Service Manual
Model : MS8-26SU

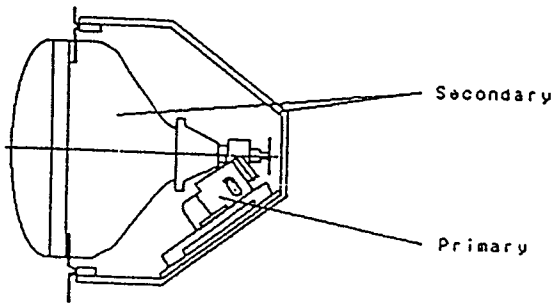
NANAO

♦ Contents

CAUTIONS

1. Primary and Secondary Circuit

To avoid a severe electric shock, never touch the primary parts.
When you make adjustments in this monitor, use the dielectric tuning tool.
Don't short anything otherwise they may cause a trouble.

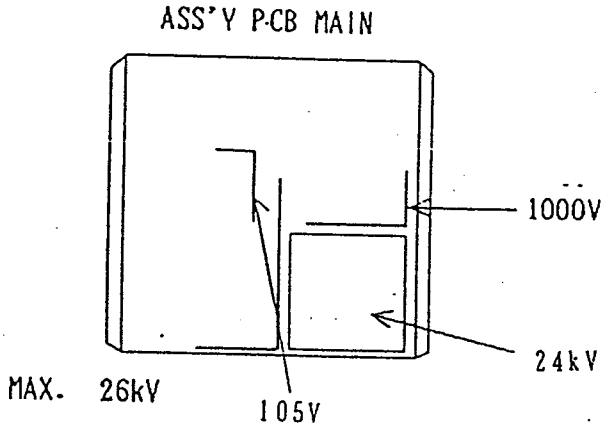


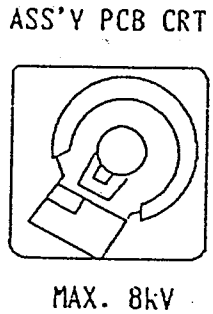
2. Impact

Don't give any impact to the color monitor during transportation, otherwise a trouble may result. The shipping package is durable against a drop of 400mm. However, if the package drops from a height of exceeding 400mm, it may be damaged.

3. High Voltage

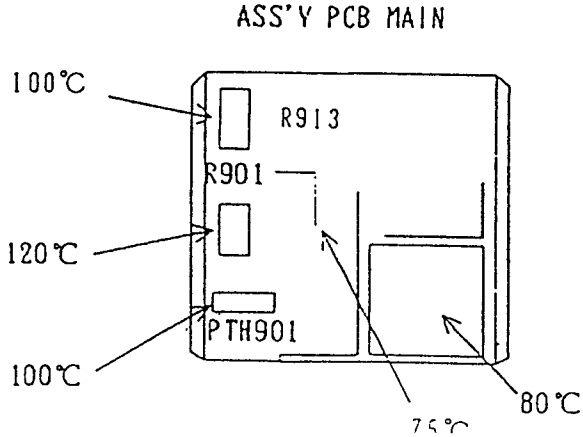
Never touch the interior of the color monitor carelessly, since a very dangerous high voltage exceeding 20,000V is produced inside the monitor.
Disconnect the AC plug from the socket before touching the interior.

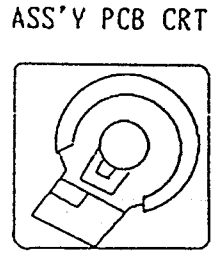




4. High-Temperature Section

If dust or paper scraps remain in the interior of the color monitor, they may cause a trouble like electric shock or a fire.
Particularly be careful with the ingress of these foreign substances due to a practical joke of customers.





5. Troubles

If an abnormal noise, smoke or an unusual odor was detected, turn off the power switch immediately and also disconnect the plug from the plug socket.
If the instrument is operated as it is, an unexpected trouble may result.

6. Magnetism

Magnetism causes the disturbance of CRT performance. Don't allow any magnet nor speaker to be close to the color monitor.
Even if it approaches the instrument, it does not cause a trouble, but the picture may be colored or distorted.

7. Static Electricity

If you touch the CRT surface, you may feel a slight electric shock.
This is caused by the static electricity being produced on the CRT surface and it does not affect the human body.

8. Control knobs

Don't manipulate control knobs uselessly. Entrust a skilled technician with their adjustments. If these control knobs are adjusted at random, the instrument may malfunction after a long-time use.
For detailed adjustments refer to the separate adjustment and check procedures.

9. Connecting CRT and PCB

Use only CRT and PCB coring the same serial number. Apply silicon grease around anode button when putting anode cap on. Please made sure that only other material is not attached around contact area.

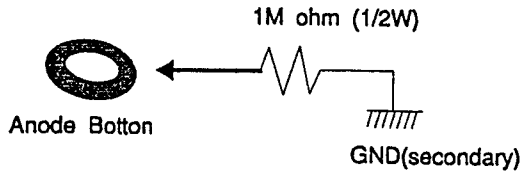
10. Modification

Never modify any part of the equipment without permission by authorized party. NANAO corporation will not be responsible for any damage or incident caused by an unauthorized modification.

♦ Notice

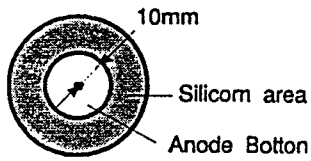
1. How to discharge the electricity on the CRT Anode button.

Use the following jig to discharge on the CRT Anode button. This action must be done after disconnecting the AC cord.
During discharging, do not attempt to touch the mentioned area (an arrow below).

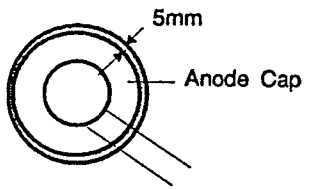


2. How to mount the Anode cap.

(1). Clean up around the Anode button and inside of Anode cap.
(2). Paint the Silicon grease around the Anode button uniformly.
(Recommended grease; KS-650N, Shinetsukagaku)

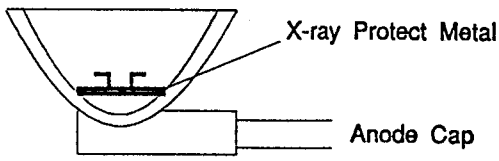


* Do not paint inside of 10mm.



* Over-painted area may be less than 5mm.

(3). Lock the hook inside of the Anode cap onto the Anode button surely. If it has X-ray metal in the Anode cap, attach it onto the Anode button surely.



(4). After locking the Anode button, pull the Anode to make sure the connection.

3. Please pay your attention to CRT neck and NECK PCB. Do not put both part to other material. It will be caused the damage.

4. Be careful to insert the NECK PCB to CRT.

5. Do not clamp CN102 lead and High Voltage lead from FBT with other lead wires.

I. PRODUCT SPECIFICATIONS

(1) Input Unit

A. Power Input

A－1	Plug Cord	2-pin AC cor(UL Listed,polarized,18AWG, SPT-2)
A－2	Input voltage	120V AC ± 10% 60Hz
A－3	Power consumption	About 100W
A－4	Inrush Current	About 36A peak (Input voltage 120VAC)

B. Signal Input

B－1 Connector

AMP 2P.3P
parts code : 1-480698-0 (2P)
parts code : 1-480700-0 (3P)

B－2 Pin Assignment

Pin No. (Wire color)	Input signal	Input signal specification
1	Vertical sync signal	Negative polarity TTL level
2 (Blue/White)	Horizontal sync signal	Negative polarity or Positive polarity TTL level Negative polarity composite synchronization 1.0～5.0Vp-p
3 (White)	Ground	Ground
4 (Blue)	Blue video signal	Positive polarity White level: Lower than 5V DC Black level: Higher than 0V DC 2.5～5.0Vp-p
5 (Green)	Green video signal	↑ Same as specified
6 (Red)	Red video signal	↑ Same as specified

※1. Vertical synchronizing signal

Frequency	54Hz～60Hz
Pulse width	190μS(=3H)～500μS(=8H)

※2. Horizontal synchronizing signal

Frequency	15.75kHz (MODE 1),24.39kHz (MODE 2)
Pulse width	3μS～7μS(MODE 1),2μS～5μS(MODE 2)

C. Degaussing Power Input

C－1	Connector	AMP 2P parts code : 1-480698-4
C－2	Current On Degawss Coil	In-rush Normal Operation

(2) Display Unit

A. Display Tube	26″100° deflection color CRT CRT type : A63JHF81X
B. Scanning	TV scanning system

(3) Electrical Performance

A. Video Amplifier

A－1	Video amplification	More than 30dB
A－2	Video Bandwidth	More than 16MHz (at -3dB)

B. Deflection Unit

B－1	Horizontal Frequancy Range	15.75kHz ± 300Hz (MODE 1) 24.39kHz ± 300Hz (MODE 2)
B－2	Vertical Frequancy Range	54Hz～60Hz

C. CRT Screen

C－1	Raster Linearity		
	Horizontal	±8% max.	
	Vertical	±8% max.	
C－2	Raster distortion		
	Trapezoidal distortion	less than 3%	
	Barrel/pincushion distortion	less than 3%	
	Tilt	less than 2%	
C－3	Misconvergenee		
	Within a circle having a diameter corresponding to 80% of vertical length of CRT		Less than 1.1mm
	Within a circle having a diameter equivalent to vertical length of CRT (excluding the above circle)		Less than 2.1mm
	Within CRT screen (excluding the above circles)		Less than 3.0mm

C－4 Color purity

No trouble shall be appeared after demagnetization by using a bar demagnetizer.

Condition: Within USA terrestrial magnetism, set as TV style.

C－5 Horizontal Resolution

680dots(center)

C－6 Display size/position

Conform to TV specifications.
To be discussed.

(4) Environmental Conditions

A. Operating conditions

Temperature	0° C～40° C
Relative humidity	Less than 70%

B. Storage conditions

Temperature	-10° C～60° C
Relative humidity	Less than 80%

C. AC line noise resistance

No asynchronized condition shall be detected when applying 500Vp-p pulse by using a noise simulator.

D. Drop Test 40cm (excep top direction)

E. Vibration Test

No abnormal symptom shall appear when applying vibrations having the maximum acceleration of 1G for 30 minutes.

F. Weight 33.0kg (Net)
38.5kg (Gross)

(5) Adjustment Functions

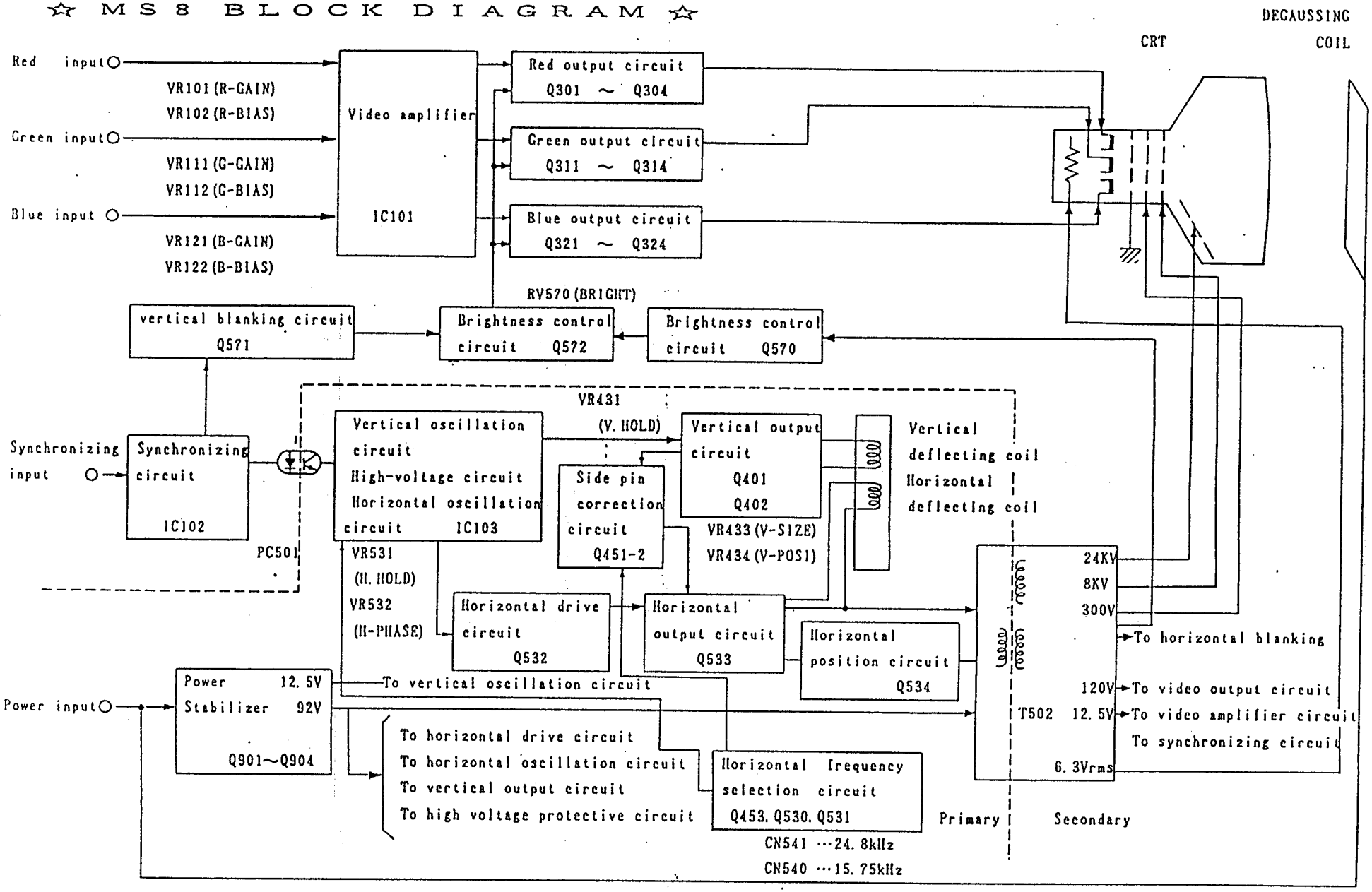
Arrangement	control knobs
Front face of the Main PCB	Brightness (BRIGHT) Vertical position (V.POSI) Vertical size (V.SIZE) Vertical hold (V.HOLD) Horizontal hold (H.HOLD) Horizontal size (H.SIZE) Horizontal phase (H.PHASE) Red signal gain (R-GAIN) Green signal gain (G-GAIN) Blue signal gain (B-GAIN) Red signal bias(R-BIAS) Green signal bias (G-BIAS) Blue signal bias(B-BIAS) Sharpness Selection Switch (SS.SW) Side pin spc (S.P.C)
Inside of the Main PCB	Horizontal frequency selector (HIGH←→LOW) Horizontal size selector (NARROW←→WIDE) Deflection yoke polarity selector (NORMAL←→REVERSE) Horizontal position (H.POSI) Vertical linearlity (V.LIN)
On the FBT	Focus (FOCUS) Screen (SCREEN)

(6) Safety Standards

designed UL
according to UL 1410

Fcc DHHS

☆ MS8 BLOCK DIAGRAM ☆

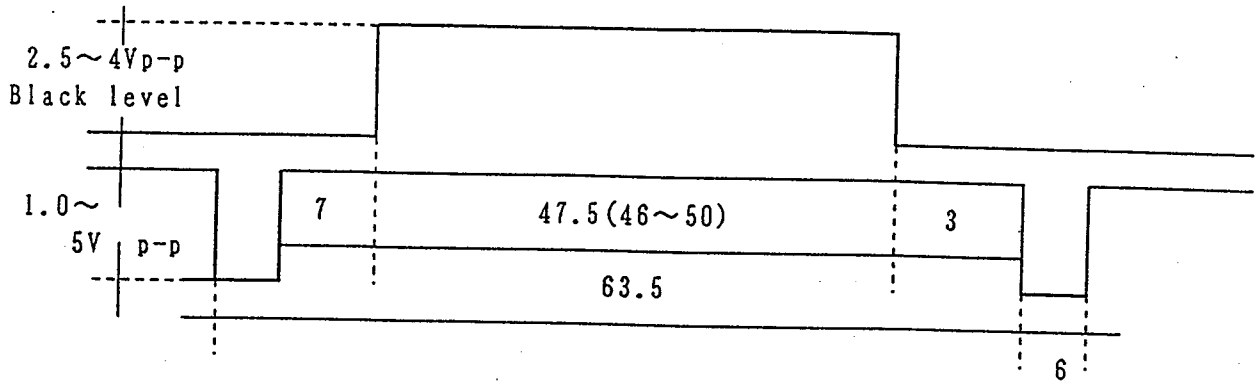


Timing chart

○ Horizontal signal

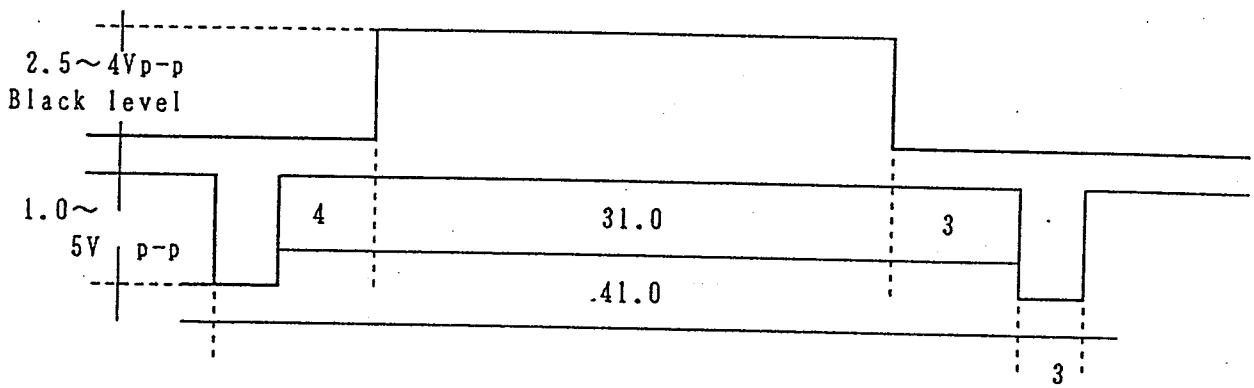
15.75kHz

(UNIT: μsec)



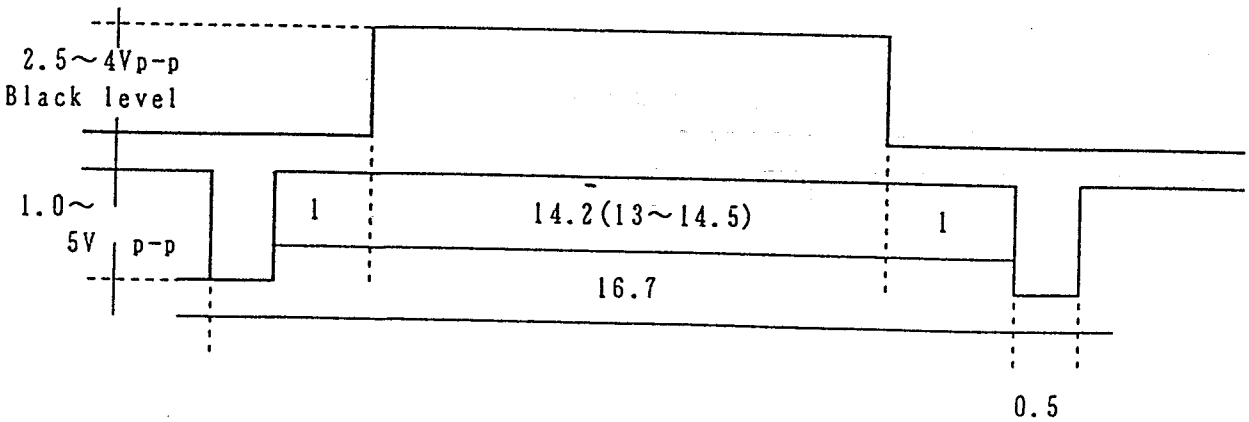
24.39kHz

(UNIT: msec)



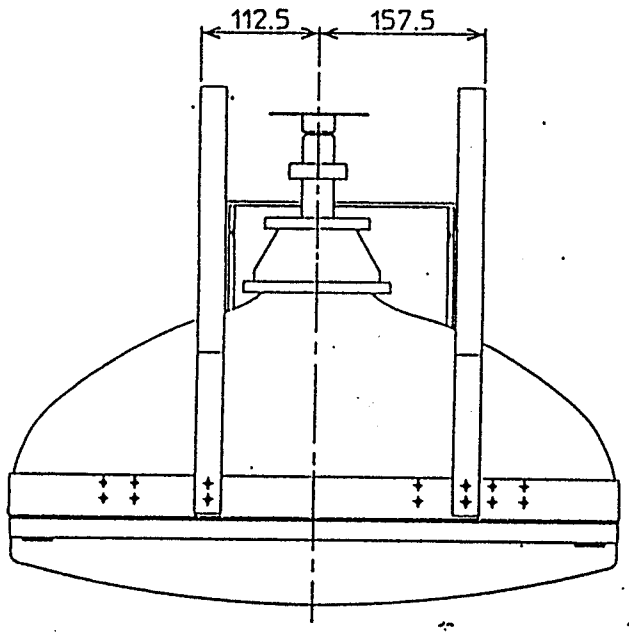
○ Vertical signal

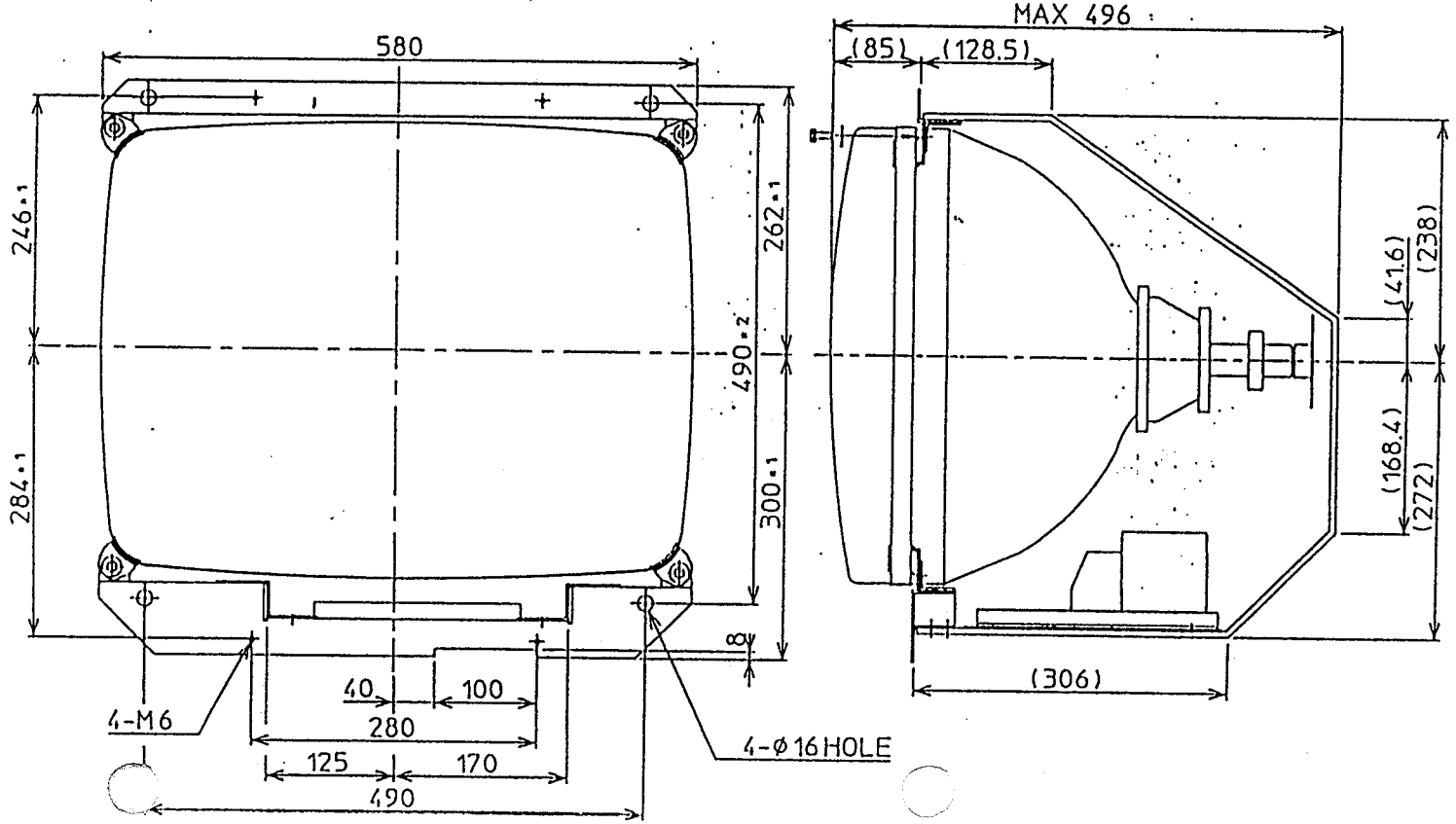
(UNIT: μsec)



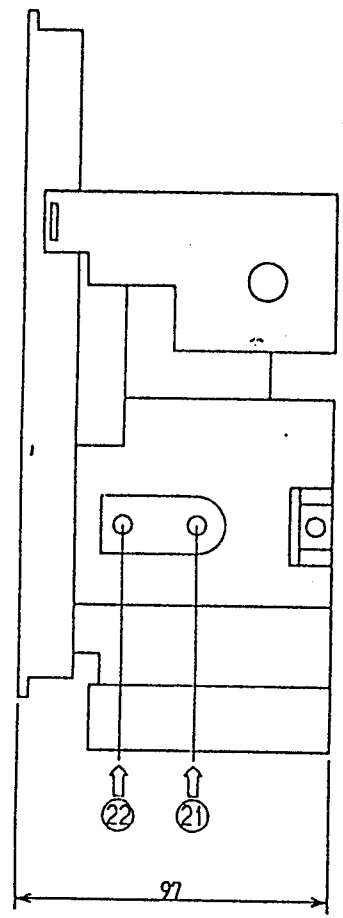
OUTLINE OF MONITOR
MS8-26SU

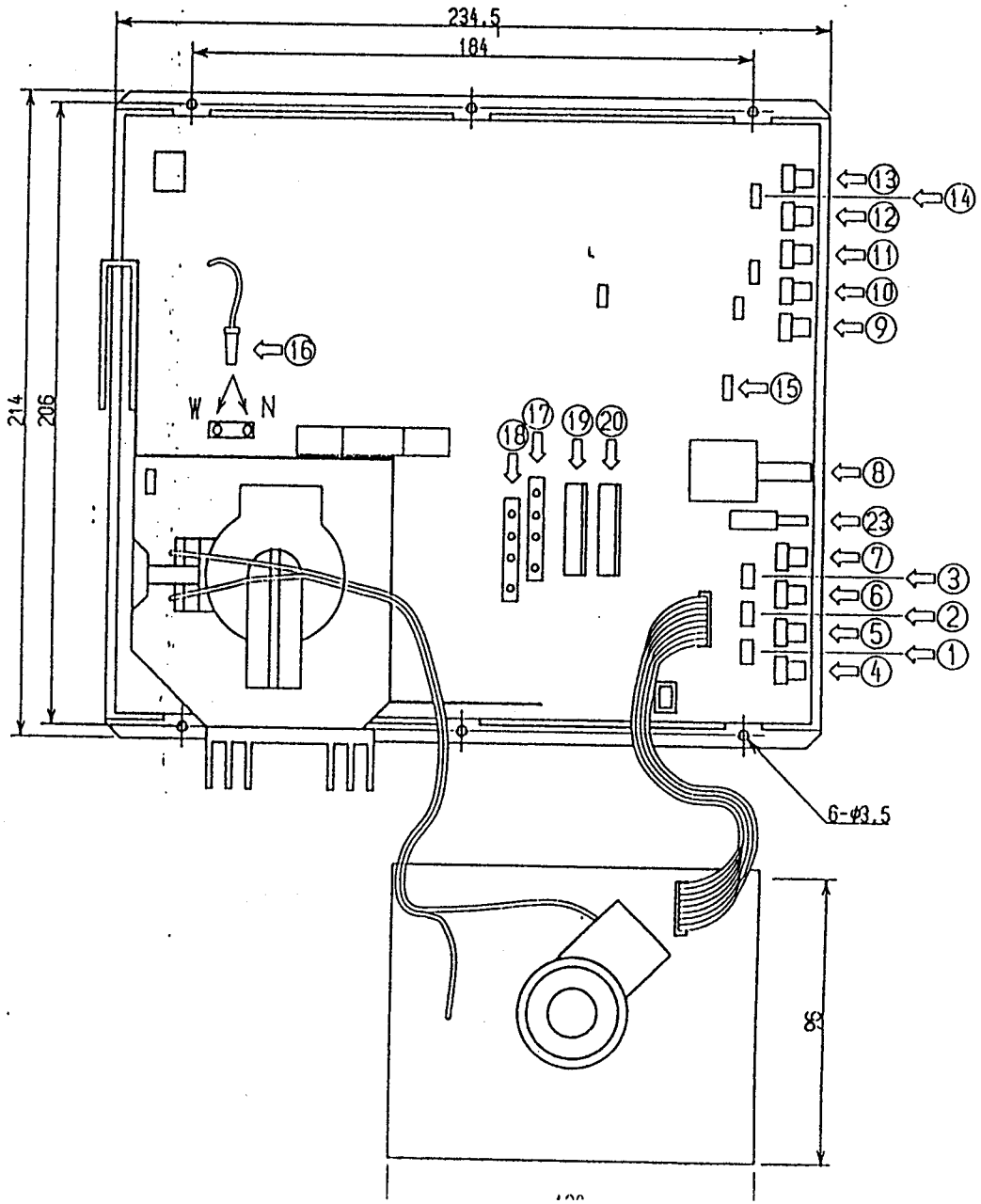
DIM IN mm





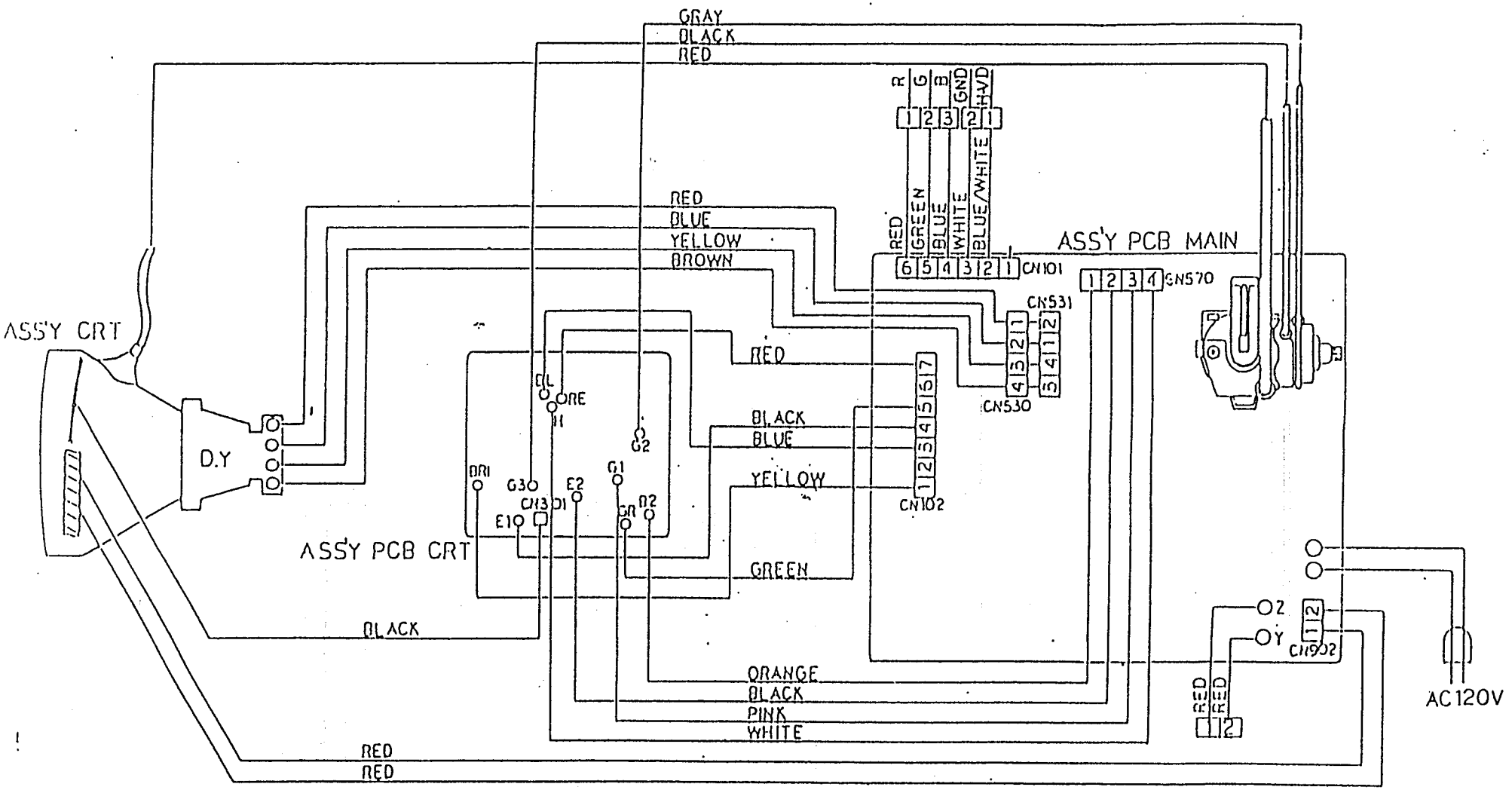
DIM IN mm



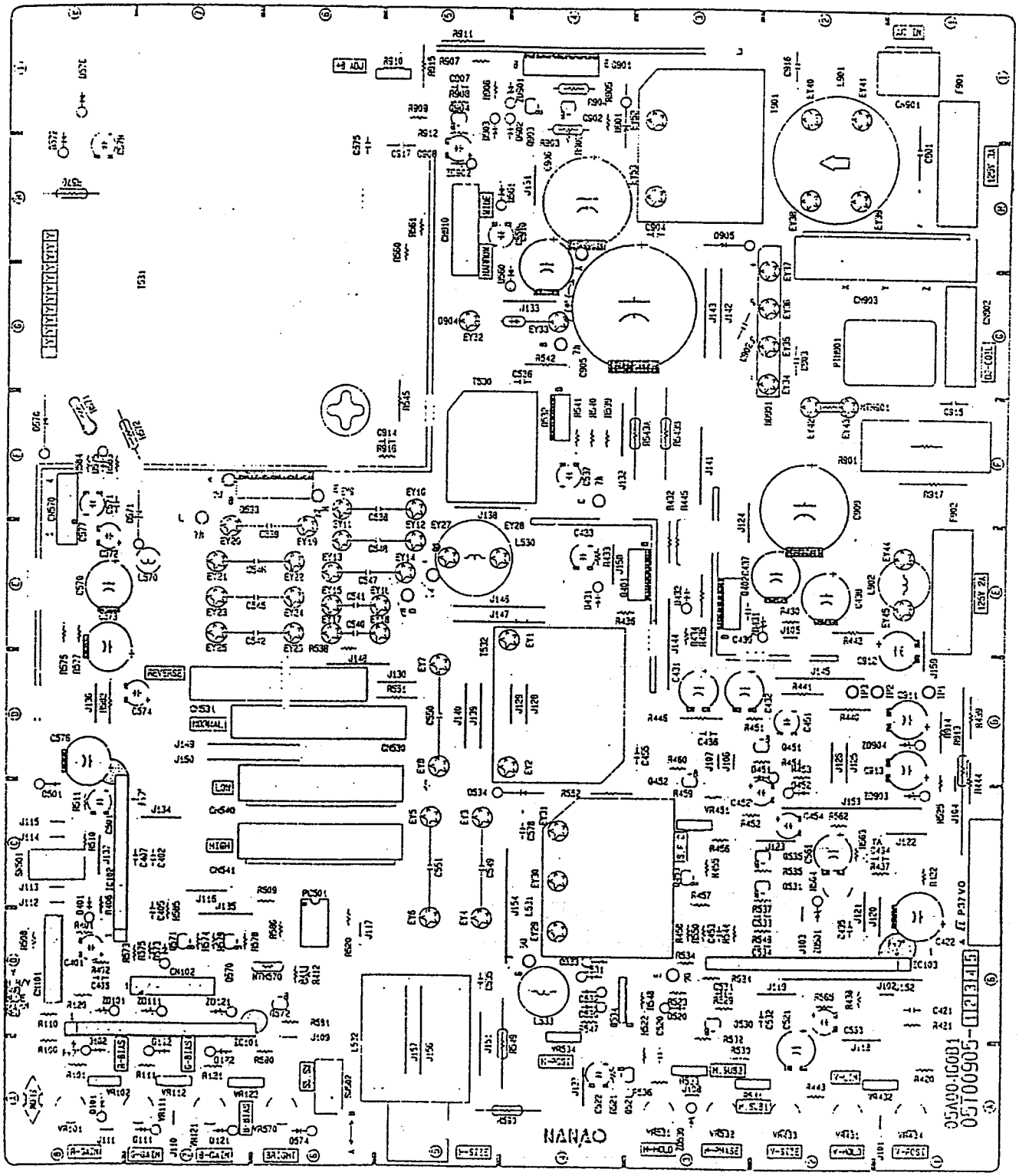


① R-BIAS
② G-BIAS
③ B-BIAS
④ R-GAIN
⑤ G-GAIN
⑥ B-GE-IN
⑦ BRIGHT
⑧ H.SIZE
⑨ H.HOLD
⑩ H.PHASE
⑪ V.SIZE
⑫ V.HOLD
⑬ V.POSITION
⑭ V.LIN
⑮ H.POSITION
⑯ H.SIZE SELECTOR TAP
⑰ NORMAL
⑱ REVERSE
} POLARITY SELECTOR TAP
⑲ 15.75kHZ
⑳ 24.83kHZ
} HORIZONTAL FREQUENCY SELECTOR TAP
㉑ FOCUS
㉒ SCREEN

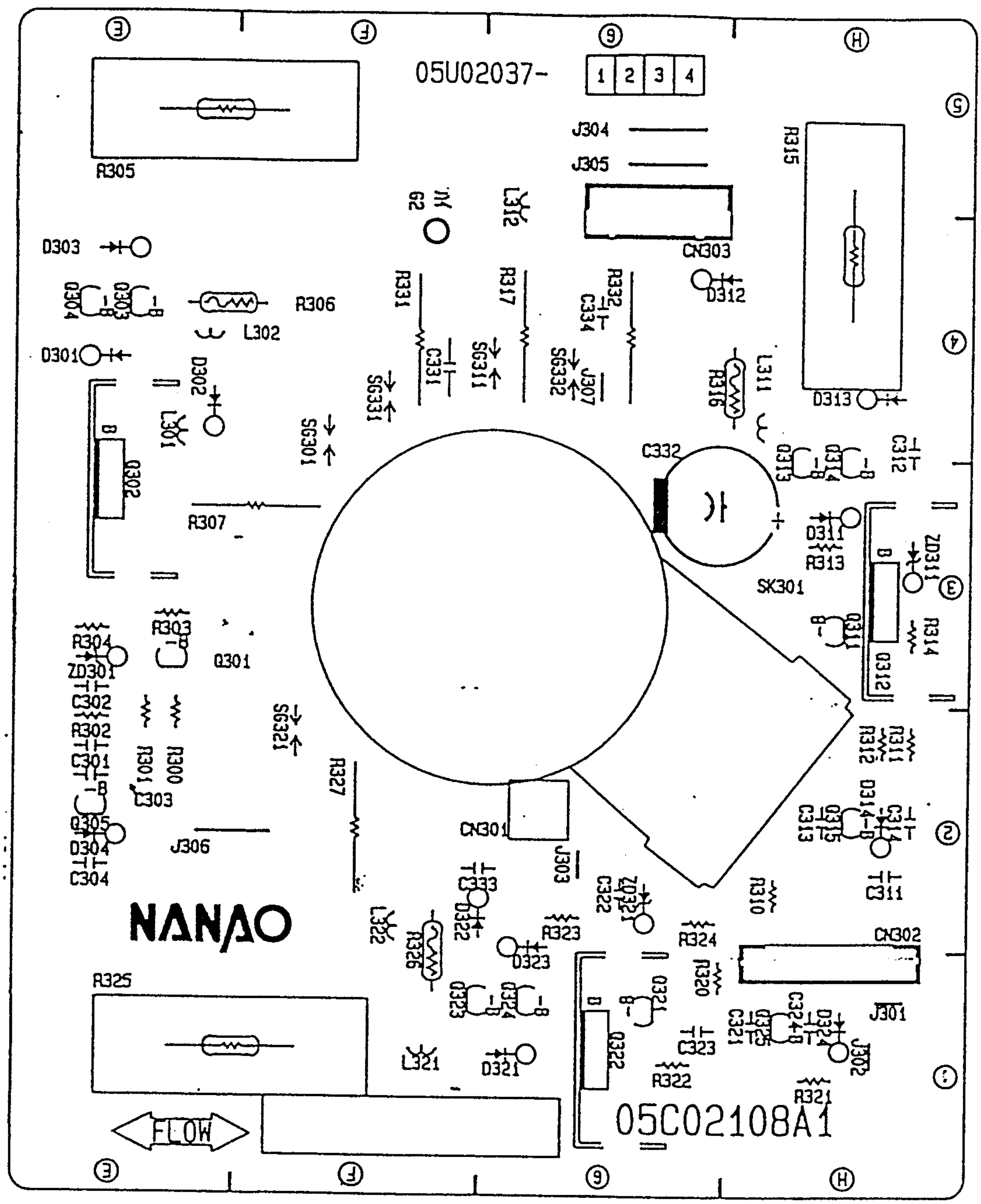
CONNECTION DIAGRAM



PCB-MAIN



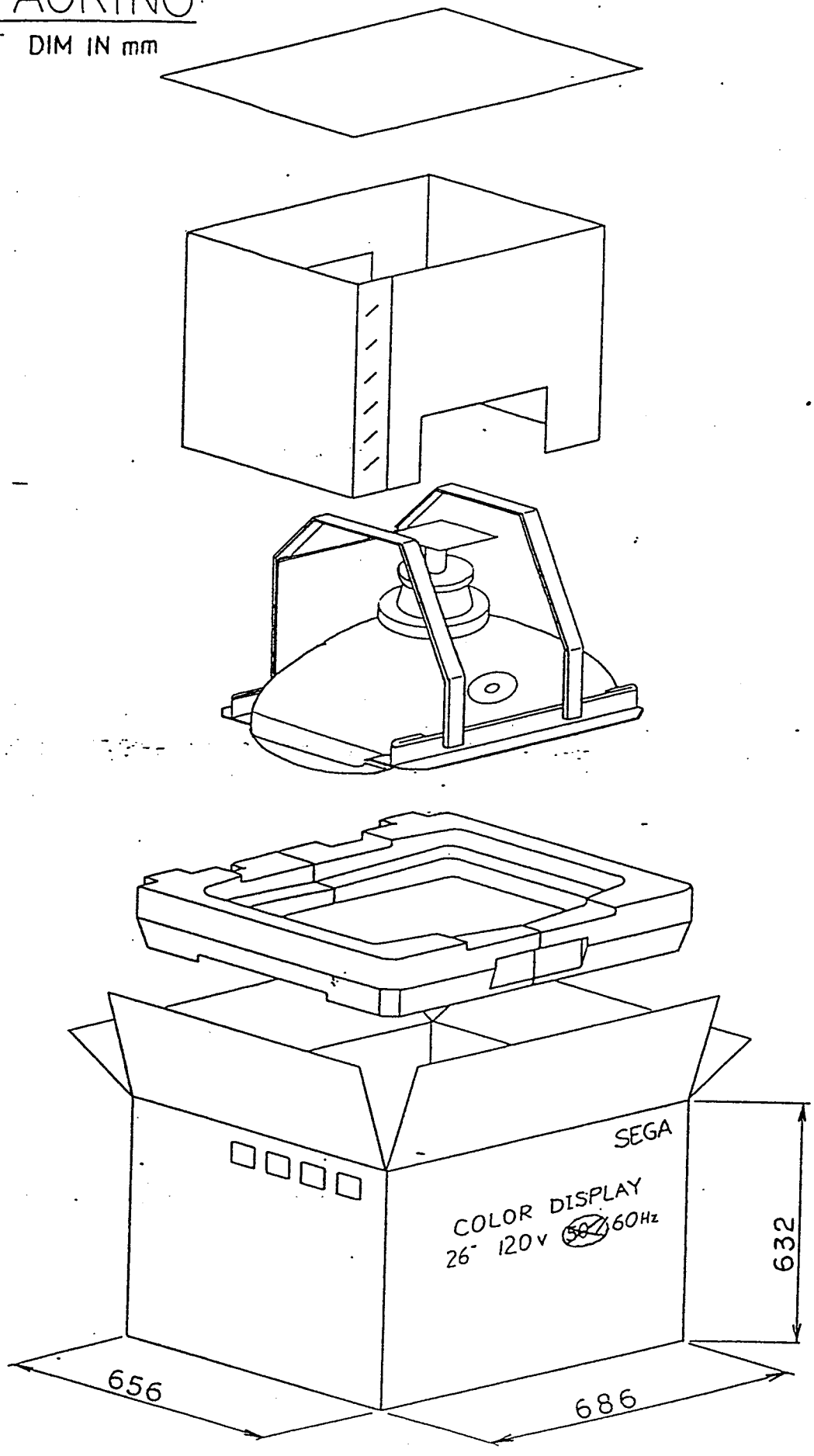
PCB-CRT



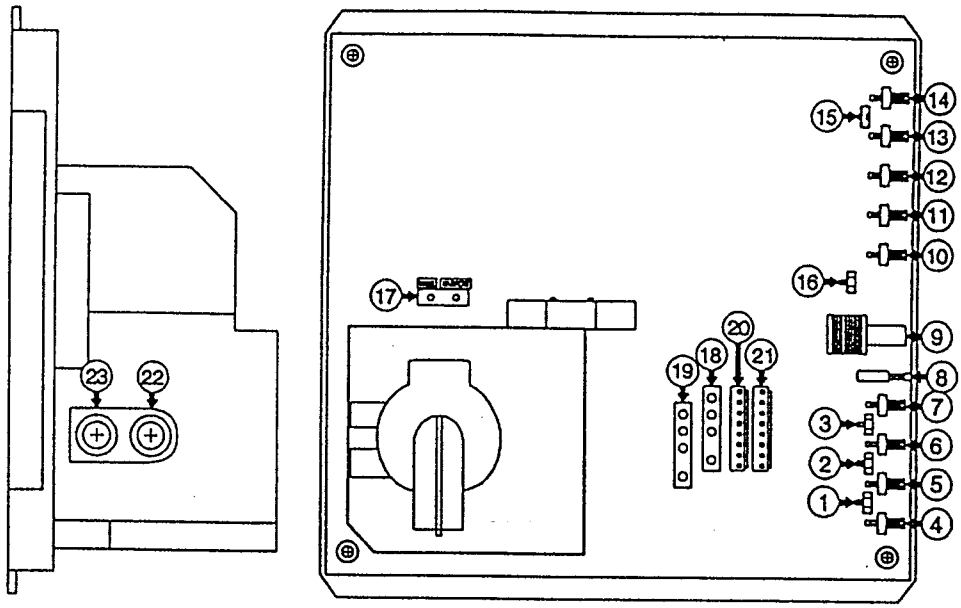
05U02037-
1 2 3 4
J304
J305
CN303
R305
R315
D303
R306
L302
D301
D302
L301
Q302
R307
SG301
SG331
SG311
SG332
R331
R317
R332
C334
C331
L312
J307
D312
R316
L311
D313
C332
C312
Q313
Q314
D311
R313
ZD311
SK301
Q311
R314
Q312
R304
R303
Q301
ZD301
C302
R302
C301
R301
R300
C303
Q305
D304
C304
J306
SG321
R327
CN301
J303
R311
R312
D314
C313
Q315
C314
C311
R310
C322
ZD321
C333
D322
L322
R323
R326
D323
R324
CN302
R320
Q321
Q323
Q324
Q322
C321
Q325
C324
D324
J301
J302
C323
R322
R321
L321
D321
R325
NANAO
FLOW
05C02108A1

PACKING

DIM IN mm



Ⅱ. ADJUSTMENT CONTROL



1. R-BIAS (VR102)
RED BIAS adjustment.
RED color gets stronger when turning this VR to clockwise.

2. G-BIAS (VR112)
GREEN BIAS adjustment.
GREEN color gets stronger when turning this VR to clockwise.

3. B-BIAS (VR122)
BLUE BIAS adjustment.
BLUE color gets stronger when turning this VR to clockwise.

4. R-GAIN (VR101)
RED INPUT GAIN adjustment
RED color gets deeper when turning this VR to clockwise.

5. G-GAIN (VR111)
GREEN INPUT GAIN adjustment
GREEN color gets deeper when turning this VR to clockwise.

6. B-GAIN (VR121)
BLUE INPUT GAIN adjustment
BLUE color gets deeper when turning this VR to clockwise.

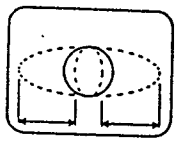
Note : GAIN control works as contrast control. Contrast level gets stronger when turning those VR to clockwise and gets weaker when turning those VR to counterclockwise.

7. BRIGHT (VR570)

8. S.S. SW (SW502)

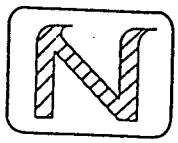
This switch changes video sharpness level.
A: Normal B: Sharper

9. H. SIZE (L532)



Horizontal size adjustment.
Note: Use the hex core driver to turn this coil.

10. H. HOLD (VR531)

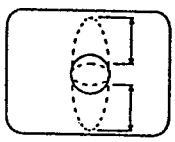


Horizontal synchronization adjustment.
Set the screen at most stable poison.
Note: H. SUB HOLD1 and 2 are preadjusted at 15kHz and 24kHz in factory for dual frequency use.

11. H. PHASE (VR532)

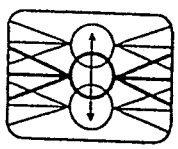
Horizontal phase adjustment.

12. V. SIZE (VR433)



Vertical size adjustment.

13. V. HOLD (VR431)

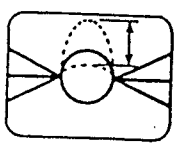


Vertical synchronization adjustment.
Set the screen at most stable position.

14. V. POSITION (VR434)

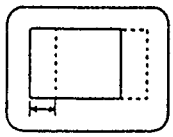
Vertical position adjustment.

15. V. LIN (VR432)



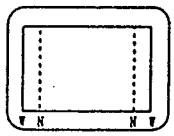
Vertical linearity adjustment.

16. H. POSITION (VR534)



Horizontal position adjustment.

17. H. SIZE CONNECTOR (CN910; WIDE/NARROW)



This connector changes the range of horizontal size control. If the screen is too wide even adjusting H. SIZE, change this connector to NARROW position.

18. DY POLARITY SELECTOR (CN530; Normal)

19. DY POLARITY SELECTOR (CN531; Reverse)

20. H. FREQ. CONNECTOR (CN540; Low)

For 15kHz signal.

21. H. FREQ. CONNECTOR (CN541; High)

For 24kHz signal.

22. FOCUS

23. SCREEN

Adjust to just back raster disappearing.

III. Detail Adjustment

Necessory equipment and tool: Hand demagnetiser
Digital Multi Meter
Frequency Counter
Plastic Driver

1. Preset

A. Setting before detail adjustment.

CRT direction	TV stype, faced to East	Volume Position	RGB Gain; 1 o'clock Others; center
DY polarity	Normal (CN530)	SS.SW	A side
fH connector	Low (CN540)	SCREEN VR	Just disappeared the raster
		FOCUS VR	Best focused

B. CRT and other metal parts are degaussed. Burning time must be more than 30 minutes.

2. Adjustment

* Standard signal; System 32 and System 24. If required, use the game logic board.
* Input Voltage; 100VAC

A. +B Adjustment Without any signal
Make sure the +B voltage between TP2(GND) ~ TP1(F902). 92 +/- 0.52VDC

B. ITC Adjustment RED raster and closs-hatch signal

B-1. Earth magnetism setting
Set to shipping distenation. CRT is faced to East.

B-2. Purity Adjustment

B-2-1. Receive white closs-hatch and adjust it rougly.
B-2-2. Recieve RED raster signal.
B-2-3. Pull the DY toward your body and adjust 2P magnet for getting the RED bar on the cernter of the screen. (Fig.B-1)
B-2-4. Push the DY away from your body and fix it at best RED color position with checking the Tilt distortion.
B-2-5. Check the white uniformity with white raster signal.
B-2-6. Check the purity to South and North direction after degaussing by hand demagnetiser. If noticed, attach the magnet pieces to CRT funel to compensate it.

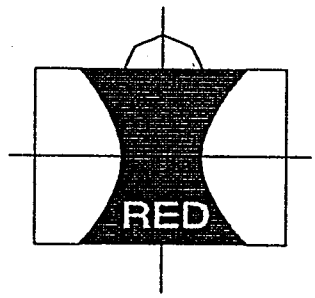
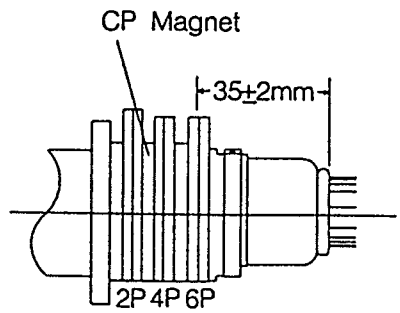


Fig B-1

B-3. Static Convergence Adjustment

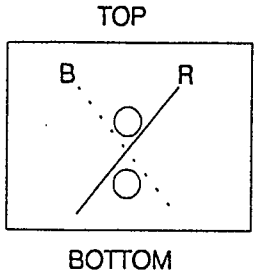
B-3-1. Recieve closs-hatch signal and adjust focus at best position.
B-3-2. Recieve magenta closs-hatch and adjust 4P magnet for getting the best magenta color at center of the screen.
B-3-3. Recieve white closs-hatch and adjust 6P magnet for getting the best white color at center of the screen.
B-3-4. If necessory, repeat B-3-2 and B-3-3.



B-4. Dynamic Convergence Adjustment

B-4-1. Recieve magenta closs-hatch.

B-4-2. Swing the DY up and down for getting the less mis-convergence on the top and bottom area. After this, fix the DY by putting wedges around DY. (Fig. B-2)



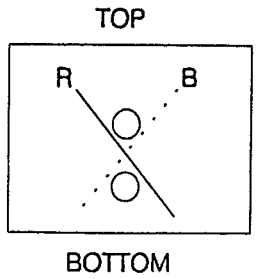
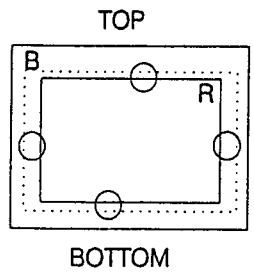


Fig. B-2



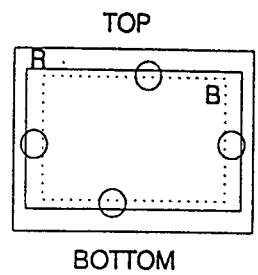


Fig. B-3

B-4-3. Swing the DY on both sides for getting the less mis-convergence on all edges. After this, fix the DY again. (Fig.B-3)

B-4-4. Adjust the deferencial coil on bottm of DY for getting the less misconvergence on left and righ egdes. (Fig.B-4)

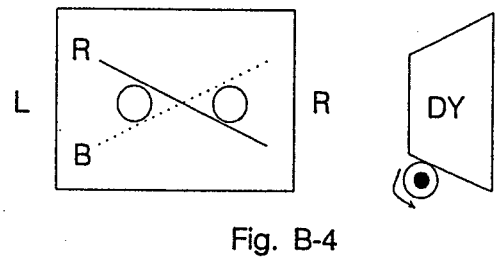
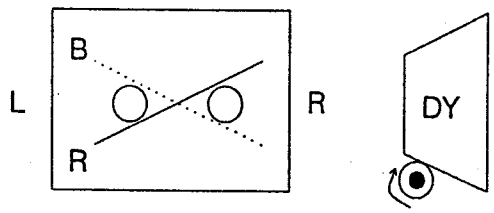


Fig. B-4



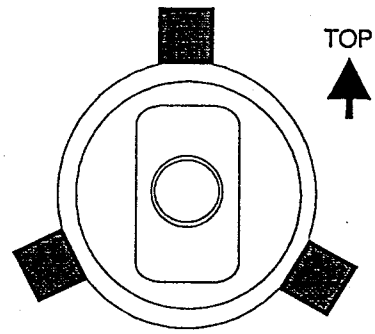


Fig. B-5

B-4-5. It is recommended to put the wedges as as above. (Fig.B-5)

B-4-6. If the mis-convergene appears on the edges still, put the ferrite magnet into the space between CRT and DY.

B-5. Fixing of the DY.

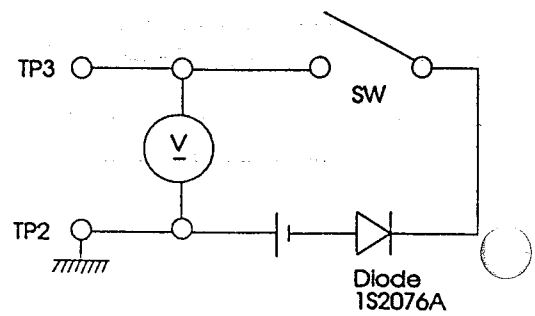
CP magnet, DY screw; Locked by the paint.

Wedges; Fixed with the Silicorn rubber

C. X-ray protector check With standard signal.

Check the voltage between TP2(GND) and TP3 for 20~24VDC.

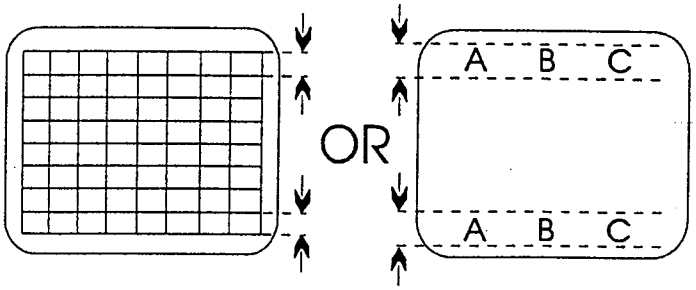
Input 35VDC between TP2 and TP3 and endure the protection activates. (Right drawing; recommended circuit)



D. V. Hold (VR431) adjustment With standard signal

Set this VR centered of the stable image.

E. V. Lin (VR432) adjustment With standard signal
Adjust this VR for getting the same hight at top and bottom of the screen.



F. Side Pincushion (VR451) adjustment With standard signal
Adjust left and right edges for getting the strait line.

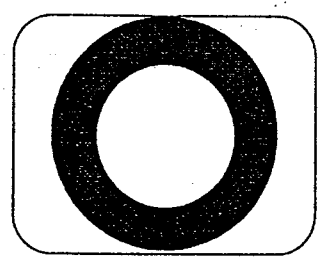
G. H & V Size (H;L532, V;VR433) adjustment With standard signal
Adjust Horizontal and Vertical Size to the designated size precesely.

H. H & V Position (H;VR532, V;VR435) adjsutment With standard signal
Adjust the image to center presecely.

I. White balance adjustment With greyscale standard signal
* Gain VR VR101, VR111, VR121
* BIAS VR102, VR112, VR122
Tune the image for gettting the pure white tuneby adjusting above VRs. Check both bighten part and darken part.

J. Brightness (VR570) adjustment With greyscale standard signal
Set the Screen VR just disappearing the retrace line.
Adjust this VR to the point which can be distinguished th bright part and the dark part in greyscale bar.

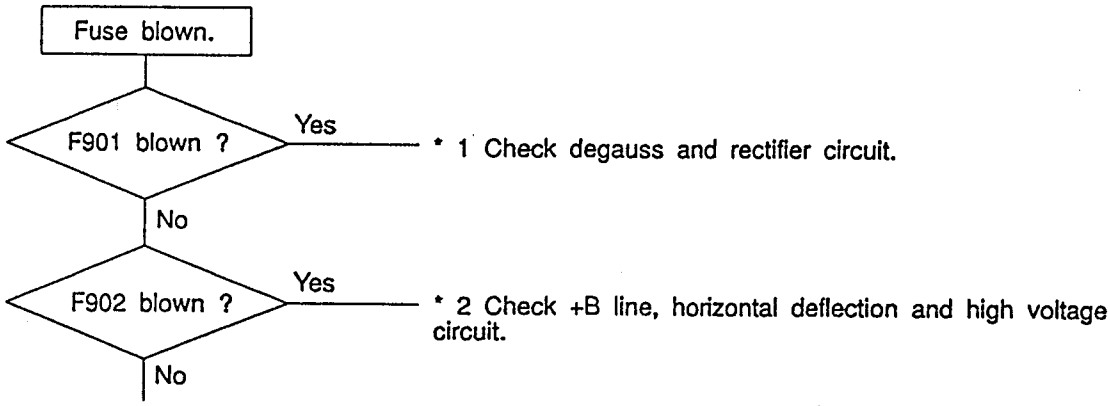
K. Focus Adjustment With standard signal
Adjust this VR on FBT for getting the best focus position at designated area, like right drawing.



L. SS. Switch (SW502) With standard signal
Check the difference both A and B position when switching.

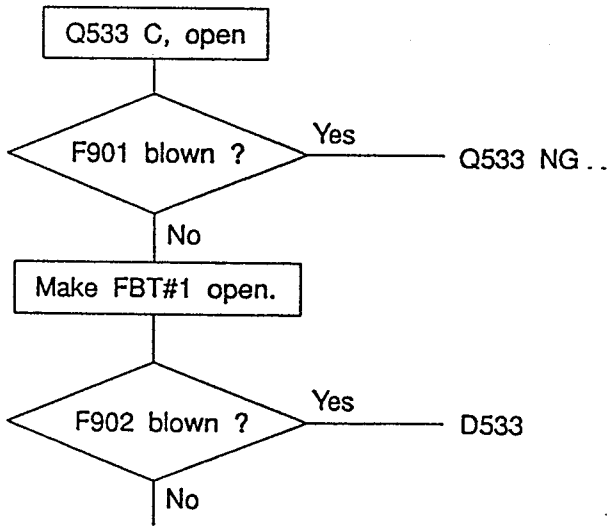
IV. Trouble Shooting

1. Fuse blown



* 1. F901 blown.
Check C901, C905, BD901, PTH901 and degaussing coil.

* 2. F902 blown.
After disconnecting AC cord and pulling off the fuse, check the resistance between GND and F902 on the side of L902. If around 2k ~ 5k Ω, the circuit is normal condition. If it shows different resistance, check +B line, Horizontal and High voltage circuit. For Horizontal and High voltage circuit, please follow below procedure.



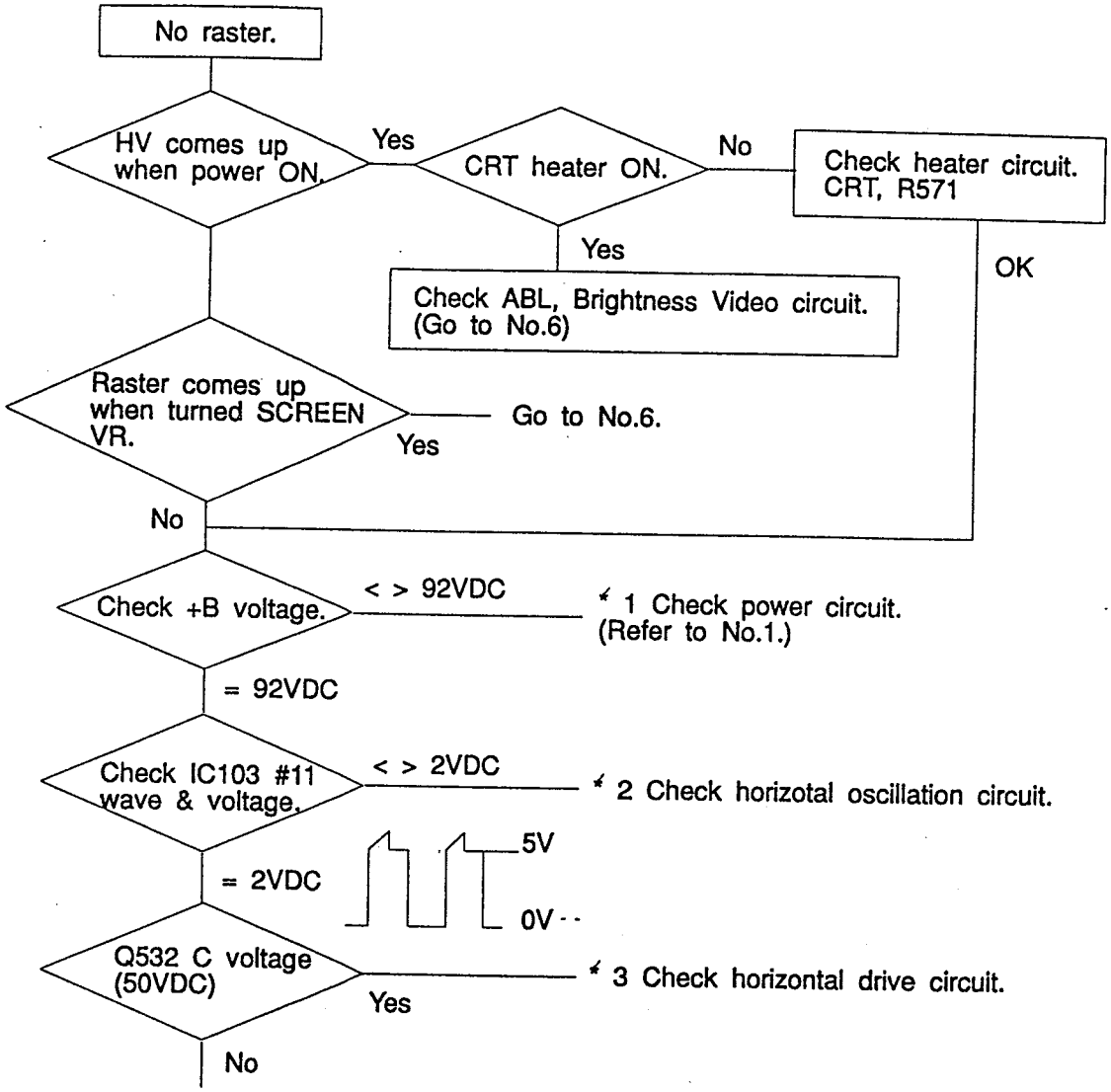
Check FBT, D904 and CRT.
If F902 turned to RED slowly and blown, check Q304, Q314 and Q324.

* 3. +B voltage is not normal.
After pulling off F902, measure the +B voltage between GND and F902 on the side of power circuit. If 80 ~ 110VDC, check the circuit around Q904. In other case, check the circuit around Q901 ~ Q903.

Caution !
If you replace below parts during the power circuit maintenance, replace R910 to new one and fix with Silicon bond after adjusting +B voltage at 92VDC.
Listed Parts; R908, R909, Q904, ZD902

Recommended bond; Sony Chemical, SC-901

2. No raster, only vertical line displayed.



* 1. +B voltage is not normal.
Check the circuit around Q904 if +B voltage is between 80 ~ 110VDC. If others, check the circuit around Q901 ~ Q903.

Caution !
Take the same procedure as previous page.

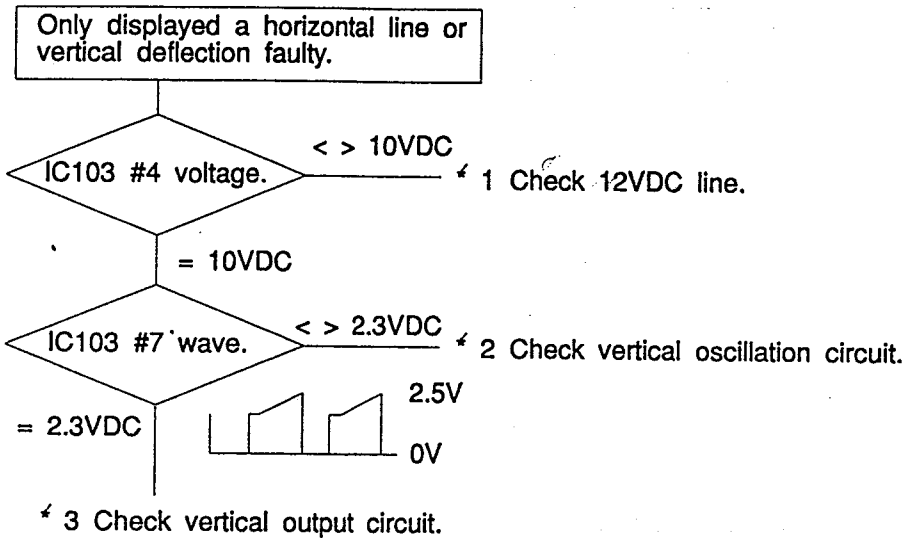
* 2. Horizontal Oscillation circuit problem.
Check the Horizontal Oscillation wave on IC103 #13. If not normal, check the input voltage on IC103 #12 and the circuit around #13 pin.
If #13 wave is normal and the Horizontal Drive pulse does not output on IC103 #11, check the circuit around IC103.
If there is no wave on IC103 #11, X-ray protection circuit will be active. The protection circuit functions if the voltage on IC103 #10 increases more than 0.65VDC. In case of this, check the wave output on #11 when power ON. If there is the some wave for a moment, check the circuit around X-Ray protection, Horizontal Output and +B line.

* 3. Horizontal Drive circuit problem.
Check the voltage on Q532 C first.
If high, check Q532, T530, R539 and R541. If low, check Q532, T530, R540 and R543.

* 4. Horizontal Output or High Voltage circuit problem.
Check the wave on Q533 C. If not normal, check DY, T530, T532, L531, L532 and Q533.
Check the wave on Q533 B. If not normal, check T530 and the circuit around Q533 B.

* 5. Only displayed a vertical line.
This phenomena means that there is no deflection current in DY coil. Check DY, L531 and L532.

3. Only displayed a horizontal line or vertical deflection problem.



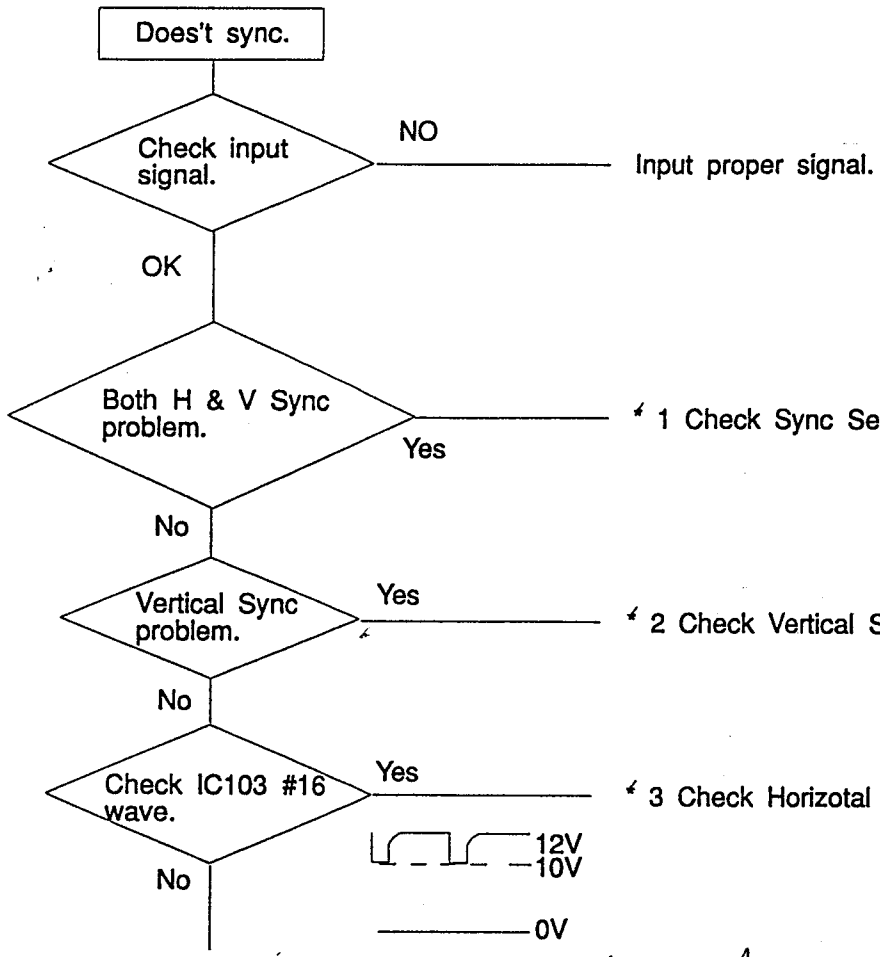
* 1. 12V line failure.
Check T901, D905, ZD903, ZD904, C911, C912 and C913.

* 2. Vertical Oscillation problem.
Check the circuit around IC103 #2 ~#8.

* 3. Vertical Output circuit problem.
Check Q401, Q402, D431 D432 and around them.

* 4. Side Pincushion circuit problem.
In case of this control volume (VR434) does not work properly, check Q451, Q452, Q453 and around them.

4. Doesn't sync properly.

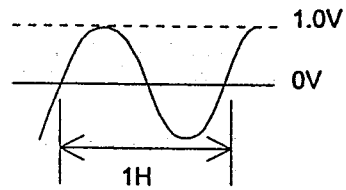


- try exchanging 'LE' surface mount transistor Vert X Horiz. Pin 2 Pin 2

* 1. Sync Separator circuit problem.
Check IC102 and the sync input circuit.

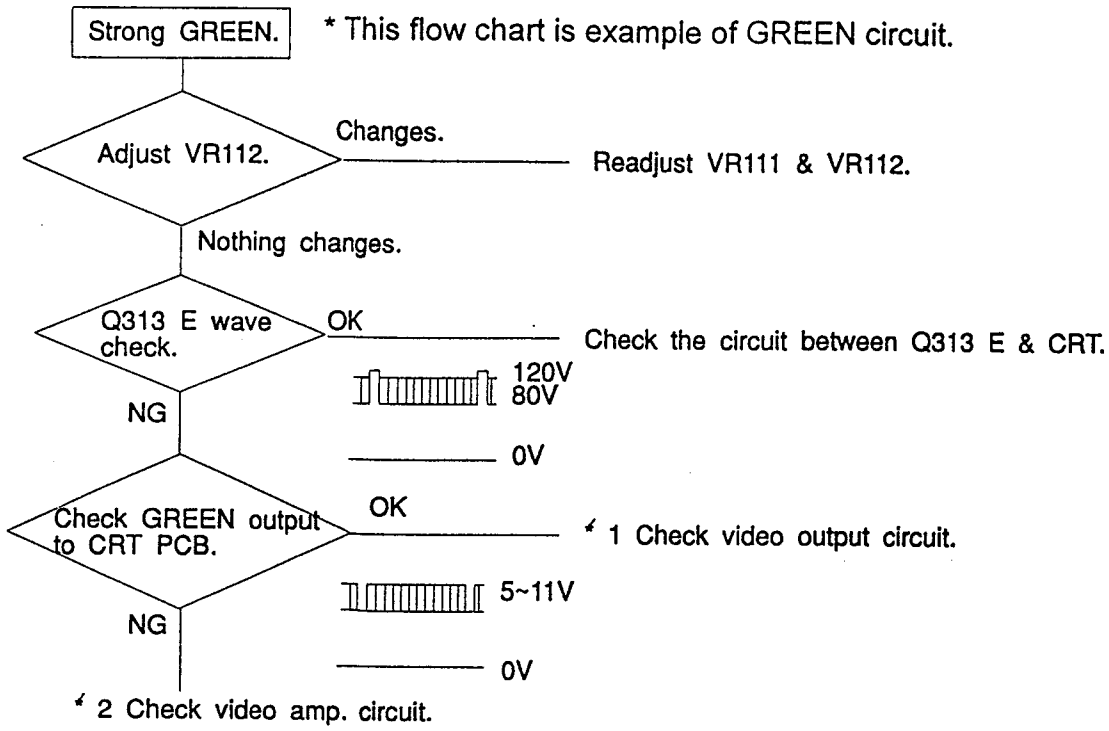
* 2. Vertical Sync circuit problem.
Check IC102, PC501 and around them.

* 3. Horizontal AFC circuit problem.
Check the wave on IC103 #14. (See right drawing.)



* 4. Horizontal Sync circuit problem.
Check PC501, Q521 and around them.

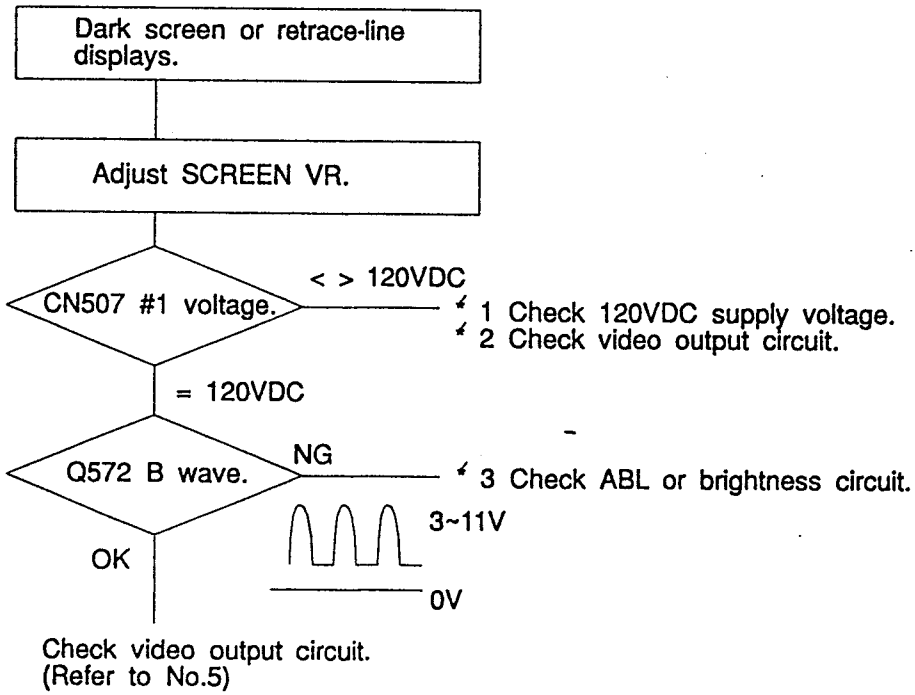
5. Color balance is not correct.



* 1. Video Output circuit problem.
Check Q311 ~ Q314 and around them. Please refer to other color circuit.

* 2. Video Amp. circuit problem.
IC101 #7 is input pin and #9 is output pin. Check the wave on each pins.

6. Dark screen or retrace line displays.



* 1. 120V line problem.
Check R570, D570 and C570.

* 2. Video output circuit problem.
Check Q303, Q304, Q313, Q314, Q323 and Q324.

* 3. ABL or Brightness circuit problem.
Check Q570, Q571, Q572 and D574.

Important Service Safety Information

The +B and H.V. Hold-down voltage Adj. controls in this monitor are sealed not to remove unnecessarily because of protecting the user from X-ray radiation. The +B Adj. and H.V. Hold-down controls should not normally have to be adjusted. But if the parts related X-ray circuit are replaced due to the damage, check the +B voltage and H.V. Hold-down voltage to assure that these are within specification after adjustment. Then, seal these controls according to the manufacturer's requirement.

H.V. failure may increase X-ray radiation. Therefore, monitors should not be operated with H.V. level exceeding the specified rating. The max. operating H.V. specified on the chassis is 25kV +/- 1.5kV at max. brightness with an input voltage of 120VAC. Higher voltage may also increase possibility of failure in H.V. supply to CRT.

It is important to maintain specified values of all components in the horizontal deflection, high voltage circuits and anywhere else in the monitor that could cause a rise in high voltage or operating supply voltage. No change should be made to the original design of the monitor.

Components shown on the schematic diagram identified mark should be replaced only with exact factory recommended parts. The use of unauthorized substitute parts may cause X-ray radiation.

To determine the presence of high voltage, use an accurate and high impedance H.V. meter connected between second anode lead and the CRT dag grounding.
When servicing the High Voltage System, AC line cord should be disconnected from AC supply line. Remove static charge from anode button by connecting a 10kΩ resistor in series with an insulated wire (such as a test probe). Attach such tool between picture tube dag and second anode lead after servicing the anode cap onto picture tube and eliminate static charge.

How to adjust;

1). +B (92VDC) voltage

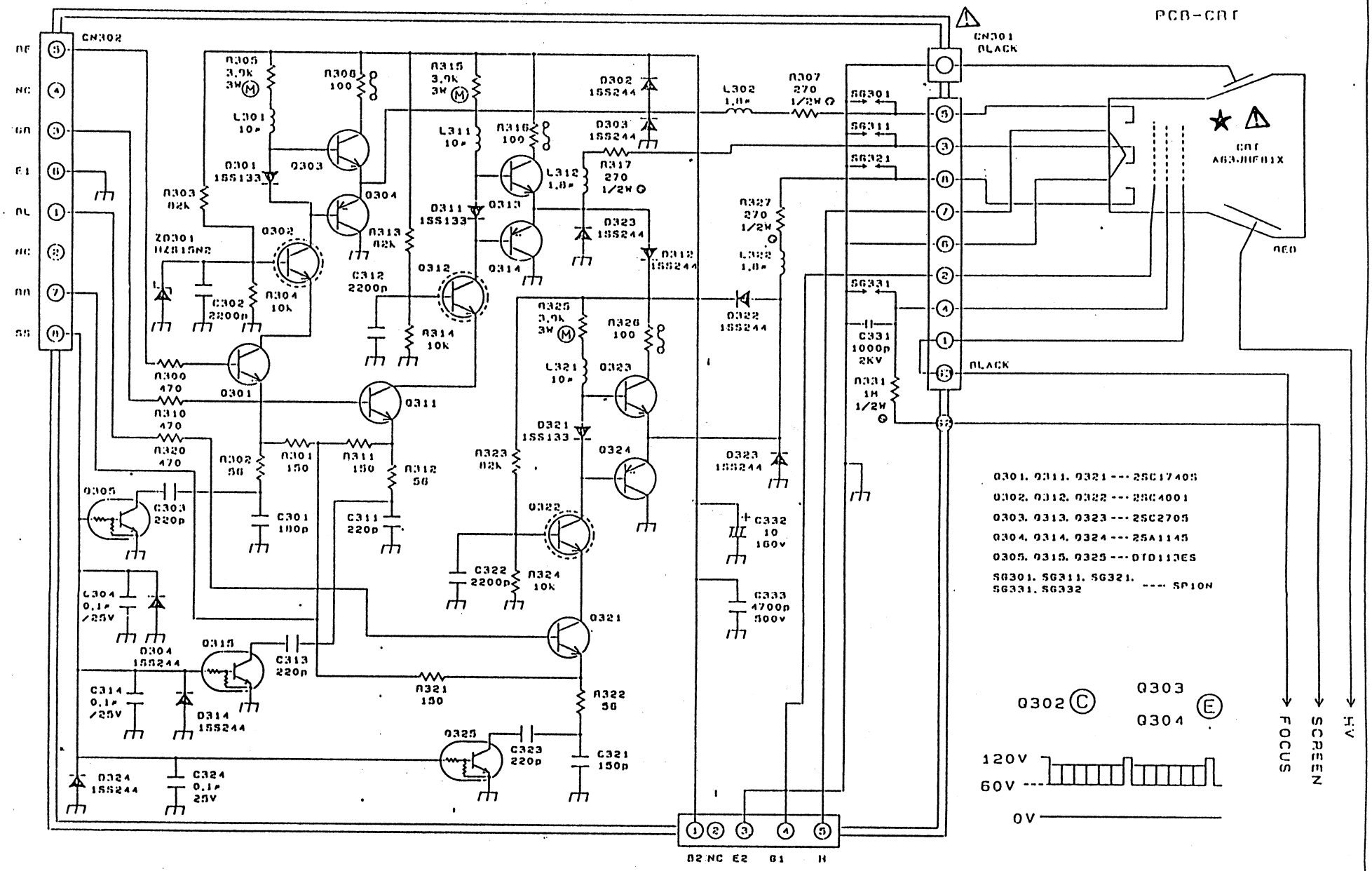
Symbol No.	;R910
How to adjust	;R910 is sealed and not to be adjusted. But in case of some parts (for example, ZD902, Q904, etc.) cause the damage, R910 should be replaced as a new one. Adjust the + B voltage to 92V +/- 0.5VDC. After the adjustment, seal the hole and movable element of R910 with silicon rubber.

2). H.V. Hold-down voltage

Symbol No.	;R564
How to adjust	;R564 is sealed and not to be adjusted. But in case of some parts (for example, ZD501, IC101 and others) cause the damage, R564 should be replaced as a new one. Turn the VR control (R564) fully clockwise. Put the variable bias voltage on the +B line and increase the voltage till the D506 cathode voltage reaches 29.2V +/- 0.1VDC. Adjust the VR control (R564) till the set is down. After the adjustment, seal the hole and movable element of R564 with silicon rubber.

MSB-26

PCB-CRT



CONFIDENTIAL

TLP521GB, TLP521-2GB, TLP521-4GB
TLP521, TLP521-2, TLP521-4

HIGH DENSITY MOUNTING PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS

APPROVALS

- UL recognised, File No. E91231

DESCRIPTION

The TLP521, TLP521-2, TLP521-4 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

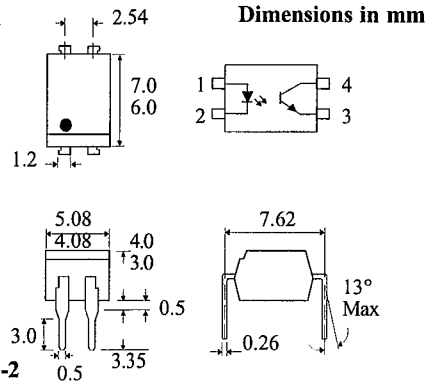
FEATURES

- Options :-
  10mm lead spread - add G after part no.
  Surface mount - add SM after part no.
  Tape&reel - add SMT&R after part no.
- High Current Transfer Ratio (50% min)
- High Isolation Voltage ($5.3kV_{RMS}$, $7.5kV_{PK}$)
- High BV_{CEO} (55Vmin)
- All electrical parameters 100% tested
- Custom electrical selections available

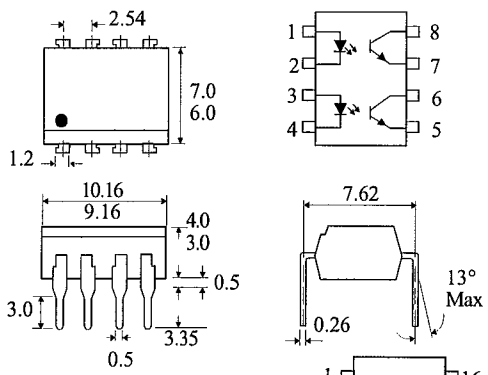
APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances

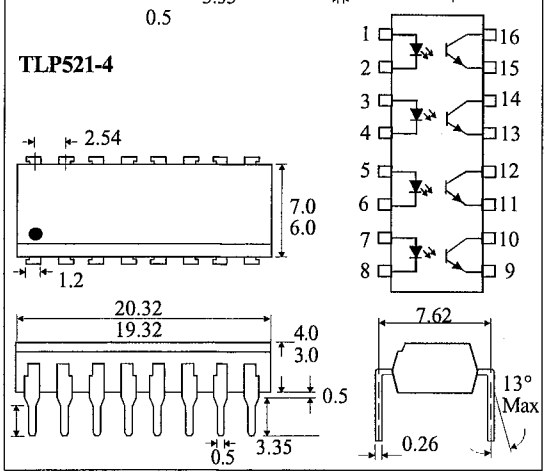
TLP521 Dimensions in mm



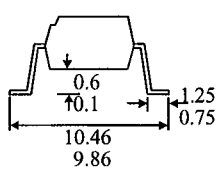
TLP521-2



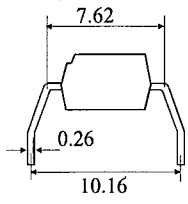
TLP521-4



OPTION SM
SURFACE MOUNT



OPTION G



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Tel: (01429) 863609 Fax :(01429) 863581

ISOCOM INC
1024 S. Greenville Ave, Suite 240,
Allen, TX 75002 USA
Tel: (214)495-0755 Fax: (214)495-0901
e-mail info@isocom.com
http://www.isocom.com

ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature	-55°C to + 125°C
Operating Temperature	-55°C to + 100°C
Lead Soldering Temperature (1/16 inch (1.6mm) from case for 10 secs)	260°C

INPUT DIODE

Forward Current	50mA
Reverse Voltage	5V
Power Dissipation	70mW

OUTPUT TRANSISTOR

Collector-emitter Voltage BV_{CEO}	55V
Emitter-collector Voltage BV_{ECO}	6V
Power Dissipation	150mW

POWER DISSIPATION

Total Power Dissipation	200mW
(derate linearly 2.67mW/°C above 25°C)	

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)	1.0	1.15	1.3	V	I_F = 10mA
	Reverse Voltage (V_R)	5			V	I_R = 10μA
	Reverse Current (I_R)			10	μA	V_R = 5V
Output	Collector-emitter Breakdown (BV_{CEO}) (Note 2)	55			V	I_C = 0.5mA
	Emitter-collector Breakdown (BV_{ECO})	6			V	I_E = 100μA
	Collector-emitter Dark Current (I_{CEO})			100	nA	V_{CE} = 24V
Coupled	Current Transfer Ratio (CTR) (Note 2)					
	TLP521, TLP521-2, TLP521-4	50		600	%	5mA I_F, 5V V_{CE}
	CTR selection available BL	200		600	%	
	GB	100		600	%	
	GB	30			%	1mA I_F, 0.4V V_{CE}
	Collector-emitter Saturation Voltage $V_{CE\ (SAT)}$			0.4	V	8mA I_F, 2.4mA I_C
	-GB			0.4	V	1mA I_F, 0.2mA I_C
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
		7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Rise Time tr		2		μs	V_{CC} = 10V ,
	Fall Time tf		3		μs	I_C = 2mA, R_L = 100Ω
	Turn-on Time ton		3		μs	
	Turn-off Time toff		3		μs	

Note 1 Measured with input leads shorted together and output leads shorted together.
Note 2 Special Selections are available on request. Please consult the factory.