

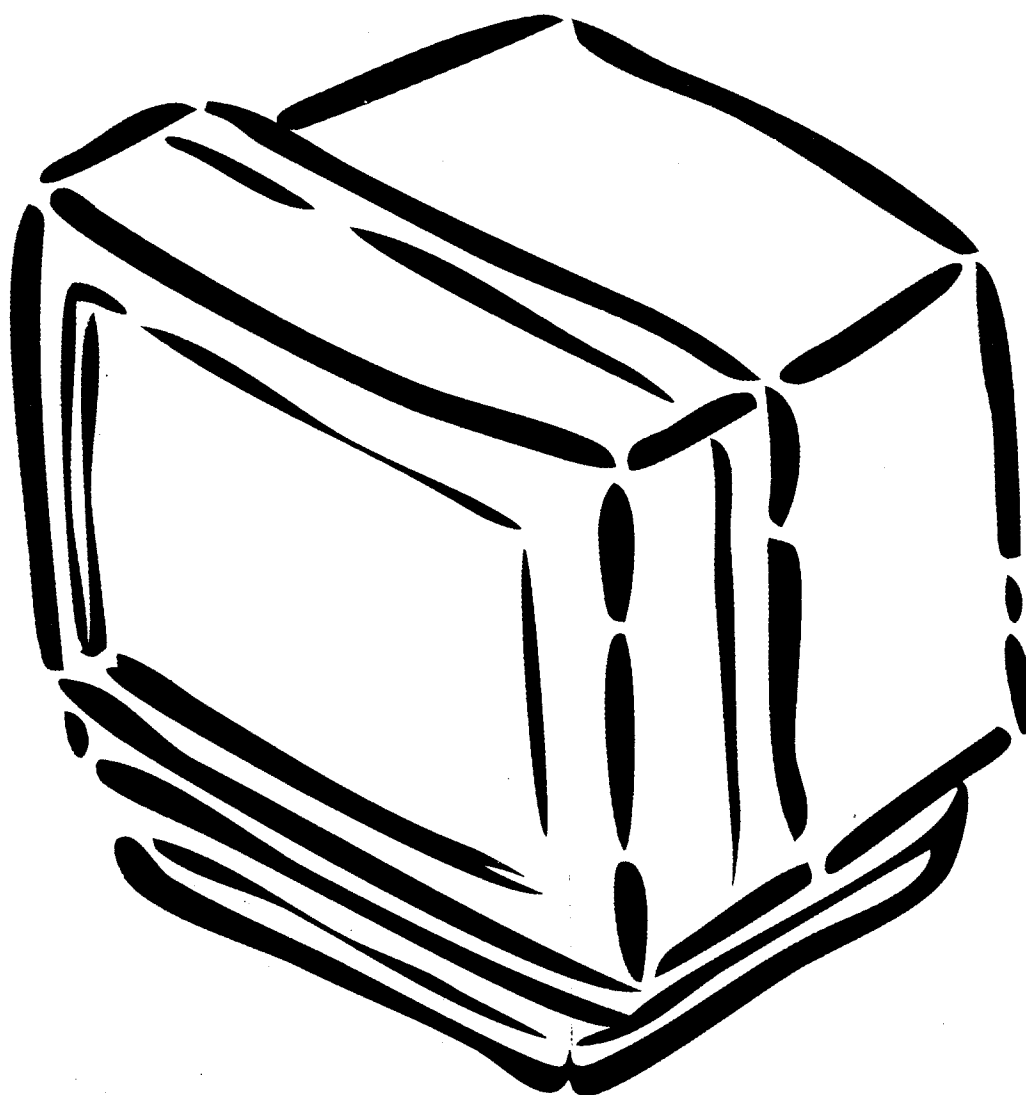
Technical Service Manual

ULTRA VGA/SUPER VGA COLOR MONITOR

SM482CIV

SM482

SM492 PRE DEC 95



SHIN HO TECH CO., LTD.

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SPECIFICATION

- **Picture Tube**

14" 90° Deflection

0.28mm / 0.39mm Dot Pitch ☞ NOTE) 0.39mm is applied to only SM492 model

Non-glare

- **Scanning Frequency (Horizontal/Vertical)**

31.47Khz / 70Hz, 31.47Khz / 60Hz, 35.5Khz / 87Hz, 35.15Khz / 56Hz

37.86Khz / 72.8Hz, 37.88Khz / 60.3Hz. , 48.077Khz / 72.18Hz, 48.363 Khz / 60Hz

☞ NOTE) SM482/SM492 model is act from 31Khz to 38Khz

- **Display Colors**

Analog Input : Unlimited Colors.

- **Maximum Resolution**

Horizontal : 1024 Dots.

Vertical : 768 Lines.

- **Input Video Signal**

Analog 0.7 vp-p Positive at 75 Ω Terminated.

- **Input Sync Signal**

Separate Sync : TTL level Positive /Negative.

Video Signal : Analog(0.7vp-p) Positive.

- **Video Band Width :Max. 65Mhz**

☞ NOTE) SM482/SM492 model video band width is MAX 45Mhz (-3db)

- **Active Display**

Horizontal : 250mm \pm 5mm.

Vertical : 187mm \pm 5mm.

* Active Display Area is Changed by Signal Timing.

- **Input Voltage**

AC 100-240Volt, 60Hz/50Hz \pm 3Hz.

- **Power Consumption : 80 Watt.(Max.)**

- **Environmental Consideration**

Operating Temperature : 32°F to 95°F (0℃ to 35℃)

Humidity 30% to 80% .

Storage Temperature : -4°F to 140°F (-20℃ to 60℃)

Humidity 10% to 95% .

- **Dimension**

Unit (H \times W \times D) : 12.4 \times 13.8 \times 15.1 inches (317 \times 352 \times 385 mm)

Carton (H \times W \times D) : 17.1 \times 14.5 \times 15.7 inches (435 \times 370 \times 400 mm)

- **Weight**

NET : 22Lbs (10Kg).

GROSS : 26Lbs (12Kg).

DESIGNS and SPECIFICATIONS are subjected to change without prior NOTICE.

☞ NOTE) Details are next page make no attention it.

SAFETY PRECAUTIONS

Service work should be performed only by qualified service technicians who are thoroughly familiar with all of the following safety checks and servicing guidelines :

WARNING

1. For continued safety, do not attempt to modify the circuit.
2. Disconnect the AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. Do not place anything heavy, wet or magnetic on the Monitor or on the power cord.
5. Be sure to turn the Monitor off before plugging in into the socket. Hold the plug when disconnecting it from the socket.
6. If the Monitor is not to be used for a long period, disconnect the power cord from the socket.
7. Make sure that the power cord and connection cords are securely connected.
8. Install the Monitor on a stable horizontal surface.
9. Avoid operating the Monitor in extreme heat, humidity or where it may be affected dust.
10. Never cover the ventilation holes or touch them with metallic or inflammable materials.
11. Never drop or otherwise strongly shock the Monitor.

SERVICING THE HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10kohm resistor in series with an insulated wire (such as a test probe) between the chassis and the anode lead. (The AC line cord should be disconnected from the AC outlet)

1. The picture tube in this display monitor employs integral implosion protection.
2. Replace with a tube of the same type and number for continued safety.
3. Do not lift the picture tube by the neck.
4. Handle the picture tube only when wearing shatter proof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in a current solidstate display monitor is the tube. However, the picture tube does not emit measurable X-ray radiation if the high voltage is as specified in the "high voltage check" instruction. It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube, including the lead in glass material. The important precaution is to keep the high voltage below the maximum levels specified.
2. It is essential that serviceman have available at all times an accurate high voltage meter. The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value-no higher. Operation at high voltage may cause a failure of the picture tube of high voltage circuitry and, also under certain conditions, may produce radiation in excess of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem.
Everytime a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified, value and that it is regulating correctly.
5. Do not use a picture tube other than that specified, or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting taking test measurements on a display monitor with excessively high voltage, avoid being unnecessarily close to the display monitor. Do not operate the display monitor longer than is necessary to locate the cause excessive voltage.

FIRE AND SHOCK HAZARD

Before returning the display monitor to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the display monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment cover or shields, isolation resistor-capacitor networks, mechanical insulator, etc.
3. To be sure that no shock hazard exists, checks for leakage current in the following manner:
 - Plug the AC line cord directly into a 120volt AC outlet. (Do not use an isolation transformer for this test)
 - Using two clips leads, connect 1.5kohm, 10 watt resistor paralld by a 0.15uF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduct or electrical ground connected to earth ground.
 - Use a SSVM or VOM with 1000 ohms per-volt or higher sensitivity to measure the AC voltage drop across the resistor. (see Figure 1.)
 - Connect the resistor to all exposed metal parts having a return path to the chassis (metal cabinet, screw heads, knobs and shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.
 - Any reading of 5.25 volt RMS (this corresponds to 3.5 milliamp. AC) or more is excessive and indicates a potential chock hazard which must be corrected before returning the display monitor to the user.

SAFETY NOTICE

Many electrical and mechanical parts which have special characteristics in the chassis often pass unnoticed and the protection afforded by them can not necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts that have these special safety characteristics are identified in this manual, and its supplement electrical components having such features are identified by a in the Parts List and Schematic Diagrams.

Before replacing nay of these components, read the Parts List this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the Parts List may create shock, fire, or other hazards.

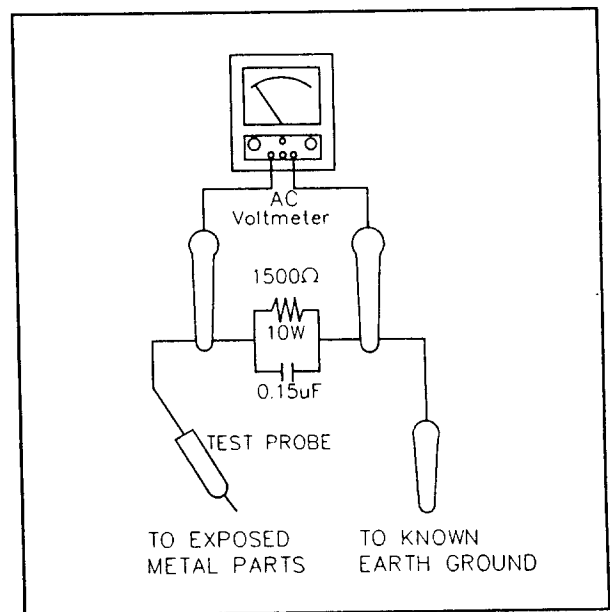


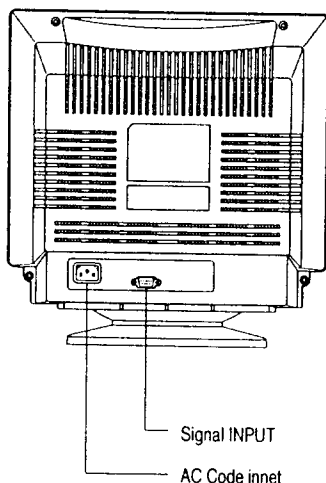
Figure 1. Leakage Current Test Circuit

GENERAL INFORMATION

1. FEATURES

- 14 inch (13.5 inch visual) high performance CRT.
 - Available in 0,28 / 0,39mm dot pitch
- Automatically scans frequencies from 31.47Khz / 70Hz, 31.47Khz / 60Hz, 35.5Khz / 87Hz, 35.15Khz / 56Hz, 37.86Khz / 72.83Hz, 37.88Khz / 60.3Hz, 37.86Khz / 72.8Hz, 48.077Khz / 72.18Hz, 46.88Khz / 75Hz, 48.363Khz / 60 Hz
- Compatible with a wide variety of video standards including VGA, IBM 8514/A(XGA), and Super-VGA, ULTRA-VGA
- Size and position controls are located up front for easy and accurate adjustment.
- The optional tilt and swivel stand may be attached to provide a variety of viewing angles, or not attached if limited workspace is a consideration.
- Power supply operates on AC 100-240 volt 60 / 50Hz for use all over the world.

2. INSTALLATION



This monitor can be connected to any IBM compatible analog display adapter. such adapters include VGA,8514/A,XGA,ULTRA VGA and the built-in video system of IBM ps/2 computers and compatibles.

To attach the monitor to your system, use the following instructions:

1. Turn off the power to the computer.
2. Insert AC power cord into monitor and then into an AC power outlet.
3. Connect the 9 pin side of the signal cable to the 9 pin D-SUB connector on the rear side of the monitor.
4. Connect the 15 pin side of the signal cable to the video output port of your video controller.

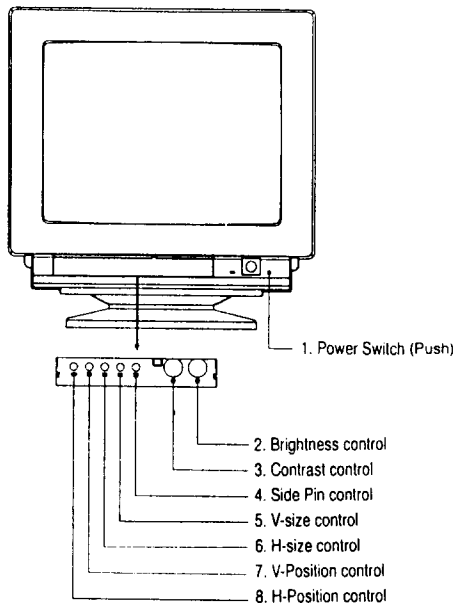
Note : please see the connector pin assignment chart for the video controller (video controller manual) and the connector pin assignment chart for the monitor (page 6 this manual) if the video controller does not have a standard 15 pin D-SUB connector.

5. Before turning on the power to the monitor and computer,check your computer's owner's manual for instructions about turning on equipment connected to the computer. Also,check for any instructions for your video system when using a multi-sync monitor. In some cases, jumper or switch settings may be required for the video board to output extended resolution modes.
6. To turn on the monitor, push the power switch. The power indicator LED will amber light. To turn the monitor off, push the power switch once again. The power indicator LED will also turn off.
7. Power saving mode your monitor is in, your system is ready at all the time for you to recover your work by processing and key on the keyboard.
8. Your computer system features a display power management function, this monitor, when signaled will enter power saving modes. power LED is blinkering on green or off.

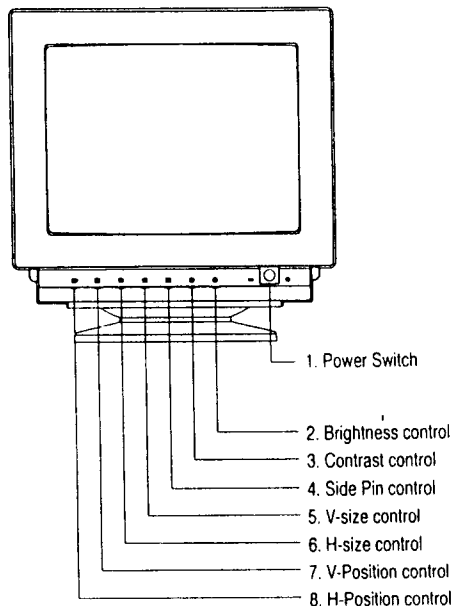
3. CONTROL LOCATION & FUNCTIONS

Please take the time to familiarize yourself with the location and function of all the monitor's controls so that you can adjust it for the optimum display.

3-1. FRONT VIEW



☞ NOTE SM4**B Model



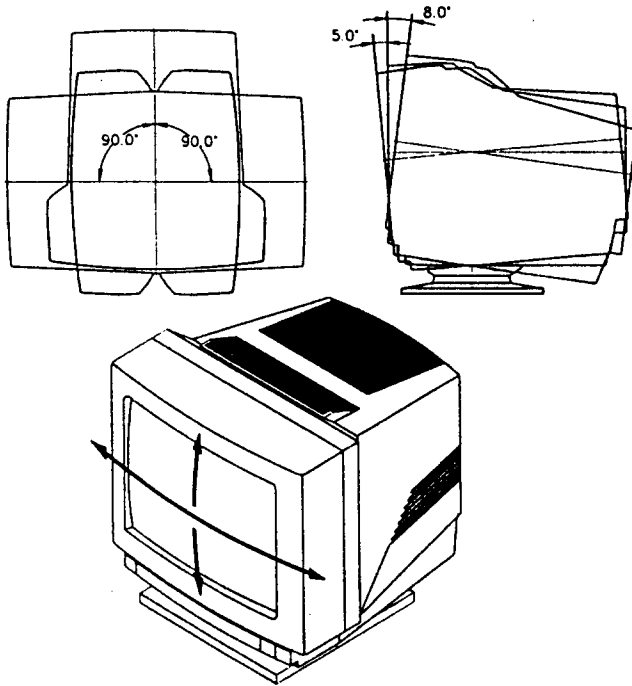
☞ NOTE SM4**C Model

3-2. BASIC CONTROLS & FUNCTIONS

- **Power switch**
Use to turn monitor power on and off. push switch once to turn monitor power on. LED power on indicator will also turn on. push switch once again to turn monitor power off.
- **Contrast control**
Use to adjust the contrast level of the displayed image. contrast controls the difference between dark and light areas of the displayed image.
- **Brightness control**
Use to adjust the overall brightness of the displayed image.
- **H-POSITION**
Adjust this control for the proper horizontal position(centering)of the display.
- **H-SIZE**
Adjust this control for the desired horizontal size(width) of the display.
- **V-SIZE**
Adjust this control for the desired vertical size of the display.
- **SIDE-PIN**
Adjust this control, to correct the vertical sides of the display form bowing out (barrel distortion) or bowing in (pincushion distortion).

4. USE OF THE TILT-SWIVEL

With the tilt-swivel, this unit can be adjusted to be viewed at your desired angle within 90° horizontally and 13° vertically.



To turn the unit horizontally, hold it at its bottom with you both hands as illustrated below.

5. SIGNAL CONNECTIONS AND PIN ASSIGNMENTS

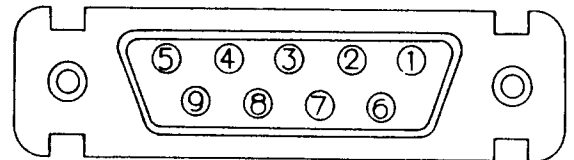
- Input Signal : R.G.B Analog
- Input Connection
The 9 pin D-SUB connector can be used with the supplied 9-15 pin cable.
The 15 pin side connects to any IBM compatible VGA video port, the 9 pin side to the monitor's connector

D-SUB signal input (Female Type)

PIN CONNECTION

PIN NO.	CONNECTION
1	RED
2	GREEN
3	BLUE
4	H-SYNC
5	V-SYNC
6	GND-R
7	GND-G
8	GND-B
9	GND-SYNC

D-subminiature connector



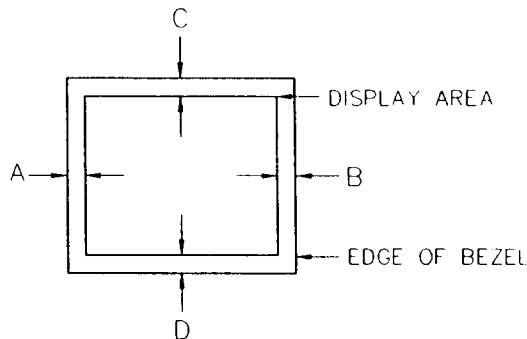
DISPLAY PERFORMANCE

1. DISPLAY AREA

- WIDTH : $250 \pm 5\text{mm}$
- HEIGHT : $187 \pm 5\text{mm}$

2. CENTERING

- $|A-B| \leq 3\text{mm}$
- $|C-D| \leq 2.5\text{mm}$

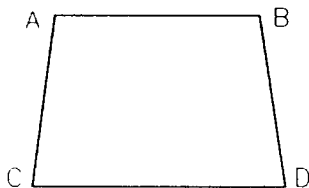


3. DISTORTION

a) Trapezoid

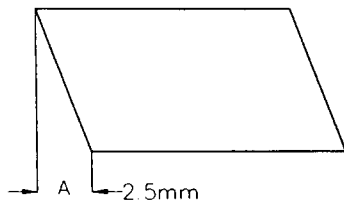
$$\frac{|AC - BD|}{|AC + BD|} \times 100 \leq 1\%$$

$$\frac{|AB - CD|}{|AB + CD|} \times 100 \leq 1\%$$



b) Parallelogram

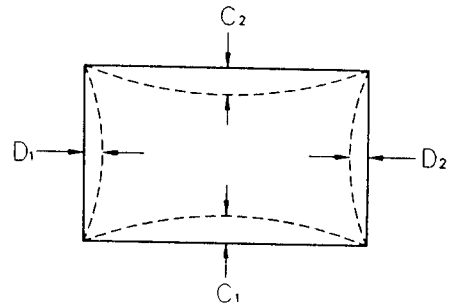
$$|A| \leq 2.5\text{mm}$$



c) Pincushion

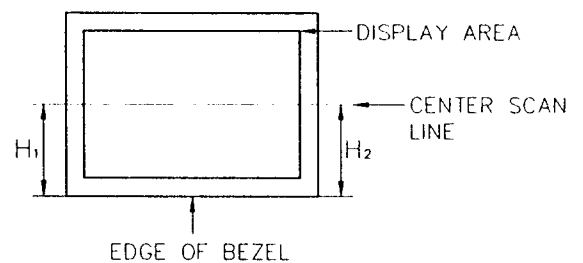
$$|C1|, |C2| \leq 2.5\text{mm} (0.98")$$

$$|D1|, |D2| \leq 3.0\text{mm} (0.98")$$



d) Rotation

$$|H1 - H2| \leq 2.0\text{mm} (\pm 0.5^\circ)$$



4. LINEARITY

- Horizontal linearity

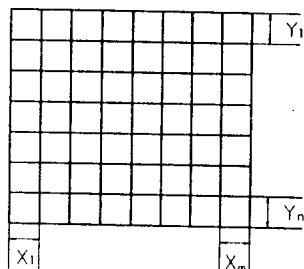
$$HL = \frac{X_{max} - X_{min}}{\bar{X}} \times 100\% \times 0.5 \leq 7\%$$

- Vertical linearity

$$VL = \frac{Y_{max} - Y_{min}}{\bar{Y}} \times 100\% \times 0.5 \leq 5\%$$

$HL \leq 7\%$, $VL \leq 5\%$ for this others mode

- Standard mode : 31.5 KHz
- Others mode : 8514/A, Super VGA,
VESA VGA, VESA SVGA,
ULTRA-VGA



- Conditions

Display image : crosshatch pattern
Maximum and minimum values should not be adjacent each other

X_{max} is maximum value among $X1 \sim Xm$

X_{min} is minimum value among $X1 \sim Xm$

$$\bar{X} = \frac{X1 + X2... Xn}{m} \quad (m \geq 11)$$

Y_{max} is maximum value among $Y1 \sim Ym$

Y_{min} is minimum value among $Y1 \sim Ym$

$$\bar{Y} = \frac{Y1 + Y2... Yn}{n} \quad (n \geq 10)$$

5. BRIGHTNESS UNIFORMITY

Value	65% (Min) Variation = $\frac{C}{A} \times 100$
Conditions	Display image : white flat field Luminance : F/L at the center of display area A : Luminance at position of the highest C : Luminance at position of lowest brightness

6. COLOR POINT

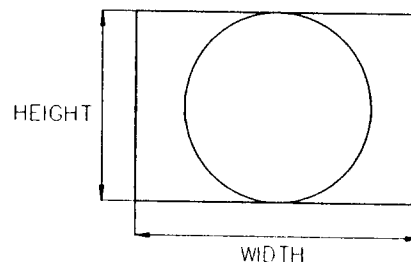
Value	9300°K + 27MPCD $X = 0.281 \pm 0.03$, $Y = 0.311 \pm 0.03$
Conditions	Display image : White flat field at the center of display area. Luminance : min : 5 F/L max : 20 F/L

7. MISCONVERGENCE

Center area of display

("A" circle is 180 mm) (A) : 0.3mm

Peripheral area of display (B) : 0.45mm



- Conditions

Display image : Crosshatch pattern mixed with R, G and B colors

8. PURITY

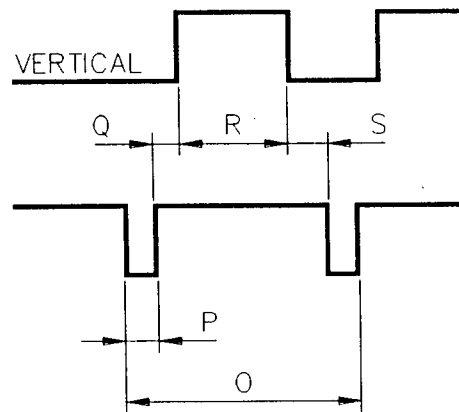
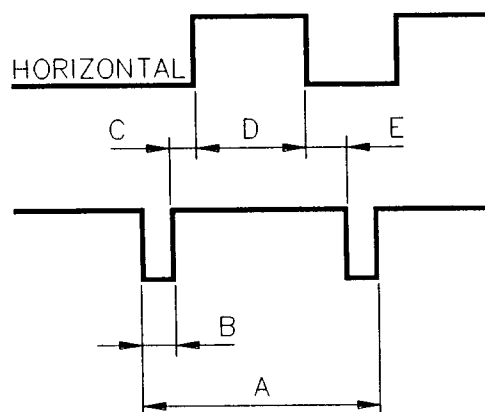
Conspicuous mislanding shall not be visible within display area at distance of 50Cm (23.6") from CRT surface.

- Conditions

Display image : White flat field

Luminance : 20 F/L at the center of display area.

FACTORY PRESET SIGNAL TIMING CHART



Mode Timing	VGA & MCGA Compatible			8514A& XGA	SVGA	VESA		ULTRA VGA	
	VGA1	VGA2	VGA3			VGA	SVGA		
	640×350	640×400	640×480			640×480	800×600	800×600	1024×768
FH(KHz)	31.468	31.468	31.468	35.520	35.156	37.860	37.879	48.077	48.363
A u sec	31.778	31.778	31.778	28.150	28.444	26.413	26.400	20.800	20.677
B u sec	3.813	3.813	3.813	3.920	2.000	1.270	3.200	2.400	2.092
C u sec	1.589	1.589	1.589	1.250	3.556	4.603	2.200	1.280	2.462
D u sec	26.058	26.058	26.058	22.800	22.222	20.317	20.000	16.000	15.754
E u sec	0.318	0.318	0.318	0.180	0.667	0.762	1.000	1.120	0.369
FV(Hz)	70.080	70.080	59.940	86.960	56.250	72.809	60.317	72.180	60.000
O u sec	14.268	14.268	16.683	11.500	17.778	13.735	16.579	13.850	16.667
P u sec	0.064	0.064	0.064	0.113	0.057	0.079	0.106	0.125	0.124
Q u sec	1.716	0.890	0.794	0.563	0.626	0.740	0.607	0.478	0.600
R u sec	11.504	13.156	15.762	10.810	17.067	12.678	15.840	12.480	15.880
S u sec	0.985	0.159	0.064	0.014	0.028	0.238	0.026	0.770	0.062
Clock Fre. (MHz)	25.175	28.322	25.175	44.912	36.000	31.500	40.000	50.024	65.000
Polarity H. Sync V. Sync	Positive Negative	Negative Positive	Negative Negative	Positive Positive	Posi./Nega. Posi./Nega..	Posi./Nega. Posi./Nega.	Posi./Nega. Posi./Nega.	Posi./Nega. Posi./Nega.	Posi./Nega. Posi./Nega.
Remark				Interlaced					

ALIGNMENT PROCEDURE

ADJUSTMENT CONDITIONS AND PRECAUTIONS

- Power supply voltage
AC 100V-240V (60Hz / 50Hz)
- Warm up time
The display must be on for 15 minute before starting alignment
This is especially critical in color temperature and white balance adjustments.
- Signal
Video Analog 0.7 Vp-p Positive at 75 ohm Terminated.
- Sync on green : Video 0.7 Vp-p Positive
 : Sync. 0.3 Vp-p Negative
Sync : TTL level negative / positive
 separate / composite
- Scanning frequency (Horizontal / Vertical)
31.47Khz / 70Hz, 31.47Khz / 60Hz, 35.5Khz / 87Hz, 35.15Khz / 56Hz, 37.879Khz / 60.3Hz, 37.86Khz / 72.8Hz, 48.07khz / 72.18hz, 48.363khz / 60hz.

1. MAIN PWB PREPARE ADJUSTMENT

- (1) Operate the monitor.
- (2) Connect the plus pole of DVM (Digital Multi Meter) to the cathode of 160V ADJ. and connect the other pole(GND) to chassis GND.
- (3) Rotate the B+ voltage adjusting control VR151 to provide 160V DC
Condition : brightness, contrast VR max in white pattern.

2. HORIZONTAL FREQUENCY ADJUSTMENT

(Instrument in use : frequency counter, scope probe)

- (1) Connect the plus pole of the scope to RED wire jacket of DY and the minus pole to chassis frame.

- (2) At self raster (disconnect the signal cable), adjust the horizontal frequency control VR 203 so that horizontal frequency : 31.5KHz.
(Free running frequency : 31.5KHz \pm 100Hz)

3. FBT B+ ADJUSTMENT (HIGH VOLTAGE)

- (1) Connect the plus pole of DVM to the FBT TP and connect the other pole to the chassis GND.
- (2) Rotate the B+ voltage adjusting control VR201 to provide 85.0 \pm 0.3V DC. At H-SIZE min.
Condition : brightness, contrast VR max VGA mode3

4. HORIZONTAL CENTER ADJUSTMENT

Adjust control SW201 back raster point being most suitable

5. HORIZONTAL PHASE ADJUSTMENT

Adjust control VR204 the image (or test pattern) is placed on the center.

6. FOCUS ADJUSTMENT

- (1) Operate the monitor to display the full white pattern on the screen
- (2) Set the brightness & contrast control at maximum position
- (3) Change the pattern into "H" character pattern on the screen
- (4) Rotate the focus adjusting control in FBT for the best focus.

7. HORIZONTAL SIZE ADJUSTMENT

Adjust the horizontal size VR205 (Located at the front panel)so that the horizontal size of displayed pattern is 250mm. (Tolerance: \pm 5mm)

8. VERTICAL LINEARITY ADJUSTMENT (SPEC : 5 % MAX)

Adjust the vertical linearity control VR305 until the linearity is best in mode 3.

9. VERTICAL CENTERING ADJUSTMENT

Adjust VR304 (Located at the front panel) until the vertical center is set at screen center. (Vertical centering tolerance is $\pm 3\text{mm}$)

10. VERTICAL SIZE ADJUSTMENT



Adjust the vertical size control VR301 so that the vertical size of displayed pattern is 187mm in mode 5 (Tolerance : $187 \pm 3\text{mm}$)

11. SIDE PINCUSHION ADJUSTMENT

Adjustment the side pincushion control (Located at the front panel) until the side lines become straight in mode 3.

12. WHITE BALANCE ADJUSTMENT

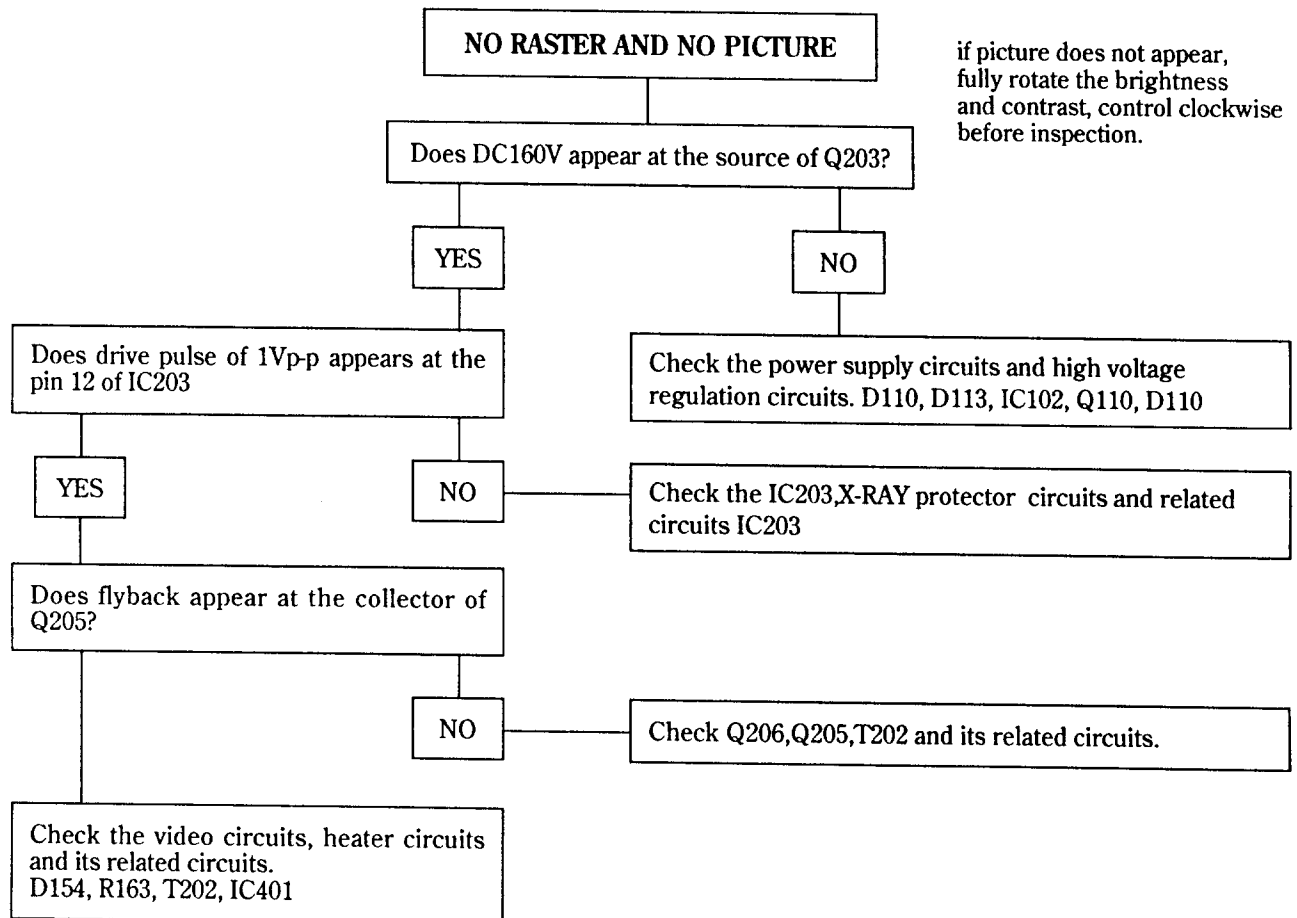
- (1) Have to do aging over 20 minutes before adjust.
- (2) Set drive VR (VR401, VR441) and bias VR (VR402, VR422, VR442) on CRT board to mechanical center position.
- (3) Adjust bright VR and contrast VR (External VR) to max position.
- (4) - Set test pattern to black pattern.
 - Set luminance to 2-3 F/L by screen voltage VR
 - Adjust bias VR (VR402, VR421, VR442) to get the following values which measured by color analyzer in center clockwise.
 $X = 0.281 \pm 0.03$
 $Y = 0.311 \pm 0.03$
 - At this time,
When red color appears on the screen, adjust VR422 and VR442.
When green color appears on the screen, adjust VR402 and VR442.
When Blue color appears on the screen, adjust VR402 and VR422.

- (5) - After adjustment,
Adjust back raster luminance to 0.5 ± 0.2 F/L by screen voltage VR.
- (6) - Set test pattern to white pattern in VGA mode
 - Set luminance to 10.0 ± 0.5 F/L by contrast VR.
 - Adjust drive VR (VR401, VR441) to get the following values which measured by color analyzer in clockwise.
 $X = 0.281 \pm 0.03$
 $Y = 0.311 \pm 0.03$
- (7) - Set test pattern to white pattern
 - Set bright control () and contrast control () to max position.
 - Adjust luminance to 28 F/L by VR202

13. GREEN FUNCTION TEST AND CONTROL

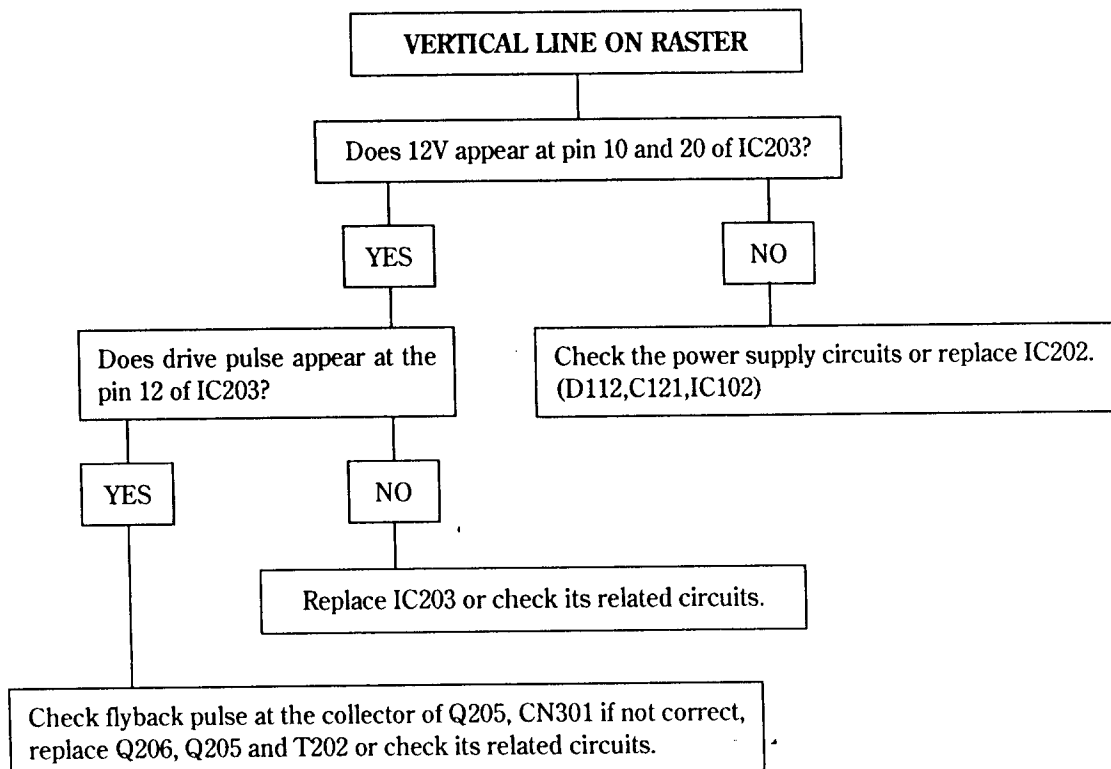
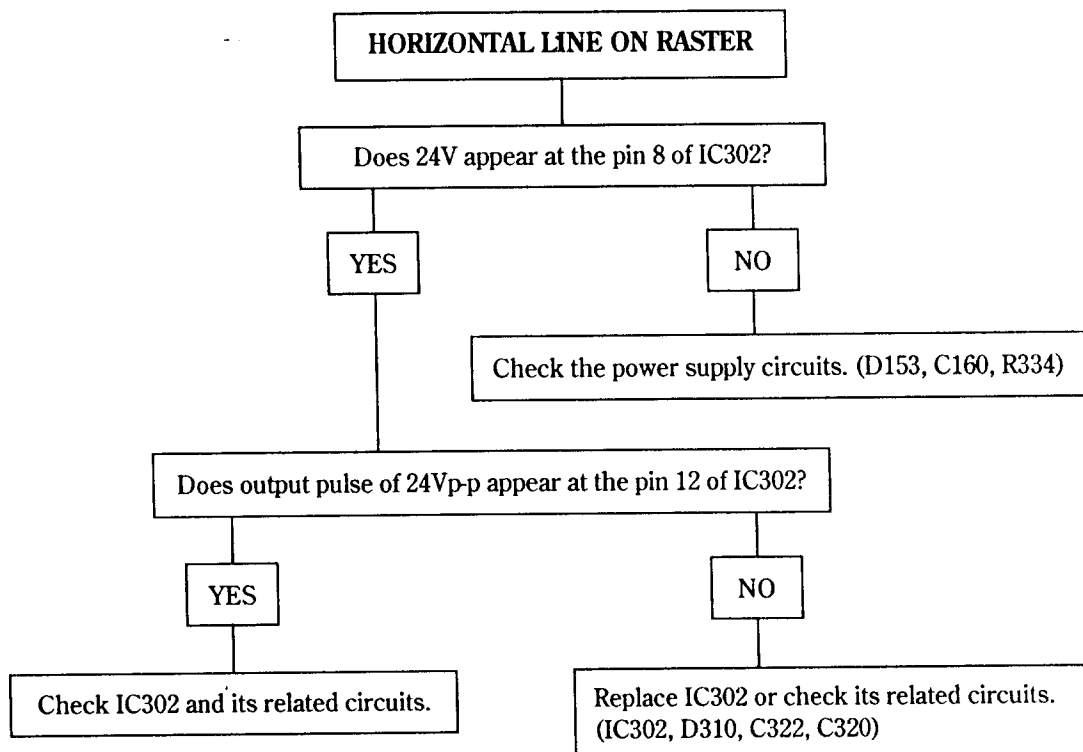
- (1) Set SW102 to center position
- (2) When the monitor is normal operation, LED illuminates amber.
- (3) Suspend mode a state, LED illuminates green. Power consumption (less than 20W)
- (4) Power-off mode a state, LED is off. Power consumption (less than 5W)
- (5) Monitor returns to normal operation state when horizontal and vertical sync returns.

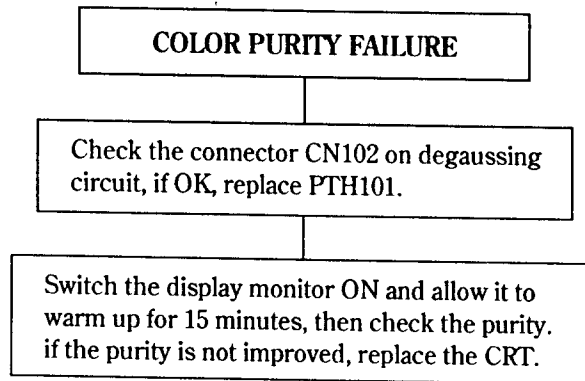
TROUBLESHOOTING GUIDE



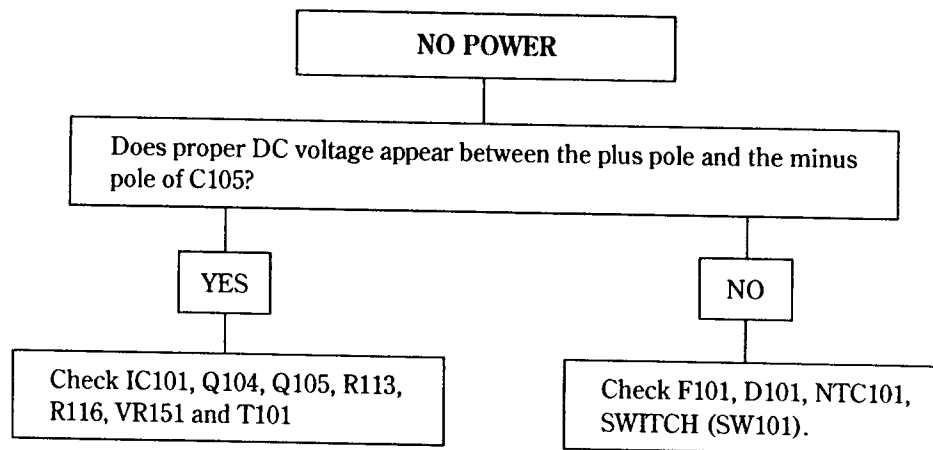
CIRCUIT TO BE CHECKED

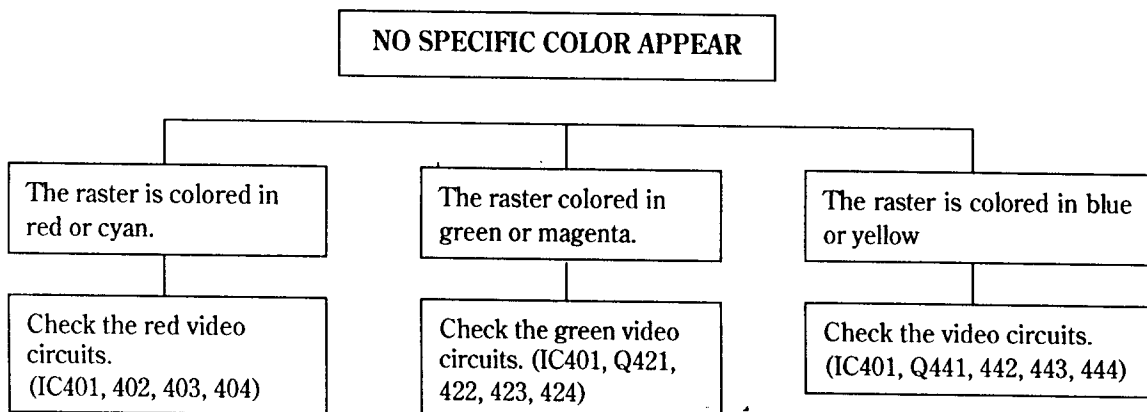
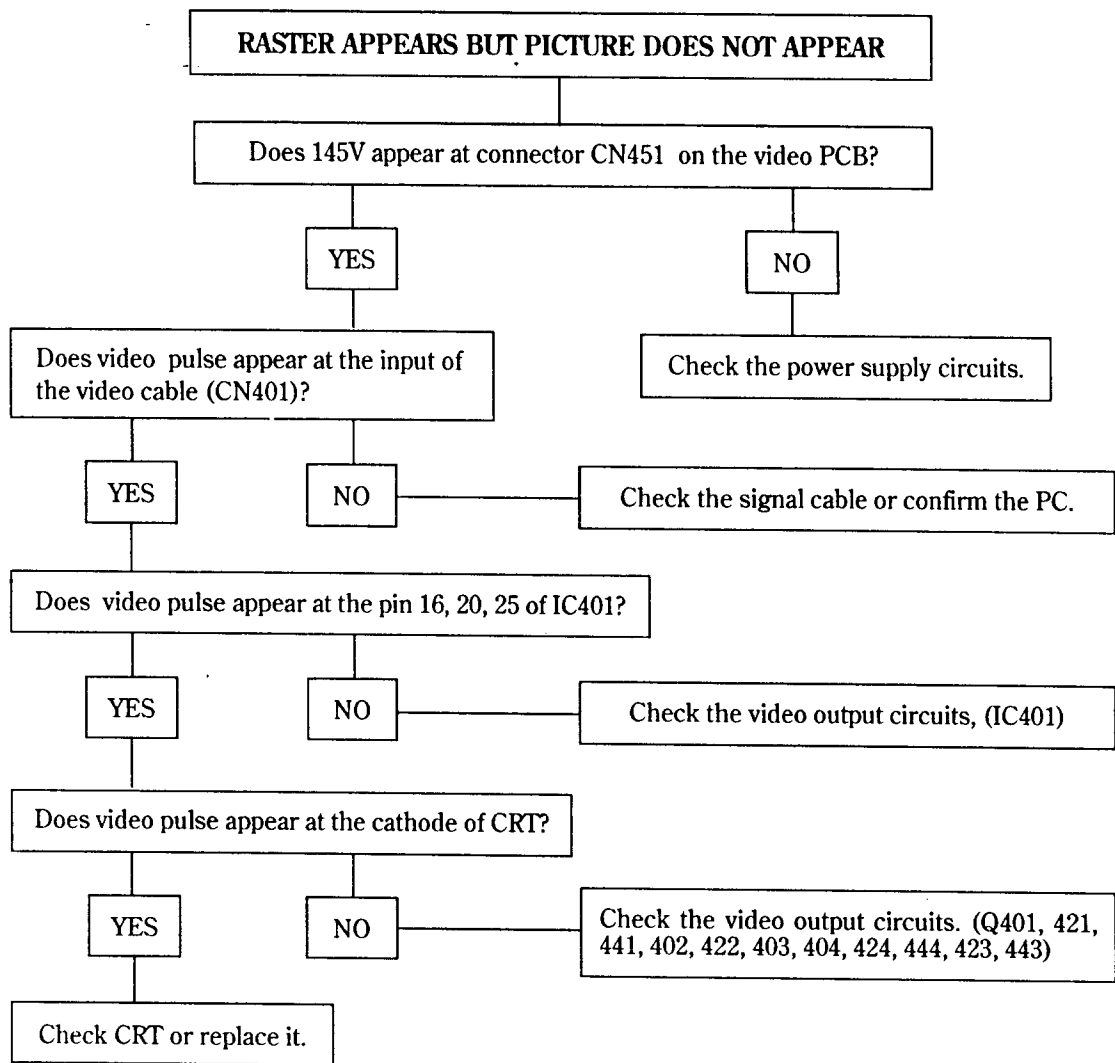
1. No raster appears
 - power circuits - horizontal output circuits
2. A high voltage develops but no raster appears
 - video output circuits
3. A high voltage is not developed
 - horizontal output circuits.



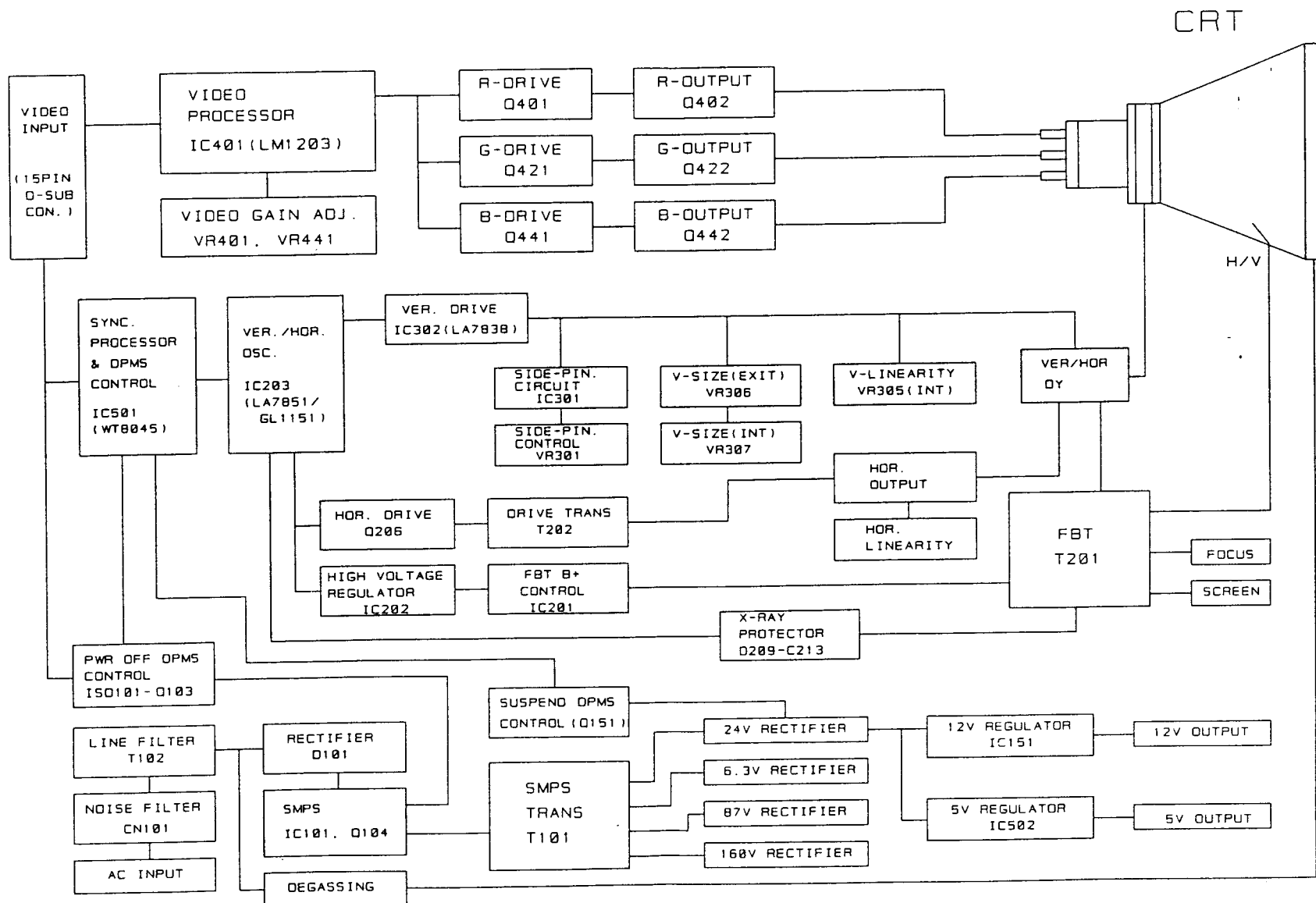


NOTE : if color purity is not normal, manual degaussing should be done by mandatory method using the manual degaussing coil before inspection.

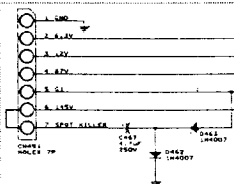
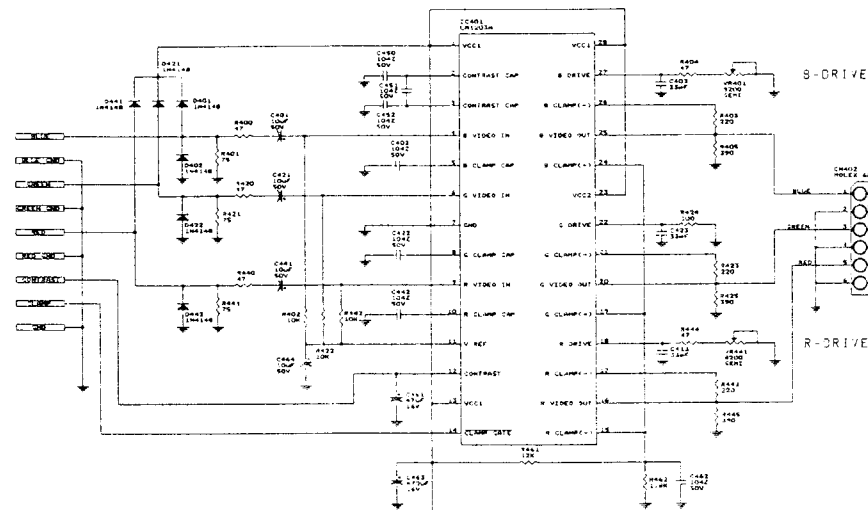




< BLOCK DIAGRAM >

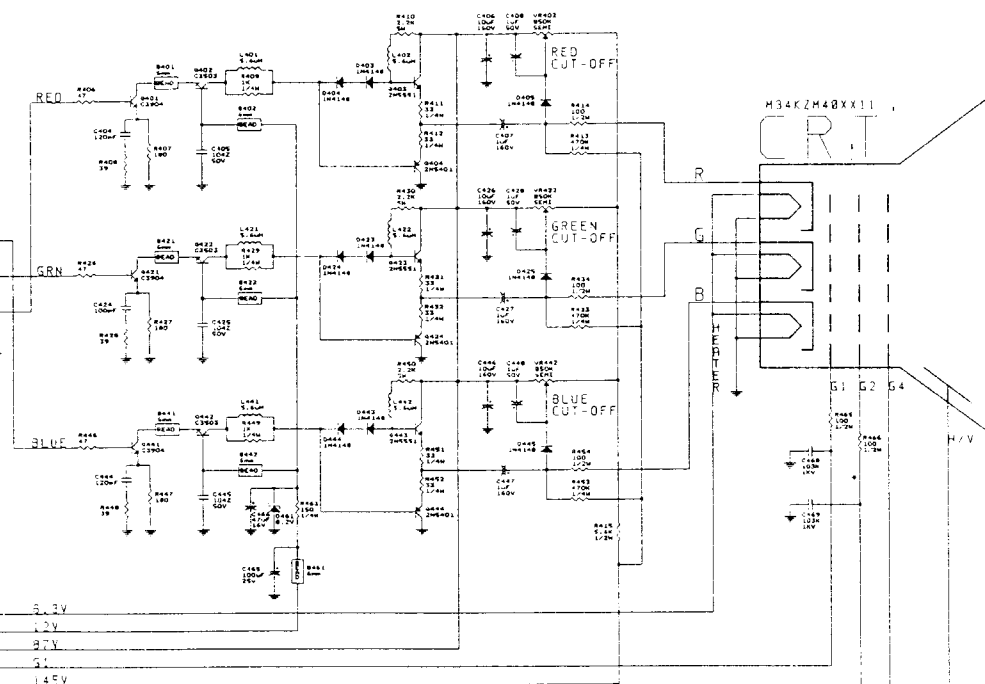


MAIN BOARD



5V G2
5V G4
5V HIGH VOLTAGE

VIDEO BOARD



5.3V
1.2V
0.7V
0.1V
1.45V

수치지령

1. 저항값은 ohm 단위로 표시되며 K=1000, M=1000000을 나타낸다
2. 주입력 표시된 것을 대체하는 모든 저항은 1/6W 또는 사용한다
3. 주입력 표시된 것을 대체하는 모든 저항은 50V 이상
4. 회로도에 표시된 기호를 \downarrow 는 1차 지령을 나타내며 \uparrow 는 2차 지령을 나타내며 \wedge 는 2차 지령을 나타내며
5. 회로도에 표시된 기호는 아래에 같은 의미를 나타낸다

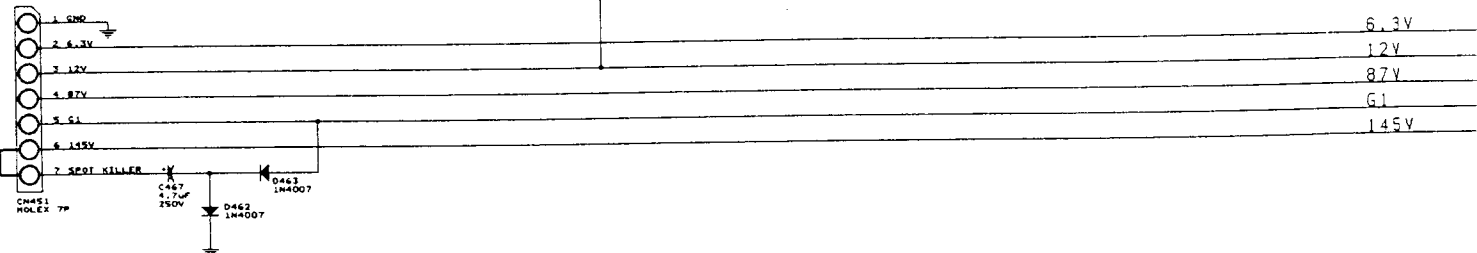
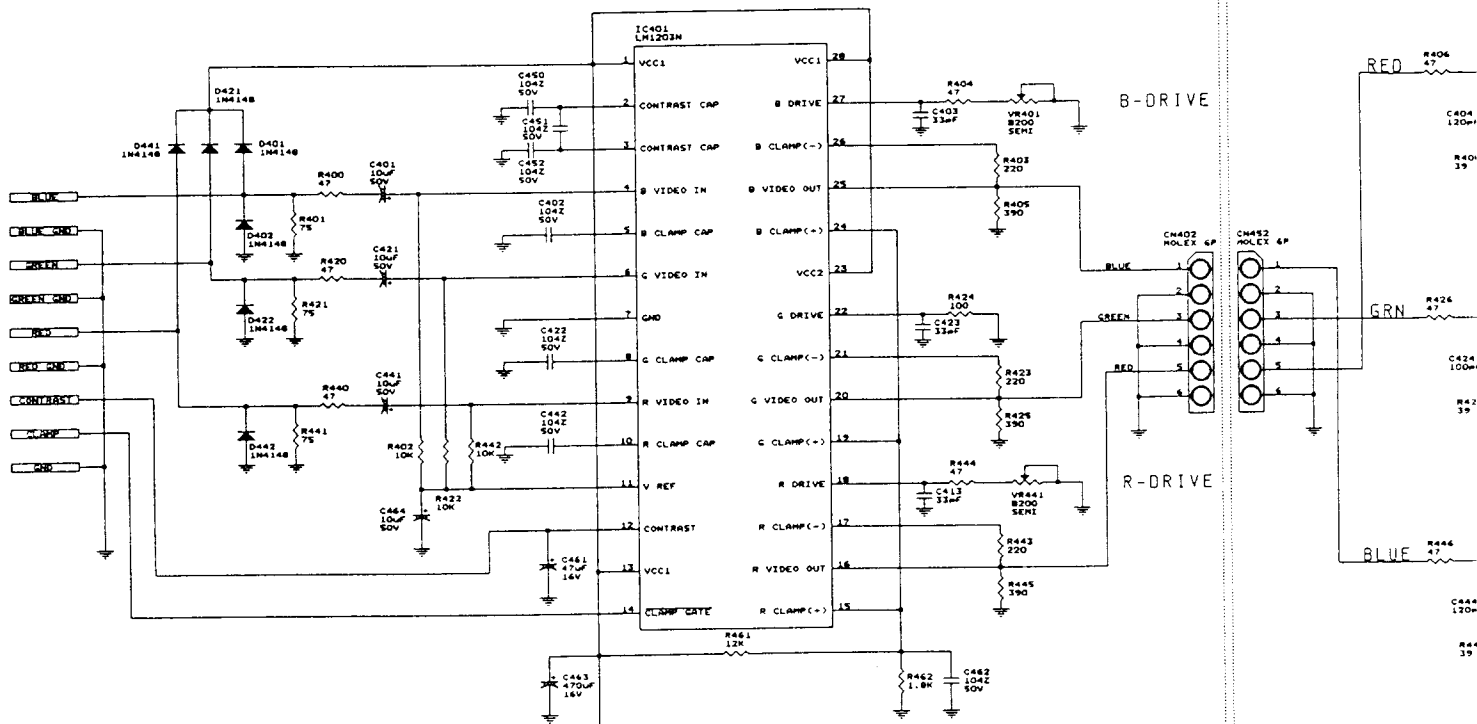
THE SPECIFIC LOCATION-NUMBER'S ORDER

- 100 100 PRIMARY POWER CIRCUIT
- 100 100 SECONDARY POWER CIRCUIT
- 100 100 AUDIO/VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT
- 100 100 VIDEO CIRCUIT

DRAW BY 199 . . . DESIGN BY 199 . . . CHECK BY 199 . . . APP'L BY 199 . . .

SHIN-HO TECH. CO., LTD.
44-2, GANJE-RI, GYEONGGI-DO, KOREA
DESIGNED BY SHIN-HO
REV. 1.0
DATE: 1998.12.15

MAIN BOARD



SCREEN G2
EXCLUS G4
H/V HIGH VOLTAGE

주의 사항

- 저항값은 ohm 단위도 표시되며 K=1000, M=1000000을 나타낸다
- 특정히 표시된 것을 제외하고는 모든 저항은 1/6W 도 사용된다
- 콘덴서는 특정히 표시된 것을 제외하고는 세리믹 콘덴서가 사용되며 내압은 50V이다
- 회로도에 표시된 기호중 ∇ 는 1차 접지점을 나타내며 ∇ 는 2차 이닝도그 접지를 ∇ 는 2차 디지탈 접지를 나타낸다
- 회로도에 표시된 약어는 아래의 값은 의미를 나타낸다

P.F.E : POLYESTER FILM CAPACITOR
P.P.F : POLYPROPYLENE FILM CAPACITOR
M.P.F : METALLIZED POLYESTER FILM CAPACITOR
M.P.P.F : METALLIZED POLYPROPYLENE FILM CAPACITOR

C : CAPACITOR
D : DIODE
R : RESISTOR

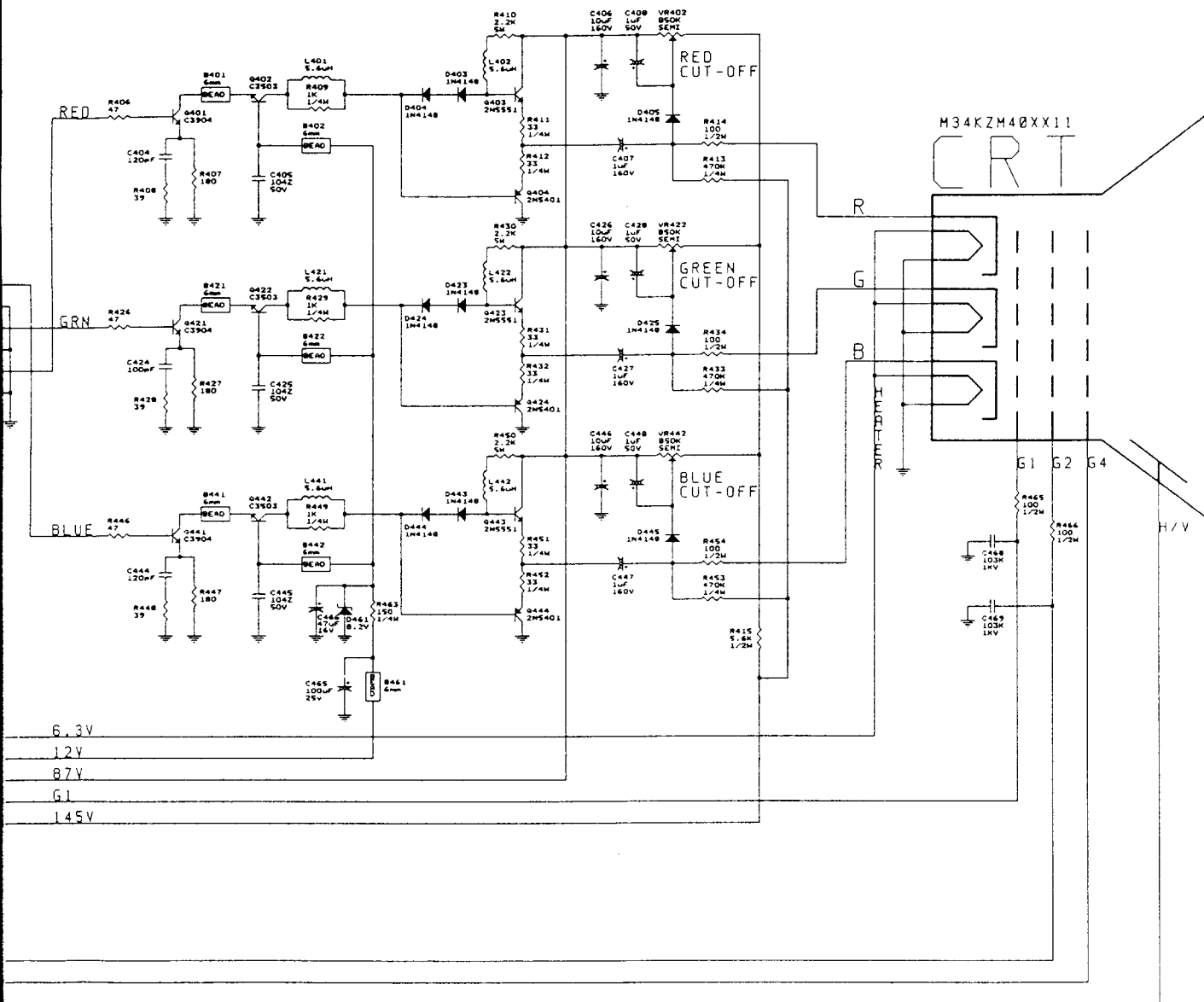
T : TRANSFORMER
U : IC
Y : CRYSTAL OSCILLATOR
CH : CONNECTOR

RES : RESISTOR
ISO : OPTO ISOLATOR
PTH : POSITIVE THERMISTOR
NTH : NEGATIVE THERMISTOR

(THE SPECIFIC LOCATION-NUMBER'S ORDER)

- 100 - 149 : PRIMARY POWER CIRCUIT
- 150 - 199 : SECONDARY POWER CIRCUIT
- 200 - 299 : HORIZONTAL CIRCUIT
- 300 - 399 : VERTICAL CIRCUIT
- 400 - 499 : VIDEO CIRCUIT
- 500 - 599 : MODE SELECT CIRCUIT
- 600 - 699 : RESERVED
- 700 - 799 : RESERVED
- 800 - 899 : RESERVED
- 900 - 999 : CIRCUIT FOR DOMESTIC PRODUCT

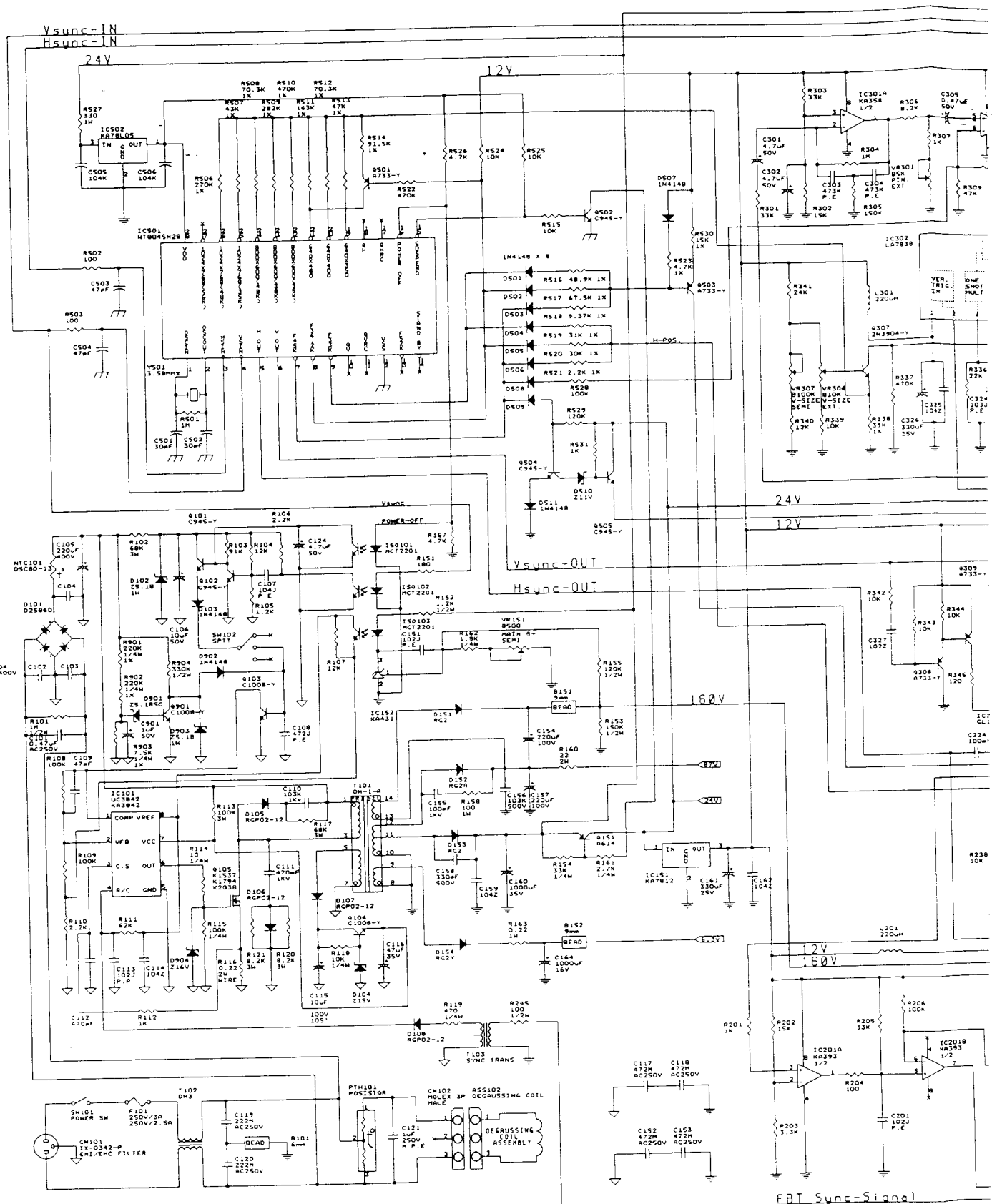
VIDEO BOARD



	DRAW BY	DESIGN BY	CHECK BY	APP'L BY
	199 . . .	199 . . .	199 . . .	199 . . .
ATTENTION-NUMBER'S ORDER)				
ANY POWER CIRCUIT				
WARRANTY POWER CIRCUIT				
INTERNAL CIRCUIT				
EXTERNAL CIRCUIT				
SELECT CIRCUIT				
VIDEO CIRCUIT				
VIDEO CIRCUIT				
UNIT FOR DOMESTIC PRODUCTS				

SHIN-HO TECH. CO., LTD.
 RED CENTER
 46-2, SANGYE-RI, POCHON-HYUN,
 YONGIN-SI, KYONGGI-DO, KOREA
 DESIGNED BY KT - HANG

Title
 NEW 400MHz MODEL VIDEO CRT
 Revision Number
 0 SH4638-V.SCH
 Date December 17, 1994
 of 2



주의 사항

- 저항값은 ohm 단위로 표시되며 K=1000, M=1000000을 나타낸다
- 특별히 표시된 값을 제외하면 모든 저항은 1/6W도 사용된다
- 콘덴서는 특별한 표시된 것을 제외하면 세라믹 콘덴서가 사용되며 내압은 50V이다
- 회로도에 표시된 기호중 ∇ 는 1차 접지임을 나타내며 ∇ 는 2차 아날로그 접지를 나타내며 ∇ 는 2차 디지털 접지를 나타낸다
- 회로도에 표시된 약어는 아래와 같은 의미를 나타낸다

* P.F.E. POLYESTER FILM CAPACITOR
 * P.P.E. METALLIZED POLYESTER FILM CAPACITOR
 * P.P.P. METALLIZED POLYPROPYLENE FILM CAPACITOR

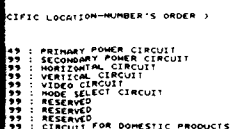
* C. CAPACITOR
 * D. DIODE
 * T. TRANSISTOR
 * R. RESISTOR

* T. TRANSFORMER
 * U. CRYSTAL OSCILLATOR
 * CN. CONNECTOR

* ASS. ASS'Y
 * ISO. OPTO ISOLATOR
 * PTH. POSITIVE THERMISTOR
 * NTH. NEGATIVE THERMISTOR

THE SPECIFIC LOCATION-NUMBER

- * 100 - 149 PRIMARY POWER CT
- * 150 - 199 SECONDARY POWER
- * 200 - 299 HORIZONTAL CIRCUIT
- * 300 - 399 VERTICAL CIRCUIT
- * 400 - 499 VIDEO SELECT CIRCUIT
- * 500 - 599 VIDEO SELECT CIRCUIT
- * 600 - 699 RESERVED
- * 700 - 799 RESERVED
- * 800 - 899 RESERVED
- * 900 - 999 CIRCUIT FOR DOME



SHIN-HO TECH. CO., LTD.
RAD CENTER
46-2, SANKYE-WI, POGOK-MYUN,
YONGIN-KUN, KYOUNGKI-DO, KOREA
DESIGNED BY KT, KANG

Title NEW 48KHE MODEL MAIN CKT

Size	Document Number	REV
0	SH4838-M-SCH	2
03-1	January 15, 1995	Sche 1 of 2

REV. A PCB BLANK NO.:
478-88-48MB488A

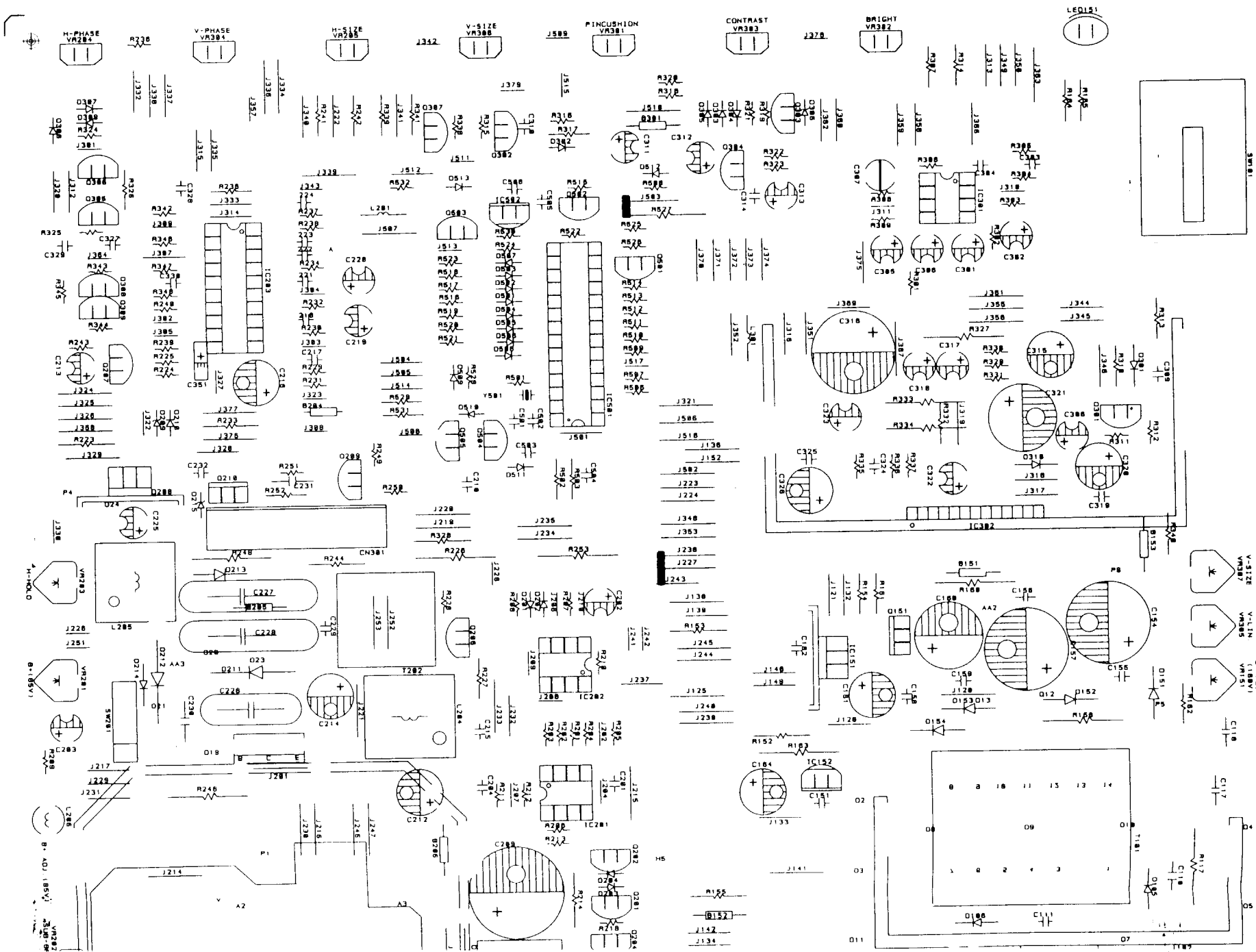
FUSE : T3.8A/T2.5A 250V

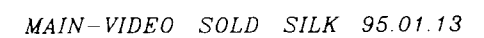
CAUTION:
CONTINUED PROTECTION
AGAINST FIRE HAZARD
REPLACE ONLY WITH SAME
TYPE AND SAME RATING

MAIN-VIDEO SOLD SILK 95.01.13


SM483C

REV A

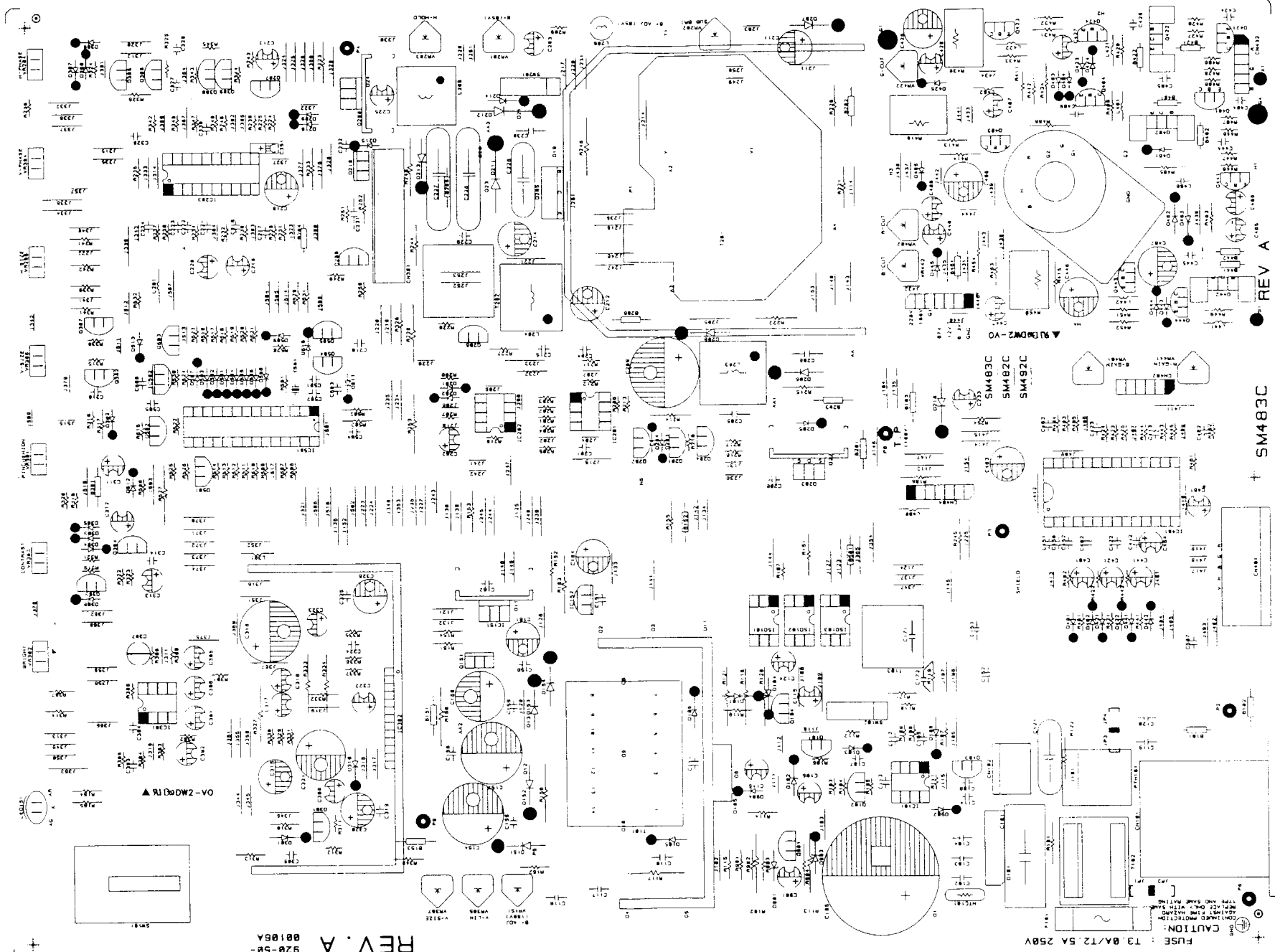




FUSE : T3.0A/T2.5A 250V

CAUTION:  CONTINUED PROTECTION
AGAINST FIRE HAZARD
REPLACE ONLY WITH SAME
TYPE AND SAME RATING

REV. A 920-58-80185A

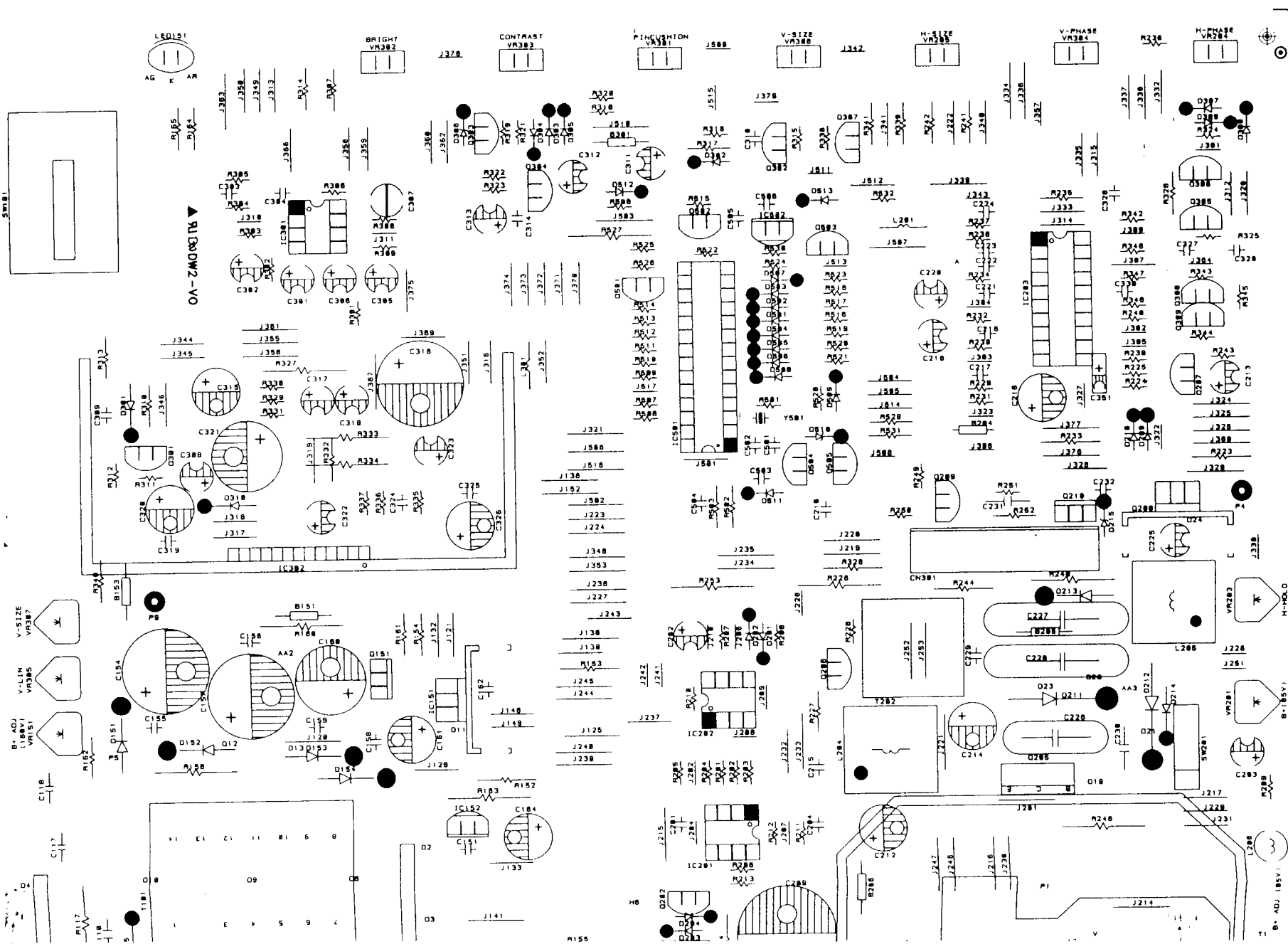


MAIN-VIDEO COMP SILK 95 01 13

SM483C

REV A

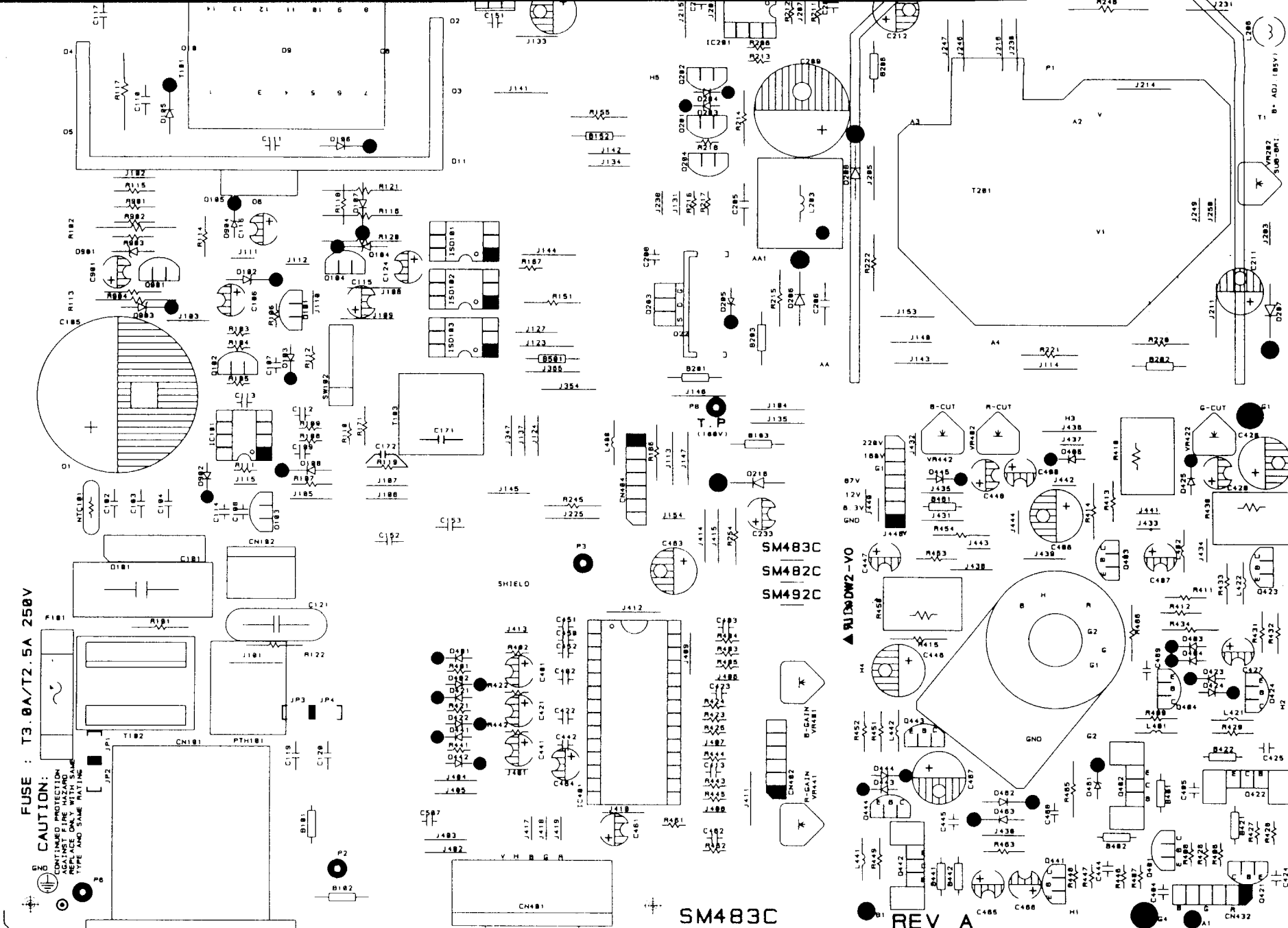
REV. A 920-50-
80106A



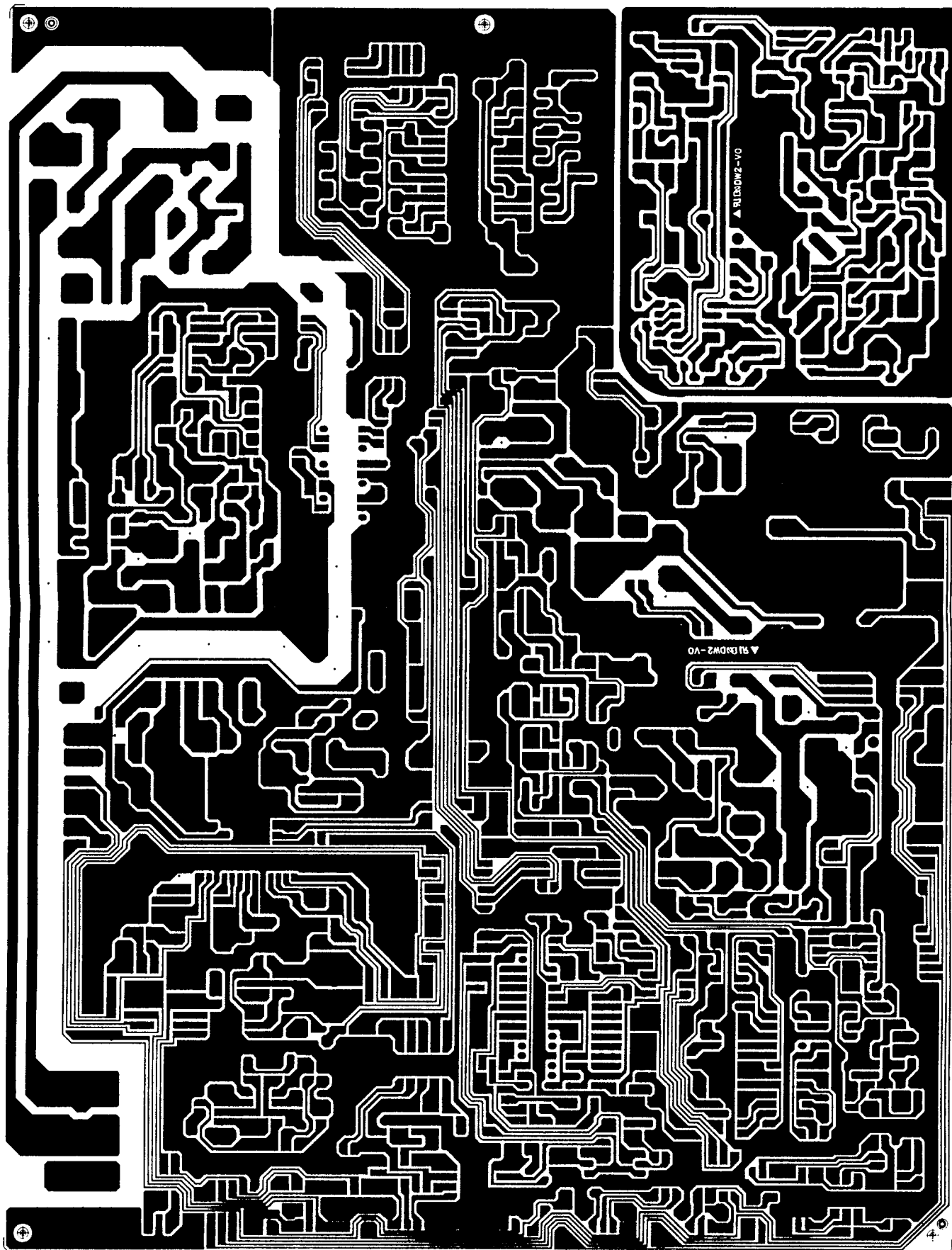
FUSE : T3.0A/T2.5A 250V

CAUTION:

CONTAINS PRECISION
COMPONENTS
REPLACE ONLY WITH SAME
TYPE AND SAME RATING



MAIN-VIDEO COMP SILK 95 01 13



ELECTRICAL PARTS LIST

IMPORTANT SAFETY NOTICE

Components identified by the ! symbol have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

NOTE : Tolerance F; $\pm 1\%$: G $\pm 2\%$; J; $\pm 5\%$: K; $\pm 10\%$: M; $\pm 20\%$
 P; +100% -0% : Z; +80% -20%

LOC. NO.	DESCRIPTION	REMARK
RESISTORS		
R101	R-CARBON : 1/2W 1MJ	
R102	R-METAL OXIDE : 3W 68KJ	
R103	R-CARBON : 1/6W 91KJ	
R104	R-CARBON : 1/6W 12KJ	
R105	R-CARBON : 1/6W 1.2KJ	
R106	R-CARBON : 1/6W 2.2KJ	
R107	R-CARBON : 1/6W 12KJ	
R107	R-METAL OXIDE : 3W 68KJ	
R108	R-CARBON : 1/6W 100KJ	
R109	R-CARBON : 1/6W 100KJ	
R110	R-CARBON : 1/6W 2.2KJ	
R111	R-CARBON : 1/6W 62KJ	
R112	R-CARBON : 1/6W 1KJ	
R113	R-METAL OXIDE : 3W 100KJ	
R114	R-CARBON : 1/4W 10J	
R115	R-CARBON : 1/4W 100KJ	
R116	R-WIRE : 2W 0.22J	
R118	R-CARBON : 1/4W 10KJ	
R119	R-CARBON : 1/4W 470J	
R120	R-METAL OXIDE : 3W 8.2KJ	
R121	R-METAL OXIDE : 3W 8.2KJ	
R151	R-CARBON : 1/6W 180J	
R152	R-CARBON : 1/2W 1.2KJ	
R153	R-CARBON : 1/2W 150KJ	
R154	R-CARBON : 1/4W 33KJ	
R155	R-CARBON : 1/2W 120KJ	
R158	R-METAL OXIDE : 1W 100J	
R160	R-METAL OXIDE : 2W 22J	
R161	R-CARBON : 1/4W 2.7KJ	

LOC. NO.	DESCRIPTION	REMARK
RESISTORS		
R162	R-CARBON : 1/4W 1.8KJ	
R163	R-METAL OXIDE : 1W 0.22J	
R164	R-CARBON : 1/4W 1KJ	
R165	R-CARBON : 1/4W 2.2KJ	
R166	R-CARBON : 1/2W 2.2KJ	
R167	R-CARBON : 1/6W 4.7KJ	
R201	R-CARBON : 1/6W 1KJ	
R202	R-CARBON : 1/6W 15KJ	
R203	R-CARBON : 1/6W 3.3KJ	
R204	R-CARBON : 1/6W 100J	
R205	R-CARBON : 1/6W 33KJ	
R206	R-CARBON : 1/6W 100KJ	
R207	R-CARBON : 1/6W 12KJ	
R208	R-CARBON : 1/6W 3.3KJ	
R209	R-CARBON : 1/6W 2.5KJ	
R210	R-CARBON : 1/6W 1KJ	
R211	R-CARBON : 1/6W 12KJ	
R212	R-CARBON : 1/6W 6.8KJ	
R213	R-CARBON : 1/6W 3.3KJ	
R214	R-CARBON : 1/2W 22J	
R215	R-CARBON : 1/2W 100KJ	
R216	R-CARBON : 1/6W 3.3KJ	
R217	R-CARBON : 1/6W 2.2KJ	
R218	R-CARBON : 1/6W 33KJ	
R220	R-CARBON : 1/2W 270KJ	
R221	R-CARBON : 1/2W 1.2J	
R222	R-CARBON : 1/2W 0.56J	
R223	R-CARBON : 1/4W 7.5KF	!
R224	R-CARBON : 1/6W 8.2KJ	!
R225	R-CARBON : 1/6W 3.3KJ	!
R226	R-METAL OXIDE : 3W 150J	!
R227	R-CARBON : 1/4W 180J	
R228	R-CARBON : 1/6W 1KJ	
R229	R-CARBON : 1/6W 1KJ	
R230	R-CARBON : 1/6W 33KJ	
R231	R-CARBON : 1/6W 9.1KJ	
R232	R-CARBON : 1/6W 8.2KJ	
R233	R-CARBON : 1/6W 27KJ	
R234	R-CARBON : 1/6W 8.2KJ	
R235	R-CARBON : 1/6W 150J	

LOC. NO.	DESCRIPTION	REMARK
RESISTORS		
R236	R-CARBON : 1/4W 6.2KJ	
R237	R-CARBON : 1/6W 22KJ	
R238	R-CARBON : 1/6W 10KJ	
R239	R-CARBON : 1/6W 12KF	
R240	R-CARBON : 1/6W 12KF	
R241	R-CARBON : 1/6W 15KJ	
R242	R-CARBON : 1/6W 2.2KJ	
R243	R-CARBON : 1/6W 330J	
R244	R-CARBON : 1/2W 330J	
R245	R-CARBON : 1/2W 100J	
R246	R-METAL OXIDE : 3W 100J	
R248	R-CARBON : 1/2W 22J	
R253	R-METAL OXIDE : 3W 120J	
R301	R-CARBON : 1/6W 33KJ	
R302	R-CARBON : 1/6W 15KJ	
R303	R-CARBON : 1/6W 33KJ	
R304	R-CARBON : 1/6W 1MJ	
R305	R-CARBON : 1/6W 150KJ	
R306	R-CARBON : 1/6W 8.2KJ	
R307	R-CARBON : 1/6W 1KJ	
R308	R-CARBON : 1/6W 47KJ	
R309	R-CARBON : 1/6W 47KJ	
R310	R-CARBON : 1/4W 10KJ	
R311	R-CARBON : 1/6W 3.3KJ	
R312	R-CARBON : 1/6W 1KJ	
R313	R-CARBON : 1/4W 2.2MJ	
R314	R-CARBON : 1/6W 6.8KJ	
R315	R-CARBON : 1/6W 470KJ	
R316	R-CARBON : 1/6W 8.2KJ	
R317	R-CARBON : 1/4W 100KJ	
R318	R-CARBON : 1/6W 39KJ	
R319	R-CARBON : 1/6W 1KJ	
R320	R-CARBON : 1/6W 820J	
R321	R-CARBON : 1/6W 5.6KJ	
R322	R-CARBON : 1/6W 1.5KJ	
R323	R-CARBON : 1/6W 1KJ	
R324	R-CARBON : 1/6W 330J	
R325	R-CARBON : 1/6W 33KJ	
R326	R-CARBON : 1/4W 22J	

LOC. NO.	DESCRIPTION	REMARK
RESISTORS		
R327	R-METAL OXIDE : 2W 100J	
R328	R-CARBON : 1/2W 270J	
R329	R-CARBON : 1/6W 6.8KJ	
R330	R-CARBON : 1/6W 68J	
R331	R-CARBON : 1/6W 15KJ	
R332	R-CARBON : 1/6W 22KJ	
R333	R-METAL OXIDE : 1W 1.8J	
R334	R-METAL OXIDE : 1W 3.3J	
R335	R-CARBON : 1/6W 82KJ	
R336	R-CARBON : 1/6W 22KJ	
R337	R-CARBON : 1/6W 470KJ	
R338	R-CARBON : 1/6W 39KF	
R339	R-CARBON : 1/6W 10KJ	
R340	R-CARBON : 1/6W 12KJ	
R341	R-CARBON : 1/6W 24KJ	
R342	R-CARBON : 1/6W 10KJ	
R343	R-CARBON : 1/6W 10KJ	
R344	R-CARBON : 1/6W 10KJ	
R345	R-CARBON : 1/6W 120J	
R346	R-CARBON : 1/6W 330KF	
R347	R-CARBON : 1/6W 22KJ	
R348	R-CARBON : 1/6W 56KJ	
R401	R-CARBON : 1/6W 75J	
R402	R-CARBON : 1/6W 10KJ	
R403	R-CARBON : 1/6W 220J	
R404	R-CARBON : 1/6W 47J	
R405	R-CARBON : 1/6W 390J	
R406	R-CARBON : 1/6W 47J	
R407	R-CARBON : 1/6W 180J	
R408	R-CARBON : 1/6W 39J	
R409	R-CARBON : 1/4W 1KJ	
R410	R-CEMENT : 5W 2.2KJ	
R411	R-CARBON : 1/4W 33J	
R412	R-CARBON : 1/4W 33J	
R413	R-CARBON : 1/4W 470KJ	
R414	R-CARBON : 1/2W 100J	
R415	R-CARBON : 1/2W 5.6KJ	
R421	R-CARBON : 1/6W 75J	
R422	R-CARBON : 1/6W 10KJ	
R423	R-CARBON : 1/6W 220J	

LOC. NO.	DESCRIPTION	REMARK
RESISTORS		
R424	R-CARBON : 1/6W 100J	
R425	R-CARBON : 1/6W 390J	
R426	R-CARBON : 1/6W 47J	
R427	R-CARBON : 1/6W 180J	
R428	R-CARBON : 1/6W 39J	
R429	R-CARBON : 1/4W 1KJ	
R430	R-CEMENT : 5W 2.2KJ	
R431	R-CARBON : 1/4W 33J	
R432	R-CARBON : 1/4W 33J	
R433	R-CARBON : 1/4W 470KJ	
R434	R-CARBON : 1/2W 100J	
R441	R-CARBON : 1/6W 75J	
R442	R-CARBON : 1/6W 10KJ	
R443	R-CARBON : 1/6W 220J	
R444	R-CARBON : 1/6W 47J	
R445	R-CARBON : 1/6W 390J	
R446	R-CARBON : 1/6W 47J	
R447	R-CARBON : 1/6W 180J	
R448	R-CARBON : 1/6W 39J	
R449	R-CARBON : 1/4W 1KJ	
R450	R-CEMENT : 5W 2.2KJ	
R451	R-CARBON : 1/4W 33J	
R452	R-CARBON : 1/4W 33J	
R453	R-CARBON : 1/4W 470KJ	
R454	R-CARBON : 1/2W 100J	
R461	R-CARBON : 1/6W 12KJ	
R462	R-CARBON : 1/6W 1.8KJ	
R463	R-CARBON : 1/4W 150J	
R465	R-CARBON : 1/2W 100J	
R466	R-CARBON : 1/2W 100J	
R501	R-CARBON : 1/6W 1MJ	
R502	R-CARBON : 1/6W 100J	
R503	R-CARBON : 1/6W 100J	
R506	R-CARBON : 1/6W 270KF	
R507	R-CARBON : 1/6W 43KF	
R508	R-CARBON : 1/6W 67.5KF	
R509	R-CARBON : 1/6W 282KF	
R510	R-CARBON : 1/6W 470KF	
R511	R-CARBON : 1/6W 163KF	
R512	R-CARBON : 1/6W 70.3KF	

LOC. NO.	DESCRIPTION	REMARK
RESISTORS		
R513	R-CARBON : 1/6W 47KF	
R514	R-CARBON : 1/6W 91.5KF	
R515	R-CARBON : 1/6W 10KJ	
R516	R-CARBON : 1/6W 48.9KF	
R517	R-CARBON : 1/6W 67.5KF	
R518	R-CARBON : 1/6W 9.37KF	
R519	R-CARBON : 1/6W 20KF	
R520	R-CARBON : 1/6W 91.5KF	
R521	R-CARBON : 1/6W 5.1KF	
R522	R-CARBON : 1/6W 470KJ	
R523	R-CARBON : 1/6W 4.7KF	
R524	R-CARBON : 1/6W 10KJ	
R525	R-CARBON : 1/6W 10KJ	
R526	R-CARBON : 1/6W 4.7KJ	
R527	R-CARBON : 1/2W 330J	
R528	R-CARBON : 1/6W 100KJ	
R529	R-CARBON : 1/6W 120KJ	
R530	R-CARBON : 1/6W 15KF	
R531	R-CARBON : 1/6W 1KJ	
R532	R-CARBON : 1/6W 3.9KF	
R901	R-CARBON : 1/4W 220KF	
R902	R-CARBON : 1/4W 220KF	
R903	R-CARBON : 1/4W 7.5KF	
R904	R-CARBON : 1/2W 330KJ	
DIODE		
D101	DIODE-BRIDGE : D2SB60	
D102	DIODE-ZENER : UZP-5.1B 1W	
D103	DIODE-REC : 1N4148	
D104	DIODE-ZENER : 15V 0.5W	
D105	DIODE-REC : RGP02-12E	
D106	DIODE-REC : RGP02-12E	
D107	DIODE-REC : RGP02-12E	
D108	DIODE-REC : RGP02-12E	
D151	DIODE-REC : RG2	
D152	DIODE-REC : RG2A	
D153	DIODE-REC : RG2	
D154	DIODE-REC : RG2Y	
D201	DIODE-REC : 1N4148	
D202	DIODE-REC : 1N4148	
D203	DIODE-REC : 1N4148	

LOC. NO.	DESCRIPTION	REMARK
DIODE		
D204	DIODE-REC : 1N4148	!
D205	DIODE-ZENER : UZ 9.1BM 0.5W	
D206	DIODE-REC : RG2	
D207	DIODE-REC : RGP10G	!
D208	DIODE-REC : RGP10G	
D209	DIODE-ZENER : UZ 8.2BM 0.5W	
D210	DIODE-REC : 1N4148	!
D211	DIODE-REC : RG4	
D212	DIODE-REC : ERD09-152D	
D213	DIODE-REC : RGP10G	!
D214	DIODE-REC : RGP10G	
D301	DIODE-REC : RGP10G	
D302	DIODE-REC : 1N4148	!
D303	DIODE-REC : 1N4148	
D304	DIODE-REC : 1N4148	
D305	DIODE-REC : 1N4148	!
D306	DIODE-ZENER : UZ 8.2BM 0.5W	
D307	DIODE-REC : 1N4148	
D308	DIODE-REC : 1N4148	!
D309	DIODE-REC : 1N4148	
D310	DIODE-REC : RGP10G	
D401	DIODE-REC : 1N4148	!
D402	DIODE-REC : 1N4148	
D403	DIODE-REC : 1N4148	
D404	DIODE-REC : 1N4148	!
D405	DIODE-REC : 1N4148	
D421	DIODE-REC : 1N4148	
D422	DIODE-REC : 1N4148	!
D423	DIODE-REC : 1N4148	
D424	DIODE-REC : 1N4148	
D425	DIODE-REC : 1N4148	!
D441	DIODE-REC : 1N4148	
D442	DIODE-REC : 1N4148	
D443	DIODE-REC : 1N4148	!
D444	DIODE-REC : 1N4148	
D445	DIODE-REC : 1N4148	
D461	DIODE-ZENER : UZ 8.2BM 0.5W	!
D462	DIODE-REC : 1N4007	
D463	DIODE-REC : 1N4007	
D501	DIODE-REC : 1N4148	!

LOC. NO.	DESCRIPTION	REMARK
DIODE		
D502	DIODE-REC : 1N4148	
D503	DIODE-REC : 1N4148	
D504	DIODE-REC : 1N4148	
D505	DIODE-REC : 1N4148	
D506	DIODE-REC : 1N4148	
D507	DIODE-REC : 1N4148	
D508	DIODE-REC : 1N4148	
D509	DIODE-REC : 1N4148	
D510	DIODE-ZENER : UZ 11.0B 1W	
D511	DIODE-REC : 1N4148	
D512	DIODE-REC : 1N4148	
D513	DIODE-REC : 1N4148	
D901	DIODE-ZENER : 5.1 BSC 0.5W	
D902	DIODE-REC : 1N4148	
D903	DIODE-ZENER : UZP-5.1B 1W	
D904	DIODE-ZENER : 16V 0.5W	
CAPACITORS		
C101	C-M,POLYESTER : 250V 474K	
C105	C-ELECTROLYTIC : 400V 220UF	
C106	C-ELECTROLYTIC : 50V 10UF	
C107	C-POLYETER : 100V 104J	
C108	C-POLYETER : 100V 472J	
C109	C-CERAMIC : 50V 470K	
C110	C-CERAMIC : 1KV 103K	
C111	C-CERAMIC : 1KV 471K	
C112	C-CERAMIC : 50V 471K	
C113	C-POLYPROPYLENE : 100V 102J	
C114	C-CERAMIC : 50V 104Z	
C115	C-ELECTROLYTIC : 100V 10UF 105°	
C116	C-ELECTROLYTIC : 35V 47UF	
C117	C-CERAMIC : 400V 472M	
C118	C-CERAMIC : 400V 472M	
C119	C-CERAMIC : 400V 222M	
C120	C-CERAMIC : 400V 222M	
C121	C-M,POLYETER : 250V 105K	
C124	C-ELECTROLYTIC : 50V 4.7UF	
C151	C-POLYETER : 100V 102J	
C152	C-CERAMIC : 400V 472M	
C153	C-CERAMIC : 400V 472M	

LOC. NO.	DESCRIPTION	REMARK
CAPACITORS		
C154	C-ELECTROLYTIC : 100V 220UF	
C155	C-CERAMIC : 1KV 101K	
C156	C-CERAMIC : 500V 103K	
C157	C-ELECTROLYTIC : 100V 220UF	
C158	C-CERAMIC : 500V 331K	
C159	C-CERAMIC : 50V 104Z	
C160	C-ELECTROLYTIC : 35V 1000UF	
C161	C-ELECTROLYTIC : 25V 330UF	
C162	C-CERAMIC : 50V 104Z	
C164	C-ELECTROLYTIC : 16V 1000UF	
C201	C-POLYETER : 100V 102J	
C202	C-ELECTROLYTIC : 50V 1UF	
C203	C-ELECTROLYTIC : 50V 10UF	
C204	C-CERAMIC : 500V 472K	
C205	C-M,POLYPROPYLENE : 250V 104J	
C206	C-M,POLYPROPYLENE : 250V 104J	
C208	C-CERAMIC : 500V 561K	
C209	C-ELECTROLYTIC : 250V 100UF 105°	
C210	C-CERAMIC : 50V 101K	
C211	C-ELECTROLYTIC : 50V 100UF	
C212	C-ELECTROLYTIC : 25V 470UF	
C213	C-ELECTROLYTIC : 50V 10UF	
C214	C-ELECTROLYTIC : 50V 330UF	
C215	C-CERAMIC : 500V 472K	
C216	C-ELECTROLYTIC : 25V 330UF	
C217	C-POLYPROPYLENE : 100V 332G	
C218	C-POLYETER : 100V 103J	
C219	C-ELECTROLYTIC : 50V 1UF	
C220	C-ELECTROLYTIC : 50V 1UF	
C221	C-POLYETER : 100V 332J	
C222	C-CERAMIC : 50V 271K	
C223	C-POLYPROPYLENE : 100V 102J	
C224	C-CERAMIC : 50V 101K	
C225	C-ELECTROLYTIC : 160V 1UF	
C226	C-POLYPROPYLENE : 630V 103J	
C227	C-POLYPROPYLENE : 1.6KV 602J	
C228	C-M,POLYPROPYLENE : 250V 644J	
C229	C-CERAMIC : 500V 102K	
C230	C-M,POLYPROPYLENE : 250V 104J	
C301	C-ELECTROLYTIC : 50V 4.7UF	

LOC. NO.	DESCRIPTION	REMARK
CAPACITORS		
C302	C-ELECTROLYTIC : 50V 4.7UF	
C303	C-POLYETER : 100V 473K	
C304	C-POLYETER : 100V 473K	
C305	C-ELECTROLYTIC : 50V 0.47UF	
C306	C-ELECTROLYTIC : 50V 10UF	
C307	C-ELECTROLYTIC : 16V(NP) 22UF	
C308	C-ELECTROLYTIC : 160V 1UF	
C309	C-POLYETER : 100V 104K	
C310	C-CERAMIC : 50V 104Z	
C311	C-ELECTROLYTIC : 50V 0.47UF	
C312	C-ELECTROLYTIC : 16V 47UF	
C313	C-ELECTROLYTIC : 50V 33UF	
C314	C-CERAMIC : 50V 104Z	
C315	C-ELECTROLYTIC : 25V 220UF	
C316	C-ELECTROLYTIC : 25V 2200UF	
C317	C-TANTAL : 25V 10UF	
C318	C-ELECTROLYTIC : 50V 4.7UF	
C319	C-CERAMIC : 50V 221K	
C320	C-ELECTROLYTIC : 35V 100UF	
C321	C-ELECTROLYTIC : 35V 1000UF	
C322	C-TANTAL : 35V 0.68UF	
C323	C-ELECTROLYTIC : 50V 1UF	
C324	C-POLYETER : 100V 103J	
C325	C-CERAMIC : 50V 104Z	
C326	C-ELECTROLYTIC : 25V 330UF	
C327	C-CERAMIC : 50V 102K	
C328	C-POLYETER : 100V 122J	
C329	C-POLYETER : 100V 104J	
C330	C-POLYETER : 100V 153J	
C351	C-ELECTROLYTIC : 50V 4.7UF	
C401	C-ELECTROLYTIC : 50V 10UF	
C402	C-CERAMIC : 50V 104Z	
C403	C-CERAMIC : 50V 330J	
C404	C-CERAMIC : 50V 121K	
C405	C-CERAMIC : 50V 104Z	
C406	C-ELECTROLYTIC : 160V 10UF	
C407	C-ELECTROLYTIC : 160V 1UF	
C408	C-ELECTROLYTIC : 50V 1UF	
C413	C-CERAMIC : 50V 330J	
C421	C-ELECTROLYTIC : 50V 10UF	

LOC. NO.	DESCRIPTION	REMARK
CAPACITORS		
C422	C-CERAMIC : 50V 104Z	
C423	C-CERAMIC : 50V 330J	
C424	C-CERAMIC : 50V 101K	
C425	C-CERAMIC : 50V 104Z	
C426	C-ELECTROLYTIC : 160V 10UF	
C427	C-ELECTROLYTIC : 160V 1UF	
C428	C-ELECTROLYTIC : 50V 1UF	
C441	C-ELECTROLYTIC : 50V 10UF	
C442	C-CERAMIC : 50V 104Z	
C444	C-CERAMIC : 50V 121K	
C445	C-CERAMIC : 50V 104Z	
C446	C-ELECTROLYTIC : 160V 10UF	
C447	C-ELECTROLYTIC : 160V 1UF	
C448	C-ELECTROLYTIC : 50V 1UF	
C450	C-CERAMIC : 50V 104Z	
C451	C-CERAMIC : 50V 104Z	
C452	C-CERAMIC : 50V 104Z	
C461	C-ELECTROLYTIC : 16V 47UF	
C462	C-CERAMIC : 50V 104Z	
C463	C-ELECTROLYTIC : 16V 470UF	
C464	C-ELECTROLYTIC : 50V 10UF	
C465	C-ELECTROLYTIC : 25V 100UF	
C466	C-ELECTROLYTIC : 16V 47UF	
C467	C-ELECTROLYTIC : 250V 4.7UF	
C468	C-CERAMIC : 500V 103K	
C469	C-CERAMIC : 1KV 103K	
C501	C-CERAMIC : 50V 300J	
C502	C-CERAMIC : 50V 300J	
C503	C-CERAMIC : 50V 470K	
C504	C-CERAMIC : 50V 470K	
C505	C-CERAMIC : 50V 104Z	
C506	C-CERAMIC : 50V 104Z	
C507	C-CERAMIC : 50V 470K	
C901	C-ELECTROLYTIC : 50V 1UF	
INTEGRATED CIRCUITS		
IC101	IC-LINEAR : KA3842	
IC151	IC-LINEAR : KA7812	
IC152	IC-REGULATOR : KA431Z,KA531AZ	
IC201	IC-LINEAR : KA393	
IC202	IC-LINEAR : KA358	

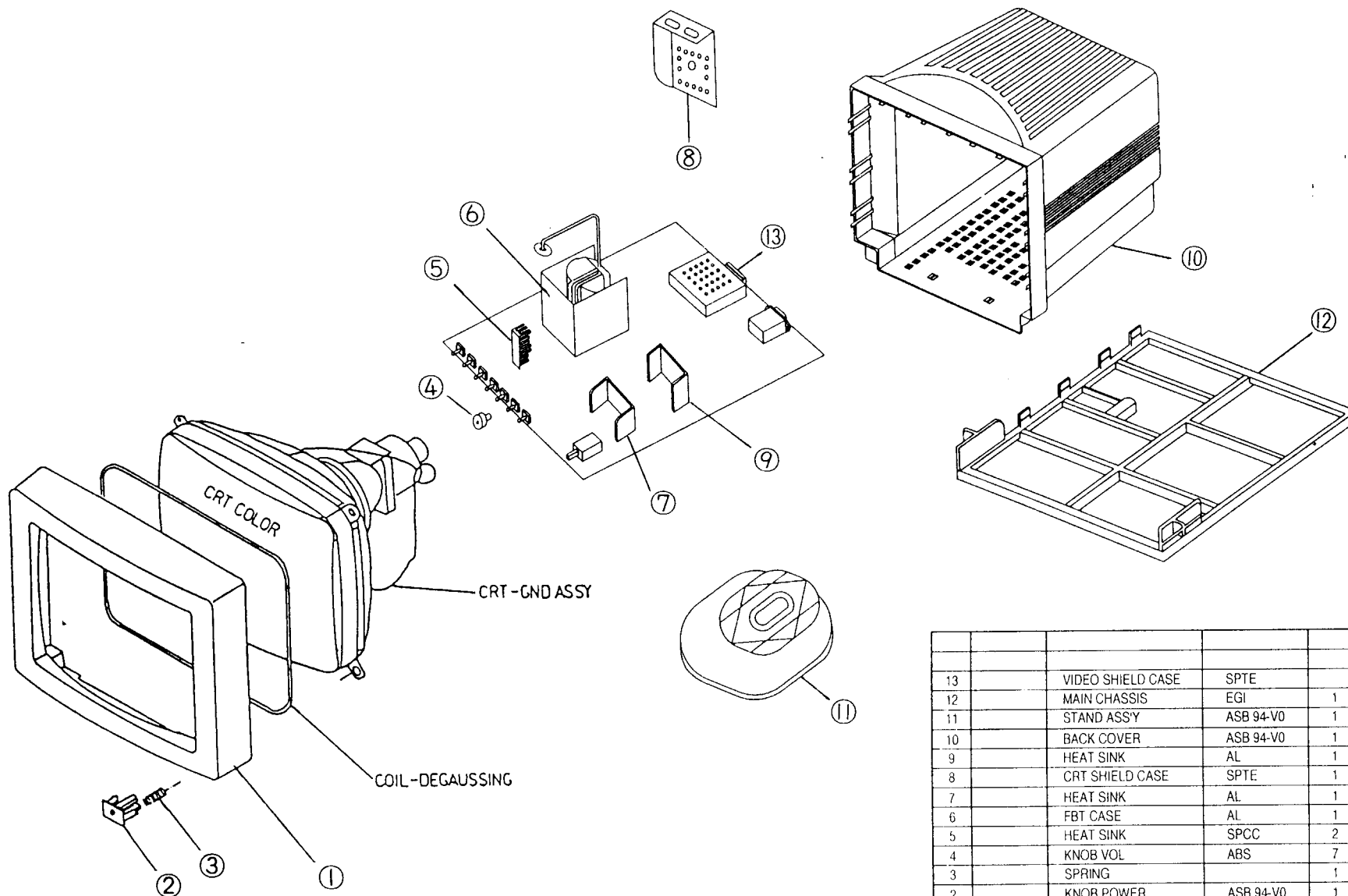
LOC. NO.	DESCRIPTION	REMARK
INTEGRATED CIRCUITS		
IC203 IC301 IC302 IC401 IC501 IC502	IC-LINEAR : GL1151 IC-LINEAR : KA358 IC-LINEAR : LA7838 IC-LINEAR : LM1203 IC : WT 8045N28 IC-LINEAR : KA78L05	
TRANSISTORS		
Q101 Q102 Q103 Q104 Q151 Q201 Q202 Q204 Q205 Q206 Q207 Q208 Q301 Q302 Q303 Q304 Q305 Q306 Q307 Q308 Q309 Q401 Q402 Q403 Q404 Q421 Q422 Q423 Q424 Q441 Q442 Q443 Q444 Q501 Q502 Q503 Q504	TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-NPN : 80V KSC1008-Y 0.7A TRANSISTOR-NPN : 80V KSC1008-Y 0.7A TRANSISTOR-PNP : 2SA614-Y TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-NPN : 2SC4762 TRANSISTOR-NPN : 80V KSC1008-Y 0.7A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-PNP : 2SA614-Y TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-NPN : 2N3904 TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-NPN : 2N3904 TRANSISTOR-NPN : C3503-E TRANSISTOR-NPN : 2N5551 (E-B-C) TRANSISTOR-NPN : 2N5401 (E-B-C) TRANSISTOR-NPN : 2N3904 TRANSISTOR-NPN : C3503-E TRANSISTOR-NPN : 2N5551 (E-B-C) TRANSISTOR-NPN : 2N5401 (E-B-C) TRANSISTOR-NPN : 2N3904 TRANSISTOR-NPN : C3503-E TRANSISTOR-NPN : 2N5551 (E-B-C) TRANSISTOR-NPN : 2N5401 (E-B-C) TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-PNP : 60V KSA733-Y 0.15A TRANSISTOR-NPN : 60V KSC945-Y 0.15A	

LOC. NO.	DESCRIPTION	REMARK
TRANSISTORS		
Q505 Q901	TRANSISTOR-NPN : 60V KSC945-Y 0.15A TRANSISTOR-NPN : 80V KSC1008-Y 0.7A	
FET		
Q105 Q203	MOS-FET N-CHANNEL : 2SK1538 FET-P CHANNEL : 200V IRF9610 1.75A	
TRANS & COILS		
L201 L203 L204 L205 L206 L301 L400 L401 L402 L421 L422 L441 L442 T101 T102 T103 T201 T202	COIL-INDUCTOR : AXIAL 220UH COIL-CHOKE : 3.2MH DH5 COIL-H,LINEARITY: 14.5UH DH4 COIL-CHOKE : 500uH DH6-1 COIL-INDUCTOR : RADIAL 5mH COIL-INDUCTOR : AXIAL 220UH COIL-INDUCTOR : AXIAL 220UH COIL-INDUCTOR : AXIAL 5.6UH COIL-INDUCTOR : AXIAL 5.6UH COIL-INDUCTOR : AXIAL 5.6UH COIL-INDUCTOR : AXIAL 5.6UH COIL-INDUCTOR : AXIAL 5.6UH TRANS-POWER : DH-1-A1 COIL-LINE FILTER : 15MH DH3 SYNC-TRANS : DH-S TRANSFORMER-FLYBACK : DNF-FLSH24 TRANS-H,DRIVE : DH2	
VARIABLE RESISTORS		
VR151 VR201 VR202 VR203 VR204 VR205 VR301 VR302 VR303 VR304 VR305 VR306 VR307 VR401 VR402 VR422 VR441 VR442	VR-SEMI FIXED : 500J 0.1W VER. VR-SEMI FIXED : 1KJ 0.2W VER. VR-SEMI FIXED : 100KJ 0.2W VER. VR-SEMI FIXED : 5KJ 0.2W VER. VR-ROTARY : 20F B5KJ VR-ROTARY : 20F B50KJ VR-ROTARY : 20F B5KJ VR-ROTARY : 20F B10KJ C1 VR-ROTARY : 20F B5KJ VR-ROTARY : 20F B20KJ VR-SEMI FIXED : 1KJ 0.2W VER. VR-ROTARY : 20F B10KJ C1 VR-SEMI FIXED : 100KJ 0.2W VER. VR-SEMI FIXED : 200J 0.2W HOR. VR-SEMI FIXED : 50KJ 0.2W VER. VR-SEMI FIXED : 50KJ 0.2W VER. VR-SEMI FIXED : 200J 0.2W HOR. VR-SEMI FIXED : 50KJ 0.2W VER.	

LOC. NO.	DESCRIPTION	REMARK
CRT		
CRT	CRT, COLOR 14" : M34 KZM 40**11	
OTHERS		
B101	BEAD CORE : 6MM	
B102	BEAD CORE : 9MM	
B103	BEAD CORE : 9MM	
B151	BEAD CORE : 9MM	
B152	BEAD CORE : 9MM	
B153	BEAD CORE : 9MM	
B201	BEAD CORE : 9MM	
B202	BEAD CORE : 9MM	
B203	BEAD CORE : 9MM	
B204	BEAD CORE : 6MM	
B205	BEAD CORE : 9MM	
B206	BEAD CORE : 9MM	
B301	BEAD CORE : 9MM	
B401	BEAD CORE : 6MM	
B402	BEAD CORE : 6MM	
B421	BEAD CORE : 6MM	
B422	BEAD CORE : 6MM	
B441	BEAD CORE : 6MM	
B442	BEAD CORE : 6MM	
B461	BEAD CORE : 6MM	
B501	BEAD CORE : 9MM	
CN101	NOISE FILTER : IX-0342-P	
CN102	CONN-WAFER : 3P 3951-03	
CN401	D-SUB CONNECTOR : DE-09SLUKL2	
CN402	CONN 6P ASS'Y : 170MM	
CN404	CONN 6P ASS'Y : 240MM	
	CONN 1P ASS'Y : 140MM BLACK	
F101	FUSE CLIP FC	
	GT PIN : 14.5MM (14EA)	
ISO101	PHOTO-COUPLER : CNY17F-2XG26,CNY17F-3XG25	
ISO102	PHOTO-COUPLER : CNY17F-2XG26,CNY17F-3XG25	
ISO103	PHOTO-COUPLER : CNY17F-2XG26,CNY17F-3XG25	
LED151	LED : SMV0523M SQUARE WHT (RED/GRN)	
NTC101	NTC-THERMISTER : DSC-8D-13	
	PCB MAIN	
PTH101	POSISTOR	
	SHIELD CRT	
	SILICON RUBBER : TC-45A 25*33MM	
	SOCKET CRT	
	SWITCH KEY : 250V 5A	
SW101	LEVER-SWITCH : JRS1301, 30V 0.2A	
SW102	LEVER-SWITCH : JRS1301, 30V 0.2A	
SW201	RESONATOR : 3.58MHZ	
Y501		

LOC. NO.	DESCRIPTION	REMARK
OTHERS		
F101	SHIELD VIDEO : SPTE T=0.3 FUSE-GLASS TUBE : 250V 2.5A HEAT SINK FBT HEAT SINK V HEAT SINK P HEAT SINK TR-A HEAT SINK TR-B (3) HEAT SINK TR-C (2) CHASSIS MAIN SCREW SAM : PHWW T1 3*10 ZPC (6) CABLE TIE (6) SCREW-TAPPING : BH M 3*8 (7) SCREW-TAPPING : BH M 4*16 SIGNAL CABLE : 15PIN-9PIN D-SUB POWER CORD : WALL IVORY 6FT NON-SHIELD (EP2) BACK COVER SCREW TAPPING : BH M 4*16 LABEL RATING MANUAL LABEL CAUTION LABEL BAR CODE PACKING CASE PE BAG : 0.015 * 850 * 800 PE BAG : 0.0015 * 230 * 360 CUSHION LEFT CUSHION RIGHT COIL-DEGAUSSING : 7.5MH 20% CRT GND ASS'Y KNOB VOLUME : HF-0660I (7) SCREW TAPPING : RH M 5*30 W/WASHER (4) SCREW TAPPING : BH M 4*16 (2) HIGH VOLTAGE WARNING FRONT ASS'Y	

ASSEMBLY DIAGRAM



NO	CODE NO	DESCRIPTION	METRIAL	QTY	REMARK
13		VIDEO SHIELD CASE	SPTE		
12		MAIN CHASSIS	EGI	1	
11		STAND ASS'Y	ASB 94-V0	1	
10		BACK COVER	ASB 94-V0	1	
9		HEAT SINK	AL	1	
8		CRT SHIELD CASE	SPTE	1	
7		HEAT SINK	AL	1	
6		FBT CASE	AL	1	
5		HEAT SINK	SPCC	2	
4		KNOB VOL	ABS	7	
3		SPRING		1	
2		KNOB POWER	ASB 94-V0	1	
1		FRONT	ASB 94-V0	1	