OFF Ry3
3. CHUCK IS MOVED TO SUCTION POSITION Ry29
4. CHUCK VALVE OFF Ry21

Ry13 Ry29 1. CHUCK MOVE TO CARRY POSITION 2. SETTER IS MOVE TO PRESS POSITION [MASTER HOLD]

NO LENS BOARD ORIGINAL POSITION? LS21 ORIGINAL POSITION

OFF C-VACUUM SW AUTO OR MANU? ADDITIONAL 1ST COPY BOARD +24 ONLY LS26 ON

MULTI EXPOSURE SW? TS11 NORMAL

POSITION PL OFF

EXPOSURE P.L ON

LENS BOARD ◁ MOTOR ON AND EXPOSURE LIGHTS ON Ry17, Ry16 [EXPOSURE]

SLIP LENS BOARD SLIP? NO

EXPOSURE FINISH? NO YES

1. LENSBOARD ◁ MOTOR OFF Ry17
2. EXPOSURE LIGHTS OFF Ry16

EXPOSURE P.L OFF

LENS BOAD ▷ MOTOR OFF Ry18 [LENS BOARD MOVE TO ORIGINAL POSITION]

3

3

MULTI EXPOSURE SW? TS11 NORMAL

START OK P.L ON

PB5 START BUTTON DEPRESSED? NO DEPRESSED

START OK P.L OFF

STOPPER MOVE TO ORIGINAL POSITION LS25

POSITION PL OFF

MASTER CARRY PL ON

LS25 Ry9 Ry29 1. STOPPER IS MOVE TO NONE STOP POSITION 2. CHUCK VALVE ON 3. CHUCK IS MOVED TO SUCTION POSITION [MASTER CARRY TO POSITION]

LS15 Ry13 1. SETTER MOVE TO ORIGINAL POSITION 2. CHUCK MOVE TO CARRY POSITION

10

CARRY MOVEMENTS? ABNORMAL

NORMAL

ORIGINAL POSITION STOPPER ORIGINAL POSITION? NO

MASTER CARRY MOTOR ◁ ON Ry10

MASTER FEED MOTOR ON Ry3

LS13 1. PROCESSOR SAFTY SW ON? 2. JAM IN THE PROCESSOR? SW OFF OR JAM

NORMAL

PROCESSOR ENTRANCE LS 5 ON? ON OFF

Ry10 1. MASTER CARRY MOTOR ◁ ON Ry6 2. MASTER OUT MOTOR ON

Ry35 CARRY SAFTY LS 11 (LEFT SIDE) ON? ON OFF

CAMERA EXIT LS4 ON? OFF ON

[CHUCK IS MOVED TO ORIGINAL POSITION] [CARRY IS MOVED TO ORIGINAL POSITION]

1. CHUCK VACUUM PUMP AND VALVE OFF Ry9, 21
2. MASTER CARRY MOTOR ◁ OFF Ry10
3. CHUCK IS MOVED TO ORIGINAL POSITION Ry25

MASTER CARRY MOTOR ▷ ON Ry11

CHUCK VACUUM PUMP AND VALVE OFF Ry9, 21

LS 5 ON? WITH IN 43 SEC YES NO

LS 4 OFF AFTER 9SEC NO YES

<PROCESSOR ENTRANCE>

LS 5 ON? OFF ON

<CAMERA EXIT>

LS 4 ON? OFF ON

LS 5 ON? OFF ON

MASTER CARRY PL FLASHES

MASTER CARRY PL OFF

1. MASTER FEED MOTOR OFF Ry3
2. MASTER OUT MOTOR OFF Ry6

A

<WAIT FUNCTION>

1. MASTER CARRY MOTOR ◁ OFF Ry10
2. MASTER FEED MOTOR OFF Ry3
3. MASTER OUT MOTOR OFF Ry6
4. LENS BOARD DRIVE MOTOR OFF Ry17, 18
5. CHUCK VACUUM PUMP AND VALVE ON Ry9, 21

START OK P.L FLASHES

MASTER CARRY P.L FLASHES

<RESTART FUNCTION>

START BUTTON DEPRESSED? NONE PB5 DEPRESSED

1. PROCESSOR MOTOR ON Ry1
2. DRYER HEATERS AND FANS ON Ry23, 34

START OK PL AND MASTER CARRY PL FLASHES CLEAR

MASTER OUT MOTOR ON Ry6

MASTER CARRY P.L ON

CHUCK VACUM PUMP AND VALVE OFF Ry9, 21

B

LS1 MASTER END? LOADED END A

MASTER CUTTING Ry7, 26

LENS BOARD ◁ MOTOR OFF Ry17

LENS BOARD ▷ MOTOR ON Ry18

MASTER OUT MOTOR ON Ry6

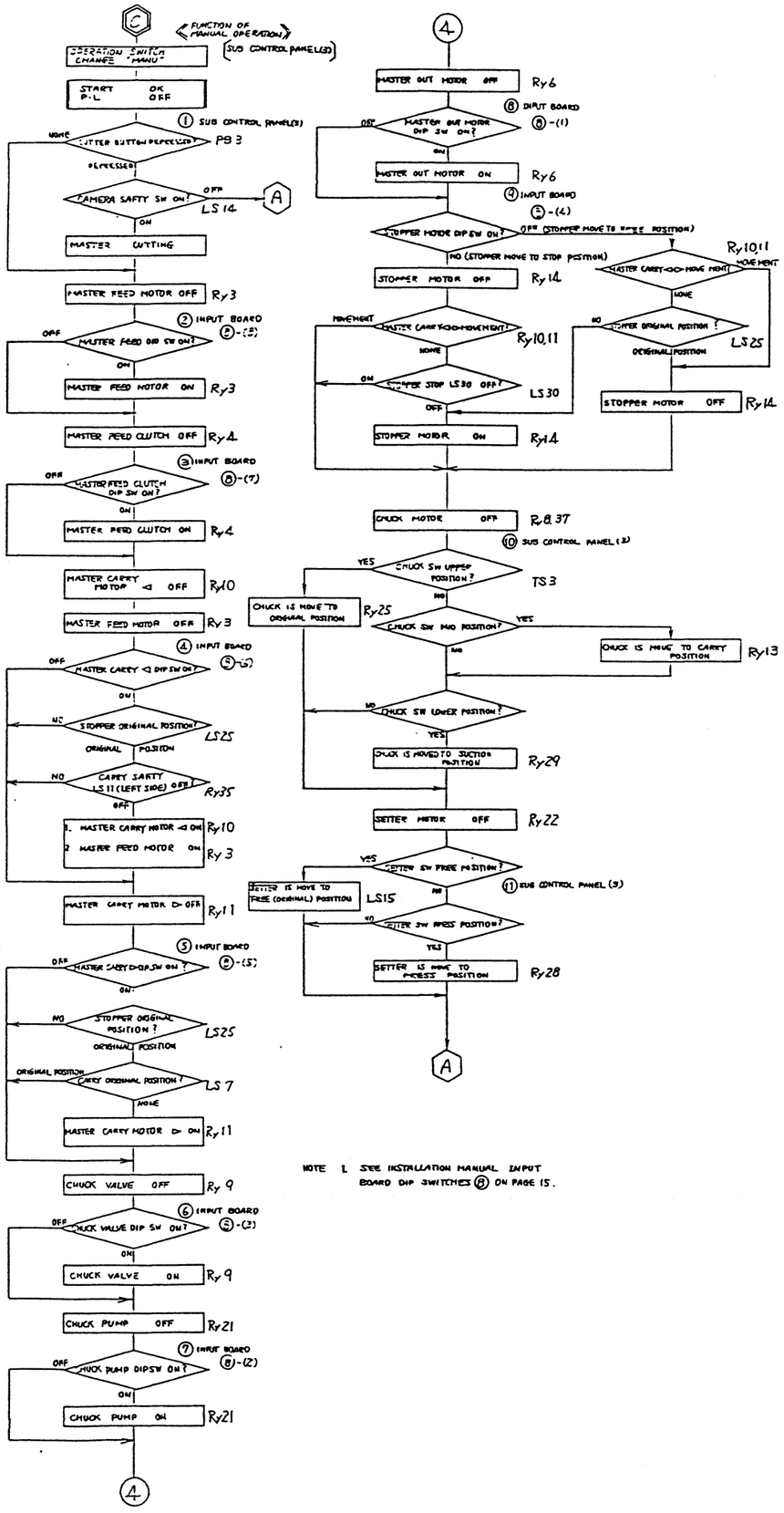
MASTER FEED P.L OFF

1. MASTER CARRY MOTOR ◁▷ OFF Ry10, Ry11
2. CHUCK MOTOR OFF Ry8, Ry37
3. CHUCK VACUUM PUMP AND VALVE OFF Ry9, Ry21
4. STOPPER MOTOR OFF Ry14.

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN	TITLE
DRAWING	SUMMARY FLOWCHART
CHECKED	
APPROVED	
DATE	JULY 18 '84
MODEL	CP-800-S ID NO. HCR 21845

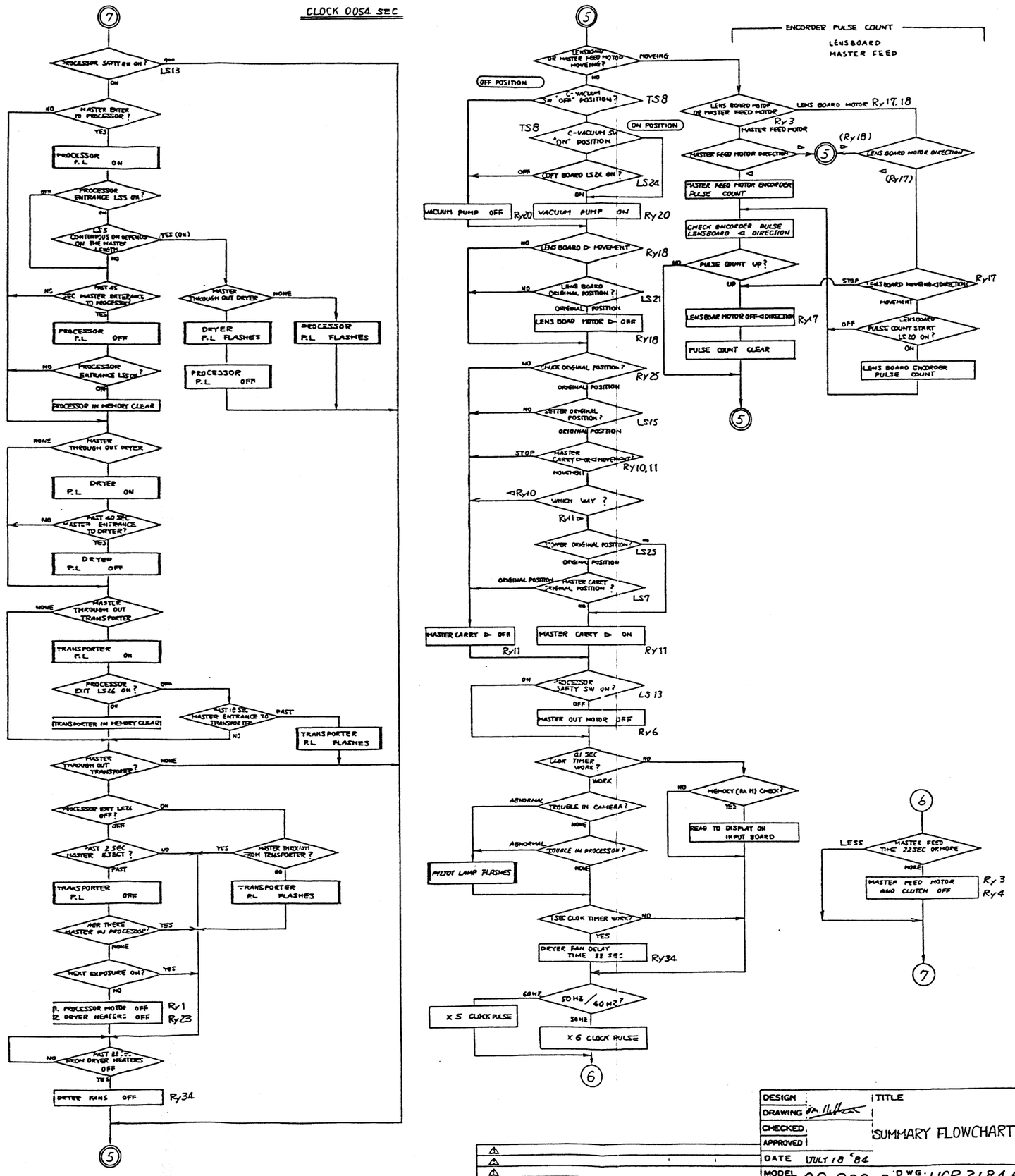
DAINIPPON SCREEN MFG CO LTD



NOTE 1. SEE INSTALLATION MANUAL INPUT BOARD DIP SWITCHES ⑧ ON PAGE 15.

INTERRUPT FUNCTION

CLOCK 0.05 4 SEC



SYM	REVISION	DATE	APPROVED
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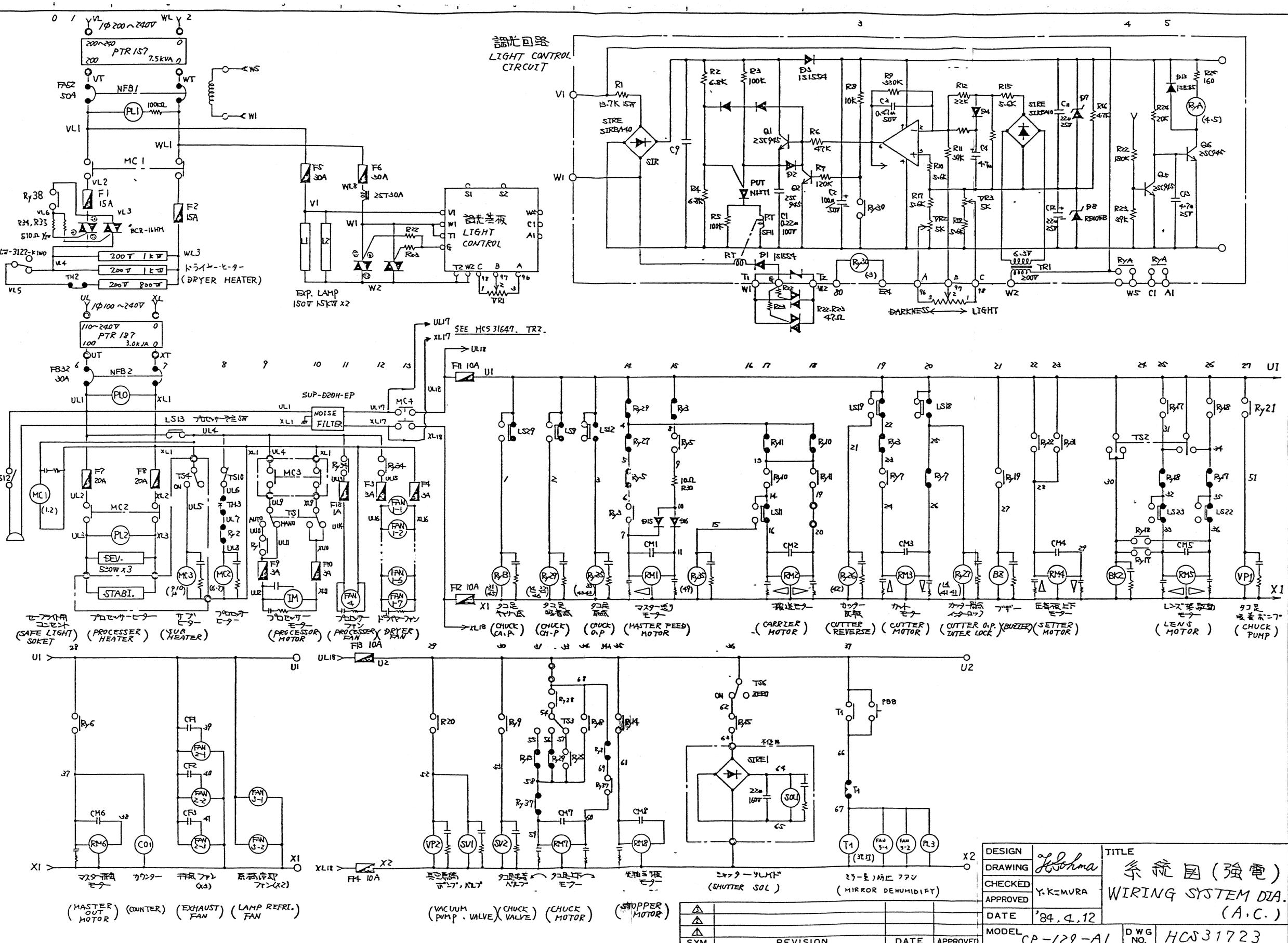
DESIGN	TITLE
DRAWING	SUMMARY FLOWCHART (II)
CHECKED	
APPROVED	
DATE	JULY 18 '84
MODEL	CP-800-S DWG. NO. HCR21846

DWG NO. HCS 31723

調光回路 LIGHT CONTROL CIRCUIT



SYM	REVISION	DATE	APPROVED
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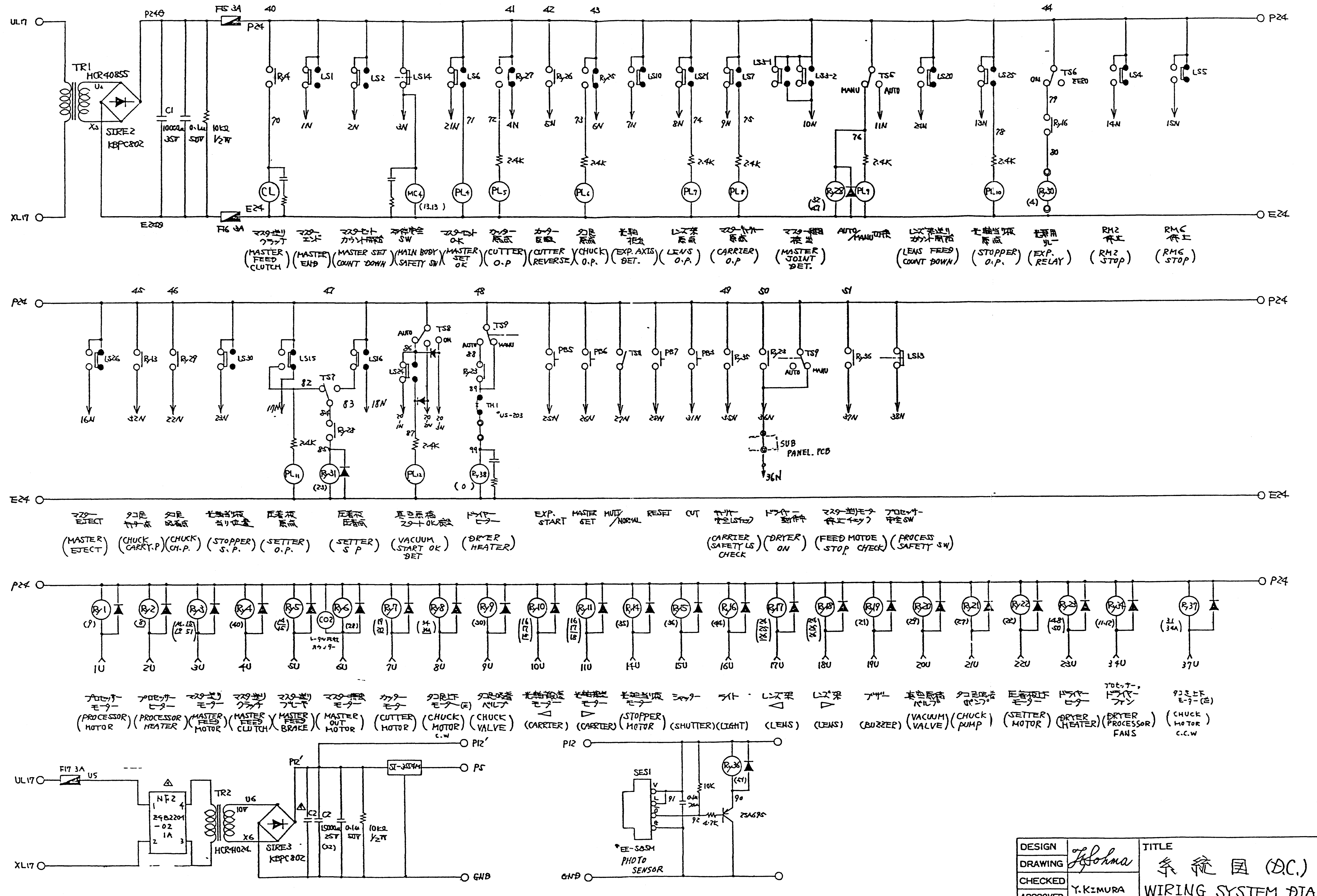
DESIGN	H.Ishima	TITLE	系統図（強電）
DRAWING			WIRING SYSTEM DIA. (A.C.)
CHECKED	Y.KIMURA		
APPROVED			
DATE	'84.4.12		
MODEL	CP-129-A1	D WG NO.	HCS31723



SYM	REVISION	DATE	APPROVED
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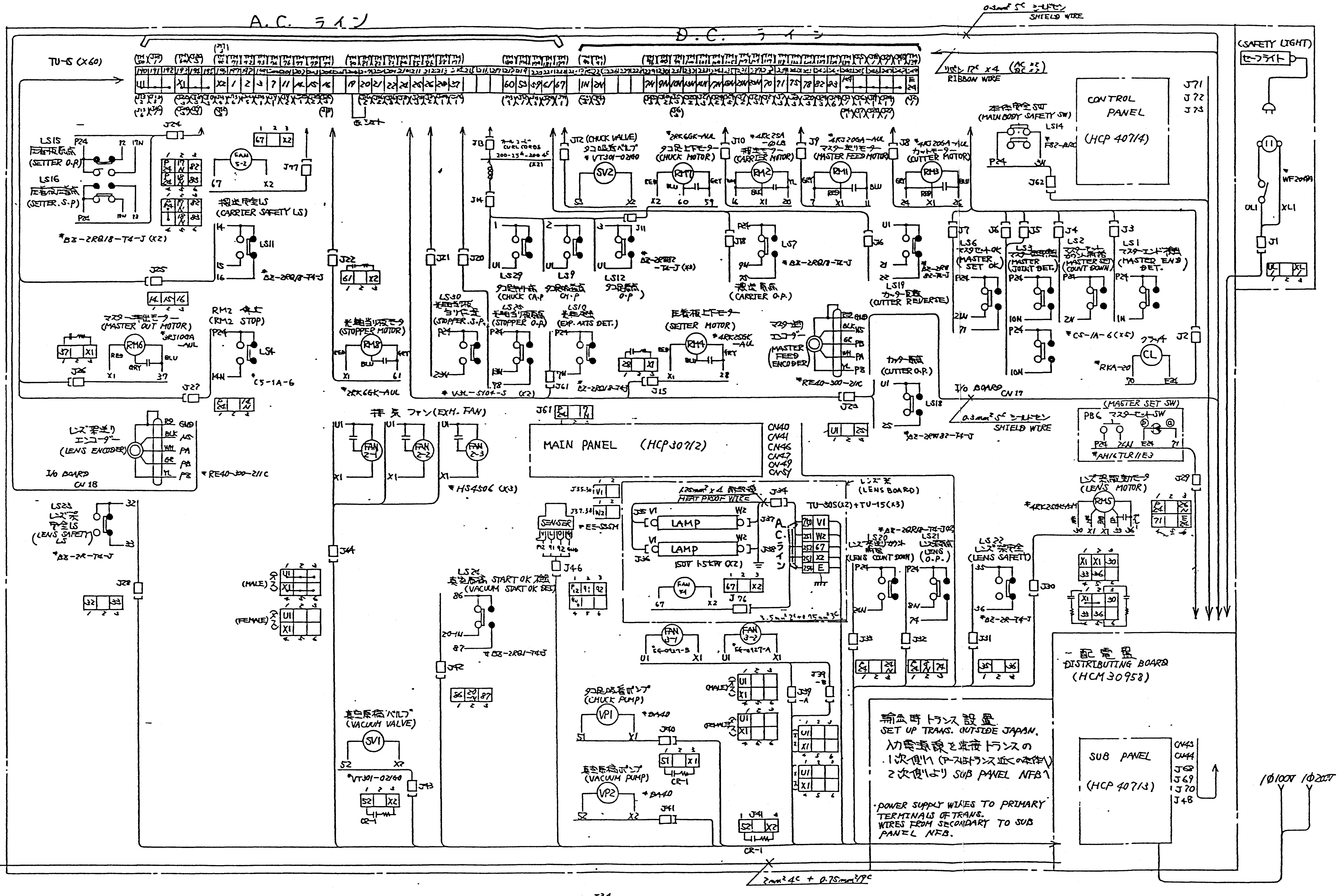
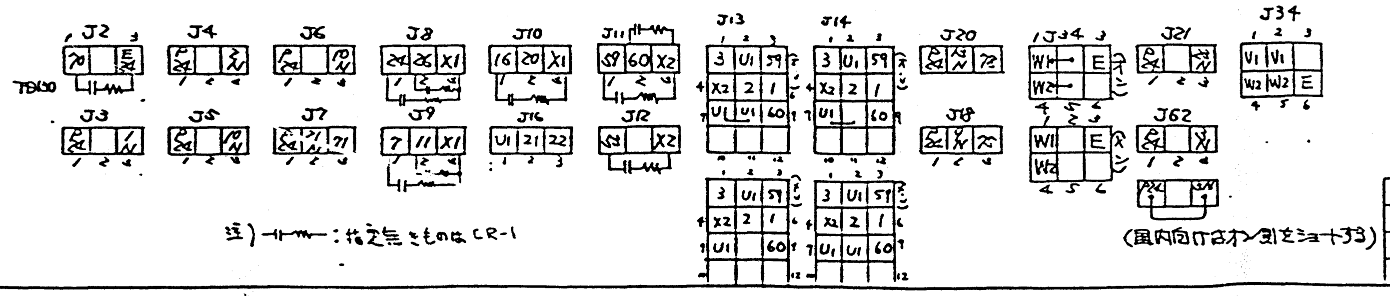
△			
△	NF・CONDENSOR ADDED 83032-2986～	MAR 23 '84	HATTORI

DESIGN	T. Sohma	TITLE	系統図 (D.C.) WIRING SYSTEM DIA
DRAWING			
CHECKED	Y. KIMURA		
APPROVED			
DATE	'83.10.13		
MODEL	CP-129-A1	DWG NO.	HCS31647

DAINIPPON SCREEN MFG. CO. LTD.

DWG NO. HCZ 31153





注 1). 指定なき線は 0.5mm² を使用のこと.
2). A.C. ライン と D.C. ライン は区別して結束し、同じダクトの中には入れないこと.

SYM	REVISION	DATE	APPROVED
△			
△			
△			

DESIGN	H. Sohma	TITLE 本体配線図 CONNECTION DIA MAIN BODY
DRAWING		
CHECKED	Y. KIMURA	
APPROVED		
DATE	'84.1.26	
MODEL	CP-129-A1	DWG NO. HCZ 31153

DAINIPPON SCREEN MFG. CO. LTD

5

HCM 30958

- TM1 ~ TM2 TU-30 (×2)
- TM3 ~ TM15 TU-30S (×13)
- TM16 ~ TM189 TU-15 (×174)

A.C.ライン / 5芯 ケーブル ライン / A.C. ライン

D.C. ライン / A.C. ライン / D.C ライン

*END 40D-14A

*ENB 2018-14A

*MP-066 (RED)

PBB *EB-2061

(MIRROR DEHUMIDIFY)

*KBPC 802 (×2)

NF *SUP-D28H-EP

TR2 HCR 41024

TR1 HCR 40855

MC4 (接点構成図) MC2 MC1

*TD-130

*CR-1

*6-2J-2212T ×3

CHOKE COIL (CC) *2ST 309

POWER BOARD

P-Tr *SI-3554M

PS (表面図)

CPU BOARD

I/O BOARD

POWER BOARD

INPUT BOARD

TO TERMINALS

SEE HCP40713 SUB PANEL / SEE HCP40714 CONTROL PANEL / SEE HCP30720 MAIN PANEL

MASTER FEED ENCODER

LENS ENCODER

FROM TERMINAL

メインパネル (MAIN PANEL) CN5Y SEE HCP30720

リレーシャーシ (RELAY BOARD)

サブSW基板 (SUB SW BOARD) CN40, CN41 SEE HCP30720

調光基板 HCB32902 (裏面図)

LIGHT CONTROL BOARD

リレーシャーシ部配線図 (HCM40910) SEE CONNECTION DIA. RELAY BOARD

SIRE1

*DSIBC-M 22W5/160V

R30 RWH206J10Ω

TOTAL COPIES COUNTER P24 6U *EW7-810 DC24V

T1 *H2A-H 60 MIN AC100V

R32 : 10kΩ
R33 : 4.7kΩ
C4 : 0.1μ ×4

	CN13	CN14	CN15	CN16	CN17	CN18	CN19	CN20	CN21	CN22
1	E24	E24	E24	E24	GND	GND	8U		6U	
2					NS	NS	9U		7U	
3	4N	1N	5N		PA	PA	37U	19U		
4	3N	6N	8N		PB	PB	21U		22U	20U
5	21N	22N		83	PZ	PZ	3U	16U	1U	
6	13N	9N	24N	38N			4U	15U	2U	12U
7	2N	37N	7N	35N				18U	34U	10U
8	23N	32N	10N	16N			5U	17U	23U	11U
9		14N		82			E24	E24	E24	E24
10	26N		15N							

CN4			
1	PIZ	16	PIZ
2	NIZ	15	NIZ
3	NS	14	NS
4	PS	13	PS
5	PS	12	PS
6	GND	11	GND
7	GND	10	GND
8	PIZ	9	PIZ

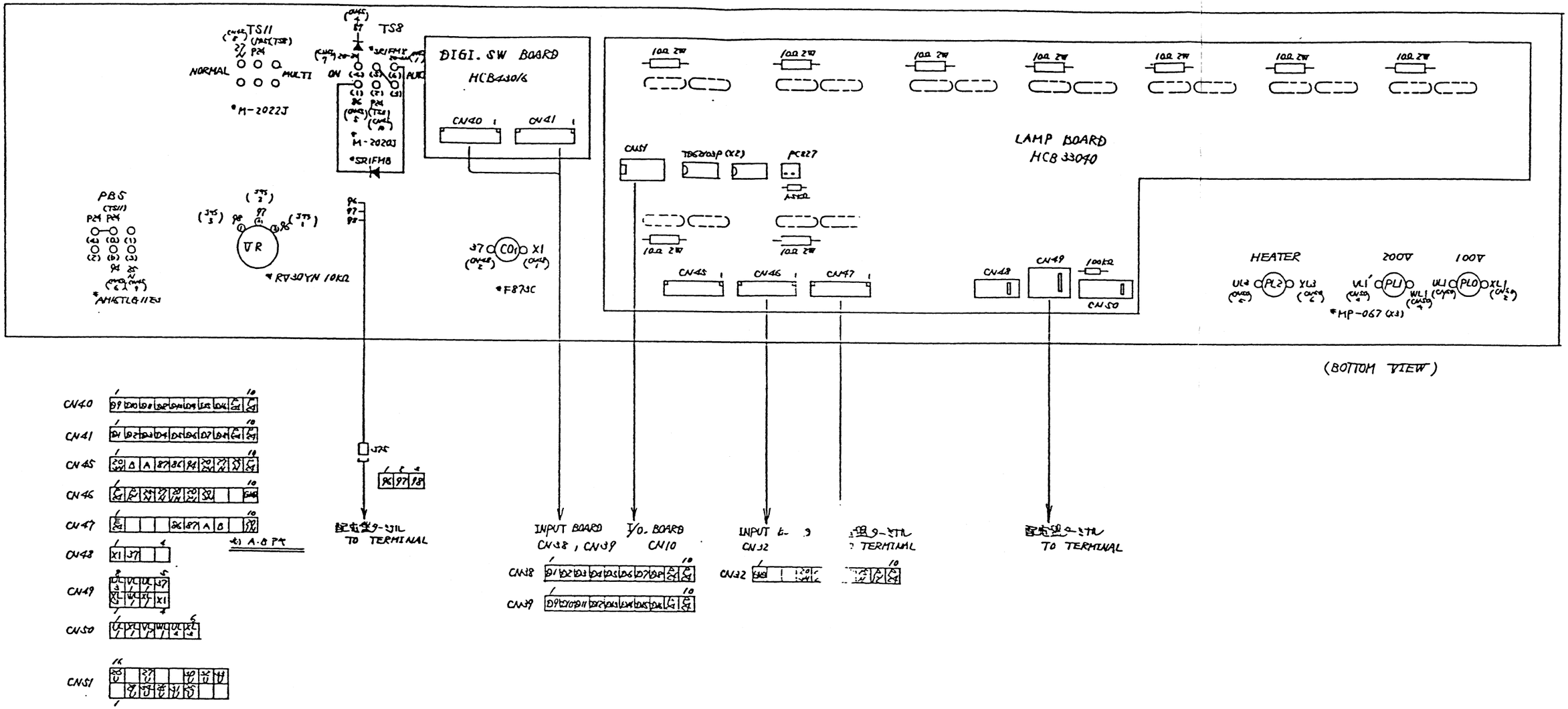
F18	F17 F16 F15	F14 F13 F12 F11	F10 F9 F4 F3	F8 F7	F2 F1	F6 F5
1A	3A	10A	3A	20A	15A	30A

注 1) 指定なき線は0.75㎟を使用のこと
2). ノイズフィルターのアースは、最短距離で直接カメラ本体のアース端子に取り付けること.
3). ノイズフィルターの一次側及び端子板に示す強電ライン(200Vラインを含む)は、ダクトの中を通さないこと.
4). A.C.ラインとD.C.ラインは区別して結束し、同じダクトには入れないこと.

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN	T.Kohma	TITLE	配電盤結線図
DRAWING			CONNECTION DIA.
CHECKED	Y.KIMURA		DISTRIBUTING BOARD
APPROVED			
DATE	'84.4.13		
MODEL	CP-129-A1	D WG NO.	HCM 30958

DAINIPPON SCREEN MFG CO LTD

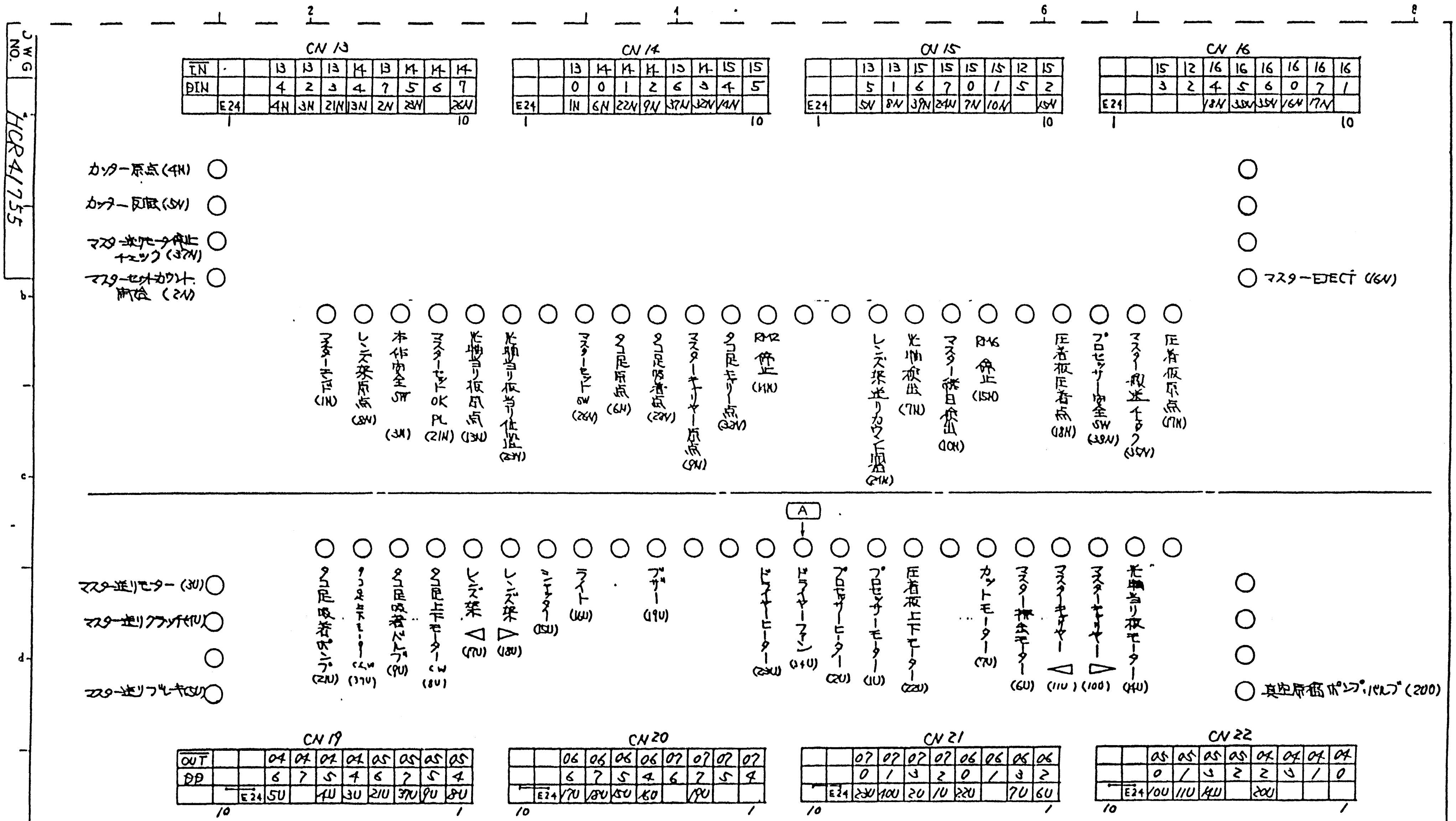


注) 指定なき線は 0.5mm² を使用

NOTE : ALL WIRES ARE 0.5mm² UNLESS OTHERWISE SHOWN.

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN		TITLE: メインパネル結線図
DRAWING		CONNECTION DIA. MAIN PANEL
CHECKED	Y.KIMURA	
APPROVED		
DATE	'83.10.12	
MODEL	CP-129-A1	D.WG NO. HCP30712



調整項目 **SEE. SERVICE MANUAL**

① 基準クロックの確認・調整

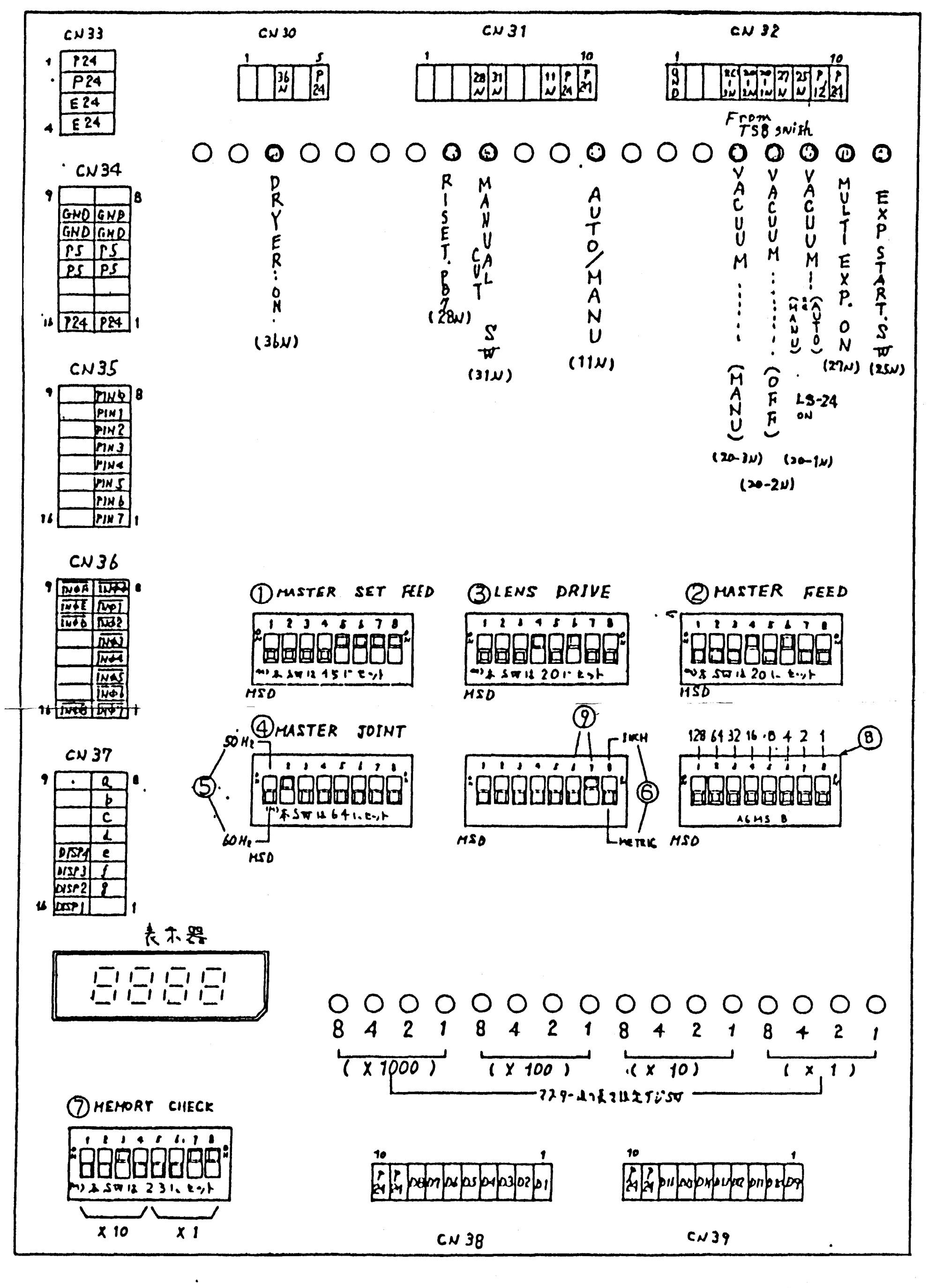
副操作盤(1)の DRYER スイッチを MANU にして下さい。本図のランプ(A)が点灯します。次にスイッチを AUTO にすると 32.4 秒後にランプ(A)が消灯します。ストップウオッチで測定して 32.2～32.6秒に調整して下さい。
調整箇所は I/O PCB 部品配置図 HCR41265 のトリマーを回わして行います。注1> 参照
スタートOKランプ点灯状態で行います。

SYM	REVISION	DATE	APPROVED
△			
△			
△			

DESIGN		TITLE	I/O. PCB. ADJ. 調整要領書 (2) (I/O ボード)
DRAWING			
CHECKED			
APPROVED			
DATE	JAN 25 '84		
MODEL	CP-800-S	DWG NO.	HCR41755

DAINIPPON SCREEN MFG. CO. LTD.

SEE SERVICE MANUAL.



SYM	REVISION	DATE	APPROVED
△			
△			
△			

DESIGN		TITLE	ADJUST (1) INPUT. PCB
DRAWING			
CHECKED	Y. KIMURA		
APPROVED			
DATE	84. 1. 12		
MODEL	CP-129-A1	DWG NO	HCR 31748

DAINIPPON SCREEN MFG CO. LTD.

D W G NO. HCP407N

(BOTTOM VIEW)

CN42 P24 36N
CN43 36N P24
CN44 E24 E24 82 78 73 75 72 76 87 74 (10)
⚠ 17N

INPUT BOARD CN30 ← DC
ターミナル TO TERMINAL ←

J48: 79 88 89 36N

LED BOARD HCB430/9
P24.36N. To TS9
CN42, CN43, CN44
36N
2.4K (x8)
1/4W OR 1/4W RD

*M-2022J TS1 — P. MOTOR
MANU: ULI0 UL9 ULI1 / XLI0 XL9 XLI0 :AUTO

TS2 *M-2028J — LENS
30 UI 30 / 31 UI 34

*M-2022J TS10 — DEV. HEATER
OFF: UL6 UL4 :AUTO

TS6 *M-2022J — EXPOSURE
ZERO: 79 P24 :AUTO / 62 U2

TS9 *M-2022J — DRYER
MANU: 88 P24 89 :AUTO / P24 36N

NFB1 NFB2

BUZZER
Z7 BZ X1
*EA-4211

J68: W1 W5

WL1 VL1 XL1 UL1 — 5.5mm²3C+2mm²/C
W10 W50
WL VL — *EA-52 50A
XL UL — 2mm²3C — *FB-32 30A

1φ100V 1φ200V
UL XL E VL WL
BL WH GR BL WH
BR BL GR/YE BR BL ← VDE COLOR

3.5mm²3C
2.5mm²3C—(VDE)
AWG 12 3C—(UL)
5.5mm²2C+2mm²
4mm²3C—(VDE)
AWG 10 3C—(UL)

J69: UL4 UL6 UL9 / UL10 UL11 XL9 / XL10 UI 30 / 31 34
J70: Z7 WI X1 / U2 W5 62
*CR-1

ターミナル TO TERMINAL ←

AC ターミナル TO TERMINL
J69 J70
ULI UL6 UL9 UL10 UL11 XL9 XL10 UI X1 Z7 30 31 34 WI W5

注) 指定ない線は0.5mm²使用。
AC、DCは区別して結束すること。

NOTE: ALL WIRES ARE 0.5mm² UNLESS OTHERWISE SHOWN.
DISTINGUISH BETWEEN A.C. LINES AND D.C. LINES AND BUNDLE.

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠	治具より変更	84.8.2	HATTORI

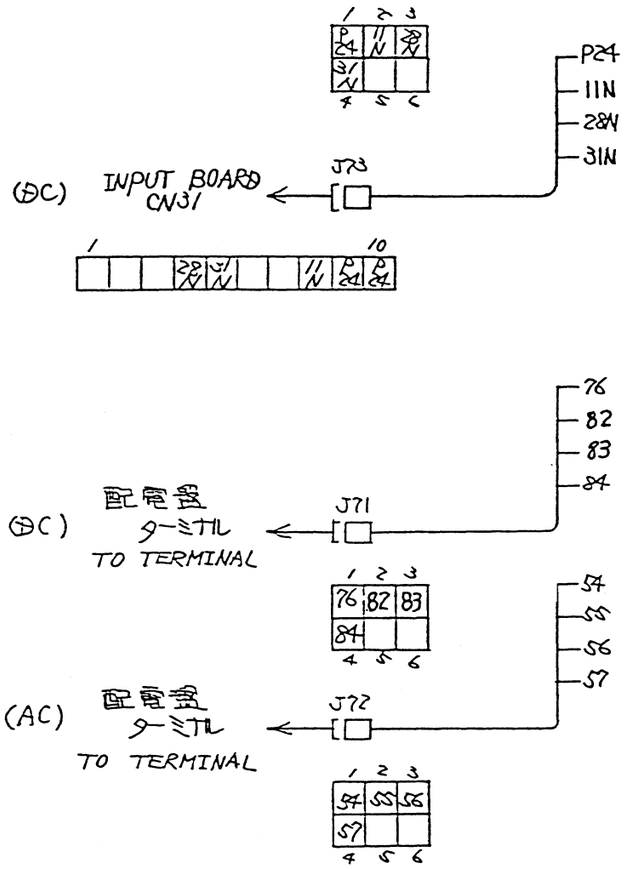
DESIGN	T. Ishima
DRAWING	
CHECKED	Y. KIMURA
APPROVED	
DATE	'83.10.13

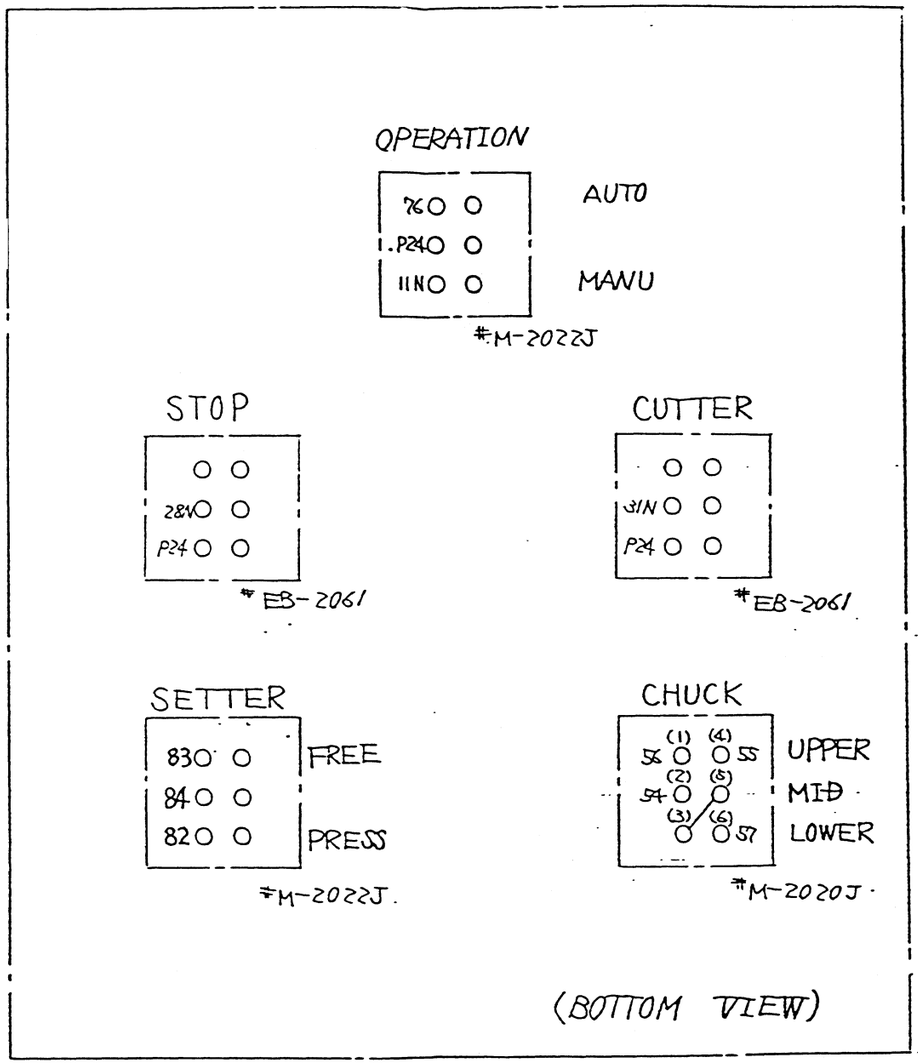
TITLE: サブパネル結線図
CONNECTION DIA.
SUB PANEL

MODEL CP-129-A1 | D W G NO. HCP407N

DAINIPPON SCREEN MFG. CO. LTD.

D W G NO. HCP40714





注) 指定なき線は 0.5mm² 使用。
AC、DC は区別して結束すること。

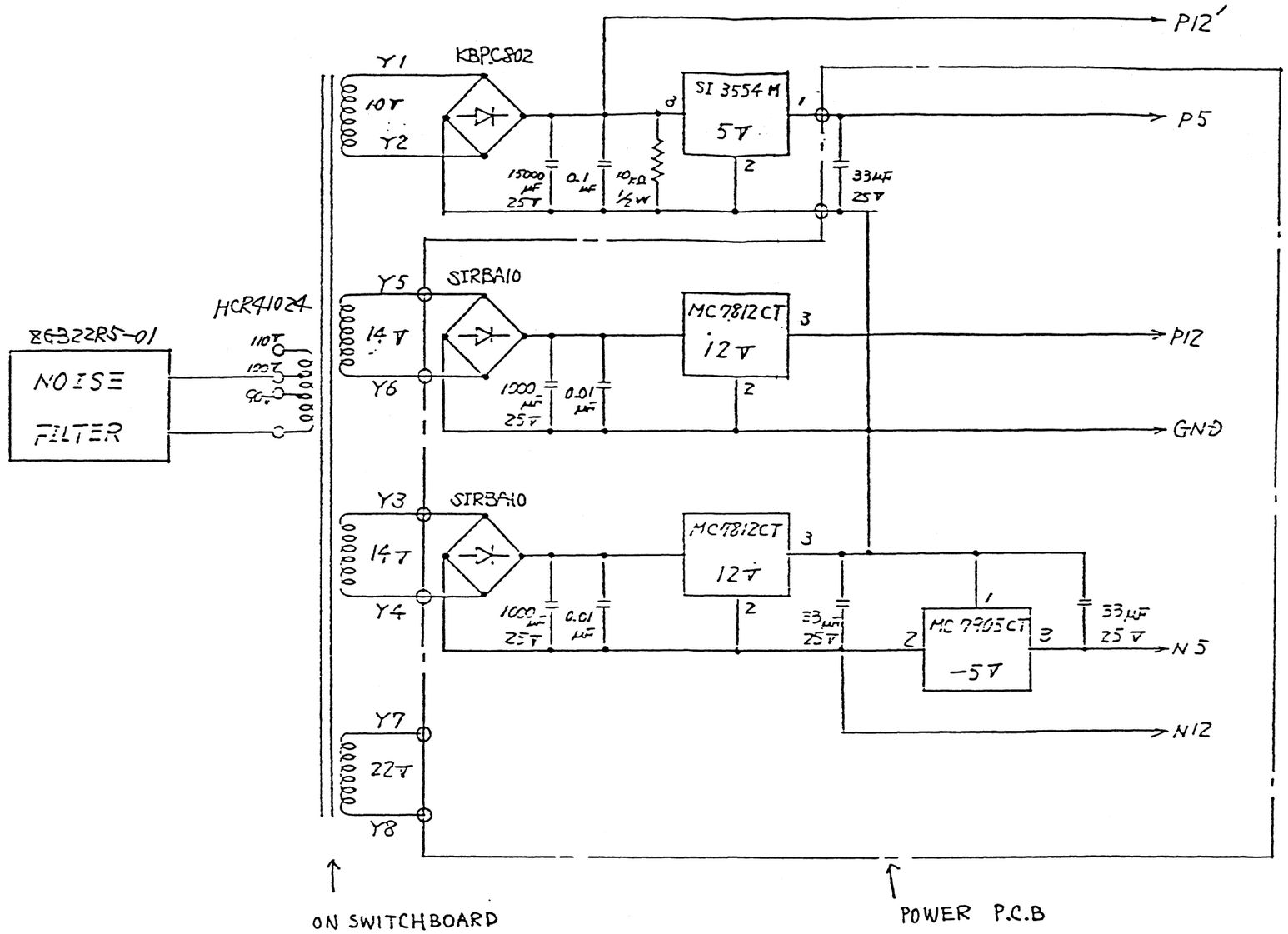
NOTE: ALL WIRES ARE 0.5mm² UNLESS OTHERWISE SHOWN.
DISTINGUISH BETWEEN A.C. LINES AND D.C. LINES AND BUNDLE.

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN	Y.Kohma	TITLE	コントロールパネル結線図
DRAWING			CONNECTION DIA.
CHECKED	Y.KIMURA		CONTROL PANEL
APPROVED			
DATE	'93.10.13		
MODEL	CP-129-A1	D W G NO.	HCP40714

DAINIPPON SCREEN MFG. CO. LTD.

D W G NO. HCS41663



SYM	REVISION	DATE	APPROVED
3			
2			
1			

DESIGN	T. Sohma	TITLE	POWER CIRCUIT (POWER PCB)
DRAWING			
CHECKED			
APPROVED			
DATE	'83.10.27		
MODEL	CP-129-A1	D W G NO.	HCS41663

DAINIPPON SCREEN MFG. CO. LTD.

DWG NO. HCS41543	
1	SN74LS373
2	8085A
3,14	2716
4	SN74LS244
5	SN74LS155
10	SN74LS04
6,19	SN74LS02
5	SN74121
5,16	2114
9	SN74LS00
7	SN74LS123
7,18	SN74LS243
6	SN74LS74

SYM	REVISION	DATE	APPROVED
3			
2			
1			

DESIGN	Y. KIMURA
DRAWING	
CHECKED	
APPROVED	
DATE	82.12.6
MODEL	CP-800-S
DWG NO.	HCS41543

TITLE

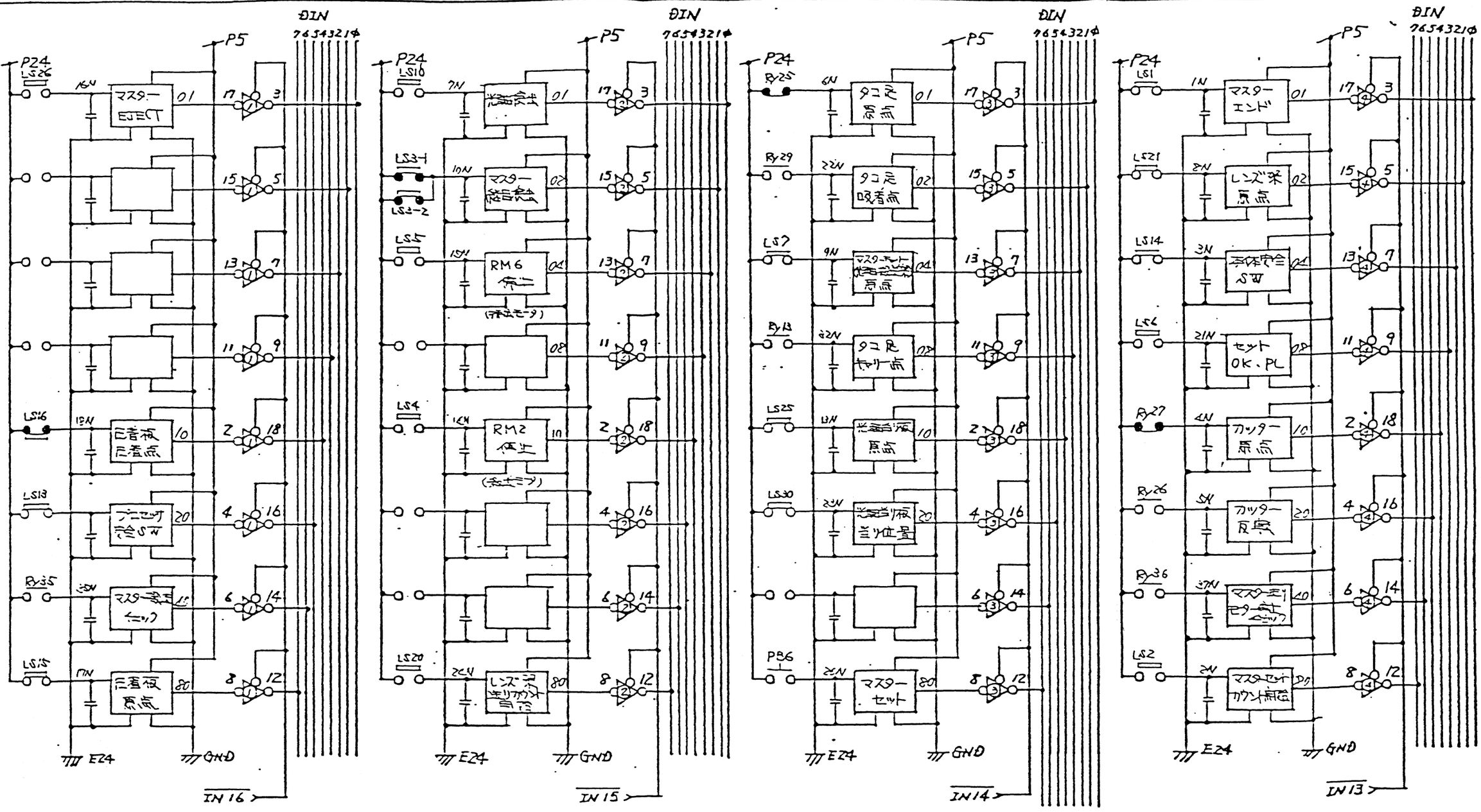
8085 CPU

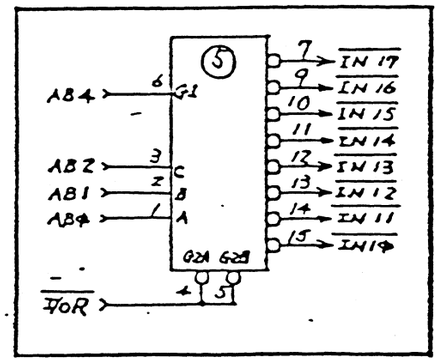
(CPU P.C.B)

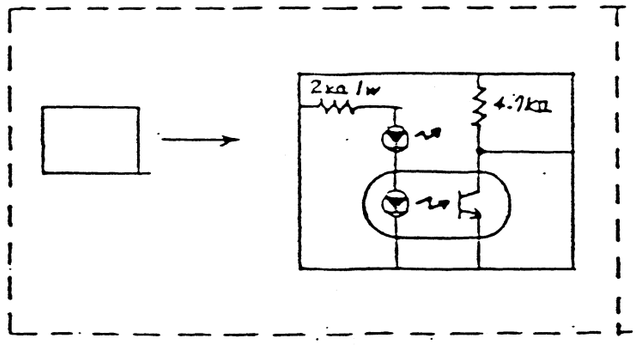
12

DAINIPPON SCREEN MFG. CO. LTD

DWG NO. HCS41648







①	SN74LS244	⑪	PC627
5	5	5	5
④	SN74LS244	⑫	PC627
⑤	SN74LS138		

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN	
DRAWING	
CHECKED	
APPROVED	
DATE	'83.10.13

TITLE: INPUT CIRCUIT (1)

(I/O BOARD)

MODEL CP-129-A1 | DWG NO. HCS41648

DAINIPPON SCREEN MFG. CO. LTD.

DWG NO. HCS41649

PIN 76543210

(spare)

INCH/METRIC

X100 X10 X1

⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

I/O P.C.B

⑥ SN74LS54 ⑲~㉓ SN74LS244
⑦ SN74LS240
⑧ SN74LS241
⑰ TC4010BP
⑱ TC4010BP
㉑ SN74LS30

SUB PANEL

MAIN PANEL

CONTROL PANEL

P24

P5

< DB > (HIGH ACT)

< BIN > (LOW ACT)

< PIN > (LOW ACT)

1.5kΩ×8

4.5kΩ×8

4.7kΩ×8

2K 1W

4TK

E24

GND

未使用ポート
(IN09. 0A. 0B. 0C)

SYM	REVISION	DATE	APPROVED
1			
2			
3			

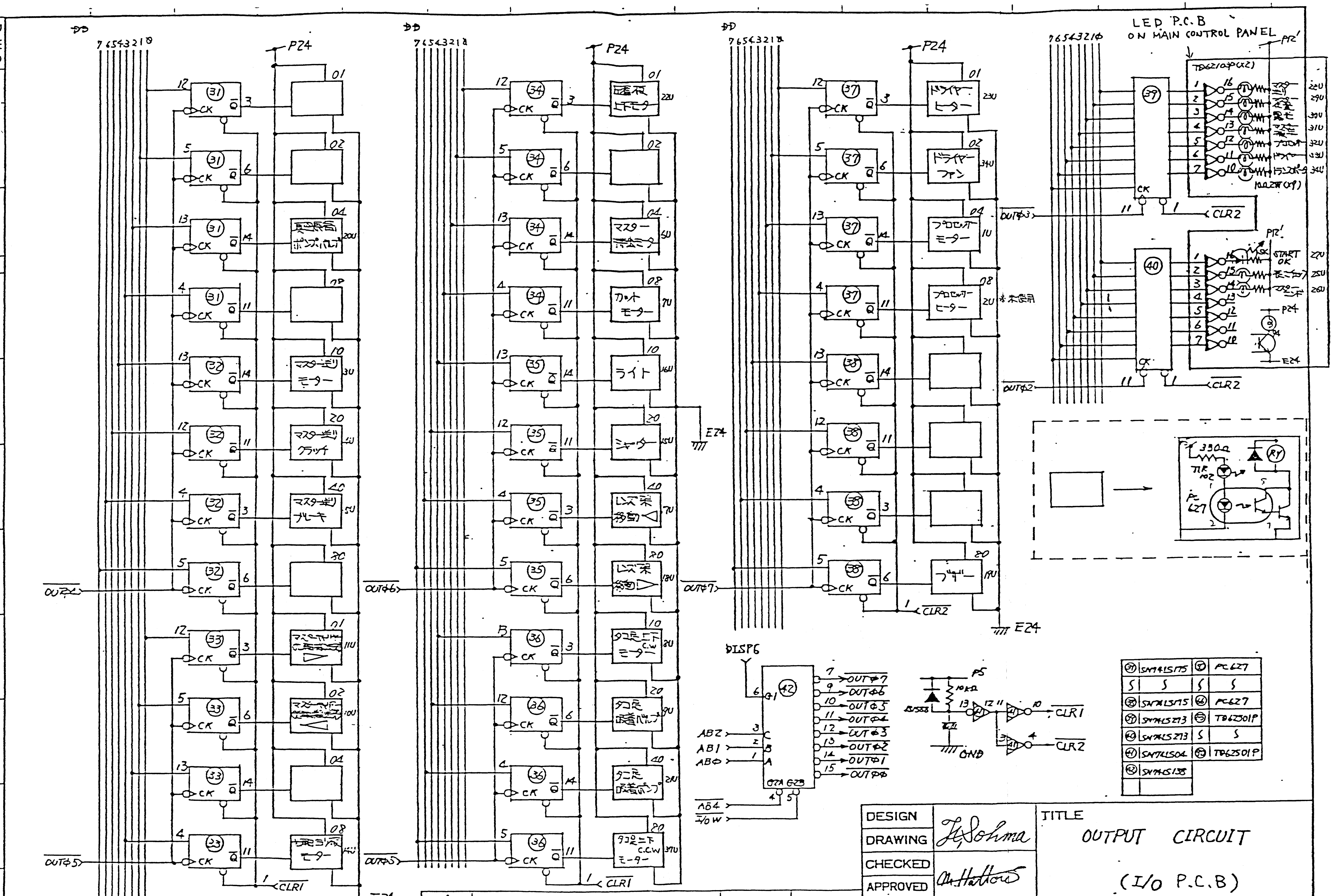
DESIGN	
DRAWING	
CHECKED	
APPROVED	
DATE	'83 10.N

TITLE
INPUT CIRCUIT (2)
(INPUT BOARD)

MODEL CP-129-AL | DWG NO. HCS41649

14

DAINIPPON SCREEN MFG CO.LTD



31	SN74LS175	30	PC627
~	~	~	~
33	SN74LS175	60	PC627
37	SN74LS273	39	TD62501P
40	SN74LS273	~	~
41	SN74LS04	40	TD62501P
42	SN74LS138		

DESIGN / DRAWING	H. Sohma	TITLE	OUTPUT CIRCUIT (I/O P.C.B)
CHECKED / APPROVED	M. Hattori		
DATE	'83.10.13		
MODEL	CP-129-A1	DWG NO.	HCS41650

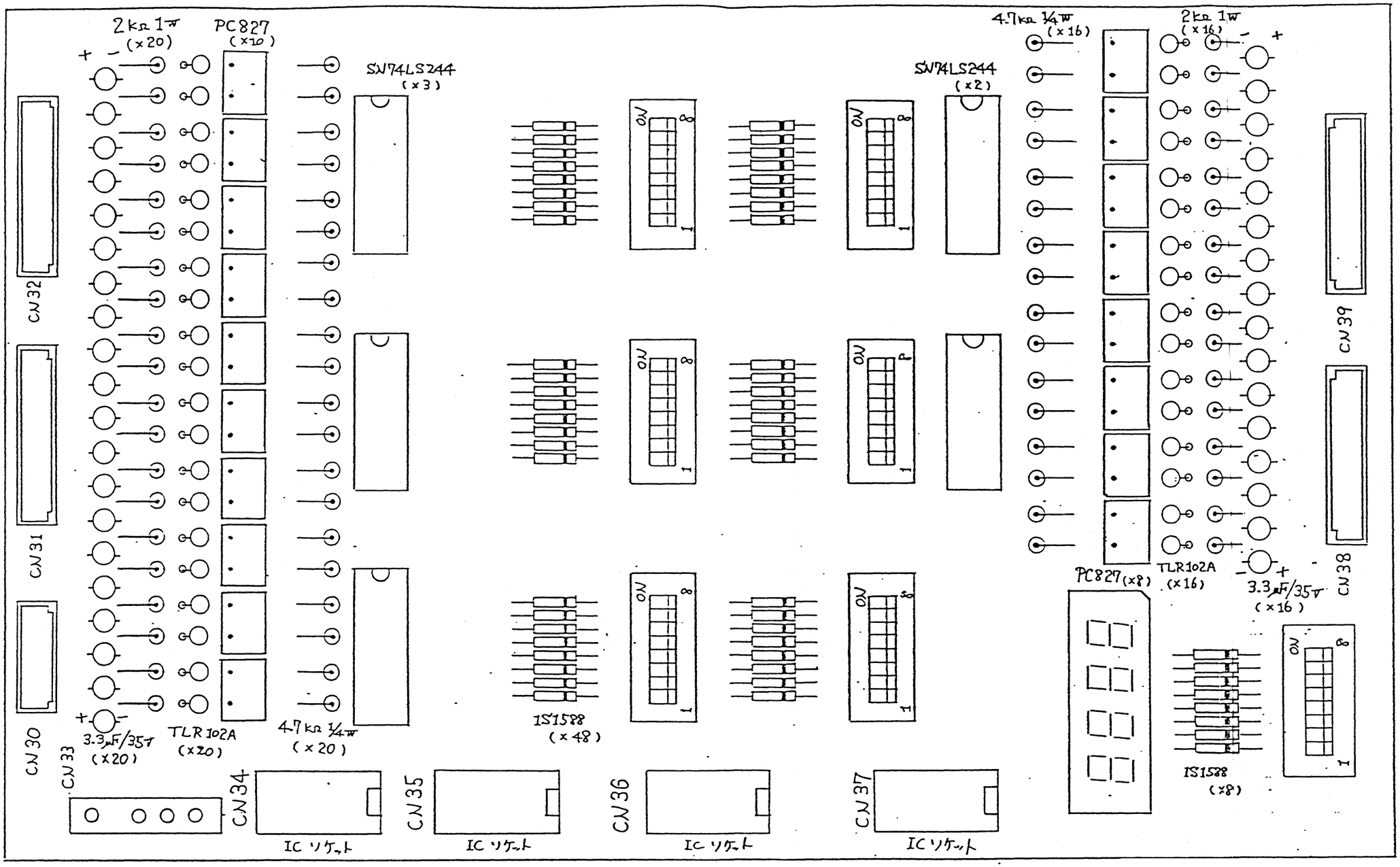
SYM	REVISION	DATE	APPROVED
3			
2			
1			

DWG NO. HCS41650

DAINIPPON SCREEN MFG CO LTD

15

DWG NO. HCR 41644



TLR102A

抵抗 立てて取付ける

SHAコンデンサ

NO.	品名	型番	メーカー	数量
1	IC	SN74LS244	テキサス	5
2	フォトカプラ	PC 827	シャープ	18
3	ダイオード	1S1588		56
4	LEDランプ	TLR102A	東芝	36
5	ディップスイッチ	A6MS-8	OMRON	7
6	抵抗	2kOHM 1W		36
7	抵抗	4.7kOHM 1/4W		36
8	SHAコンデンサ	3.3μF 35V		36
9	数字表示素子	LN543RA	松下	1
10	IC ソケット	16P		4

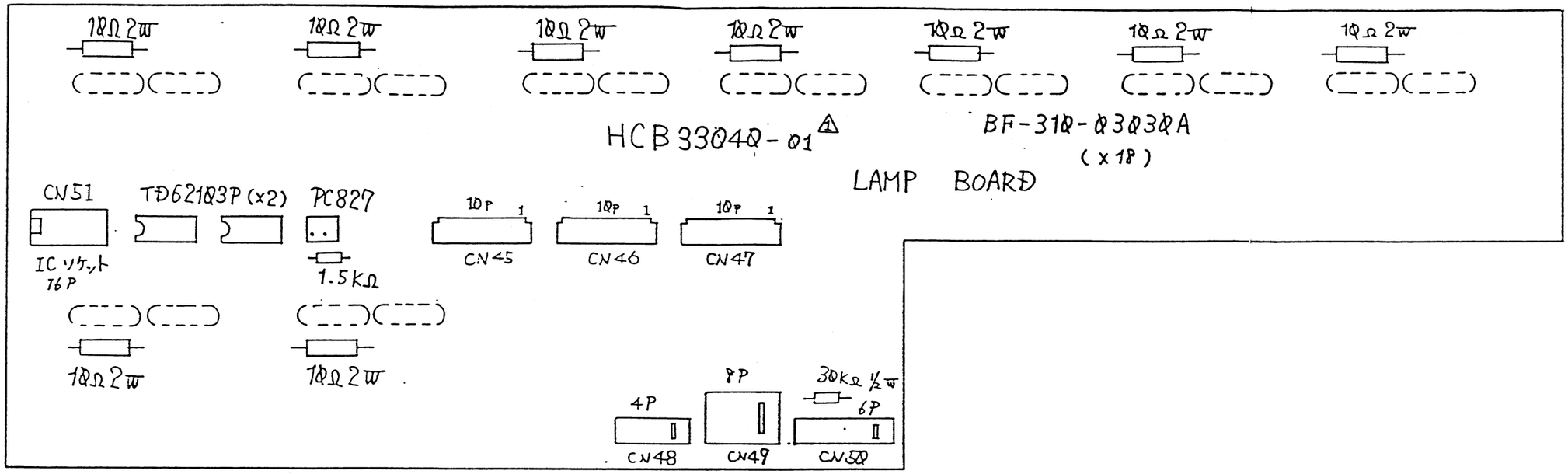
NO.	品名	型番	メーカー	数量
11	コネクター	チューニングフォーク 10P	AMP	4
12	コネクター	チューニングフォーク 5P	AMP	1
13	コネクター	コンボライン 4P	AMP	1
14				
15				
16				
17	プリント基板	HCB3304-01		

SYM	REVISION	DATE	APPROVED
4			
3			
2	HCB3304 → HCB3304-01 83030-2986～	58.12.5	H.HATTORI

DESIGN	Fujiwara	TITLE	INPUT PCB 部品配置図
DRAWING			
CHECKED	Y.KIMURA		
APPROVED			
DATE	83.8.23		
MODEL	CP-129-A1	DWG NO.	HCR41644

DAINIPPON SCREEN MFG. CO. LTD

DWG NO. HCR41700-01



NO.	部品名	型番	数量	メーカー
1	フィラメント球	BF-31Ø-Ø3ØØA	18	スタンレー
2	トランジスタアレイ	TD62103P	2	東芝
3	抵抗	1Ø Ω 2W	9	〃
4	フォトカプラ	PC827	1	シャープ
5	抵抗	1.5 KΩ 1/4W	1	
6	抵抗	3Ø KΩ 1/2W	1	
7	コンポラインコネクター	171141-1 4P	1	AMP
8	コンポラインコネクター	171216-1 6P	1	AMP
9	コンポラインコネクター	171266-1 8P	1	AMP
10	チューニングフォークコネクタ	171279-2 10P	3	AMP
11	IC ソケット	ic3Ø-16Ø3 G4	1	ヤマイチ
12	PCB	HCB3304Ø-Ø1 ⚠1	1	

《注意》

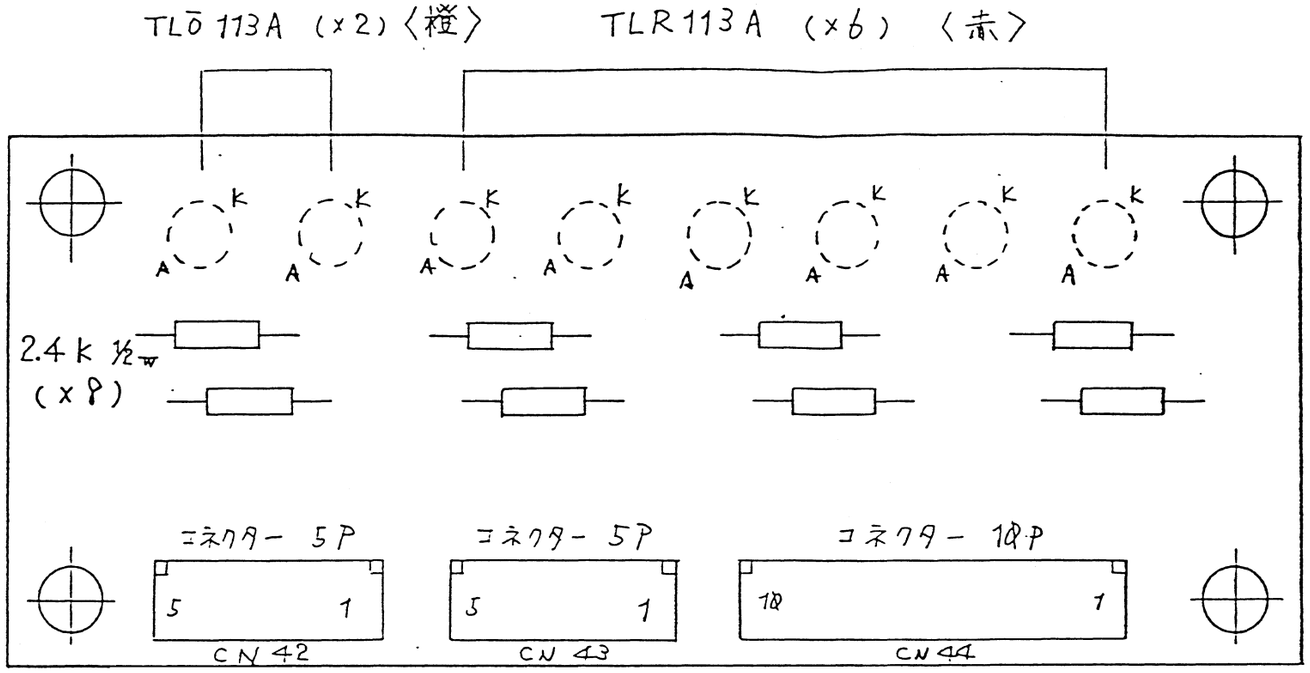
フィラメント球は裏面に基板と接するよう取り付ける.

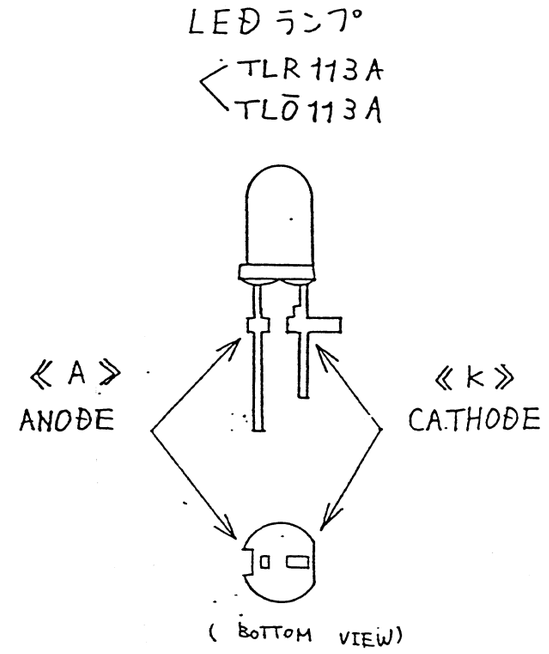
なお、フィラメント球の線は細いので気をつける事

SYM	REVISION	DATE	APPROVED
⚠3			
⚠2			
⚠1	HCB33Ø4Ø → HCB3304Ø-Ø1 83030-2986~	58.12.5	M.HATTORI

DESIGN	A.FUJIWARA	TITLE	MAIN. PANEL. PCB.
DRAWING			
CHECKED	Y.KIMURA		
APPROVED			
DATE	'83.11.04		
MODEL	CP-129-A1	DWG NO.	HCR41700-01

DWG NO. HCR41701

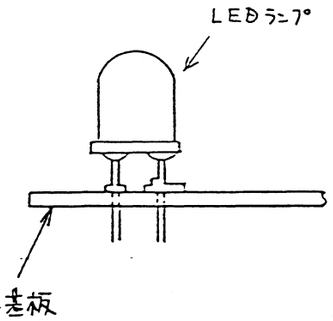




NO.	部品名	型番	数量	メーカー
1	LEDランプ	TLR 113A (赤)	6	東芝
2	LEDランプ	TLŌ 113A (橙)	2	東芝
3	抵抗	2.4 KŌHM ½W	8	
4	チューニングフォークコネクター	171384-2 5P	2	AMP
5	チューニングフォークコネクター	171279-2 10P	1	AMP
6	カラー	TA-387	4	ナトリ
7	ブッシュ	TB-388	4	ナトリ
8	PCB	HCB43819	1	

《注意》

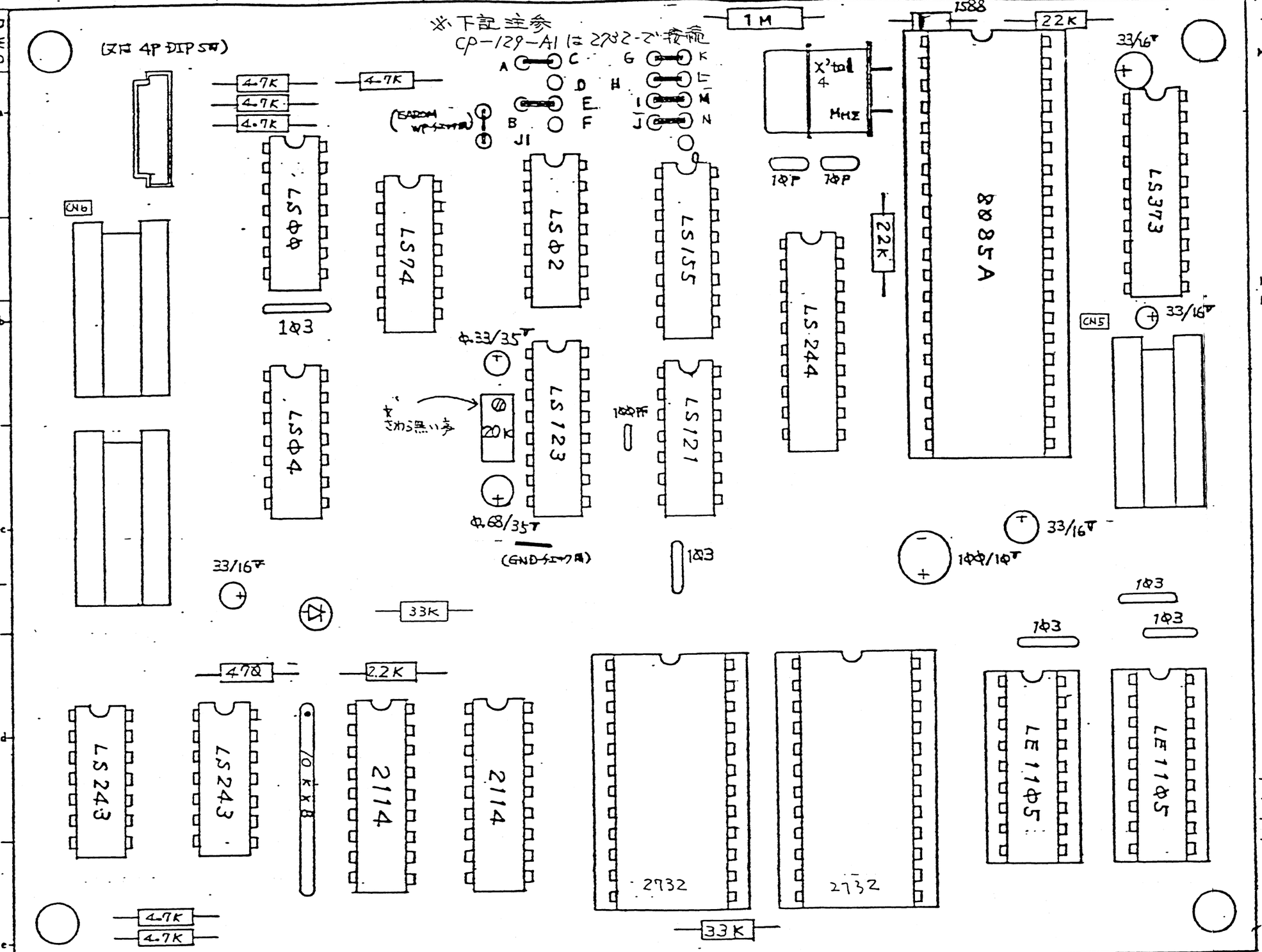
LEDランプは裏面に右図のように取り付ける。



SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN	A.FUJIWARA	TITLE	SUB PANEL PCB. サブパネル LED基板部品配置図 LED LAMP PART ASSY
DRAWING			
CHECKED	Y.KIMURA		
APPROVED			
DATE	'83,11,05		
MODEL	CP-129-A1	D.W.G NO.	HCR41701

DAINIPPON SCREEN MFG. CO. LTD.



No	部番	名称	定格/型名	数量
	1 HCB32824	基板		1.
MOS	2 52Φ9Φ3Φ29	CPU	8085A	1.
MOS	3 52ΦΦ1ΦΦΦ5	TTL	74LSΦΦ	1.
	4 ΦΦ24	〃	Φ2	1.
	5 ΦΦ43	〃	Φ4	1.
	6 1234	〃	123	1.
	7 1554	〃	155	1.
	8 243Φ	〃	243	1.
	9 2444	〃	244	1.
	10 3739	〃	373	1.
	11 1218	〃	121	1.
	12 Φ749	〃	74	1.
MOS	13 52Φ3ΦΦ51Φ	EAROM	1E1105	2
MOS	14 1325	RAM	2114	2
	15 6Φ1Φ51Φ6Φ	ICソケット	40P	1.
	16 Φ36	〃	18P	2
	17 Φ21	〃	16P	3.
	18 Φ41	〃	24P	2
	19 5743Φ2Φ12	LED	EL3AR-1	1.
	20 5ΦΦ2247 19	抵抗	470Ω 1/4W	1.
	21 2229	〃	2.2KΩ 1/4W	1.
	22 4723	〃	4.7KΩ 1/4W	6
	23 2233	〃	22KΩ 1/4W	2.
	24 3335	〃	33KΩ 1/4W	2.
	25 1092	〃	1MΩ 1/2W	1.
	26 524Φ 15883	ダイオード	1S1588	2.
	27 15Φ21ΦΦΦ59	トリマ	TF型 20PF	1.
	28 5Φ1181031	基板ピン	10KΩ 並8	1.
	29 151 111Φ15	電解コン	100μF 10V	1.
	30 1546884	タンタルコン	33μF 16V	4
	31 3381	〃	Φ.33μF 35V	1.
	32 6884		Φ.68μF 35V	1.
	33 Φ431Φ32	セラコン	Φ.01μF 50V	5
	34 1Φ13	〃	100PF 50V	1.
	35 1ΦΦ9	〃	10PF 50V	2
	36 64ΦΦ6ΦΦ42	クリスタル	4.9152MHZ	1.
※2	37 64Φ1152558	ターミナル	5P	1.
※2	38 5513ΦΦΦ11	DIP SW	IA6MS-4	1
※1	39 52Φ3ΦΦΦ11	ROM	2716	2
※1	40 ΦΦΦ31	ROM	2732	1:2

三.1. 使用するROMによって、ジャンパー線は下記の様に接続する。
(本図は 2716 使用時を図示)

	2732	
	J1	J2
	A-C B-E	G-K ユ-M H-L J-N

CP-129-A1 は2732を使用 ※2

チューニングポート コネクタ CP-129-A1

4P DIP SW CP-129

SYM	REVISION	DATE	APPROVED
1			
2			
3			

DESIGN	Y. KIMURA
DRAWING	
CHECKED	
APPROVED	
DATE	82.12.6
MODEL	CP-129-A1 CC-004

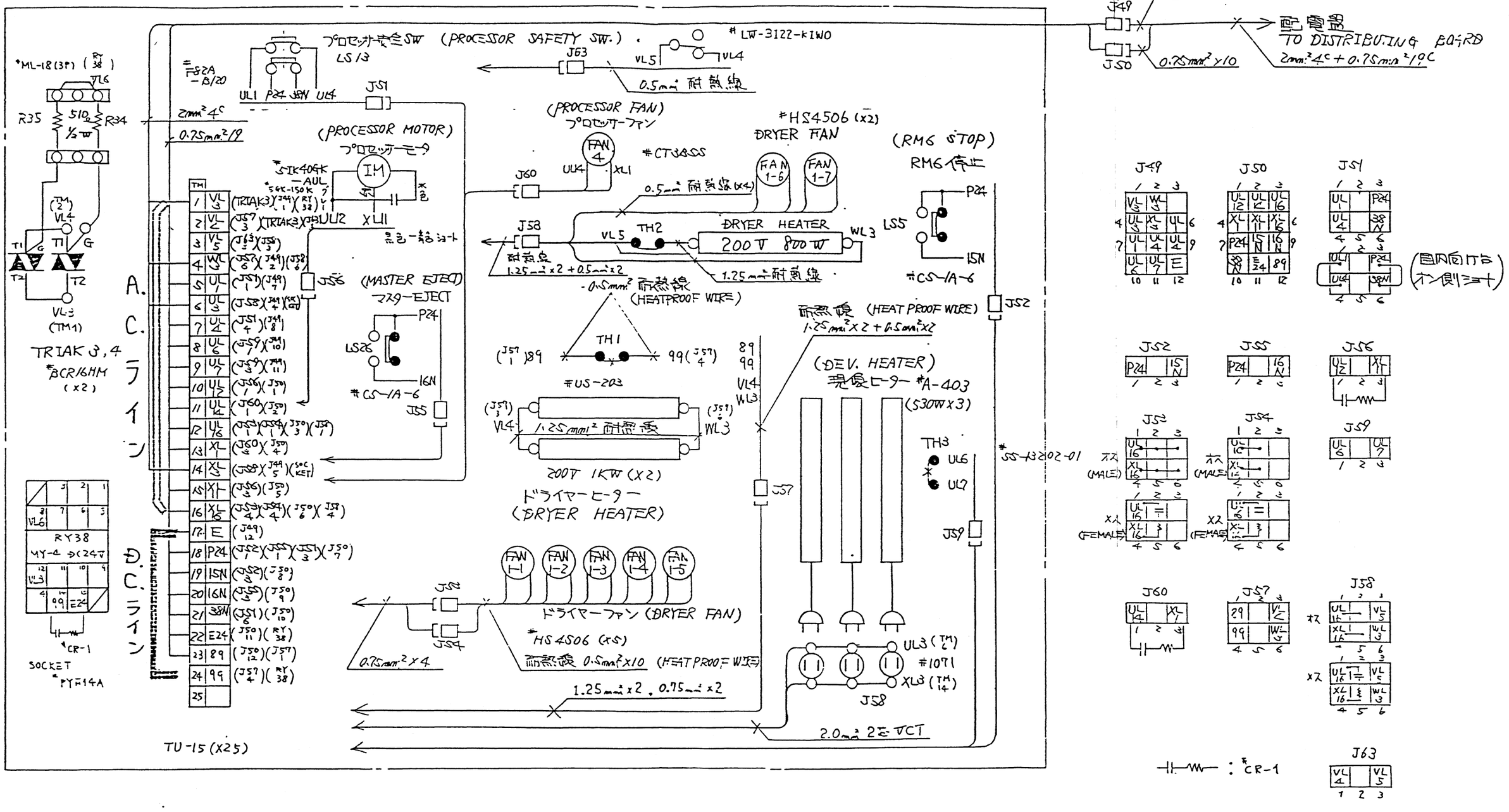
TITLE 8085 CPU PCB

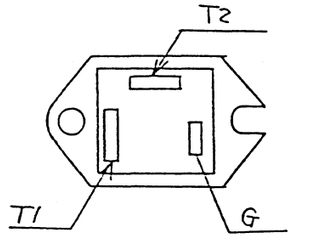
DWG NO. HCR41512

DAINIPPON SCREEN MFG. CO. LTD

D WG NO.

HCZ41177





注

1). 指定なき線は0.5mm²を使用.

2). A.C. ラインと D.C. ラインは区別して結束すること.

NOTE: 1). ALL WIRES ARE 0.5mm² UNLESS OTHERWISE SHOWN.

2). DISTINGUISH BETWEEN AC LINES AND D.C. LINES AND BUNDLE.

SYM	REVISION	DATE	APPROVED
3			
2			
1			

DESIGN		TITLE	プロセッサー部結線図
DRAWING	H.Sohma		CONNECTIO DIA. PROCESSOR
CHECKED	Y.KIMURA		
APPROVED			
DATE	'84, 4, 12		
MODEL	CP-129-A1	DWG NO.	HCZ 41177

DAINIPPON SCREEN MFG. CO. LTD.

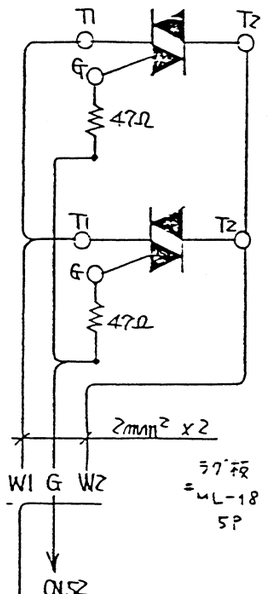
DWG NO. HCM 40910

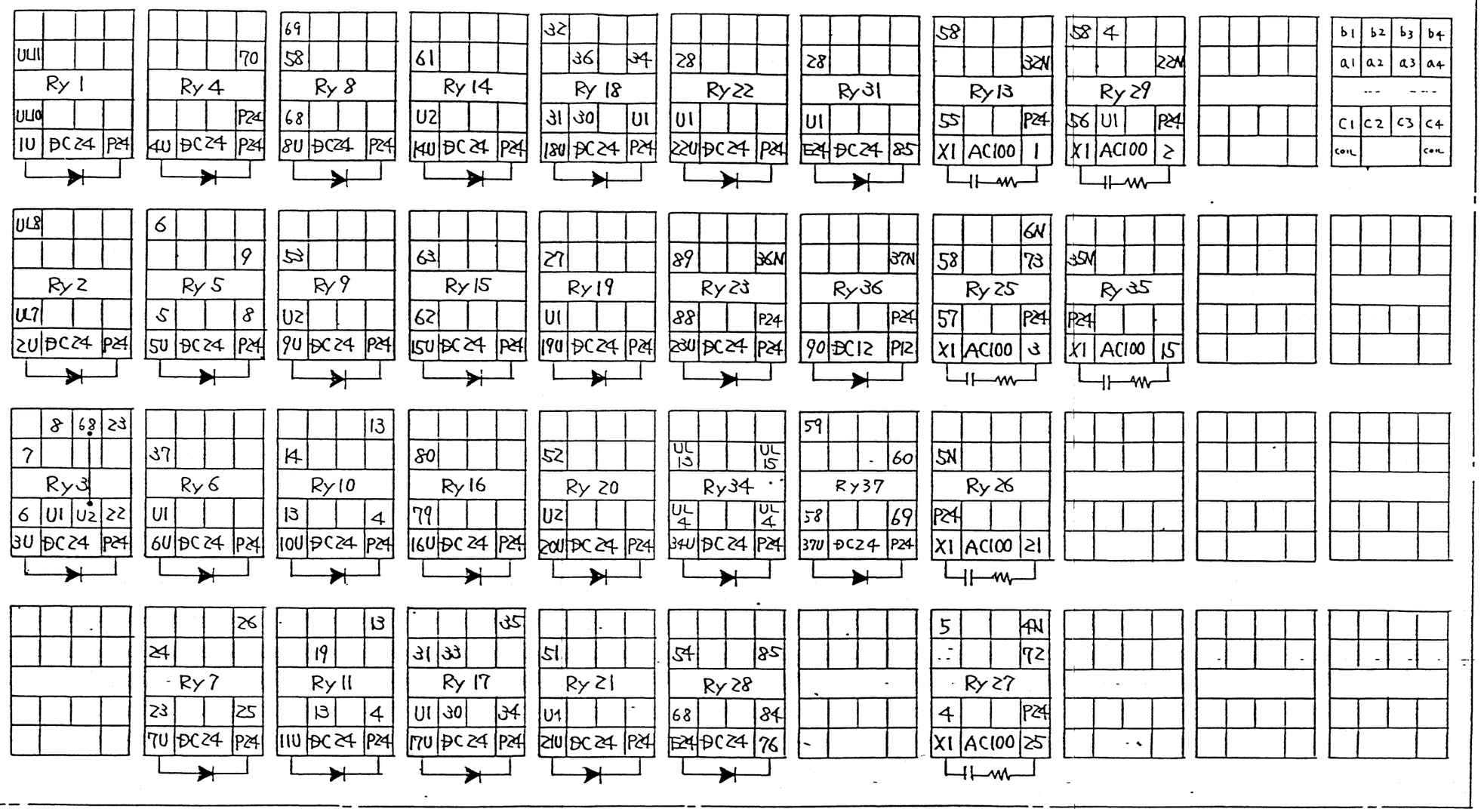
<NOTE>

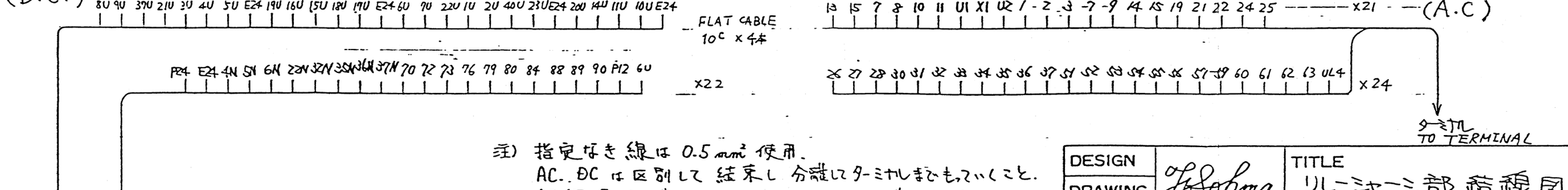
: 1S1585 : CR-1

(BOTTOM VIEW)

TRIAK
≠BCR 2SA-8L(X2)







注) 指定なき線は 0.5 mm² 使用.
AC. DC は区別して結束し分離してターミナルまでもっていくこと.
トライアックからの線は DCラインとは束ねて配線すること.

NOTE. ALL WIRES ARE 0.5mm² UNLESS OTHERWISE SHOWN.
DISTINGUISH BETWEEN AC LINES AND DC LINES AND BUNDLE

SYM	REVISION	DATE	APPROVED
⚠			
⚠			
⚠			

DESIGN	H.Ishima
DRAWING	
CHECKED	Y.KIMURA
APPROVED	
DATE	'83.10.13

TITLE
リレーシャーシ部 結線図
CONNECTION DIA.
(RELAY BOARD)

MODEL CP-129-A1 DWG NO. HCM40910

DAINIPPON SCREEN MFG. CO. LTD