COLOR SPACE FEVER

MAINTENANCE MANUAL

Nintendo

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A. BASIC MAINTENANCE FOR P.C.BOARD

Almost of troubles can be repaired by exchanging an IC. To find out what IC is defective, examine P.C.Boards in the following procedure. At the same time, carefully check for damage of parts, shortcircuiting or breakage of pattern, which may be caused when mounting or dismounting IC.

About half of troubles can be repaired by checking or exchanging CPU Chip and EP-ROM on the CPU P.C.Board or FUSE-ROM on the I/O P.C.Board. If not repaired after that, check other IC's with reference of "B. SYMPTOM OF TROUBLE AND CHECK POINT".

1. CPU P.C.Board

(1)	Give shocks to EP-ROM and CPU Chip one by one with a plastic hammer or the like. If a symptom of the image changes, exchange the device.
(2)	Warm EP-ROM and CPU Chip one by one by a hair dryer. If a symptom of the image changes, exchange the device.
(3)	If the trouble can not be repaired by the above steps, Remove CPU Chip and check IC socket. Exchange CPU Chip with other one.
(4)	Remove EP-ROM and check IC socket. Exchange it with other one. (Check EP-ROM one by one.)

2. I/O P.C.Board

(1)	Give shocks to FUSE-ROM with a plastic hammer or the like. If a symptom of images changes, exchange it.
(2)	Warm FUSE-ROM and, if a symptom of images changes, exchange it.
(3)	Remove FUSE-ROM and check socket. Exchange it with other one.

3. Sound P.C.Board

(1)	Give shocks to CPU Chip, EP-ROM and IC-8 and warm as well as other P.C.Boards. If a symptom of images changes, exchange the device.
(2)	Remove them one by one and check IC socket. Exchange it with other one.

B. SYMPTOM OF TROUBLE AND CHECK POINT

If the trouble can not be repaired by the checks in "A. BASIC MAINTENANCE FOR P.C.BOARD", do the same to other IC's with reference of the following tables. In the tables;

"SYMPTOM" ------- Symptoms of troubles on the screen or sounds.

"P.C.BOARD" ----- The most probably trouble making P.C. Board amoung CPU, I/O and Sound P.C. Board.

"CHECK POINT" --- Parts on a P.C.Board listed in the order of probability of trouble making. If all parts are good, check other IC's with reference of the circuit diagram.

NOTES

* Illustrated images are marely reference samples. Therefore, it does not always follow that you can get the same images on the screen.

* A mark of a figure and alphabet in the column of the "CHECK POINT" shows the position of parts on the P.C.Board.

* There are three kinds of specification in CPU P.C.Board, as follows. Confirm the number printed on your CPU P.C.Board and see check points for the number.

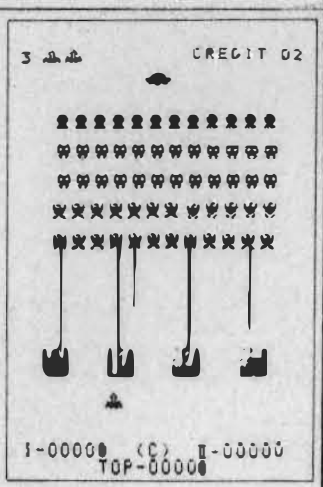
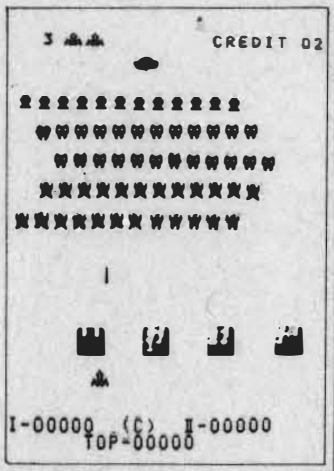
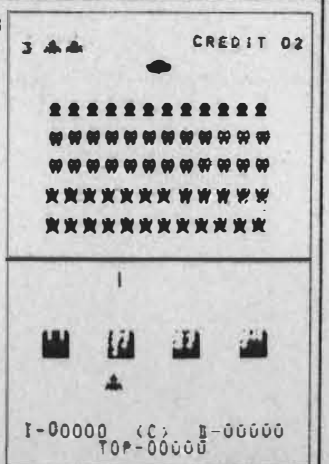
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b. TSF-CPU P1-500810
c. TSF-CPU P1-500861

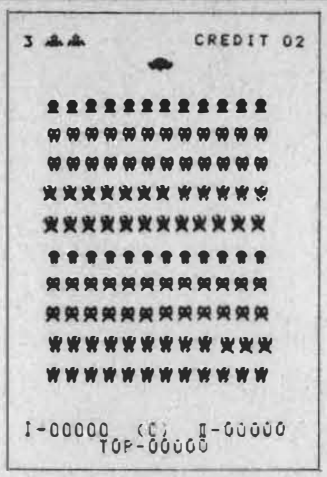
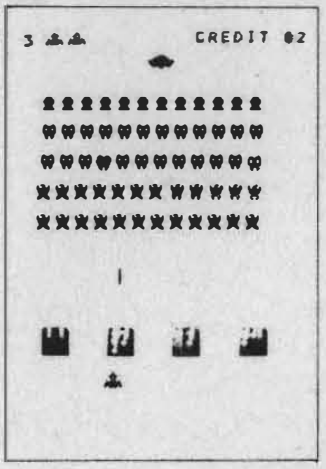
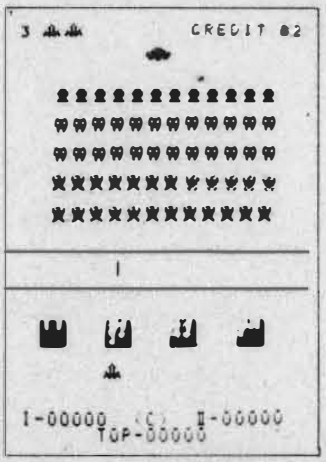
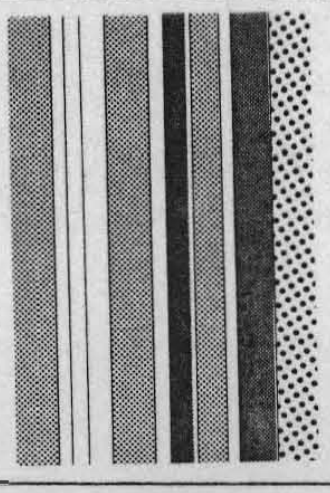
* "Image" in these tables is a general terms for images which appear on the screen, such as attacker, laser gun, shelter, spaceship carrier, laser shell, shell fired by attacker, number of credited coin, score of player and highest score.

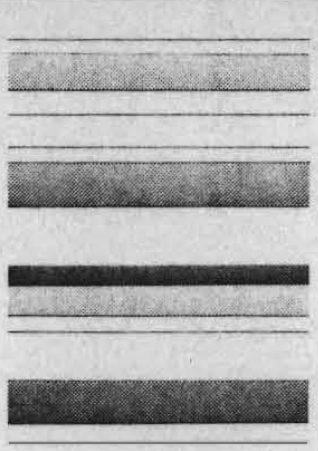
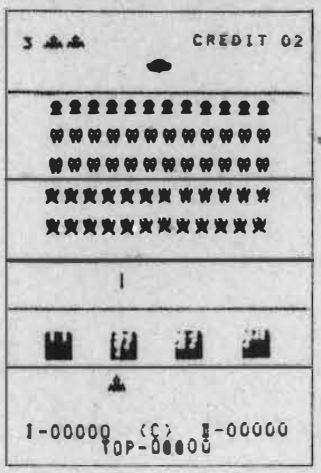
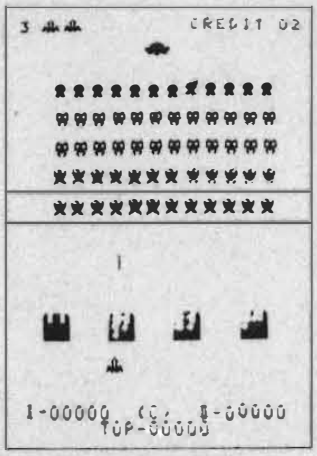
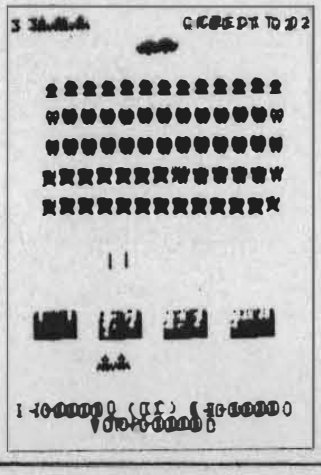
* Troubles are roughly divided into three kinds as follows;

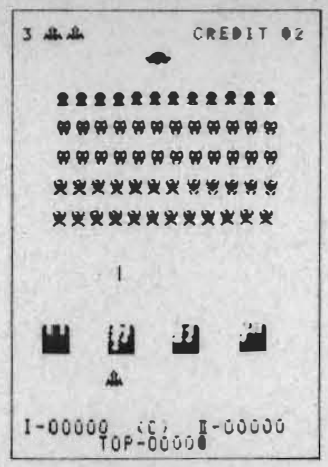
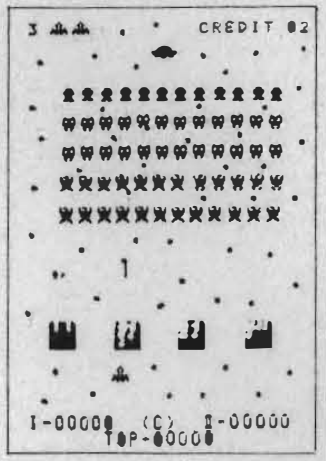
  * Troubles on image on the screen
  * Troubles on software of game
  * Troubles on sound

1. Troubles on image on the screen

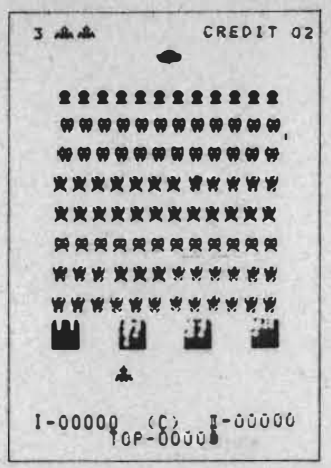
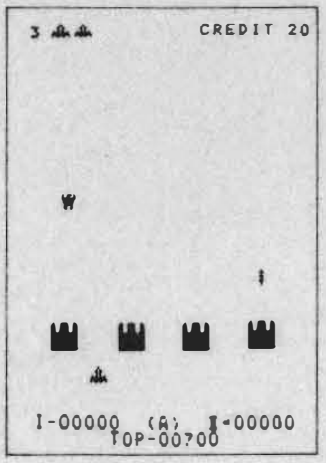
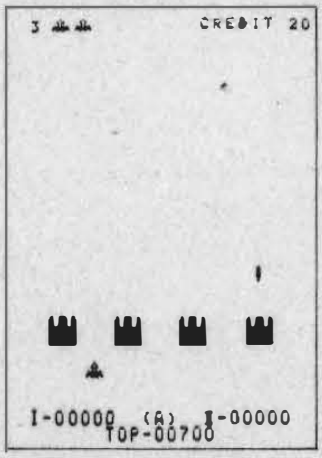
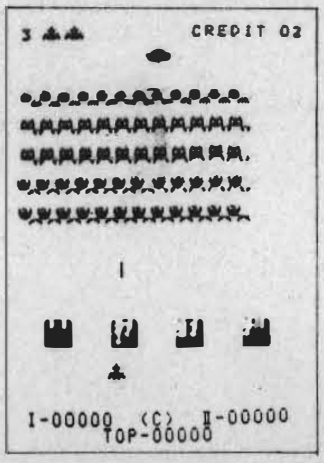
S Y M P T O M		P.C.BOARD	CHECK POINT
A shell from attacker leaves a track, making a line. At this time, there is no display and the game does not progress.		I/O	2J 2I 3I
The image waves to sides and the game is impossible.		I/O	4I 4J 5I 5J
White horizontal line appears on the screen, and laser shell explodes when hitting on the line.		CPU 500802 " 500810 " 500861	5D 5E 5D 5E 5C 5D

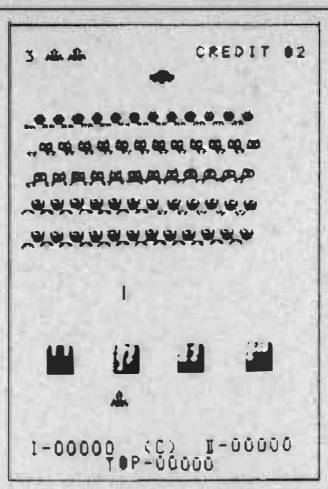
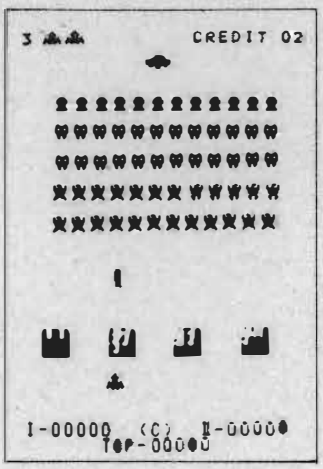
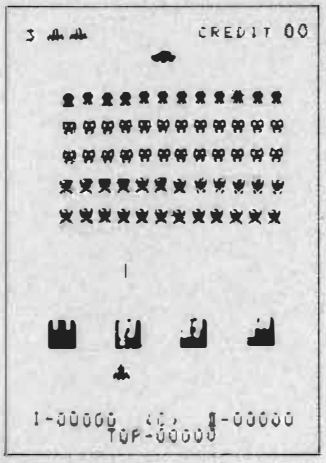
S Y M P T O M	P.C.BOARD	CHECK POINT
A group of attackers drops suddenly to the bottom of the screen. But, another group of attackers which appears first also remains on the screen. 	I/O CPU 500802 " 500810 " 500861	1K 2K 5J 5J 5I
Only images of figures and English letters do not appear on the screen. 	CPU 500802 " 500810 " 500861	4E 4E 4D
Several horizontal lines appear on the screen. Laser shells pass the lines. 	CPU 500802 " 500810 " 500861 I/O	5D 5E 5D 5E 5C 5D 1L
Colorful vertical stripes come out on the whole of the screen. 	CPU 500802 " 500810 " 500861	4G 5F 3J 3B 1B 4G 5F 3J 3B 1B 4F 5E 3I 3A 1A

S Y M P T O M		P.C.BOARD	CHECK POINT
Colorful horizontal stripes come out on the whole of the screen.		CPU 500802 " 500810 " 500861	4G 5I 4G 5I 4F 5H
Horizontal line or dotted line appears at a part or on the whole of the screen.		CPU 500802 " 500810 " 500861 I/O	5D 5D 5C 3J
White horizontal lines exist over and under attackers.		I/O	3B 1H 2J
Image flicker.		I/O	1H

S Y M P T O M	P.C.BOARD	CHECK POINT
Game progresses normally, but the background of images becomes green(red or blu). Normal one is dark gray. 	I/O	4F
White dots come out on the screen. Laser shell explodes when hitting the dots. 	I/O	3L
No image appears on the screen. But TV set is in order.	CPU 500802 " 500810 " 500861 I/O	1D 5H 1D 5H 1C 5G 1A 3B 1L
Several hours after power is turned on, the screen is disordered suddenly.	CPU 500802 " 500810 " 500861 I/O	5C 5E 5F 5C 5E 5F 5B 5D 5E 4J 3K
In the midst of a game, images stop in a certain pattern.	CPU 500802 " 500810 " 500861 I/O	5H 5H 5G 4I 4J 5I
In the midst of display, images stop in a cretain pattern.	CPU 500802 " 500810 " 500861 I/O	5K 5K 5J 3B

2. Troubles on software of game

S Y M P T O M		P.C.BOARD	CHECK POINT
Attackers appear on the whole of the screen. Other images are normal.		CPU 500802 " 500810 " 500861	5K 5K 5J
No attackers appear but one at the left(right) end of the lowest step. Other images are normal, but stopping without coming into the condition of display.		CPU 500802 " 500810 " 500861	5K 5K 5J
No attackers appear during display. Other images are normal.		I/O	1J
Legs of attacker are fixed, and only body moves.		I/O	2J

S Y M P T O M	P.C.BOARD	CHECK POINT
Body of attacker is fixed, and only legs moves. 	I/O	2D
Shell from attacker is thicker than normal one. 	I/O	4I 4J
Even with coin inserted, the indication of number of credited coins is 0, and game can not be started. The screen continues the display condition and the game counter works normally. 	I/O	4A 1J
Game counter works of itself when no coin is inserted.	I/O	2L
Laser shell explodes before reaching an attacker.	I/O	2D
Attacker goes backward, not forward.	I/O	3L
During display, no shell is shot from attacker.	I/O	5K

S Y M P T O M	P.C.BOARD	CHECK POINT
Two-player game is possible, but one-player game is impossible several hours after power is turned on.	I/O	1F
In two-player game, the main side game is normal, but the screen at sub side game is disturbed. (Sub side game is impossible.)	I/O	4B
Selection of one-player game and two-player game is impossible. The screen shows "Selection Instruction".	I/O	1J
In two-player game, credit is increased when sub side laser shell fire button is depressed.	I/O	4A
In two-player game, sub side laser shell can not be shot.	I/O	1I
Credit is increased when control lever is moved to left.	I/O	1J
Spaceship carrier entering sound roars, but the carrier does not appear.	I/O	5B
Credit is increased when power is turned on and off.	I/O	Condenser C-8
In two-player game, sub side score can not be increased.	I/O	3F 3J 4G
While spaceship carrier moves, it disappears suddenly and appears again.	I/O	5B 5C
Game counter does not work when coin is inserted.	I/O	2L
Laser shell stops before reaching attacker.	CPU 500802 " 500810 " 500861	3E 3E 3D
Speed of shell from attacker is too high.	CPU 500802 " 500810 " 500861	3E 3E 3D
In the midst of game, the movement of attacker to sides stops. However, shells are shot from attacker and other movements are normal.	CPU 500802 " 500810 " 500861	3H 3H 3G

3. Troubles on sound

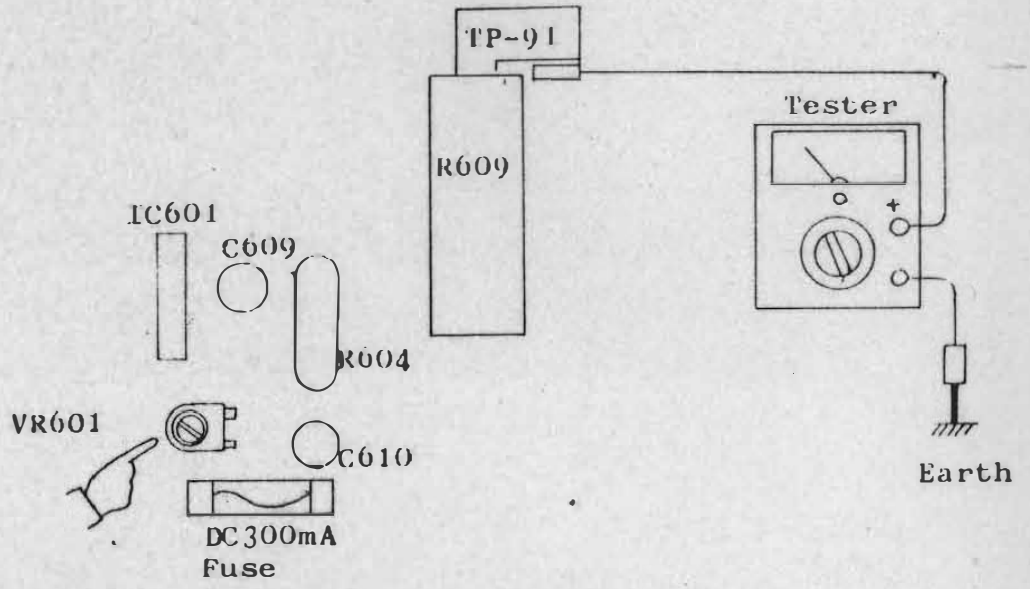
S Y M P T O M	P.C.BOARD	CHECK POINT
With all variable resistors properly adjusted, neither melody sounds nor effective sounds come out.	SOU	IC-1 IC-2
Melody is normal, but effective sound does not come out.	SOU	IC-8
Effective sound is normal, but melody does not come out.	SOU	IC-2 IC-1
Part of melody break.	SOU	IC-2
Only laser gun explosion sound, one of effective sounds, does not come out or breaks.	SOU	IC-8 IC-5 IC-7
Effective sound is distorted. (Even if sound volume is downed.)	SOU	IC-8
In the midst of game, no sounds come out but attacker advancing sound.	I/O	2D 4B
During display, attacker advancing sound comes out.	I/O	2D
When score reach to 1,500 points, extra score sound does not come out.	I/O	Condenser C-9
Laser gun explosion sound comes out preodically.	I/O	2C 2D 1D 1C
Attacker advancing sound is not picked up in tempo. (It sounds at fixed tempo.)	I/O	2C 2D 1D 1C
Attacker re-entering sound does not come out.	I/O	2C 2D 1D 1C
Attacker explosion sound or laser gun explosion sound does not come out.	I/O SOU	2C 2D 1D 1C IC-8
All sounds do not come out.	I/O SOU	2C 2D 1D 1C IC-8

C. ADJUSTMENT OF VIDEO MONITOR

1. Adjustment

(1) Power Supply

Instrument	Condition	Tool
A tester of 20kΩ internal resistance	Voltage of power supply/AC100 ± 5V	Insulated (-) screw driver



Method

a. Connect a tester between terminal TP-91 and the earth.

b. Adjust the voltage between TP-91 and the earth to DC105V by turning supply voltage Adj. Pot. VR601.

c. After adjusting, apply lacquer to VR601 to fix.

(2) Color Purity

a. Loosening deflecting coil fixing screw, pull the deflecting coil fully backward (to CPM side).

b. To make raster red, turn cut-off Adj. Pot. for blue and green counterclockwise fullyway, and cut-off Adj. Pot. for red clockwise completely. (If red raster is not clear, adjust brightness resistor and screen resistor.)

c. Slightly loosen CPM magnet stopper and adjust two purity magnet knobs so that red raster of longitudinal stripes is produced on the whole of the screen.

d. Move the deflecting coil forward little by little until the whole of the screen becomes red evenly. (If the deflecting coil fixing wedge is a hindrance, remove it as shown in Fig.2-2.) Confirm that the picture is not out of the center of the screen, longitudinally or laterally. If out, correct the picture's position by adjusting the purity magnet in a range of not deteriorating purity.)

e. Then turning cut-off Adj. Pot. for red counterclockwise completely, check color shading of blue and green in the same manner.

f. Tighten the deflecting coil fixing screw.

g. When there is partial color shading in a picture, repeat above items (b) to (f).

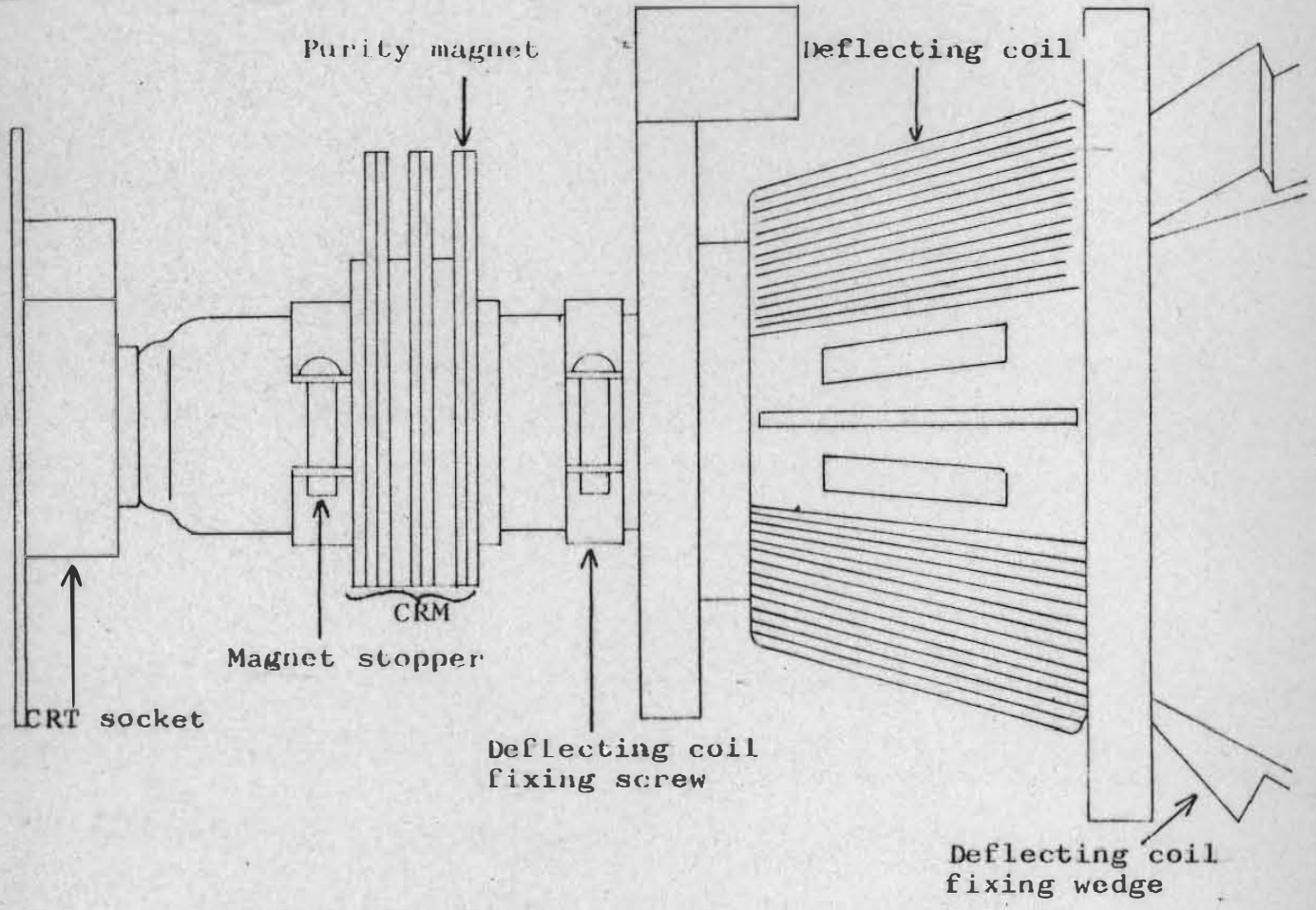


Fig.2-1 Name of each part of neck of Braun tube

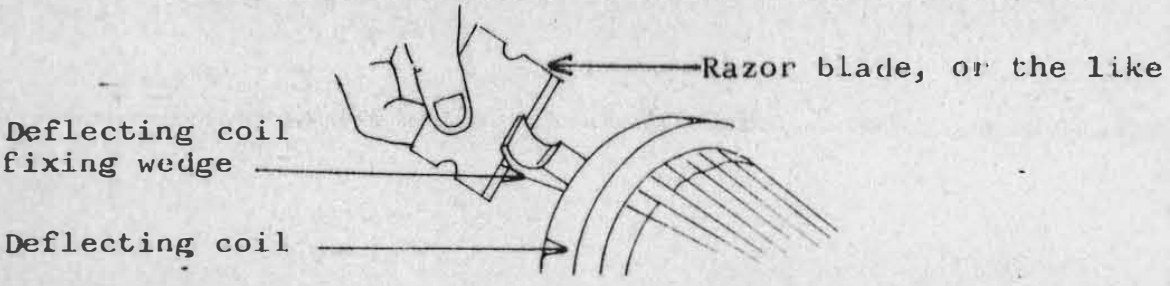


Fig.2-2 Removing deflecting coil fixing wedge

(3) Convergence

a. Static Convergence

This adjustment is to be carried out when, along with the margine of a picture, a different color appears. For convenience of adjustment, receive cross-hatch pattern on the screen. (If it is impossible, receive a stationary picture.)

① Receive cross-hatch pattern on the screen.

② Overlap red and blue lines at the center of the screen by moving 4-pole magnet knobs. (The adjustment is easy when green pattern is put out by turning the green cut-off Adj. Pot. counterclockwise fullway.)

③ Overlap red/blue and green pattern at the center of the screen. (At this time, green pattern is to be on by turning the variable resistor.)

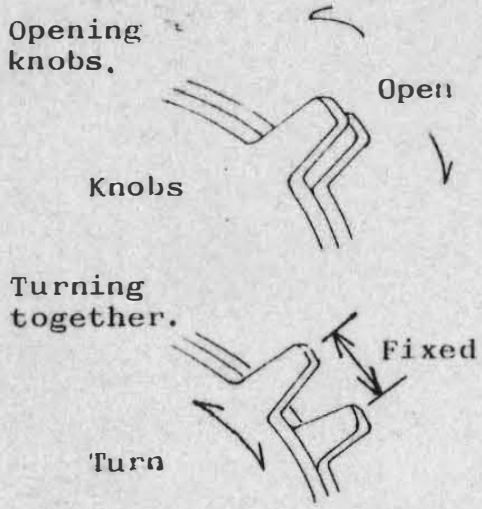


Fig.3-1 How to move knobs

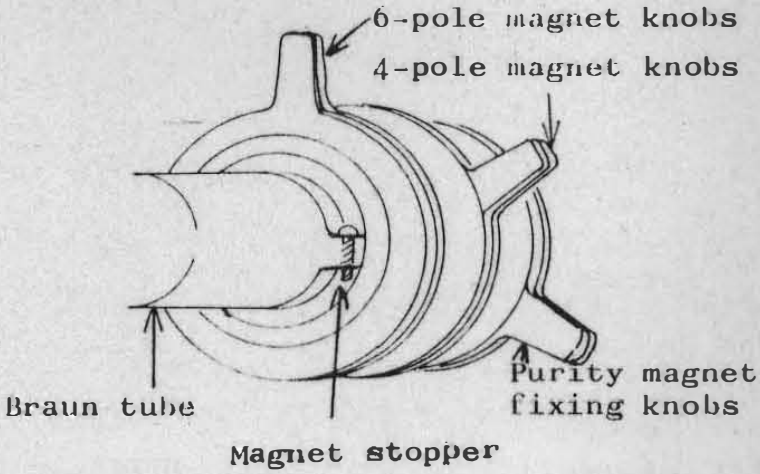
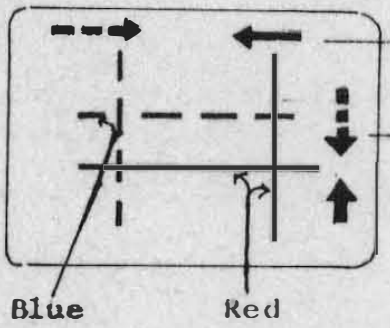
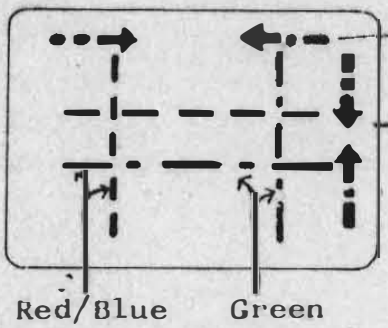


Fig.3-2 Name of each part of neck of Braun tube



* For longitudinal lines, open two 4-pole magnet knobs.

* For lateral lines, turn two 4-pole magnet knobs together without changing the opening angle between them.



* For longitudinal lines, open two 6-pole magnet knobs.

* For lateral lines, turn two 6-pole magnet knobs together without changing the opening angle between them.

Fig. 3-3 Movement of convergence by magnet knobs

④ Correction of Static Convergence

When red, green and blue lines can not be overlapped at the center by 4-pole and 6-pole magnets, move CPM about 5mm forward or backward and try "(3) Convergence" again.

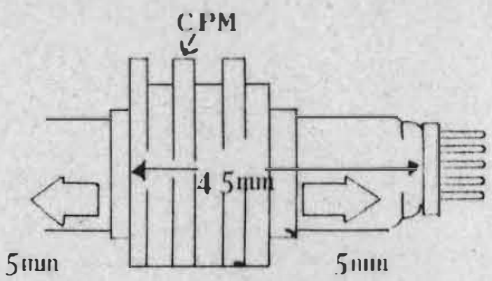


Fig. 3-4 Correction of convergence

b. Dynamic Convergence

① Remove deflecting coil fixing wedge.

② Correct deformation of the picture at the circumference and the center of the screen by moving the front of the deflecting coil up and down.

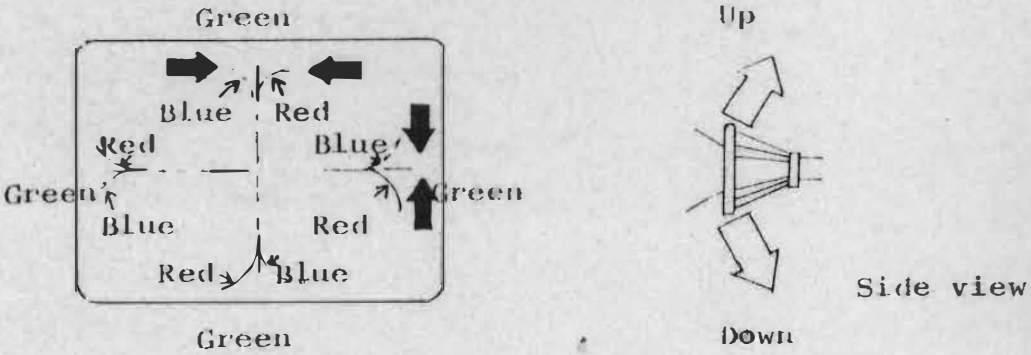


Fig. 3-5 Relation of movement of deflecting coil and convergence at circumference of screen

③ Correct unevenness in distance of lines at circumference of the screen by moving the front of the deflecting coil left and right.

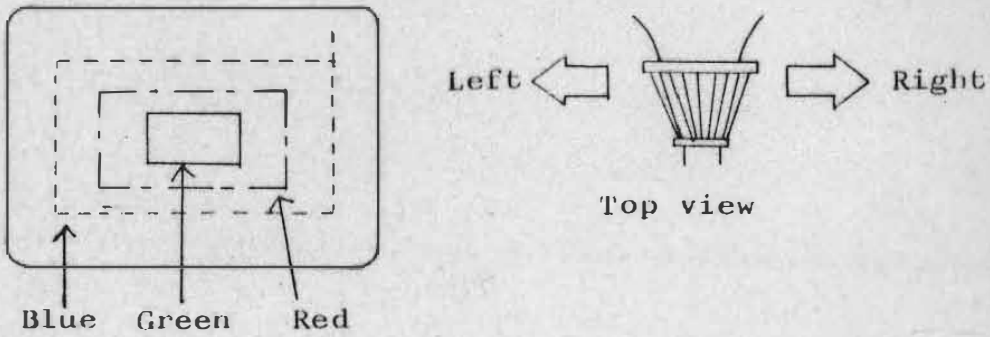


Fig. 3-6 Relation of movement of deflecting coil and convergence at circumference of screen

④ Insert deflecting coil fixing wedge

Set vertical direction first and insert wedge (A). Then, set horizontal direction and insert wedge (B) and (C). (Looking at the screen, adjust inserting wedges little by little.)

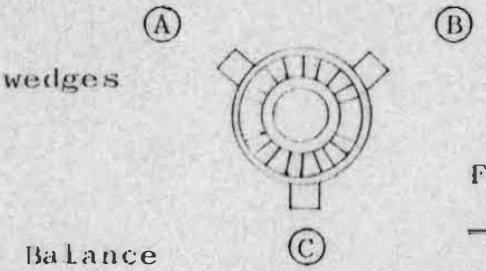


Fig.3-7 Inserting deflecting coil fixing wedges

(4) White Balance

a. Supply current for 5 minutes or more before adjustment.

b. Disconnect 6p-connector from BH terminal. After that, only raster can be seen on the screen.

c. Turn brightness Adj. Pot. to the maximum.

d. Turn cut-off Adj. Pot. for red, green and blue counterclockwise completely.

e. Turn screen voltage Adj. Pot. counterclockwise completely.

f. Set red and blue drive Adj. Pot. at the center of their rotation.

g. Insert service connector inversely. (To service side)

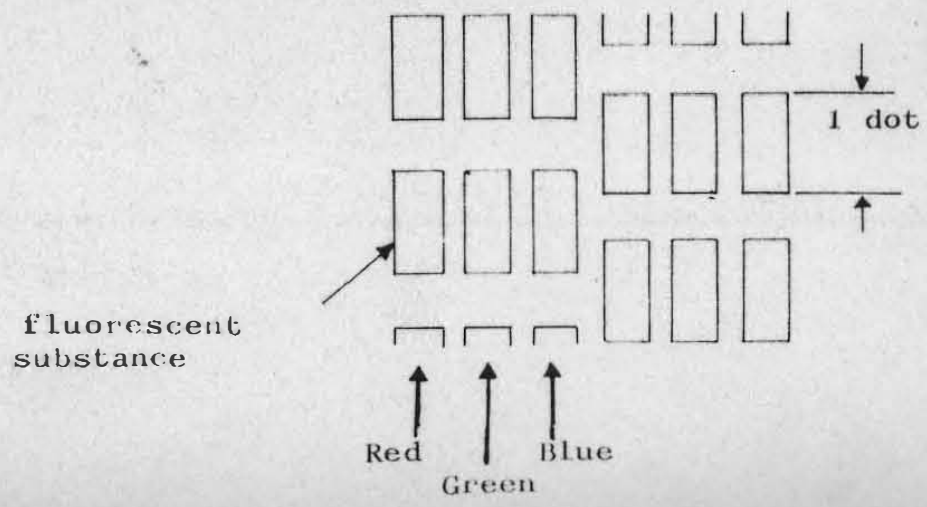
h. Turning screen voltage Adj. Pot. clockwise, receive a red, green or blue horizontal narrow raster of 1 dot. (If any color does not appear, turn the screen voltage Adj. Pot. clockwise completely.)

i. Turn cut-off Adj. Pot. for color not seen on the screen clockwise and adjust to make a horizontal white raster of 1 dot.

j. Set the service connector normally, and adjust red and blue drive Adj. Pot. so that the screen becomes white.

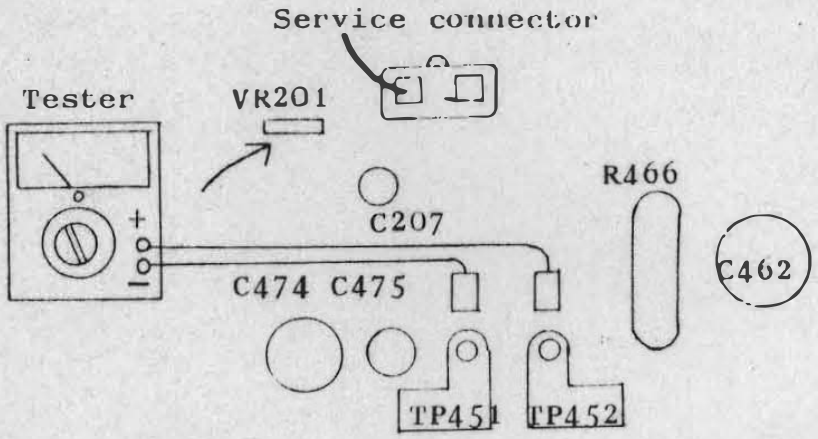
k. Set the service connector to service side again and confirm that the horizontal narrow raster is white. If not, repeat adjustments (8) and (9) without touching the drive Adj. Pot.

* "1 dot" means the longitudinal length of a fluorescent substance.



(5) Beam Current

Instrument	Condition	Tool
A tester of 20kΩ internal resistance	Voltage of power supply/AC100 ± 5V	Insulated (-) screw driver



Method

a. Supply current for 5 minutes or more before adjustment.

b. Disconnect 6p-connector from BH terminal to produce raster only on the screen.

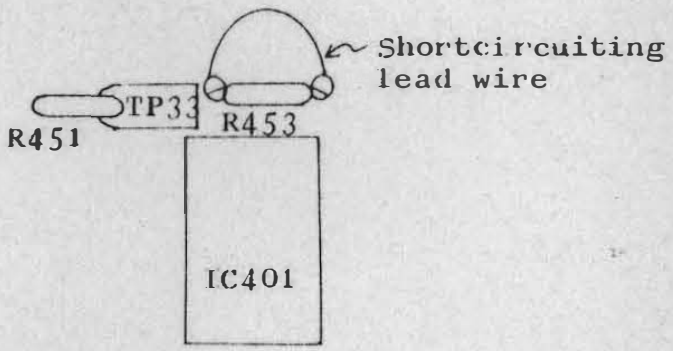
c. Set brightness Adj. Pot. to the maximum.

d. Connect (+) terminal of the tester to terminal TP452, (-) terminal to TP451.

e. Adjust voltage between TP452 and TP451 to 0.5V by turning sub brightness Adj. Pot. VR201.

(6) Horizontal Oscillation Frequency
(Horizontal Synchronization Adj. Pot.)

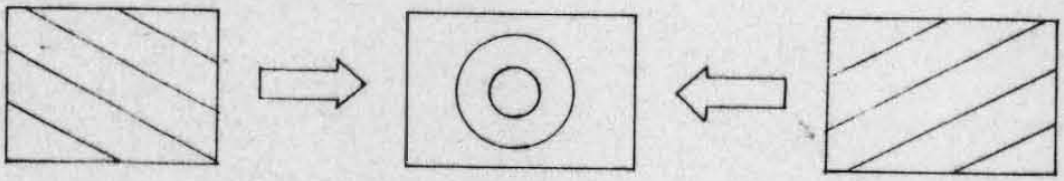
Instrument	Condition	Tool
	Voltage of power supply/AC100 ± 5V	Shortcircuiting lead wire
	Receive pattern.	



Method

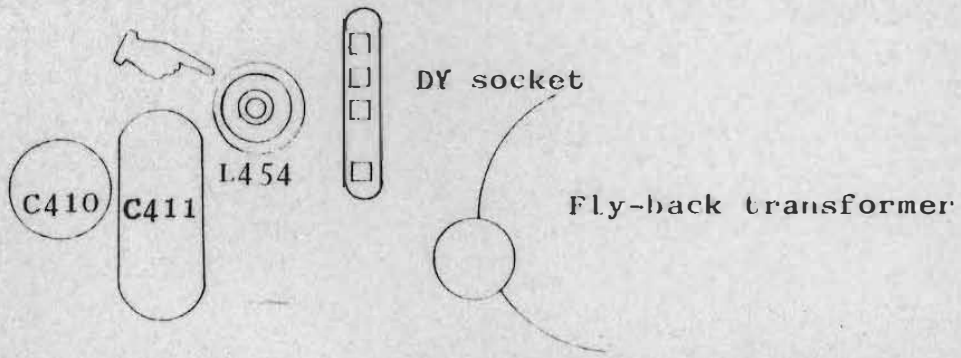
a. While receiving pattern, shortcircuit R453 with a lead wire. (Or, shortcircuit TP33 and the earth with a lead wire.)

b. Adjust horizontal synchronization Adj. Pot. to produce a normal pattern on the screen.



(7) Width (Horizontal Amplitude)

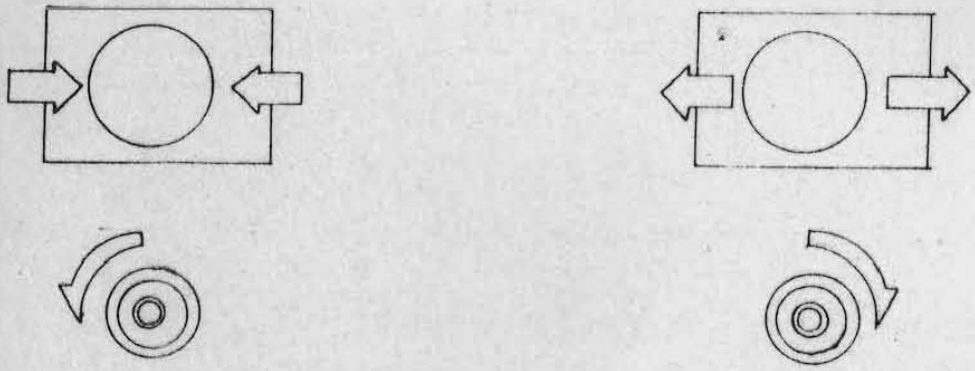
Instrument	Condition	Tool
	Voltage of power supply/AC100 ± 5V	Hexagonal regulating rod
	Receive pattern.	



Method

a. Supply current for 5 minutes or more before adjustment.

b. Adjust width (horizontal amplitude) by turning adjusting coil L454.

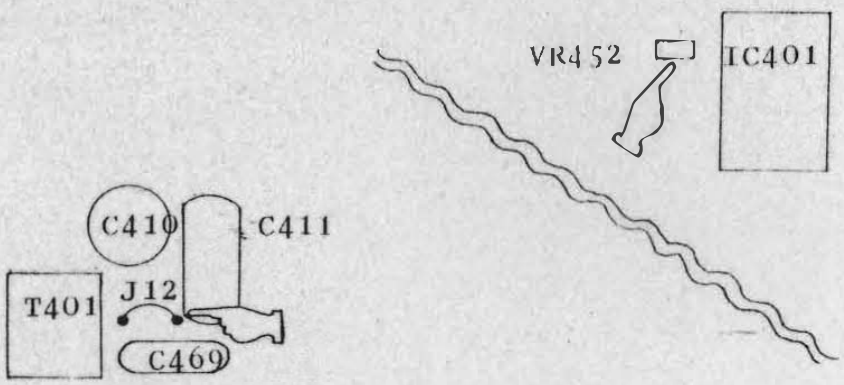


Turning adjusting coil counterclockwise decreases width.

Turning adjusting coil clockwise increases width.

(8) Horizontal Center Position

Instrument	Condition	Tool
	Voltage of power supply/AC100 ± 5V	Insulated (-) screw driver
	Receive pattern.	



Method

a. Set horizontal center position Adj. Pot. VR452 at the center of its rotation.

b. Receive a pattern on the screen and check its horizontal center position. When the position is off center of the screen to right or left, use horizontal center position adjusting jumper wire J12 to adjust.

   * When J12 is cut off, the pattern moves to left.

   * When J12 which is cut off once is shortcircuited, the pattern moves to right.

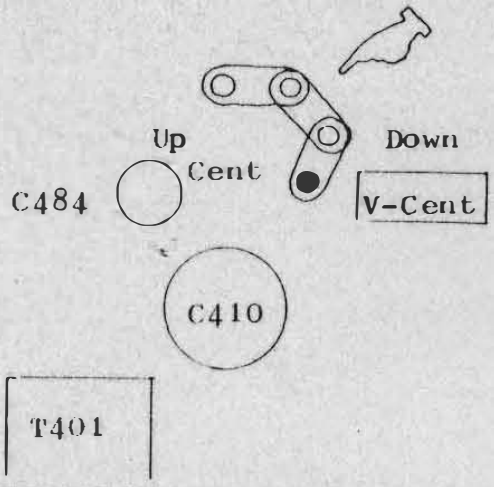
c. When the horizontal center position of the pattern is still off the center of the screen after using J12, use horizontal center position Adj. Pot. VR452.

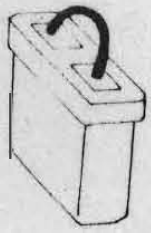
   * When VR452 is turned to right, the pattern moves to right.

   * When VR452 is turned to left, the pattern moves to left.

(9) Vertical Center Position

Instrument	Condition	Tool
	Voltage of power supply/AC100 ± 5V	2p-shorting housing
	Receive pattern	

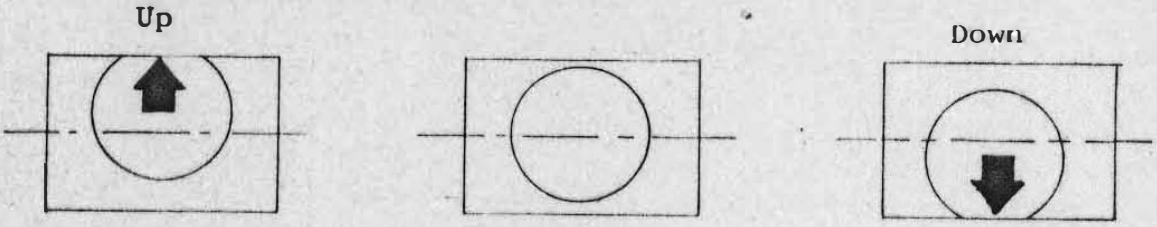




(2p-shorting housing)

Method

a. Receive a pattern on the screen and check its vertical center position. When the position is off the center of the screen up or down, insert 2p-shorting housing into vertical center position adjusting terminal.





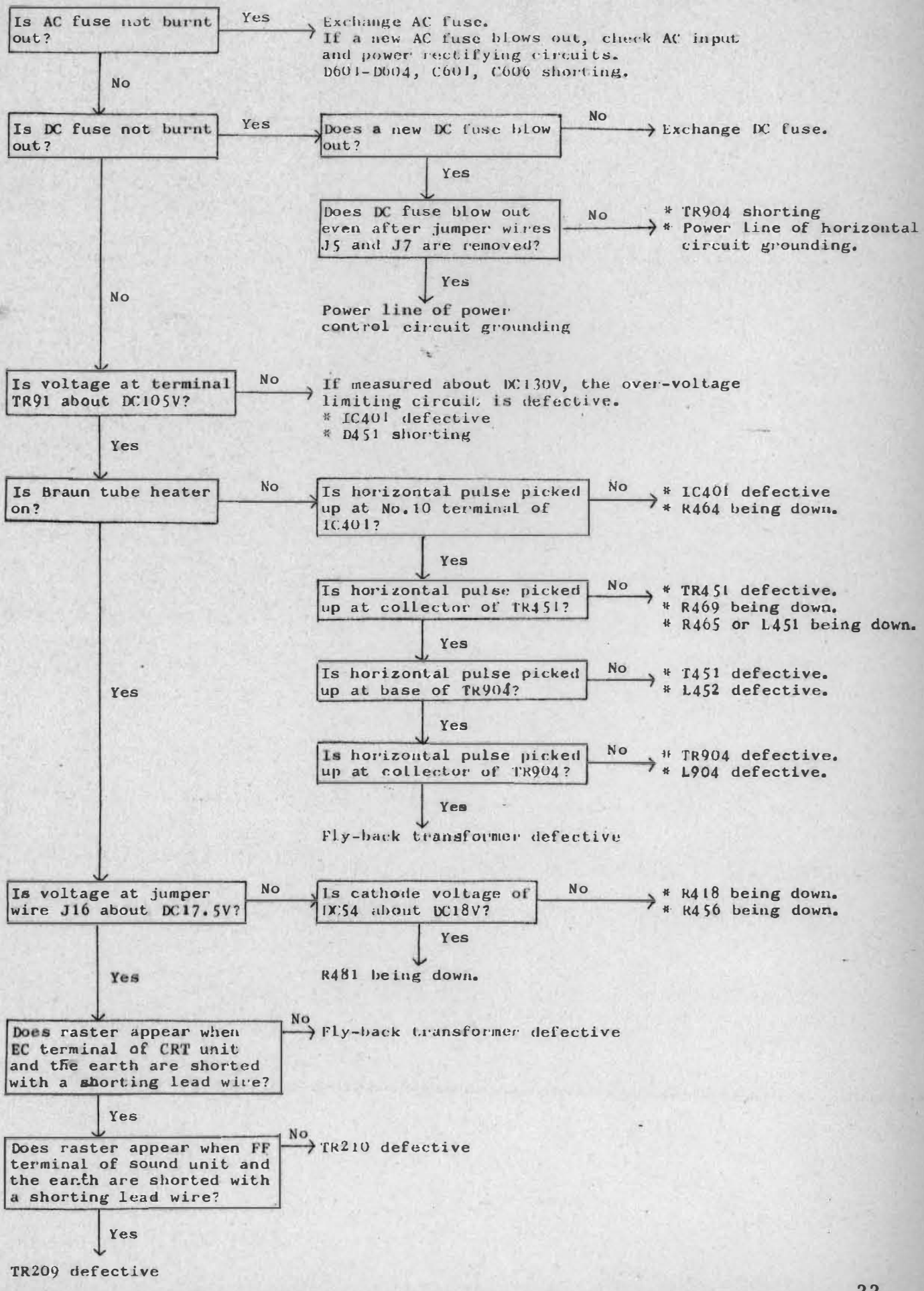
Up Cent Down

When 2p-shorting housing is inserted into UP terminal, the pattern moves upward.

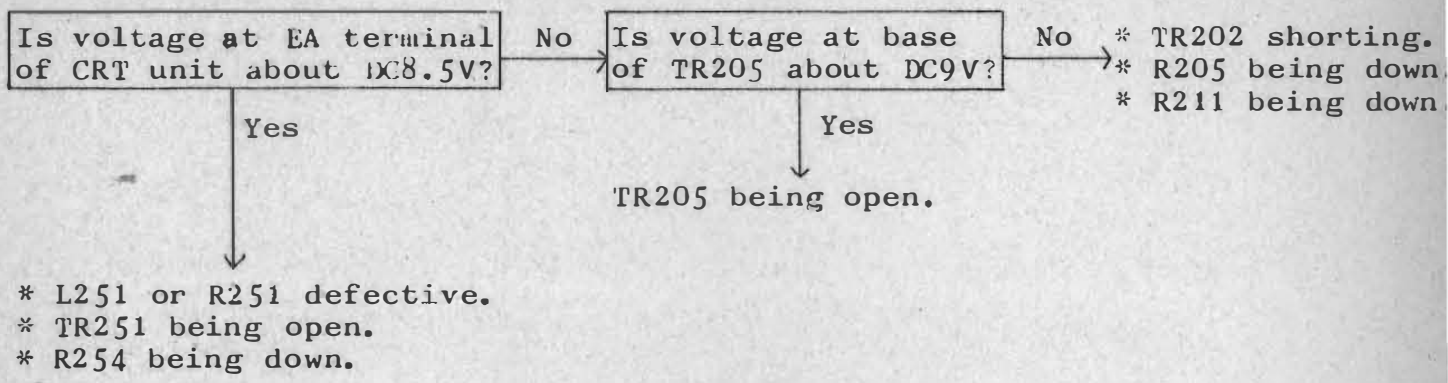
When 2p-shorting housing is inserted into DOWN terminal, the pattern moves downward.

2. Troubleshooting

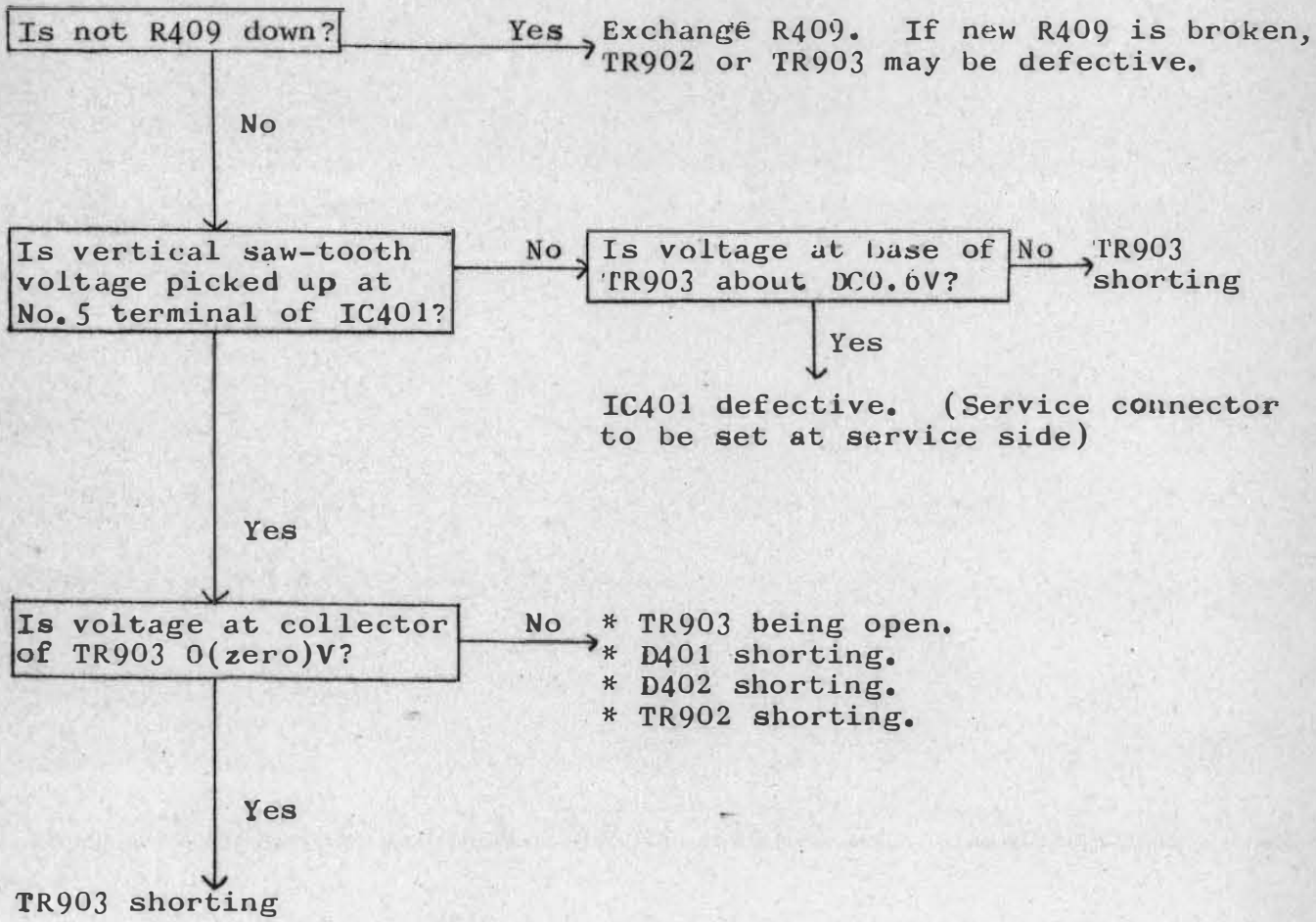
(1) No raster on the screen
(Confirm that brightness knob is not set at the leftmost position.)



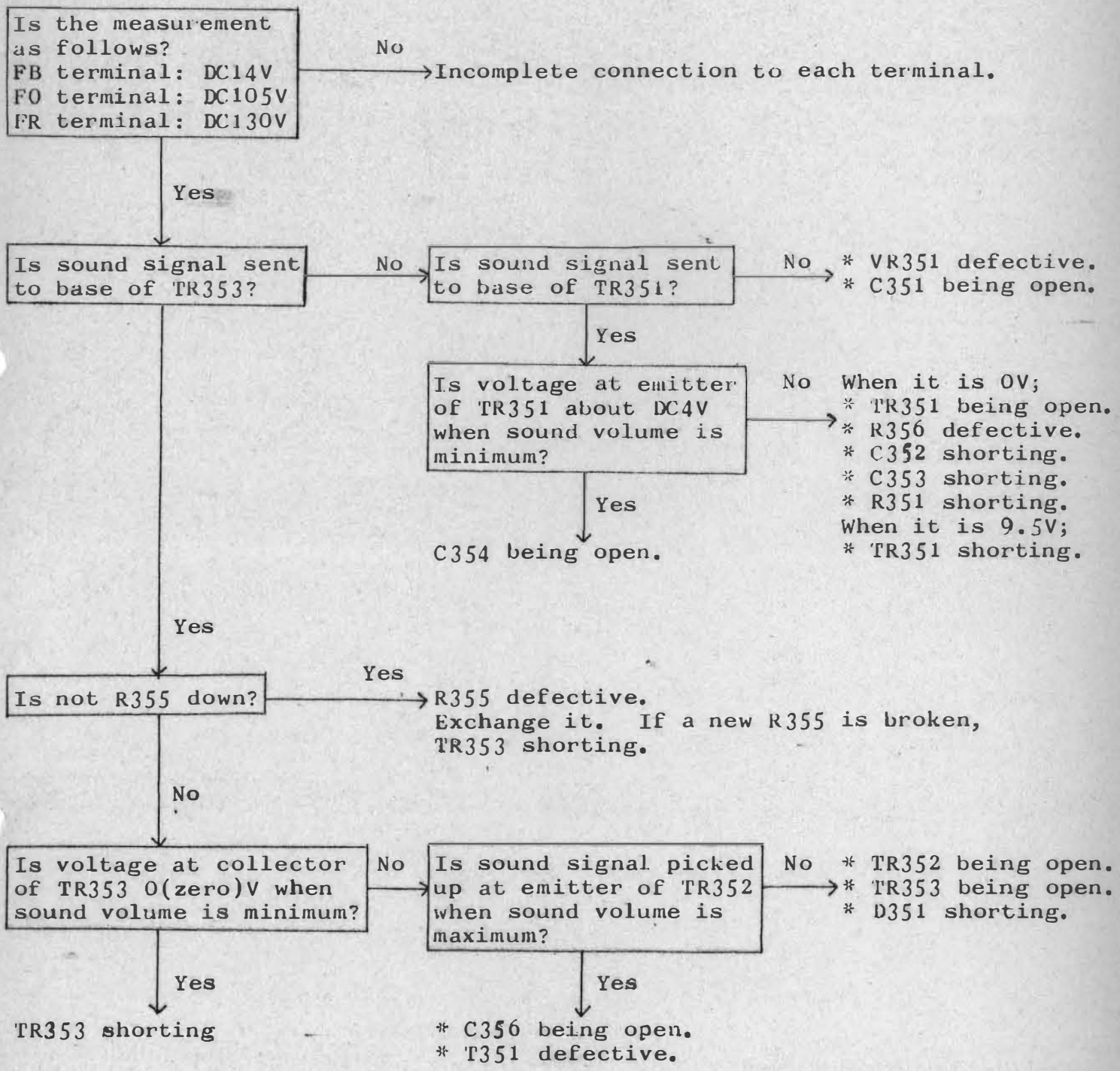
(2) One of red, green and blue does not appear.
For any color, the inspection method is the same. (This inspection is carried out without pattern on the screen.)



(3) Picture on the screen becomes a lateral narrow line. (Check service connector.)

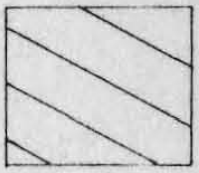
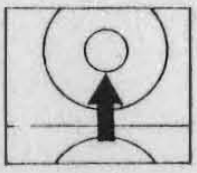
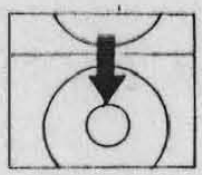
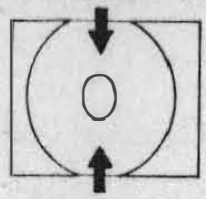
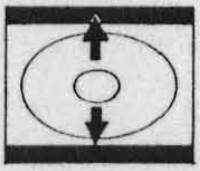


(4) No sound
(Confirm sound volume adjusting knob first.)



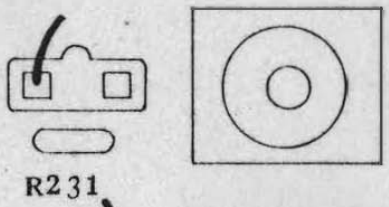
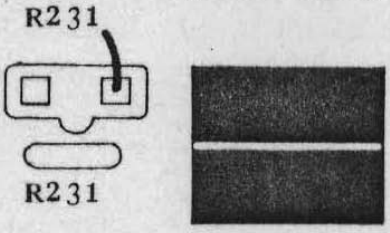
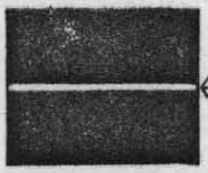
3. Function of Each Parts

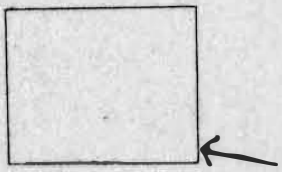
For arrangement of variable resistors and other switches, see Fig.1 - Fig.3. (Page 29 - 30)

Name of parts	Function
Sound volume (See Fig.3.)	Turning the volume knob to right turns up the volume, and to left turns down.
Brightness (See Fig.3.)	Turning the brightness knob to right makes the whole of the screen bright, and to left dark.
Horizontal synchronization (See Fig.3.)	This is used when a picture runs to right or left.  * Turn the knob to left to stop a picture running to right downward.  * Turn the knob to right to stop a picture running to left downward.
Vertical synchronization (See Fig.3.)	This is used when a picture runs upward or downward.  * Turn the knob to right to stop a picture running from down to up.  * Turn the knob to left to stop a picture running from up to down.
Vertical amplitude (See Fig.3.)	This is used to adjust vertical amplitude.  * Turning the knob to left makes vertical amplitude small.  * Turning the knob to right makes vertical amplitude large.

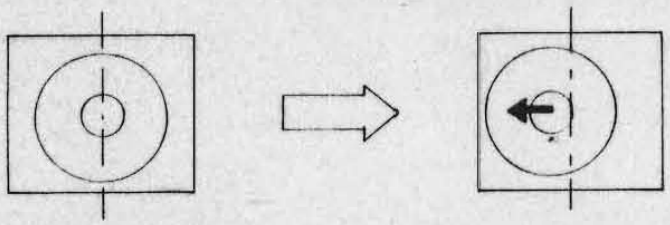
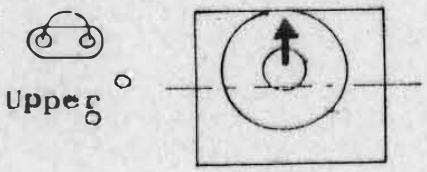
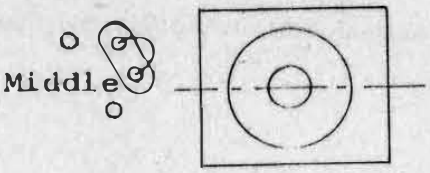
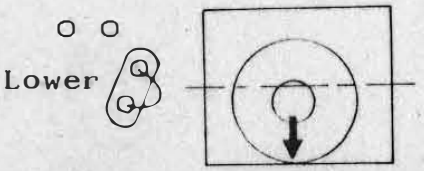
Function of service connector and variable resistor which are not required for ordinary adjustment.

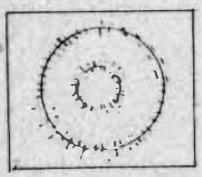
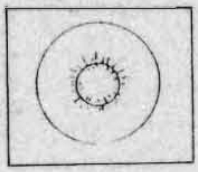
Note: If any of these controllers is touched, it should be re-adjusted with testing instruments.

Name of parts	
Screen (See Fig. 2.)	This variable resistor is used to adjust screen voltage of braun tube. Turning the knob to right raises the screen voltage, making the whole of the screen bright. Turning the knob to left lowers the screen voltage, making the whole of the screen dark. * This is used only for adjustment of white balance.
Service connector (See Fig. 1.)	This is used in adjustment of white balance to switch a picture on the screen from a normal to a horizontal narrow line.  R231 * A picture is normal when the service connector is connected as shown in the left.  R231 * A picture is a horizontal narrow line when the service connector is connected as shown in the left.
Cut-off (See Fig. 2.)	These are Adj. Pot. for adjustment of white balance. Ordinarily, these are used after a white-and-black image is changed into a horizontal narrow line by the service connector. Green cut-off: This Adj. Pot. is for green color adjustment. Turning the right makes green color bright, and to left dark. Blue cut-off : This Adj. Pot. is for blue color adjustment. Turning to right makes blue color bright, and to left dark. Red cut-off : This Adj. Pot. is for red color adjustment. Turning to right red color bright, and to left dark.  Each cut-off Adj. Pot. should be adjusted so as to make a white-and-black image in a horizontal narrow line white.

Name of parts	Function
Drive (See Fig.2.)	These are Adj. Pot. for adjustment of white balance. Ordinarily, these are used when a white-and-black picture is received. Blue drive: Turning the knob to right makes blue color deep, and to left light. Red drive: Turning the knob to right makes red color deep, and to left light.  Blue and red drives should be adjusted so as to make a white -and-black picture white. Make picture white.

Other adjusting points

Horizontal position (See Fig.1.)	This is a jumper wire which is used to change horizontal position of a picture. A picture moves to left when the jumper wire is cut.  Center Before jumper wire is cut Center After jumper wire is cut
Vertical position (See Fig.1.)	These are terminals to change vertical position of a picture.  Upper A picture moves upward when 2p-shorting housing is inserted into upper terminal.  Middle A picture moves to the center in the vertical direction when 2p-shorting housing is inserted into middle terminal.  Lower A picture moves downward when 2p-shorting housing is inserted into lower terminal.

Name of parts	Function
	This is a Adj. Pot. to change focus voltage.  When the whole of the screen is out of focus, turn focus knob to right.  When the center of the screen is out of focus, turn it to left.

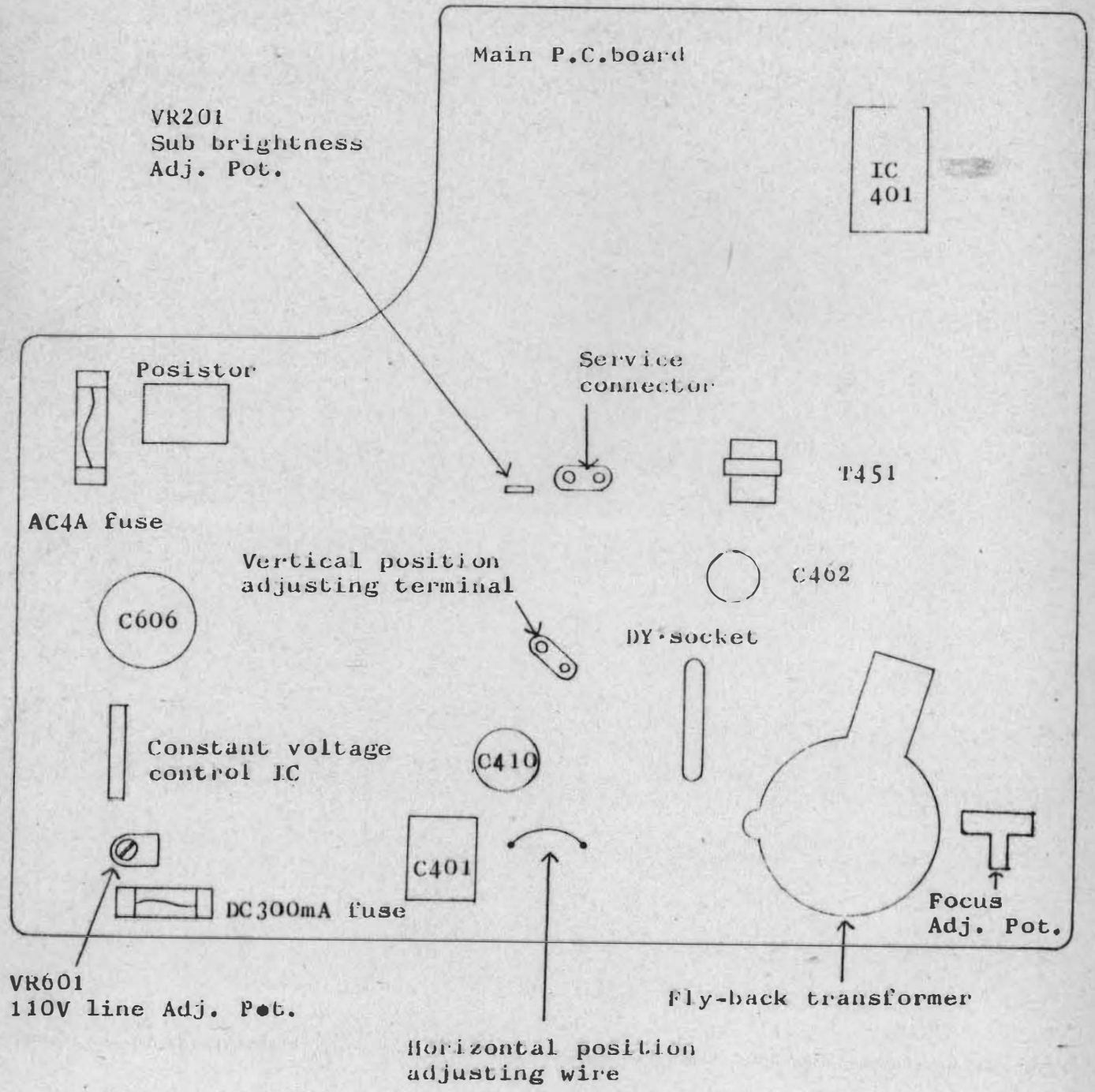

Main P.C.board
VR201
Sub brightness
Adj. Pot.
IC
401
Posistor
Service
connector
T451
AC4A fuse
Vertical position
adjusting terminal
C462
C606
DY·socket
Constant voltage
control IC
C410
C401
DC300mA fuse
Focus
Adj. Pot.
VR601
110V line Adj. Pot.
Fly-back transformer
Horizontal position
adjusting wire

Fig. 1

CRT unit

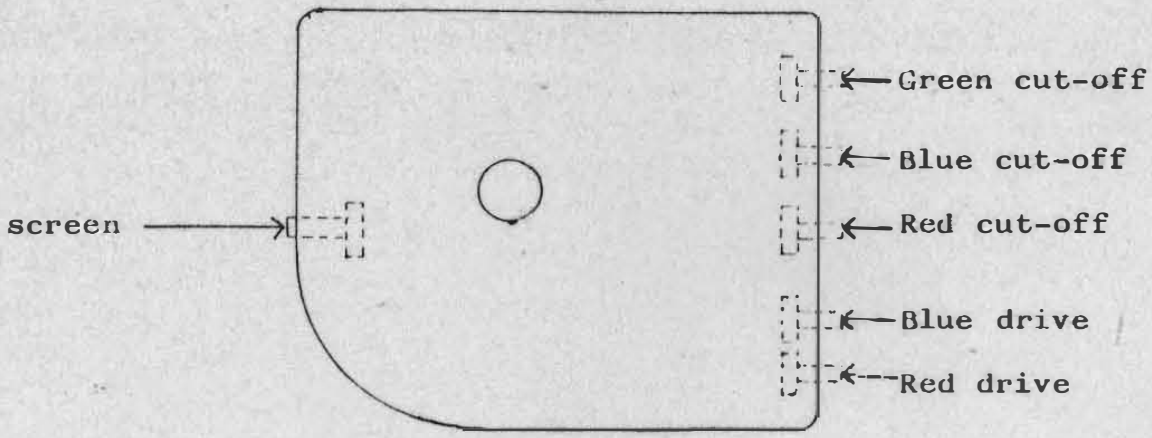


Fig. 2

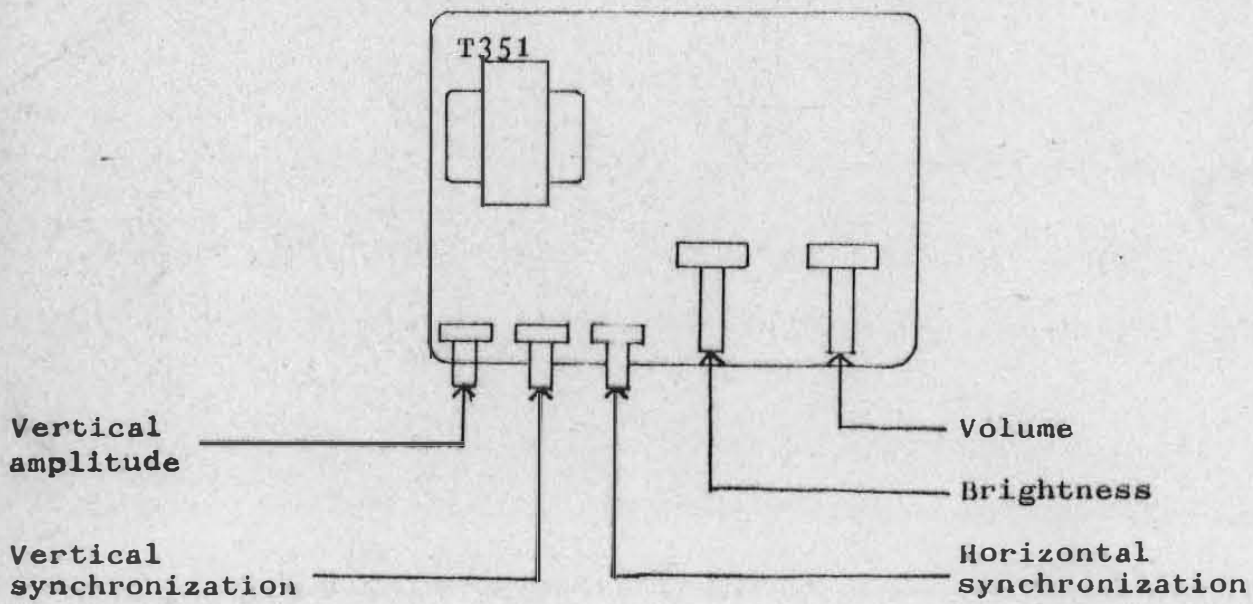
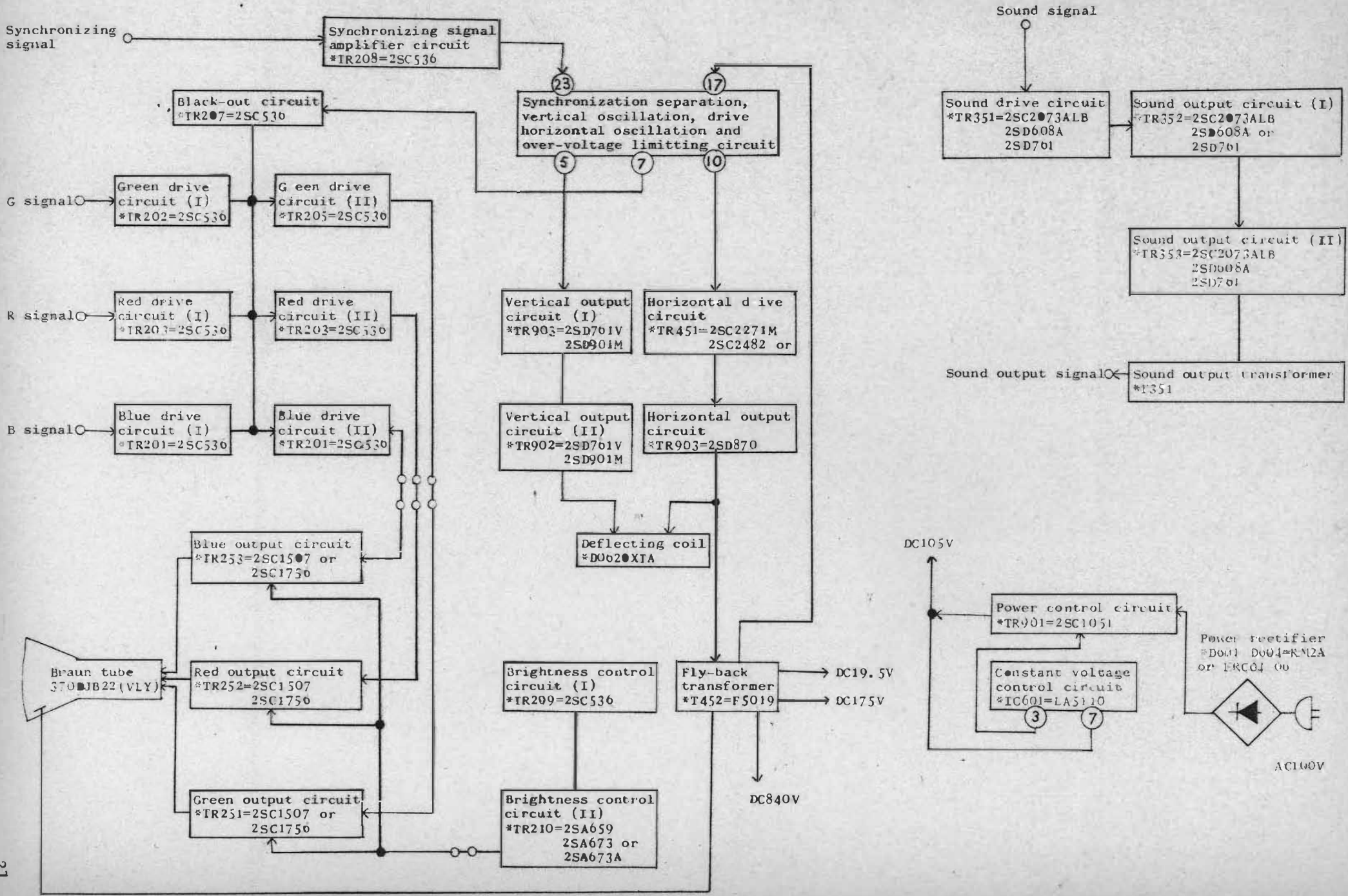
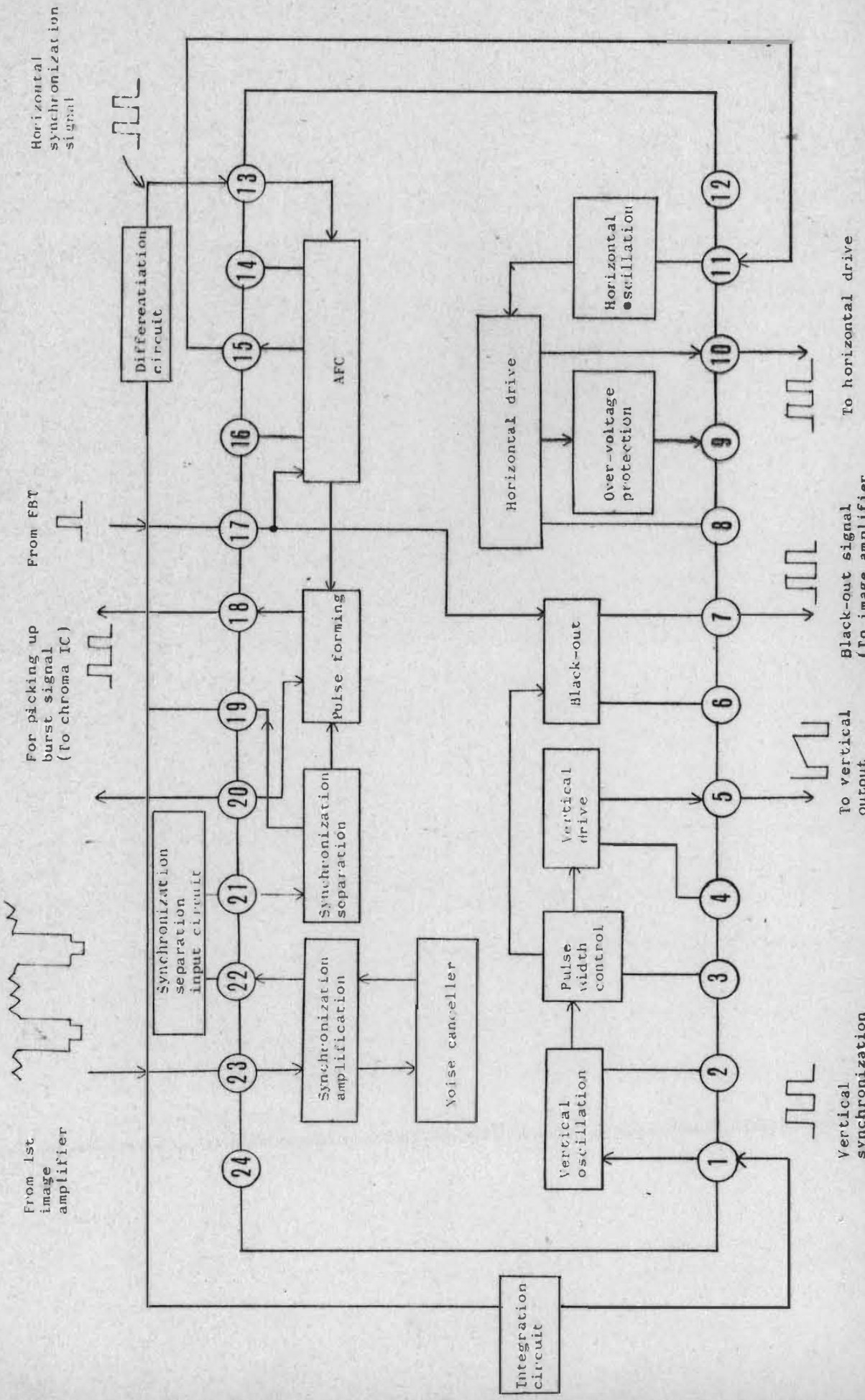


Fig. 3


Synchronizing signal
Synchronizing signal amplifier circuit *IR208=2SC536
Black-out circuit *IR207=2SC536
Synchronization separation, vertical oscillation, drive horizontal oscillation and over-voltage limitting circuit
23
17
5
7
10
G signal
Green drive circuit (I) *IR202=2SC536
G een drive circuit (II) *IR205=2SC536
R signal
Red drive circuit (I) *IR203=2SC536
Red drive circuit (II) *IR203=2SC536
B signal
Blue drive circuit (I) *IR201=2SC536
Blue drive circuit (II) *IR201=2SC536
Vertical output circuit (I) *TR903=2SD761V 2SD901M
Horizontal d ive circuit *TR451=2SC2271M 2SC2482 or
Vertical output circuit (II) *TR902=2SD761V 2SD901M
Horizontal output circuit *TR903=2SD870
Deflecting coil *D0620XTA
Blue output circuit *TR253=2SC1507 or 2SC1750
Red output circuit *TR252=2SC1507 2SC1750
Green output circuit *TR251=2SC1507 or 2SC1750
Braun tube 370BJB22(VLY)
Brightness control circuit (I) *IR209=2SC536
Brightness control circuit (II) *IR210=2SA659 2SA673 or 2SA673A
Fly-back transformer *T452=F5019
DC19.5V
DC175V
DC840V
Sound signal
Sound drive circuit *TR351=2SC2073ALB 2SD608A 2SD761
Sound output circuit (I) *TR352=2SC2073ALB 2SD608A or 2SD761
Sound output circuit (II) *TR353=2SC2073ALB 2SD608A 2SD761
Sound output signal
Sound output transformer *T351
DC105V
Power control circuit *TR901=2SC1051
Constant voltage control circuit *IC601=LA5110
3
7
Power rectifier *D601 D604=RM2A or ERC04-06
AC100V

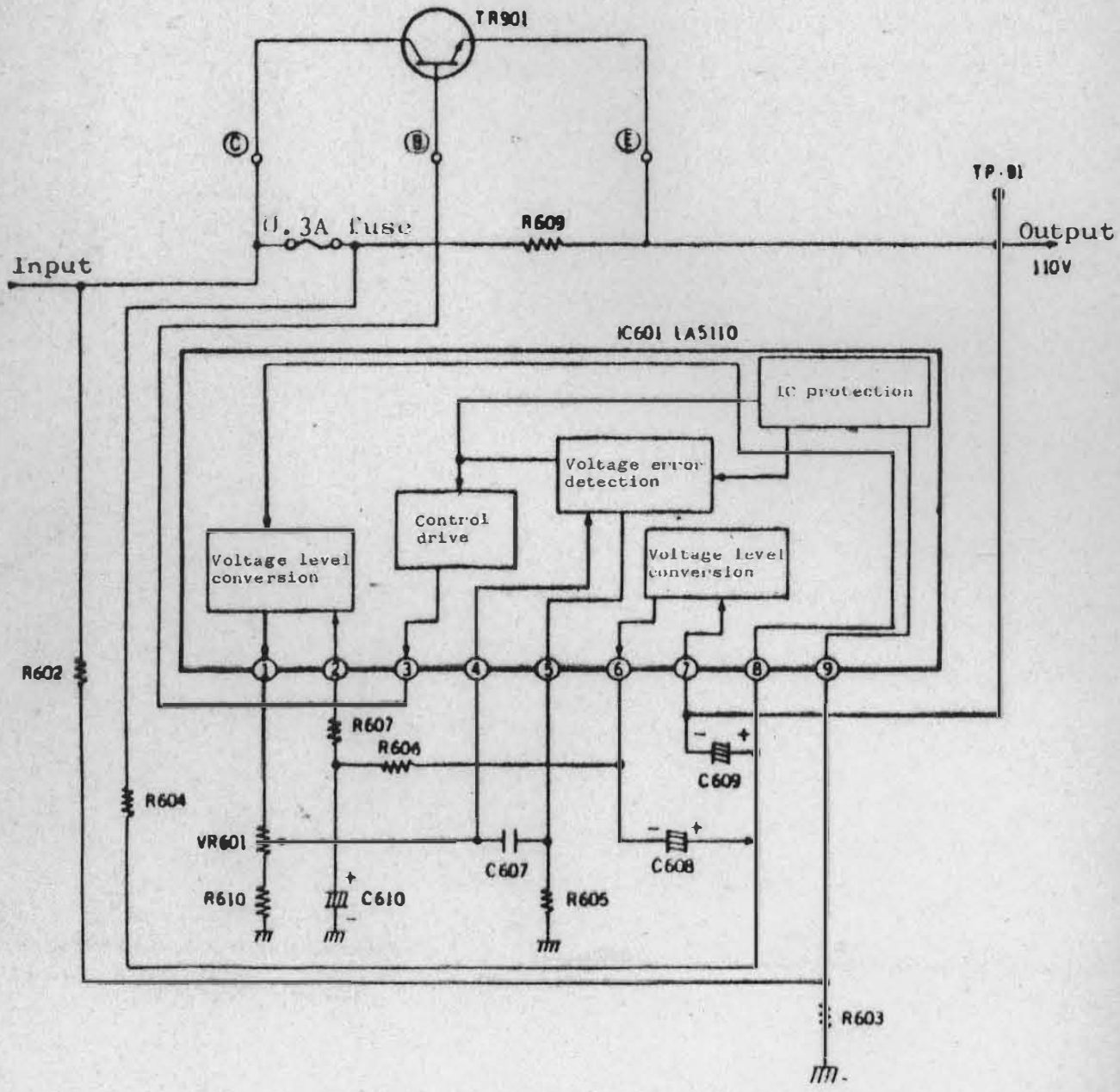
5. Constitution Diagram

(1) Deflecting IC (LA1464)



(2) Constant voltage control IC (LA5110)

Having an output voltage error detecting circuit and control circuit in a body, constant voltage control IC LA5110 detects fluctuations of DC100V output and corrects it automatically. The constant voltage control circuit using LA5110 is shown below schematically.



Schematic diagram of constant voltage control circuit

D.PARTS LIST

ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

1. Body

No.	Name of parts	Req.	Remarks	FOB Japan per pc.
01-01	Cabinet	1		
01-02	Leg	2		
01-03	Coin selector	1		
01-04	Cash box	1		
01-05	Lock	3		
01-06	Lock fitting (Lower)	2		
01-07	Cash box door	1		
01-09	Game counter	1		
01-10	Coin switch	1		
01-12	CPU P.C.Board mounting bracket	1		
01-14	P.C.Board support	6		
01-15	Table stay	1		
01-16	Power cord (w/o plug)	1		
01-17	Strain relief bushing	1		
02-01	Table	1		
02-04	Lock fitting (Upper)	2		
02-05	Table glass	1		
02-06	Table glass retainer	4		
02-07	Watertight packing 600	2		
02-08	" " 400	2		
02-09	" " 300	4		
02-10	Screen framing sheet	1		
03-01	Control box	2		
03-02	Keyboard switch spacer	4		
03-03	Laser gun control unit	2		
03-04	Laser gun control knob	2		
03-05	Fire switch bracket	2		
03-06	Shield	2		
03-07	Rubber pad	2		
03-09	Main panel	1		
03-10	Sub panel	1		
03-11	Main keyboard switch unit	1		
03-12	Fire switch	2		
03-13	Laser gun control switch	4		
03-14	Laser gun control unit frame	2		
03-15	Laser gun control lever	2		

ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

No.	Name of parts	Req.	Remarks	FOB Japan per pc.
03-16	Pin	2		
03-17	Retaining ring	2		
03-18	Switch spacer	4		
03-19	Stop rubber	2		
03-20	Bracket	2		
03-21	Angle bracket	2		
03-22	Compression spring	2		
03-23	Slide pin	2		
03-24	Nylon washer	2		
03-25	Keyswitch	5		
03-26	Button	5		
04-00	Video monitor	1		
04-13	Speaker	1		
09-01	10P CPU P.C.Board harness connector	1		
09-02	3P power supply P.C.Board harness connector	1		
09-03	9P I/O P.C.Board harness connector	1		
09-04	2P speaker harness connector (Small)	1		
09-05	6P sound P.C.Board harness connector	1		
09-06	15P sound P.C.Board harness connector	1		
09-07	4P audio harness connector	1		
09-08	6P video monitor harness connector	1		
09-09	2P speaker harness connector (Large)	1		
09-10	7P sub switch harness connector	1		
09-11	12P main switch harness connector	1		
09-12	2P game counter harness connector	1		
09-13	3P coin switch harness connector	1		
09-14	50P flat cable	1		

2. CPU P.C.Board

ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

No.	Name of parts	Req.	Remarks	FOB Japan per pc.
05-01	CPU P.C.Board	1	Complete set	
05-02	IC SN74LS153	8	Dual 4-Line to 1-Line Data Selector/Multiplexer	
05-03	" 8216	2	Buffer and Line Driver	
05-04	" C8080A	1	CPU Chip	
05-05	" SN74LS08	6	Quadruple 2-Input Positive AND Gate	
05-06	" SN74LS32	1	Quadruple 2-Input Positive OR Gate	
05-07	" SN74LS174	3	Hex D-Type Flip Flop w/Reset	
05-08	" MK4116	8	RAM	
05-09	" SN74LS74	1	Dual D-Type Edge-Triggered Flip Flop w/Set and Reset	
05-10	" SN74LS04	1	Hex Inverter	
05-11	" SN74LS02	1	Quadruple 2-Input Positive NOR Gate	
05-12	" SN74LS00	1	Quadruple 2-Input Positive NAND Gate	
05-13	" SN74LS138	1	3-to 8-Line Decoder/Demultiplexer	
05-14	" SN74LS139	1	Dual 2-to 4-Line Decoder/ Demultiplexer	
05-15	" C2708	7	EP-ROM	
05-16	" SN74LS241	2	Octal Buffer/Line Driver/Line Receiver w/3-State Output	
05-17	Resistor	2	33 ohm $\frac{1}{4}$W ± 5%	
05-18	"	2	150 ohm "	
05-19	"	8	1 kohm "	
05-20	Ceramic capacitor	43	0.1 μF 50V	
05-21	" "	8	0.2 μF "	
05-22	" "	2	120 pF "	
05-23	" "	1	330 pF "	
05-24	Electrolytic capacitor	2	100 μF 16V	
05-25	" "	2	220 μF 6.3V	

ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

3. I/O P.C.Board

No.	Name of parts	Req.	Remarks	FOB Japan per pc.
06-01	I/O P.C.Board	1	Complete set	
06-02	IC SN74S04	1	S Hex Inverter	
06-03	" SN74LS160	1	Synchronous Presettable Decade Counter w/Direct Reset	
06-04	" SN74LS123	1	Dual Retriggerable Monostable Multivibrator	
06-05	" SN74LS221	1	Dual Monostable Multivibrator	
06-06	" SN74LS14	1	Hex Schmitt Trigger Inverter	
06-07	" SN74LS164	2	8-Bit Serial-In Parallel-Out Shift Register	
06-08	" SN75361A	1	Dual NAND TTL to Mos Driver	
06-09	" SN74109	1	Dual J-K Positive-Edge-Triggered Flip Flop w/Set and Reset	
06-10	" SN74LS42	1	BCD-to-Decimal Decoder	
06-11	" SN74161	6	Synchronous Presettable 4-Bit Binary Counter w/Direct Reset	
06-12	" SN7416	2	Hex Inverter Buffer Driver	
06-13	" SN74LS174	4	Hex D-Type Flip Flop w/Reset	
06-14	" SN74LS32	1	Quadruple 2-Input Positive OR Gate	
06-15	" SN74LS74	1	Dual D-Type Edge-Triggered Flip Flop w/Set and Reset	
06-16	" SN74LS20	1	Dual 4-Input Positive NAND Gate	
06-17	" SN74156	2	2-Line to 4-Line Decoder	
06-18	" SN74LS151	8	8-Line to 1-Line Data Selector/Multiplexer	
06-19	" SN74175	1	Quadruple D-Type Flip Flop w/Reset	
06-20	" SN74148	1	8-Line to 3-Line Priority Encoder	
06-21	" SN74LS368	3	Hex Bus Driver w/3-State Output(Inverted)	
06-22	" SN74LS00	3	Quadruple 2-Input Positive NAND Gate	
06-23	" SN74LS55	1	2-Wide 4-Input AND-OR-INVERT Gate	
06-24	" SN74LS138	2	3-to 8-Line Decoder/Demultiplexer	
06-25	" SN74LS04	2	Hex Inverter	
06-26	" SN74LS240	2	Octal Buffer/Line Driver/ Line Receiver w/3-State Output(Inverted)	
06-27	" SN74LS175	2	Quadruple D-Type Flip Flop w/Reset	

ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

No.	Name of parts	Req.	Remarks	FOB Japan per pc.
06-28	IC SN74LS86	4	Quadruple 2-Input Exclusive OR Gate	
06-29	" SN75451	1	Dual Peripheral Positive and Drivers	
06-30	" SN74198	1	8-Bit Shift Register	
06-31	" N82S23N	1	Fuse-ROM	
06-32	Dip switch	1	8P	
06-33	Resistor	1	100 ohm $\frac{1}{4}$W $\pm$ 5%	
06-34	"	3	330 ohm "	
06-35	"	5	390 ohm "	
06-36	"	2	1 kohm "	
06-37	"	4	2 kohm "	
06-38	"	4	7.5 kohm "	
06-39	"	1	10 kohm "	
06-40	"	1	33 kohm "	
06-41	"	1	68 kohm "	
06-42	Ceramic capacitor	1	220 pF 50V	
06-43	"	1	330 pF "	
06-44	"	1	1000 pF "	
06-45	"	2	0.01 μF "	
06-46	"	24	0.1 μF "	
06-47	Tantalum capacitor	2	10μF 6.3V	
06-48	"	11	10μF 25V	
06-49	"	5	4.7μF "	
06-50	"	1	3.3μF "	
06-51	Electrolytic capacitor	1	33μF 16V	
06-52	" "	1	47μF "	
06-53	" "	1	100μF "	
06-54	" "	1	220μF 6.3V	
06-55	Dipped-Mica capacitor	1	180 pF 50V	
06-56	Diode	7	1S2075(High speed switching)	
06-57	"	1	1S1885	
06-58	Crystal oscillator	1	HC-18U 20.160 MHz	
06-59	Resistor array	2	4.7 kohm W$\pm$5%	
06-60	" "	2	1 kohm "	
06-61	" "	4	68 ohm "	
06-62	Transistor	1	2SC828	

4. Sound P.C.Board

ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

No.	Name of parts	Req.	Remarks	FOB Japan per pc.
07-00	Sound P.C.Board	1	Complete set	
07-01	IC C8035A	1	CPU Chip	
07-02	" C2708	1	EP-ROM	
07-03	" SN7475	2	Quadruple Bistable Latch	
07-04	" SN74123	2	Dual Retriggerable Monostable Multivibrator	
07-05	" 7405	1	Inverter Open-Collector	
07-06	" SN76477	1	Sound Generator	
07-07	Resistor	2	1 kohm $\frac{1}{4}$W $\pm$ 5%	
07-08	"	2	10 kohm "	
07-09	"	2	20 kohm "	
07-10	"	2	33 kohm "	
07-11	"	3	36 kohm "	
07-12	"	3	47 kohm "	
07-13	"	1	100 kohm "	
07-14	"	3	150 kohm "	
07-15	"	1	620 kohm "	
07-16	"	1	820 kohm "	
07-17	"	3	1 Mohm "	
07-18	"	1	1.5 Mohm "	
07-19	Electrolytic capacitor	3	330 μF 16V	
07-20	" "	3	1 μF 50V	
07-21	Ceramic capacitor	2	30pF 50V	
07-22	" "	8	0.01 μF 50V	
07-23	Polyester film capacitor	2	0.001 μF 50V	
07-24	" " "	2	0.047 μF 50V	
07-25	Tantalum capacitor	1	1 μF 25V	
07-26	" "	1	2.2 μF 16V	
07-27	" "	2	22 μF 6.3V	
07-28	" "	1	100 μF 6.3V	
07-29	Diode	8	1N34A	
07-30	Crystal oscillator	1	6.00 Mhz	
07-31	Resistor array	1	1 kohm 1/8W 8 elements	
07-32	" "	1	" " 4 "	
07-33	Variable resistor	3	10 kohm	
07-34	Transistor	1	2SC711DE	

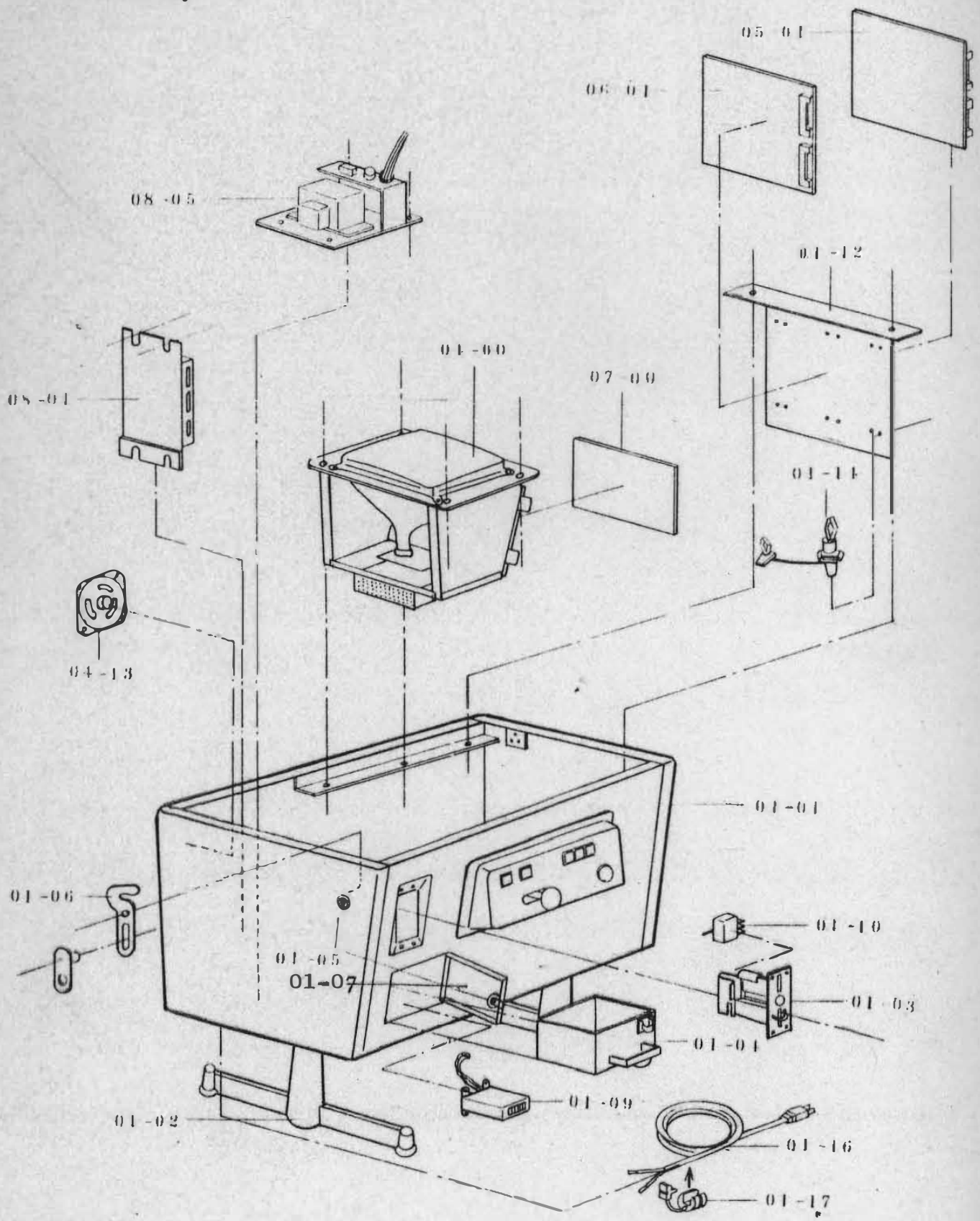
ALWAYS GIVE PART NO. WHEN ORDERING SERVICE PARTS.

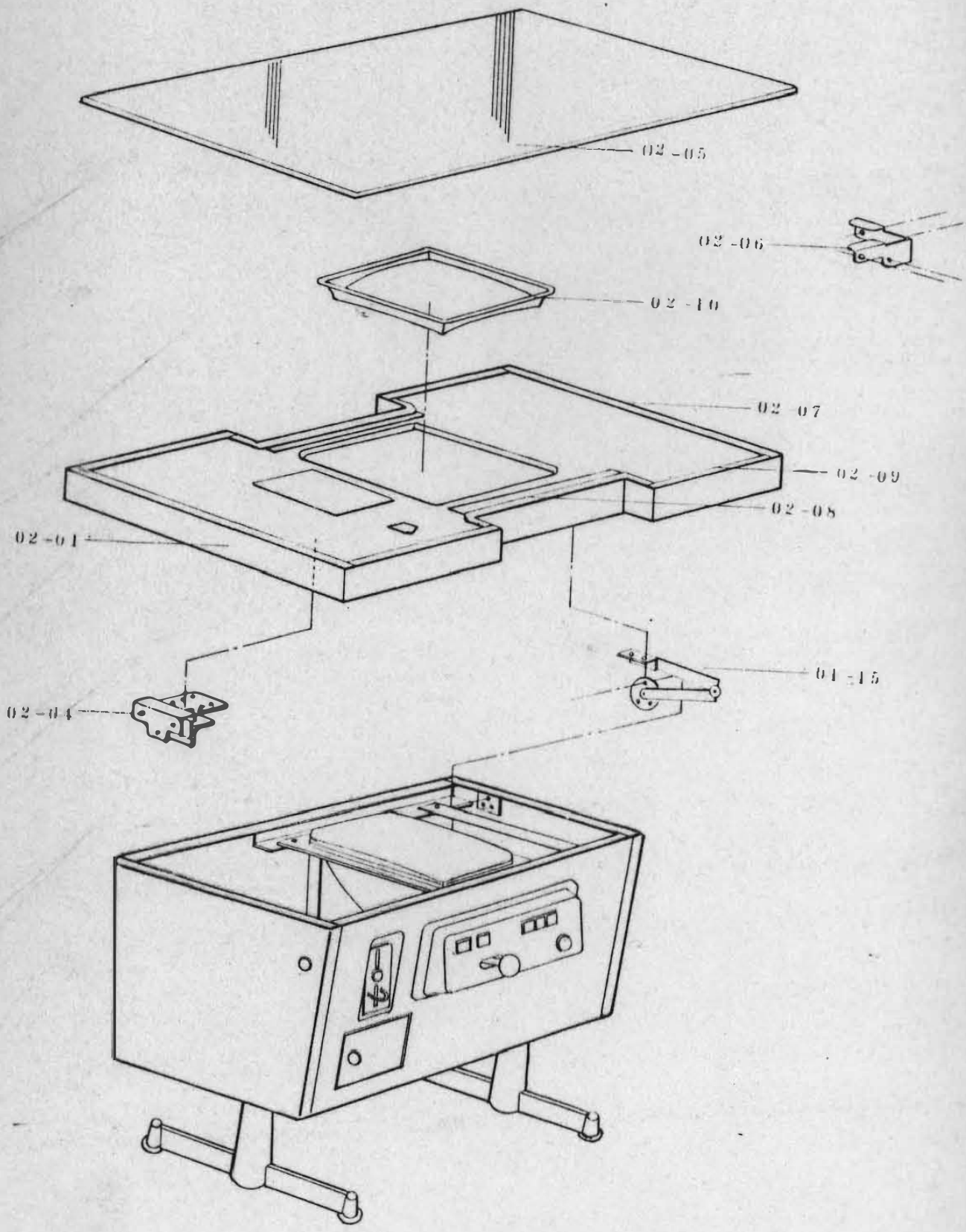
5. Power P.C.Board

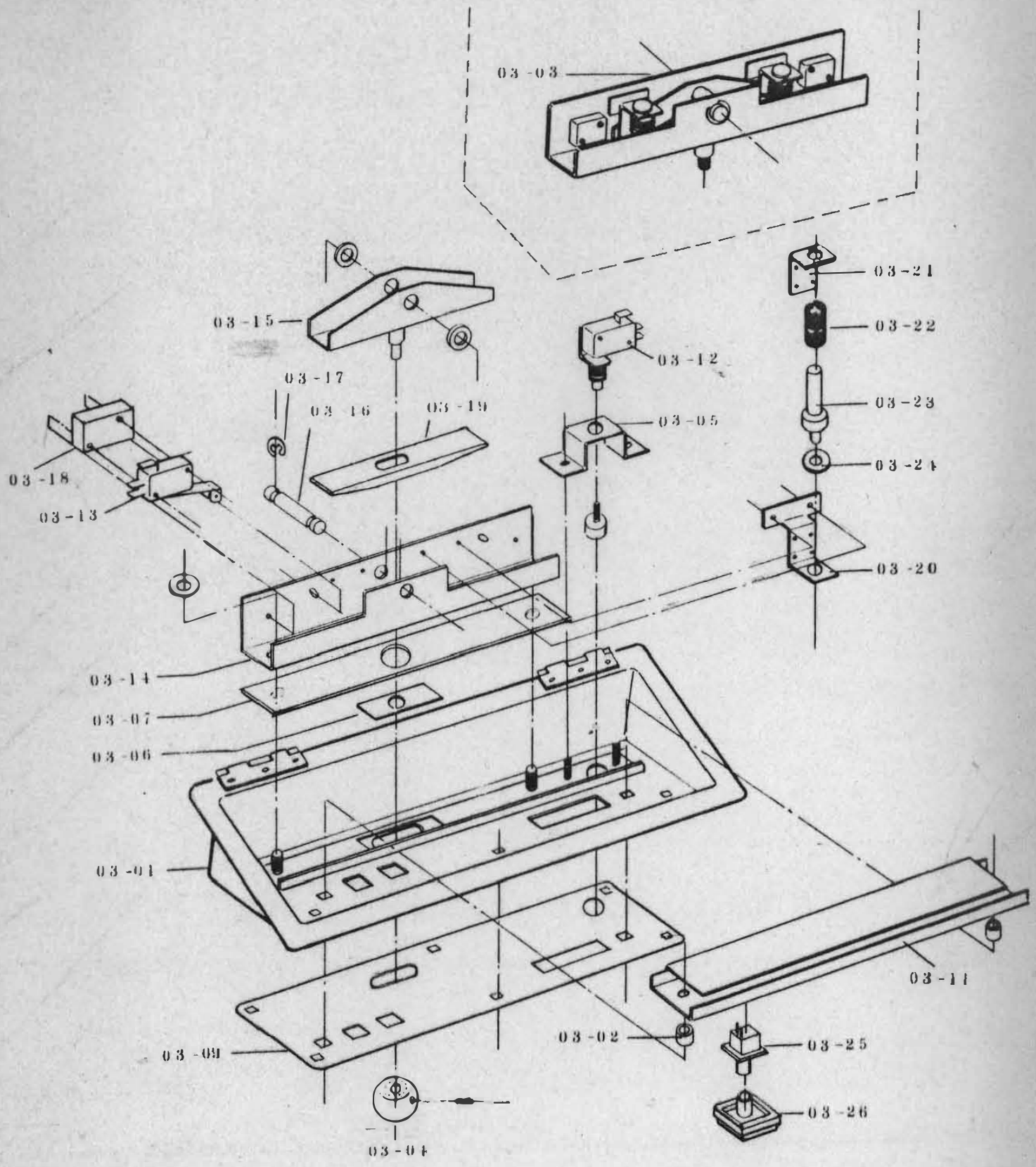
No.	Name of parts	Req.	Remarks	FOB Japan per pc.
08-01	Power supply P.C.Board	1	Complete set	
08-05	Power transformer unit	1		
08-06	IC 3D-0050	3	Switching Regurator IC	
08-07	" 78M24	1	24V Regulator IC	
08-08	Resistor	1	0.03 ohm 2W ± 5%	
08-09	"	2	0.1 ohm "	
08-10	"	1	100 ohm "	
08-11	"	1	330 ohm ½W ± 5%	
08-12	"	3	100 ohm ¼W ± 5%	
08-13	"	5	1 kohm "	
08-14	"	1	5.1 kohm "	
08-15	"	1	15 kohm "	
08-16	"	1	510 ohm 1W ± 5%	
08-17	Electrolytic capacitor	3	2200 μF 16V	
08-18	" "	1	1000 μF 35V	
08-19	" "	1	470 μF 25V	
08-20	" "	2	1000 μF 16V	
08-21	" "	1	47 μF 25V	
08-22	" "	2	10 μF 16V	
08-23	" "	1	220 μF 10V	
08-24	Transistor	3	2SA1012	
08-25	"	1	2SA817	
08-26	Diode	1	CTB24 Shot Key Diode	
08-27	"	2	1S1834 Fast Recovery Diode	
08-28	Variable resistor	3	RGP102 50 kohm	
08-29	" "	3	" 2 kohm	
08-30	Choke coil	1	3A 200 μH	
08-31	" "	2	0.5A 400 μH	
08-32	Silicon rectifier diode	1	4B4B41 4A Bridge	
08-33	" " "	2	1B4B41 1A "	

E. PARTS LOCATION

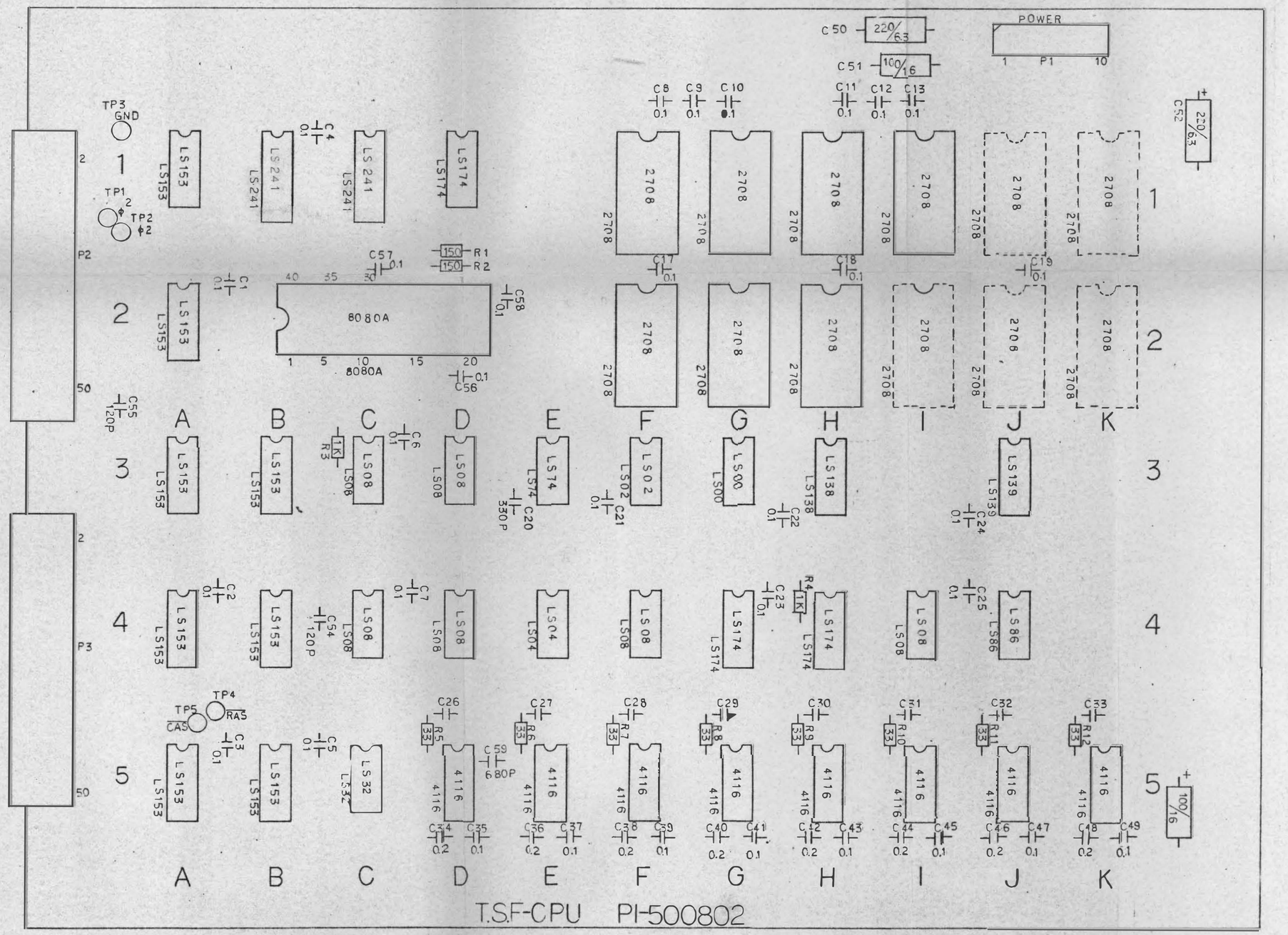
1. Body




02-05
02-06
02-10
02-07
02-09
02-08
02-01
01-15
02-04



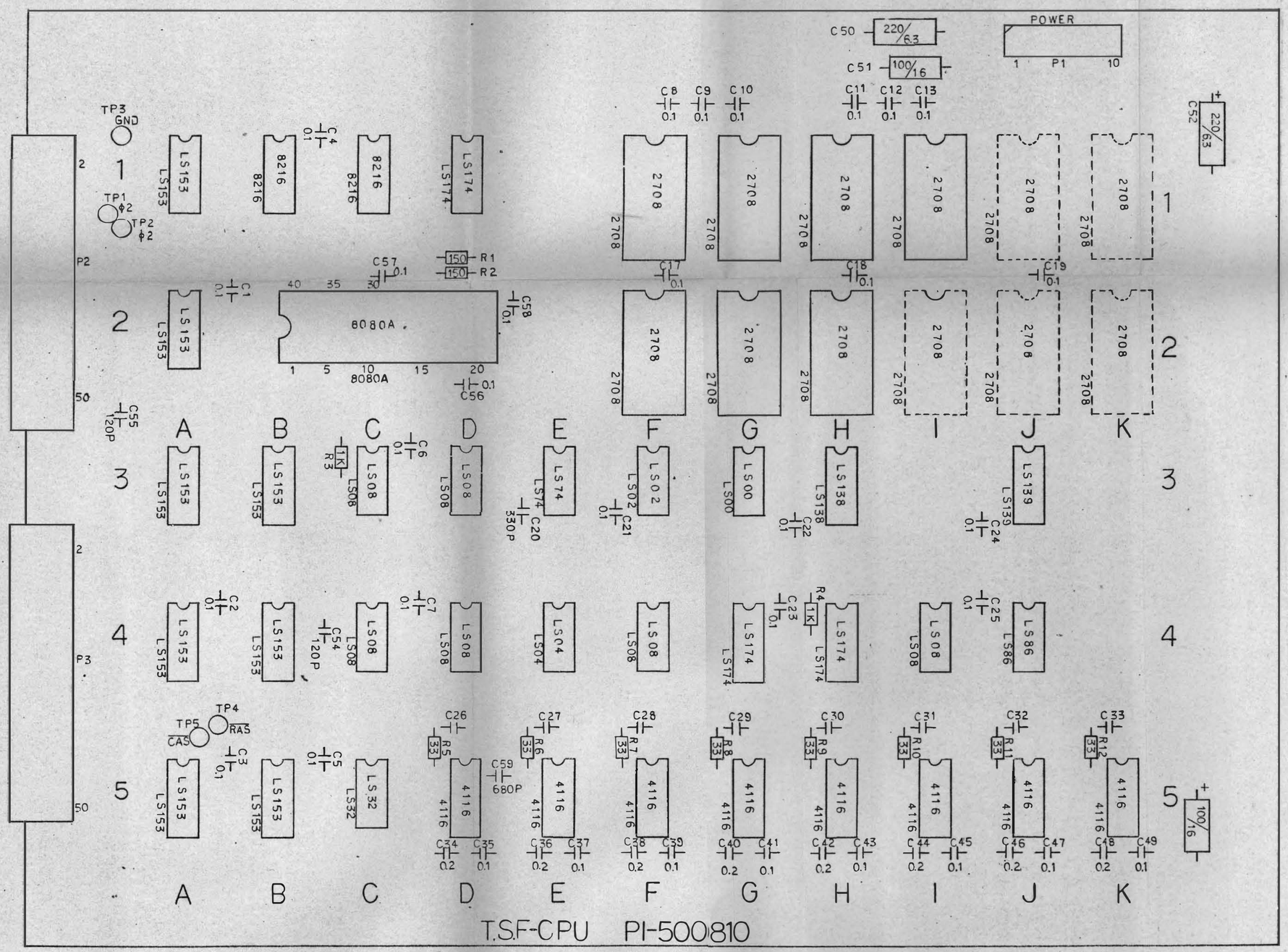
NOTE : The above figure shows the main side. Main Keyboard Switch 03-11 is not used on the sub side.
Sub Panel 03-10 is used in place of Main Panel 03-09.



品番	品名	材質	個数	摘要
名称	TSF-CPU PI-500802 PARTS LOCATIONS			年月日
製図	設計	承認	図番	

記号	年月日	変更内容	印

Nintendo 任天堂株式会社 尺 寸法 三角法



T.S.F-CPU PI-500810

品番	品名	材質	個数	摘要
名称	TSF-CPU PI-500810 PARTS LOCATIONS			年月日
製図	設計	承認	図番	

Nintendo 任天堂株式会社

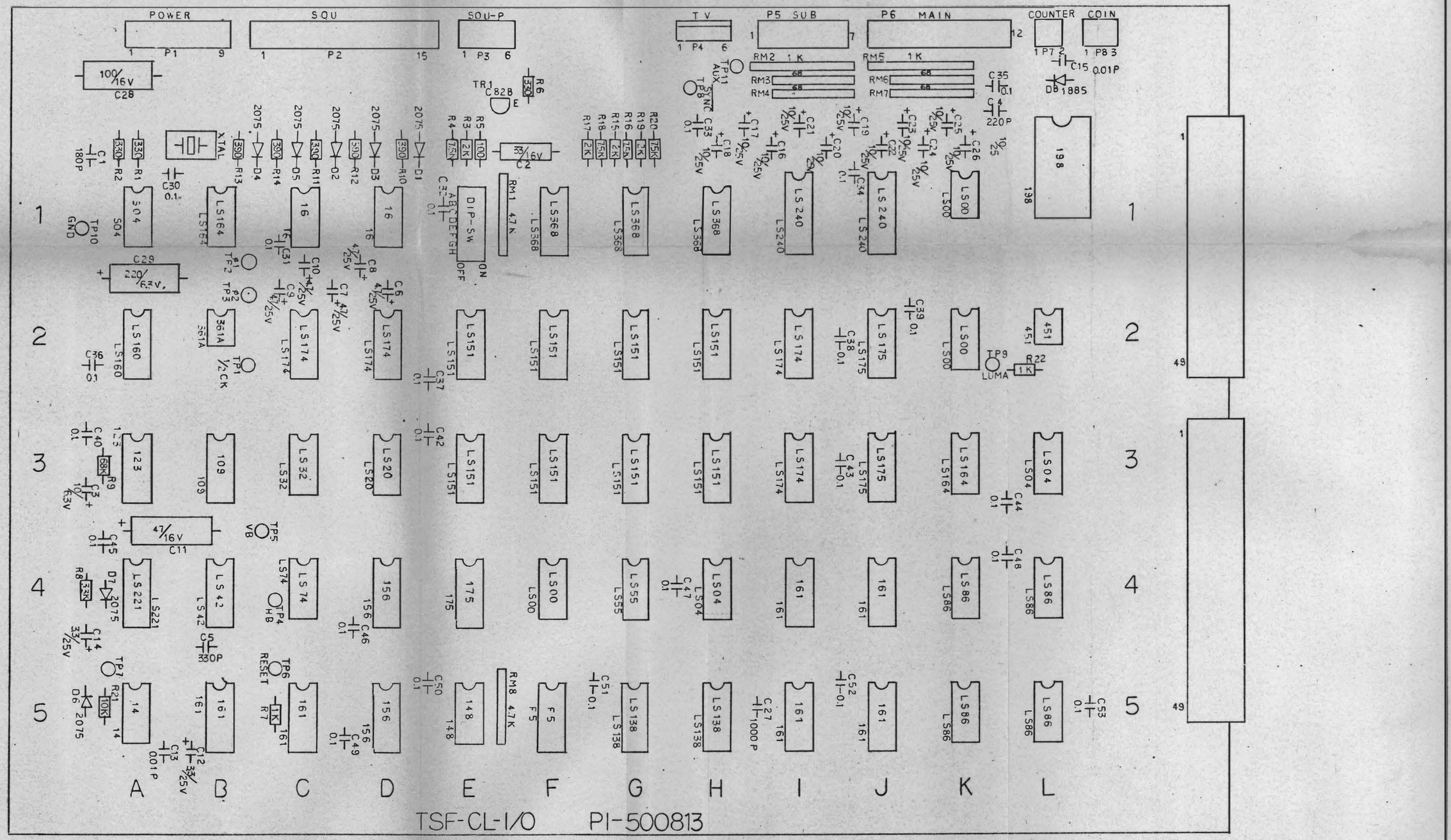
記号	年月日	変更内容	印

縮尺 寸法 三角法

T.SF-CPU PI-500861

品番	品名	材質	個数	摘要
名称	TSF-CPU PI-500861 PARTS LOCATIONS			年月日
製図	設計	承認	図番	
Nintendo		縮尺	寸法	第三角法

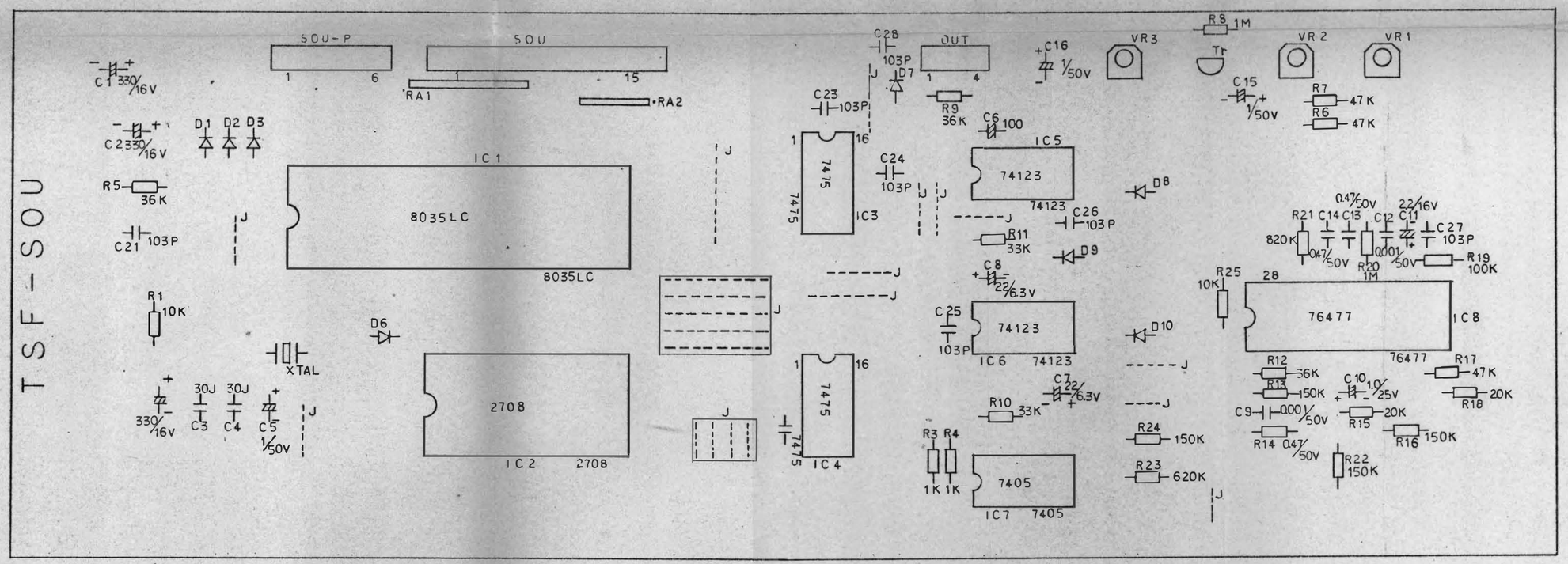
記号	年月日	変更内容	印



品番	品名	材質	個数	摘要
名称	TSF-1/O P.C.BOARD PARTS LOCATIONS			年月日
製図	設計	承認	図番	

記号	年月日	変更内容	印

Nintendo 任天堂株式会社 | 縮尺 | 寸法 | 第1版



品番	品名	材質	個数	摘要
名称	TSF-SOUND P.C.BOARD PARTS LOCATIONS			年月日
製図	設計	承認	図番	
Nintendo 任天堂株式会社	縮尺	寸法	三角法	

記号	年月日	変更内容	印

F. CIRCUIT DIAGRAM

If the trouble can not be repaired by the checks in all steps, check again with reference of the following circuit diagrams.

NOTE

CPU P.C.Boards are available in three kinds in specifications as follows. Confirm the number printed on your CPU P.C.Board and see circuit diagram for the number.

* TSF-CPU P1-500802

  IC74LS241 is mounted at the position of "1B" and "1C" on the P.C.Board.

* TSF-CPU P1-500810

  IC8216 is mounted at the position of "1B" and "1C" on the P.C.Board.

* TSF-CPU P1-500861

  This P.C.Board designed for common use for IC74LS241 and IC8216. When either IC is mounted, the space for another IC is open.
  Note that, only on this P.C.Board, alphabets instructing position of parts start with "Z".

+12V		+5V	-5V
ø1 EPROM	ø2 D RAM		
300mA	100 mA	300mA	200mA

CONSUMPTION CURRENT (AVERAGE)

A	B	INTA	INP	AM	
ø	ø	ø	ø	ø	ROM
1	ø	ø	ø	1	RAM
ø	1	ø	1	X	INPUT
1	1	1	X	X	INTERRUPT

INTERRUPT

RST1 RST2

VB

INTR

2708 18 PIN PROGRAM-- GND
24 PIN Vcc ---- +5V
21 PIN VBB ---- -5V
19 PIN VDD ---- +12V ø1
12 PIN VSS ---- GND

4116 9 PIN Vcc ----+5V
8 PIN VDD ----+12V ø2
1 PIN VBB ----- 5V
16 PIN VSS ----GND

8080A

R4 1K

LS08

LS153 x 4

LS241 x 2

LS138

LS139

LS32

LS174

LS157

LS153

LS04

LS02

LS86

LS00

CP1

CP2

CP3

TP1 TP2 TP3 TP4 TP5

2 C

品番	品名	材質	個数	摘要
名称	TSF-CPU PI-500802			年月日 54.2.15
製図	沢野	設計	承認	図番

Nintendo 任天堂株式会社

記号	年月日	変更内容	印

縮尺 寸法 三角法

+12V		+5V	-5V
Ø1 EPROM	Ø2 D RAM		
300mA	100 mA	300mA	200mA

CONSUMPTION CURRENT (AVERAGE)

A	B	INTA	INP	AM	
Ø	Ø	Ø	Ø	Ø	ROM
1	Ø	Ø	Ø	1	RAM
Ø	1	Ø	1	X	INPUT
1	1	1	X	X	INTERRUPT

INTERRUPT

RST1 RST2

VB

INTR

○2708 18 PIN PROGRAM -- GND
24 PIN Vcc ---- +5V
21 PIN VBB ---- -5V
19 PIN VDD ---- +12VØ1
12 PIN VSS ---- GND

○4116 9 PIN Vcc ----+5V
8 PIN VDD ----+12VØ2
1 PIN VBB ----- 5V
16 PIN Vss ----GND

8080A

LSØ8

LS153 × 4

LS138

LS139

2708

8216 1C

8216 1B

LS174

LSØØ

LS153

LS86

LSØ2

LSØ4

LS32

4116

CP1 CP2 CP3 TP1 TP2 TP3 TP4 TP5

R1 150 R2 150 R3 150 R4 1K R5 1K R6 33 R7 33 R8 33 R9 33 R10 33 R11 33 R12 33 R13 33

C50 C51 C52 C53 C54 128p C55 128p C20 330p

2 C

品番	品名	材質	個数	摘要
名称	TSF-CPU PI-500810			年月日 54.2.15
製図	沢野	設計	承認	図番

Nintendo 任天堂株式会社

記号	年月日	変更内容	印

縮尺 寸法 三角法

+12 V		+5V	-5V
① EPSOM	② D RAM		
300 mA	100 mA	300 mA	200 mA

CONSUMPTION CURRENT (AVERAGE)

A	B	WR	INP	MA	
0	0	0	0	0	ROM
1	0	0	0	1	RAM
0	1	0	1	X	INPUT
1	1	0	X	X	INTERRUPT

INTERRUPT

RST1 RST2

VB

INTR

●2708 18 PIN PROGRAM-- GND
24 PIN Vcc ---- +5V
21 PIN VBB ---- -5V
19 PIN VPP ---- +12V ①
12 PIN VSS ---- GND

●4116 9 PIN Vcc ---- +5V
8 PIN VPP ---- +12V ②
1 PIN VBB ---- -5V
16 PIN Vss ---- GND

8080A

LS08 LS153×4 LS241×2 8216 1D (注1) 8216 1B (注1) LS139 LS138 LS32 LS174 LS157 LS86 LS04 LS74 LS00 LS02

2708 1F 2F 1G 2G 1H 2H 1I 2I 1J 2J

4116 5C 5D 5E 5F 5G 5H 5I 5J

CP1 CP2 CP3 TP3 TP4 TP5

HOLDA WAIT RESET HOLD

(注1) IC 1C(LS241) と IC 1D(8216) はどちらか一方だけが基板に実装されている。
IC 1A(LS241) と IC 1B(8216) 〃

品番	品名	材質	個数	摘要
名称	TSF-CPU PI-500861			年月日 54.7.3

記号	年月日	変更内容	印

Nintendo 任天堂株式会社

尺度 寸法 三角法

20.160 MHz
XTAL ST-501255

R1 330 R2 330 C1 18pF

1A (S04) 1A (S04) 1A (S04)

TP1 TP2 TP3 SN75361

2A LS160 2B 3B 109 3K LS164 3L

4I 161 4J 161 5I 161 5J 161

LS74 4C 1000P

4H 3C 3D LS20 3K LS164

1/60 SEC

CK/4

HB VB

5B 161 5C 161 1L 148 4F

Tr1 C828 R5 100 R6 330 C2 33μ 16V TP8 SYNC

LS55 4G C4 220P

1K 2K

CP9 CP10 CP4 [TV]

INTD INTR SYNC GND

H READ CAS RAS COM BLK

BEAM BRK

TP9 LUMA R15 2K R16 7.5K R17 2K R18 7.5K R19 2K R20 7.5K

RED GREEN BLUE

4E LS175 5E 14S 148 E1

RM8 4.7K

[TV] RED GRN BLU GND

[POWER] +12V +5V -5V +24V GND

CP1 C28 100μ 16V C29 220μ 6.3V TP10 GND

5H LS138 5G LS138 5F1 5D 156 4D 156

UFO BEAM TRG BEAM BRK

R9 68K C3 10μ 6.3V 5A 123 3A

RED GREEN YELLOW BLUE MAGENTA CYAN WHITE

CP9 DO 0 1 2 3 4 5 6 7

2J LS175 2I LS174 3I LS174 3J LS175

PCL OUT2 OUT3

2C LS174 2D LS174 OUT4 OUT5

d BUS D BUS DO BUS

2H LS151 2G LS151 2F LS151 2E LS151 3E LS151 3F LS151 3G LS151 3H LS151

MSB LSB 1G LS368 1H LS368

DI27 DI26 DI25 DI24 DI23 DI22 DI21 DI20

CP10 DI20 DI21 DI22 DI23 DI24 DI25 DI26 DI27

IN0 IN1 IN2 IN3 INT INT INT INT

RM1 4.7K RM3 68 RM4 68 RM5 1K RM2 1K

DIP SW 76B08 H G F E D C B A

IN 0 MAIN/MODE
IN 1 SUB/GAME
IN 2 DIP
IN 3 SHIFTER

[SUB] CP5 GND

C5 330P C11 47μ 16V C12 3.3μ 25V C13 0.01 C14 33μ 25V

D6 IS2075K R21 10K R24 33K R22 1K R23 1K

4A LS221 4B LS42 1D 1C 16

TP6 RESET CP9 RESET TP7 COIN

C10 4.7μ 25V x4 390 x4 IS2075K x4 390 IS2075K

C9 C8 C7 C6 D1 D2 D3 D4 D5

C15 0.01 U5 SN75451 D8 1S1885 CP7 [COUNTER] COUNT UP RM7 68

C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 10μ 25V x6

1J 1I 1H 1E 1F 1G

CP2 -5V +5V +12V GND [SOU-P]

CP3 [SOU] GND GAME EXCEL INV BRK BEAM BRK BEAM TRG UFO APH INV S0 INV S1 INV S2 INV S3 UFO BRK 1/60 SEC

CP10 A0 A1 A2 OUT

CP8 GND COIN SW [COIN]

CP6 [MAIN] GND 2-MAN 1-MAN BEAM SHR BEAM SHL BEAM TRG GAME C GAME B GAME A BEAM SH R BEAM SH L BEAM TRG

TP11 AUX

品番	品名	材質	個数	摘要

名称 TSF-1/O P.C.BOARD 作成年月日 54.5.23

設計 製図 藤越 検図 沢野 承認 図番

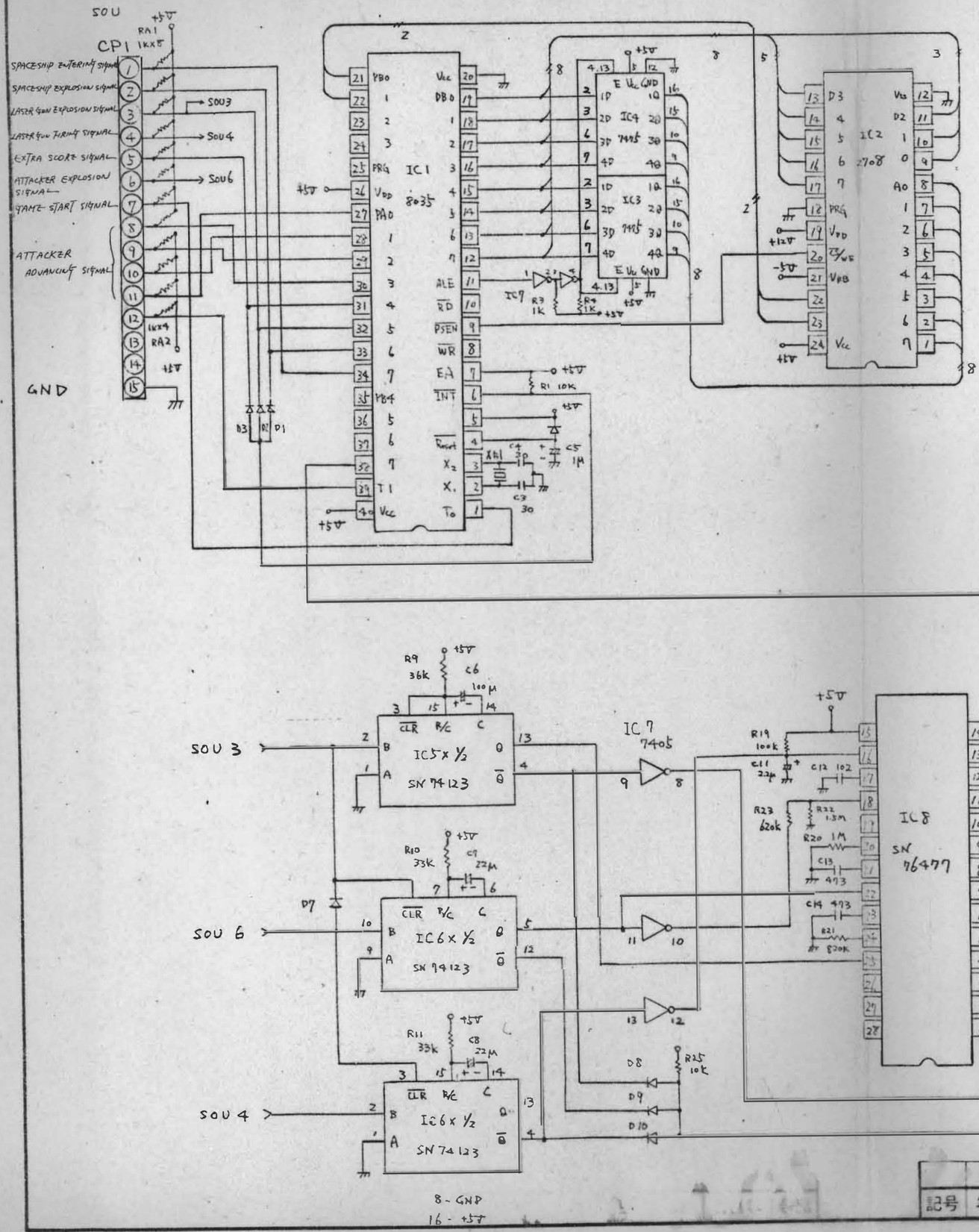
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尺度 / 単位 mm 三角法

改定

- 5P of IC
- 32×8bit P-ROM 27S08 (AMD) MB8323 (SIGNETICS) 6330-1 (MMI)
- C 30~53 BY PMS CONDENSER FOR 5V 0.1μ 50V
- Ⓣ = TANTALUM CONDENSER
- Ⓜ = DIP MICA CONDENSER
- Ⓐ = ALUMINUM ELECTROLYTIC CONDENSER
- OTHERS = CERAMIC CONDENSER

CONSUMPTION CURRENT (AVERAGE)	
+5V	1.17 A
+12	5 mA
-5	24 mA
+24	

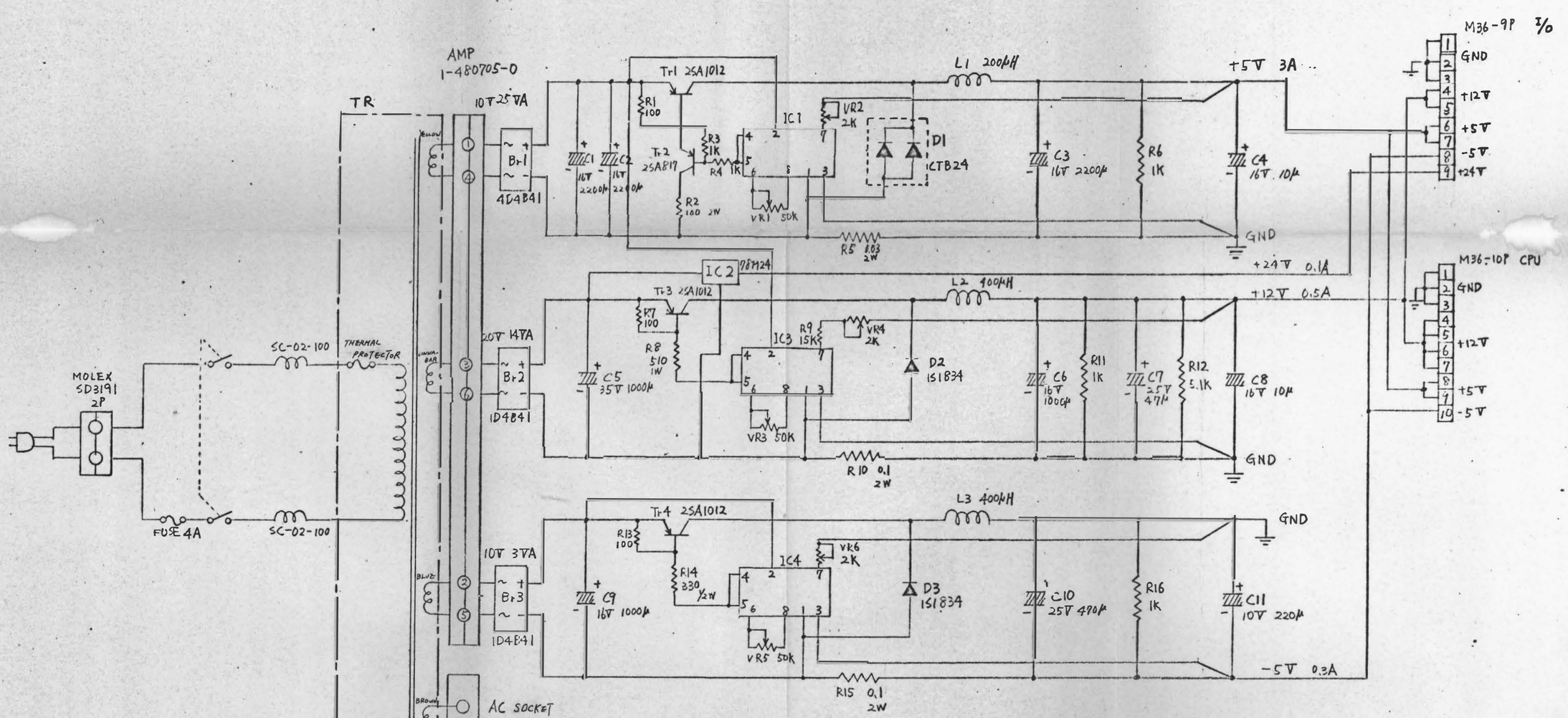


CONSUMPTION CURRENT (AVERAGE)

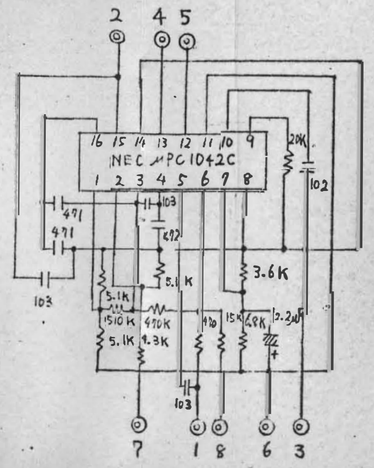
+12V	+5V	-5V
28mA	220mA	18mA

記号	年月日	変更内容	印

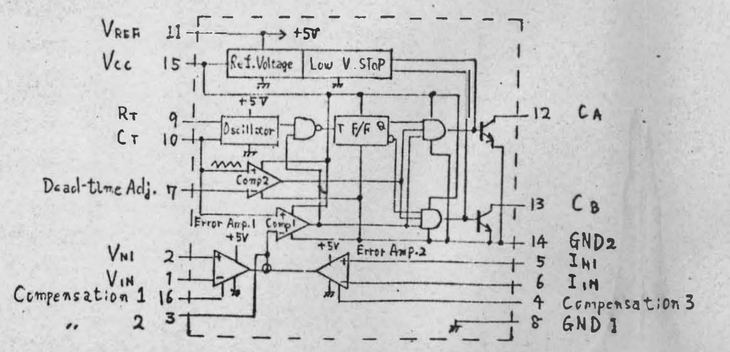
	コネクター番号 記入			54.2.14
品番	品名	材質	個数	摘要
名称	SOUND. P.C.BOARD			年月日
製図	承認	設計	承認	図番 TSI-E-
Nintendo 任天堂株式会社			縮尺	寸法 三角法



☆ IC1, IC2, IC3 (HYBRID IC)



☆ REF.: μPC1042C BLOCK DIAGRAM

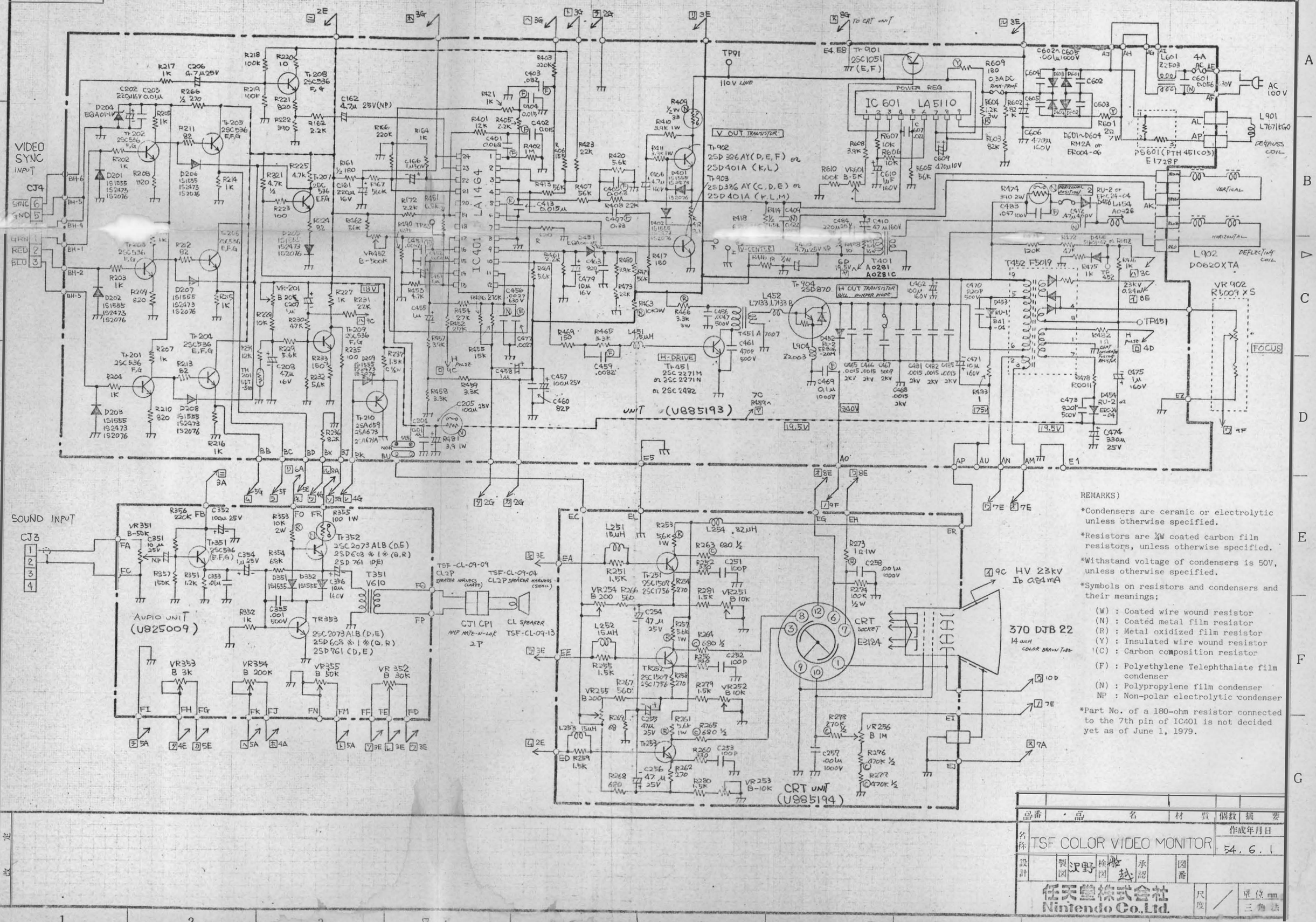


品番	品名	材質	個数	摘要
名称	POWER P.C.BOARD			年月日 54.7.4
製図		設計	承認	図番

Nintendo 任天堂株式会社

記号	年月日	変更内容	印

縮尺 寸法 三角法



REMARKS)

*Condensers are ceramic or electrolytic unless otherwise specified.

*Resistors are ¼W coated carbon film resistors, unless otherwise specified.

*Withstand voltage of condensers is 50V, unless otherwise specified.

*Symbols on resistors and condensers and their meanings;

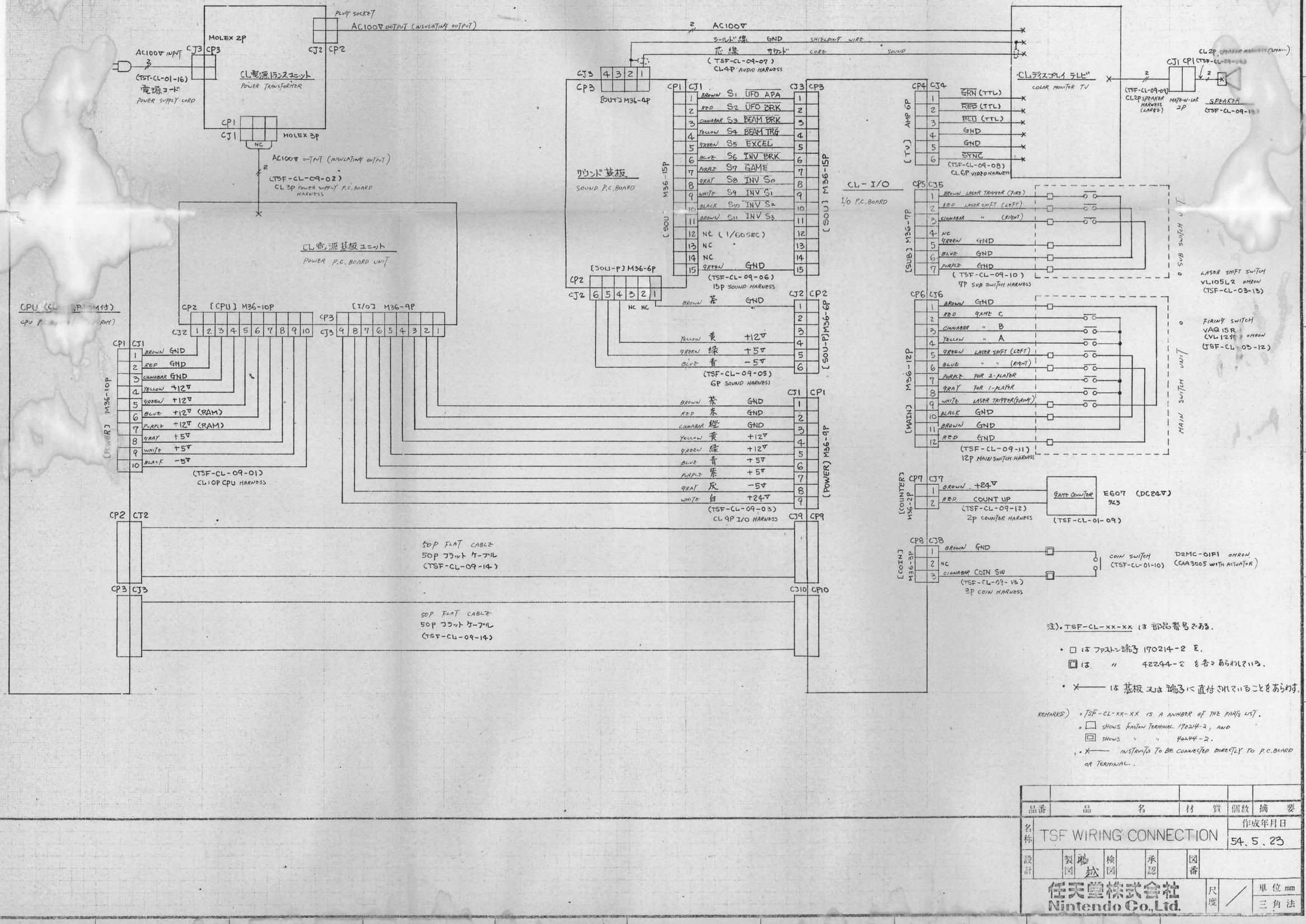
(W) : Coated wire wound resistor
(N) : Coated metal film resistor
(R) : Metal oxidized film resistor
(Y) : Insulated wire wound resistor
(C) : Carbon composition resistor
(F) : Polyethylene Telephthalate film condenser
(N) : Polypropylene film condenser
NP : Non-polar electrolytic condenser

*Part No. of a 180-ohm resistor connected to the 7th pin of IC401 is not decided yet as of June 1, 1979.

品番	品名	材質	個数	摘要
名称	TSF COLOR VIDEO MONITOR		作成年月日	54. 6. 1
設計		製図 沢野	検図	承認	図番

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尺度 / 単位 mm 三角法



注)。TSF-CL-xx-xx は 部品番号である。

- □ は ファストン端子 170214-2 を、
  ▣ は 〃 42244-2 を各々あらわしている。
- X—— は 基板 又は 端子に 直付されていることをあらわす。

REMARKS) ◦ TSF-CL-XX-XX IS A NUMBER OF THE PARTS LIST.
◦ □ SHOWS FASTON TERMINAL 170214-2, AND
▣ SHOWS 〃 〃 42244-2.
◦ X—— INSTRUCTS TO BE CONNECTED DIRECTLY TO P.C.BOARD OR TERMINAL.

品番	品名	材質	個数	摘要

名称	TSF WIRING CONNECTION	作成年月日	54.5.23
設計	製図	検図	承認	図番
	飛越			

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尺度 / 単位 mm 三角法

改定

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