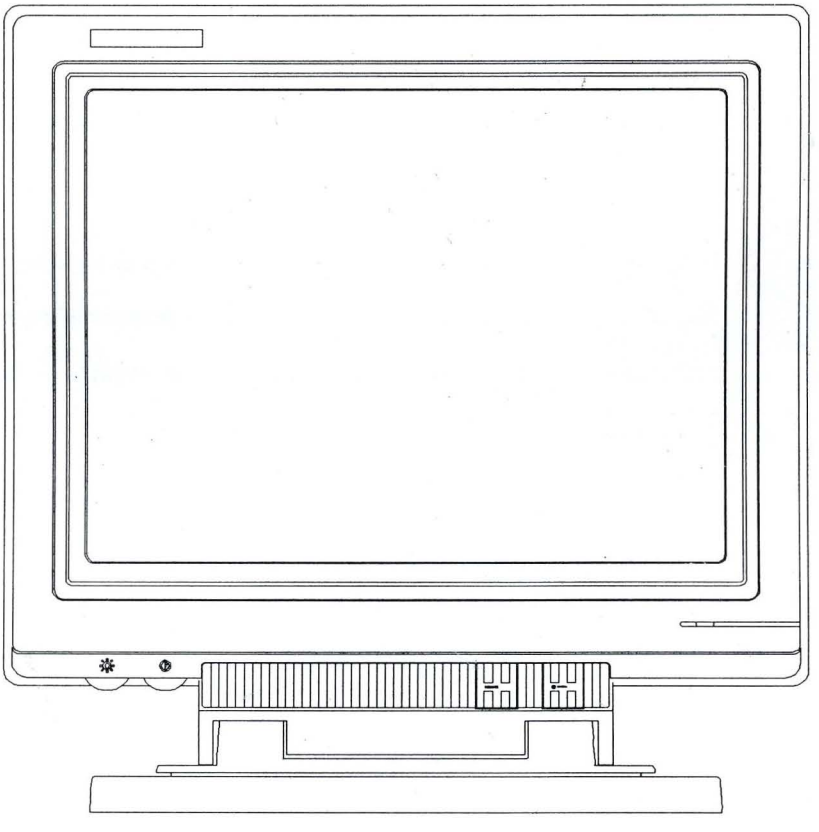
SAMSUNG

SERVICE MANUAL
19″ COLOR MONITOR

MODEL : CC9511



CONTENTS

IMPORTANT SERVICE SAFETY PRECAUTION

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.

SERVICING THE HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 20kohm 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 solid state 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 level 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 voltages may cause a failure of the picture tube or 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.

   Every time 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 troubleshooting and 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 of excessive voltage.

BEFORE RETURNING THE DISPLAY MONITOR

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 covers or shields,isolation resistor-capacitor networks,mechanical insulators,etc.
3. To be sure that no shock hazard exists, check 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 clip leads,connect 1.5 kohm,10 watt resistor paralleled by a 1.5uF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit 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 0.3volt RMS (this corresponds to 0.5milliamp.AC) or more is excessive and indicates a potential shock hazard which must be corrected before returning the display monitor to the user.

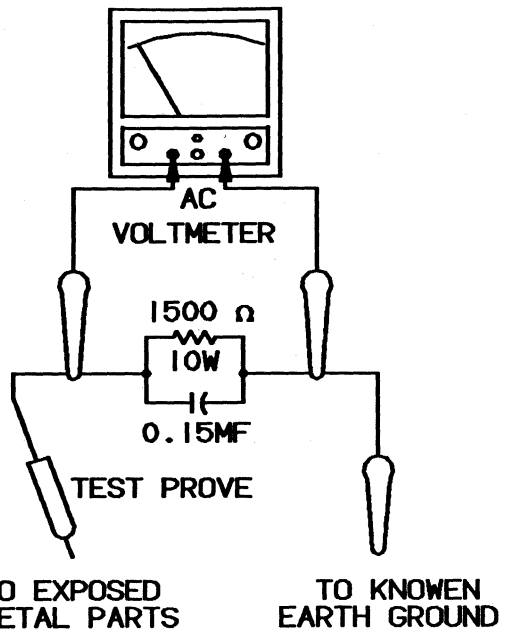


Figure 1. Leakage Current Test Circuit

SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special characteristics 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 any of these components,read the Parts List in 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.

ENGINEERING SPECIFICATIONS

1. DESCRIPTION

This specification describes in detail, the electrical and mechanical performance of a 20-inch color monitor. This monitor is designed to work with the CAD/CAM workstation or PC(personal computer). The monitor will accept RGB analog video output of the computer and display this information in up to infinite color renditions. Monitor syncronization is controlled by a sync on green video or any polarity separate TTL sync or composite TTL sync. All parameters shall be met within the limits specified in this document unless otherwise specified. The specification is subject to change without notice.

2. MECHANICAL DESCRIPTION

2.1 Dimension

525(L) x 484(W) x 488(H) mm : Net
622(L) x 558(W) x 559(H) mm : Gross

2.2 Weight

35 Kg : Net
37 Kg : Gross

3. POWER INPUT SPECIFICATIONS

3.1 Input Voltage

120V range : AC 90 ~ 132 volts.
220V range : AC 198 ~ 264 volts.

3.2 Input Frequency

50 ±3 Hz or 60 ±3 Hz

4. SIGNAL INPUT SPECIFICATIONS

4.1 Signal Wave Form

Signal input is based upon EIA standard RS343.

4.2 Video Signal

a)Type : R(Red),G(Green),B(Blue) analogtype
(Composite SYNC signal will be taken from the Green video signal.)
b) Level
Composite : 1.0 V_{p-p} Norminal
Non-composite : 0.7 V_{p-p} Norminal
c) Signal polarity : Positive bright
d) Impedance
Terminated : 75 ohms 2%
Unterminated : Greater than 10 Kohms switch selectable.

4.3 Sync Signal

a) Type :
Composite sync on Green or composite H/V sync or seperate H/V sync are automatically selectable.
b) Level
Composite : SYNC to total signal ratio = 28.6 5%
External : DC coupled TTL level
(separate H/V sync and composite H/V sync.)
c) Signal polarity : Positive or negative.

4.4 Sync Frequency

a) Horizontal :
46-52KHz (50 KHz version)
52-58KHz
58-64KHz (64 KHz version)
b) Vertical : 55-65Hz non-interlaced

4.5 Input Connector

BNC type receptacle for each R.G.B video signals and external SYNC signals.

4.6 Signal Timing

: see timing chart (page 9)

5. CRT SPECIFICATIONS

Parts NO : E8111 B22 ETAR or M48JLK22X
Type : 20" 90 DEGREES, 29MM0, SELF-CONVERGENCE
Mask Pitch : 0.31mm
Phosphor : R.G.B, Medium Short Persistance
Transmission : Approx. 70%
Face : AR Panel

6. RESOLUTION :

1280 dots x 1024 lines (64 KHz version)
1024 dots x 768 lines (50 KHz version)

7. ENVIRONMENT

7.1 Operating Environment

a) Temp : 0 ~ 40°C

b) Humidity : 10. ~ 90%
c) Altitude : 3000m max.

7.2 Storage and Shipment Environment

a) Temp : -30 ~ +65°C
b) Humidity : 10 ~ 90%
c) Altitude : 12,000m max.

7.3 Vibration (Package Condition)

a) Frequency : TBD
b) Vertical : TBD
c) Horizontal : TBD

7.4 Shock

1 corner, 3 edges and 6 surfaces

8. ELECTRICAL PERFORMANCE

8.1 Testing Conditions

All tests must be perfomed under "Standard Testing Condition " except where otherwise noted.

" Standard Testing Condition " is defined as:

a) AC Supply Voltage : 120VAC, 60Hz
b) Ambient Temperature : 20. 5°C
c) Brightness Control : Center Click
d) Contrast Control : Set to maximum video gain
e) View Direction
Parallel to the CRT axis
The set shall be tested with facing to North-east.
f)Magnetic Field : 0.03m telsa steady state in any orientation.
g) Thermal Stablization
After 20 minutes from the time AC power has been applied.

8.2 Power Supply

Input Current : 2.5A max.
(120VAC / 60Hz)
Power Consumption : 140W max.

8.3 Video Output

8.3.1 Band Width

50Hz to 100MHz (3DB) - 64KHz version
50Hz to 70MHz (3DB) - 50KHz version
* Amplifier response shall be less than 3dB down at 100MHz (70MHz) as referenced to 50Hz and with 20 volts of drive to the CRT.

8.3.2 Rise / Fall time

5.0nsec max. - 64KHz version
6.0nsec max. - 50KHz version

8.3.3 Video Amplifier Differential Gain

Less than 5% for 30 volts P-P of video at the CRT.

8.3.4 Black Level Stability

Black level shift to be less than 1% of peak luminance from 10% to 90% average picture level.

8.3.5 Contrast Control Range

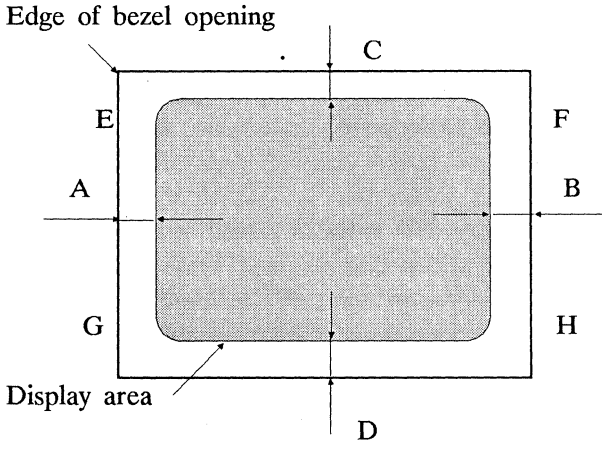
Shall provide a minimum of 7dB of adjustment range from minimum to maximum setting.

8.4 Image

8.4.1 Image Size

Horizontal : 360 ± 5mm
Vertical : 270 ± 5mm

8.4.2 Image Centering



|A-B| ≤ 4mm
|C-D| ≤ 3mm

8.4.3 Geometry

Trapezoid / Parallelogram

$$\frac{EF - GH}{EF + GH} \times 100 \leq 1\ \%\ \text{max. (horizontal)}$$

$$\frac{EG - FH}{EG + FH} \times 100 \leq 1\ \%\ \text{max. (vertical)}$$

Pincushion /

Horizontal ≤ 4 mm max. (A,B)
Vertical ≤ 3.4 mm max. (C,D)

Rotation : 1.0% max

8.4.4 Linearity

The linearity will be measured by means of full screen cross hatch pattern.
The pattern to be white lines on a black background.
Linearity to be calculated as follows

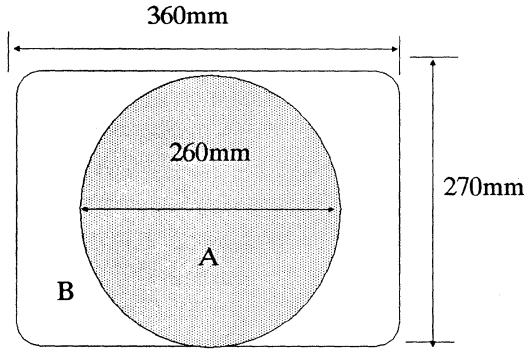
$$\frac{MAX - MIN}{MAX + MIN} \times 100 \leq 5\ \%\ \text{max.}$$

MAX = Maximum square size.
MIN = Minimum square size.

8.5 Overall Performance

8.5.1 Mis-convergence

Convergence shall not deviate more than 0.3mm in a central area bound by a circle. The diameter of this circle is 260mm. Elsewhere, deviation shall not exceed 0.5mm.



Center area of display (A) : 0.3mm max.
Peripheral area of display (B) : 0.5mm max.

8.5.2 Luminance

a) Maximum Luminance :
No less than 30 foot lambert.
b) Uniformity :
No less than 60% of peak luminance.

8.5.3 White Coordinate

The reference white shall be that of the black body at temperature of 9,300 degrees K. C.I.E. coordinates are X=0.281, Y=0.311.
Coordinate to be whitin .03 when measured at 5 foot lambert light output settings.
Coordinate to be whitin .02 when measured at 20 foot lambert light output settings.

At 20FT-L Luminance : X=0.281 ± 0.02
Y=0.311 ± 0.02
At 5 FT-L Luminance : X=0.281 ± 0.03
Y=0.311 ± 0.03

8.5.4 Purity

Conspicuous miss-landing shall not be visible within display area at distance of 60 cm from CRT surface at 15 foot lambert white luminance.

8.5.5 Jitter

Less than 1 dot, or invisible at distance of 60 cm from CRT surface.

8.5.6 Dispaly regulation

Due to brightness variation :
Within 1% of display size.
Due to power supply variation :
Within 1% of display size.
Due to temperature variation :
Within 2% of display size.

9. AUTOMATIC DEGAUSSING

Automatic degaussing of the CRT to be provided at switch on.

10. APPLICABLE DOCUMENTS

UL 478 : Standard for safety. information-processing and business equipment.

CSA C22.2 :Data processing equipment.

FCC RULES PART Class A computing devices IS SUBPART J

DHHS RULE 21 : X-ray emissions.

VDE 0806 : Safety Specification for business machine

VDE0871 : Regulation for the radio frequency interference suppressions of high frequency apparatus and installations, class A computing equipment ref. 0871/6.78

PTB : German X-ray decree of march, 1973

IEC380 : Safety of office appliances.

IEC435 : Safety of data processing equipment.

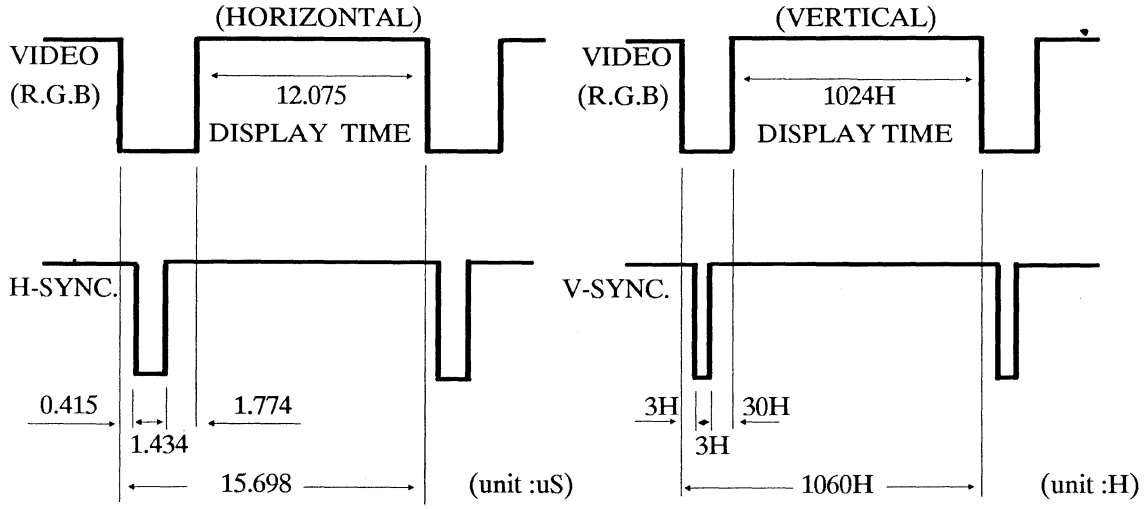
BS5850 : Britith standards institute standard for office machines.

11. Applicable Signal Timing Chart.

Video input signal timing chart (Standard timing)

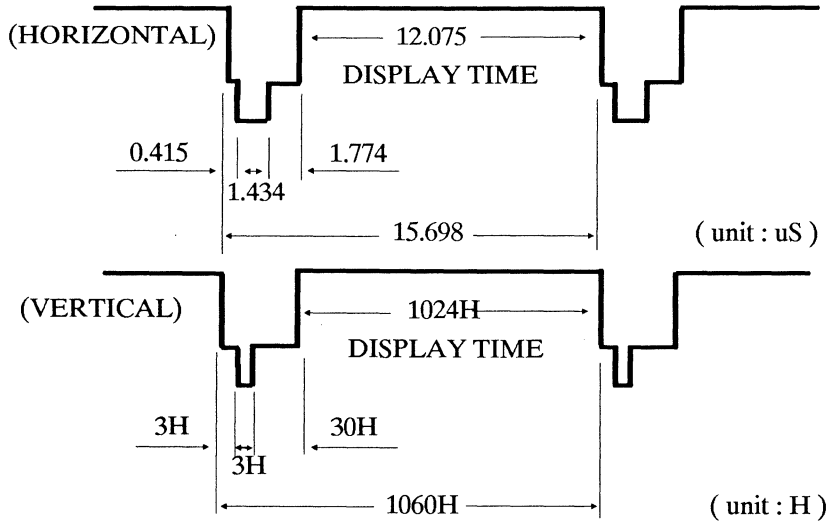
(1) H/V COMPOSITE SYNC.

R.G.B signal (analog)



(2) SYNC. ON GREEN

Green signal



THEORY OF OPERATION

1. LINE INPUT

The input rectifier section converts the AC line voltage into a crudely filtered and unregulated DC voltage, powering the switching regulator. The input section is a full-wave bridge.

1.1. FILTER

To reduce noise from the power supply, a low-pass filter isolates the switcher. The conducted noise is filtered by X and Y capacitors and a common mode transformer.

2. POWER SUPPLY

The design uses a discontinuous flyback topology operating in current-mode resulting in a multiple output switcher with outputs which track well. There are no output filter chokes. Slower diodes are used. The fast transient response of the control loop maintains picture integrity. Very fast current limiting protects the switcher against short circuits.

2.1. P.W.M. INTEGRATED CIRCUIT

The 3842 is an integrated current mode pulse width modulator. It consists of an oscillator, error amplifier, current sense comparator, under-voltage lockout, and an output MOSFET driver stage.

2.2. UNDER-VOLTAGE LOCKOUT

This circuit insures that Vcc is adequate to make the 3842 fully operational before enabling the oscillator, voltage reference, and before turning on the output stage. The turn-on/off thresholds are at 16v and 10v respectively.

2.3. OSCILLATOR

The oscillator consists of a pull up resistor from the 5v reference to pin 4 of IC601 and a timing capacitor to ground. When the voltage ramps up to about 2.8v on pin 4 of IC601 an internal current source pulls down, discharging the timing capacitor to a 1.0v level. This level releases the current source and starts the next cycle. Oscillator frequency is roughly equal to 1/.55RC.

Synchronization is achieved by feeding timing pulses from a reference into the oscillator.

2.4. OUTPUT STAGE

The 3842 has a single totem-pole output capable of operating to 1.0 A peaks and a 200mA average cur rent.

2.5. CURRENT SENSE COMPARATOR

Current-mode controllers inherently keep close watch over the pass transistor's current. Pin 3 of IC601 is connected to a voltage comparator which shuts off the output when current reaches the desired level, as prescribed by the error amplifier. This way the controller will only allow the needed amount of power into the output transformer. This method differs from most pulse width controllers which compare the error amplifier's output against the oscillator's voltage ramp. This results in control of on-time, which does not necessarily mirror the power stored in the transformer.

This comparator also serves the dual purpose of monitoring current limit. Any time pin 3 of IC601 rises above 1 volt the output will terminate. Output-short circuits and core saturations are detected before they destroy the pass transistor.

2.6. ERROR AMPLIFIER

Voltage on pin 2 of IC601 is compared with a 2.5v, 2% source. Errors in output voltage are amplified and fed to pin 1 of IC601 where they are frequency compensated by an RC back to pin 2 of IC601. This error voltage is dropped by 1.4v and divided by 3 before being fed to the current comparator.

In this application, the error amplifier is on the secondary side of the switcher. Inside the

IC604(TL431), T603 in the data book, is a programmable reference. In side it consists of a temperature compensated reference and an amplifier. Any error in output voltage is compared against 2.5 volts and amplified. Frequency compensation is handled by C610. Error current passes through an optocoupler to another error amplifier.

2.7. Vcc

The 3842 draws very little current in start up mode. There is enough power from the line bleeder R604 to slowly charge C616 to the 16 volts needed to start the switcher. When switching begins the Vcc falls quickly but before it drops to the 10 volt turn off level, the horizontal section of the monitor should be up and running. A few turns of wire from around the flyback transformer supplies power and synchronization.

2.8. POWER TRANSFORMER

Transistor Q601 starts a cycle by allowing current to flow into the primary of T601. As current ramps up with time, the voltage across current sense resistor R608 also ramps to a point where IC601 determines enough power is stored and turns off Q601. As the voltage on Q601 flies upward, power is dumped from the main power transformer through diodes in to the different supplies. D602 clamps ringing which could over-voltage Q601. A sample of this voltage is fed back to the optocoupler to keep the power FET safe encase of a catastrophic failure.

To keep radio frequency radiation to a minimum and reduce transistor heating, a turn-off snubber network is placed across Q601. The transformer has a center leg gap with no gap in the outer legs. This greatly reduces the flux radiating from the cores. There also may be a large copper strap around T601 to stray flux.

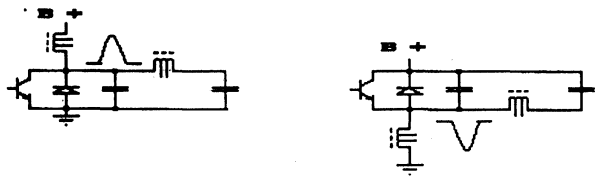
2.9. RECTIFICATION and FILTERS

Currents from the secondary windings are rectified and filtered to create the desired voltages. Low internal series resistance electrolytic capacitors reduce ripple voltage. Small high current capacitors quickly return charging current to the source.

3. HORIZONTAL

The next diagram shows a positive and a negative horizontal section.

This monitor uses the negative approach in the horizontal section.



3.1. PHASE-LOCK LOOP

A phase-locked loop synchronizes the horizontal switch to the timing pulses from the computer. The phase-lock loop compensates for storage delay in Q401.

Incoming horizontal sync is level-translated by Q401 then fed into the input of the phase comparator. Transistor Q407 watches the falling edge of the flyback pulse. When the flyback pulse falls to within a few volts of ground, a rising edge is sent to the other input of the phase-lock loop phase comparator.

The phase comparator operates in an edge lock mode. Integrated circuit IC401(4046) pin 13 is in a high impedance mode most of the time. If the rising edges fed into pins 3 and 14 of IC401 do not coincide, pin 13 of IC401 goes into a low impedance state for the time difference. Depending on which edge leads the other, current flows into or is pulled out of the filter capacitors C408 and C409.

Voltage controlled oscillator input pin 9 of IC401 determines the frequency and phase of the output square wave on pin 4 of IC401 The free running frequency and lock range is set by C406, R411, R412 and VR401.

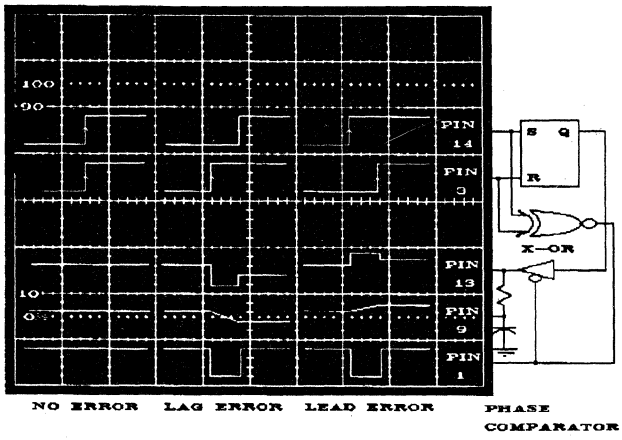


diagram1.

If no sync is present the PLL will normally drop to the bottom of the lock range. This causes problems in setting the Horizontal Hold control.

One way of setting the H. Hold VR is to send video into the monitor without H. sync (unplug the green channel and the H. sync cable if any). Adjust H. Hold for a nearly stable picture. This should insure that the free running frequency is close to the incoming sync frequency.

3.2. MISSING SYNC

When the PLL does not see sync it tries to lower the frequency of the monitor. With some types of composite sync, during vertical sync, where will be no horizontal sync. The PLL will drop the horizontal frequency down a long way during the 3 to 4 missing syncs.

The figure below shows how the input of the voltage controls oscillator (pin 9 of IC401) drops with only one missing sync. Trace A represents the input of the PLL that is watching the flyback pulse. Trace B is horizontal sync with one pulse missing. Trace C comes from pin 1 of the PLL(IC401) and indicates when an error condition arrives. Trace D is the input of the voltage controlled oscillator. Notice how much the voltage drops in one line time and that the recovery is very slow.

Trace E shows how the missing sync circuit adds in the missing pulse. The pulse is late by about 1uS which is fare better that being one to five line times late. Notice trace G, the input to the VCO, drops very little. The PLL is back on frequency within a few lines. Trace F is pin 1 of the PLL(IC401). The time delay in the missing sync circuit is set by a RC time constant. The voltage in the timing capacitor is seen in trace G.

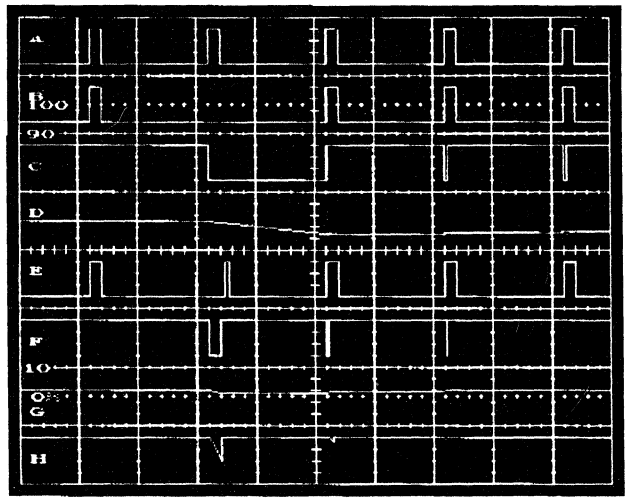


diagram 2.

If a sync pulse is missing pin 1 of the PLL(IC401) falls. After a time delay set by R415, C410 the missing pulse is added by Q201. The missing pulse circuit is disabled by Q404 if many pulses are missing. This condition usually arises because the sync is totally gone.

3.3. DOUBLE SYNC

Refer to the sections **MISSING SYNC** and **PLL** to understand the phase lock loop and what happens when phase error is detected.

If double sync is sent to the PLL the horizontal frequency will be driven up just like no sync drove the frequency down. A diode(D403) and transistor(Q415) is added from pin 4 to pin 14 of the PLL(IC401) to short out any sync pulses that might arrive during the half of the line time when sync

should normally not be. For the half if the line that includes blanking the sync is allowed to pass.

3.4. BASE DRIVE

When turned on, transistor Q410 turns off the horizontal switch Q409. At the same time, current is stored on transformer T401. When Q410 opens up this stored power supplies turn-on current for Q409. Resistor R442 sets the average power level to the base drive circuit. Snubbing circuits surround transformer T401. They control the discharge current waveform into the base.

3.5. BASE DRIVE RESISTOR

The base drive resistor determines the amount of base drive. If the transistor is over driven the V_{set} looks very good, but the current fall time is poor. If the base current is too small the current fall time is very fast. The problem is that the transistor will have many volts across C-E when closed.

The best condition is found by placing the transistor in the heaviest load condition. Adjust the base resistor for the **least** power consumption.

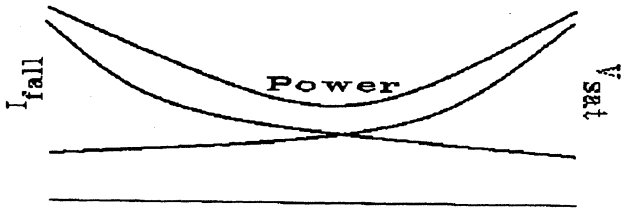


diagram 3.

3.6. CHOPPER

The horizontal section does not have a horizontal power supply voltage like most monitors. A chopper is used to take the 150 volt video supply and create the necessary power for the horizontal section. The duty cycle of the chopper is controlled by a pulse width modulator (PWM) IC401. The PWM watches the current in the horizontal yoke and adjusts the duty cycle to obtain the desired width.

Yoke current can be measured in several different ways. The yoke current is directly related to the voltage across the S capacitor, the average voltage from the chopper and the peak flyback voltage.

The flyback pulse is upside down for the PWM. A capacitor and diode is used to invert the flyback pulse. A resistor divider drops the 1200 volt flyback pulse to 2.5 volts for the PWM.

3.7. HORIZONTAL SWITCH/DAMPER DIODE

On the right hand side of the screen, transistor Q409 conducts current through the deflection yoke. This current comes from the "S" correction capacitor, C433, which has a charge equal to the supply voltage. Diode D415 allows current for the left hand side of the screen to flow back through the deflection yoke to C433.

3.8. FLYBACK CAPACITOR

The flyback capacitor connects the hot side of the yoke to B+. This component determines the size and length of the flyback pulse. Choose the flyback capacitor to adjust the second anode voltage. Capacitors C431 must be precision high voltage high current components.

3.9. "S" CAPACITOR

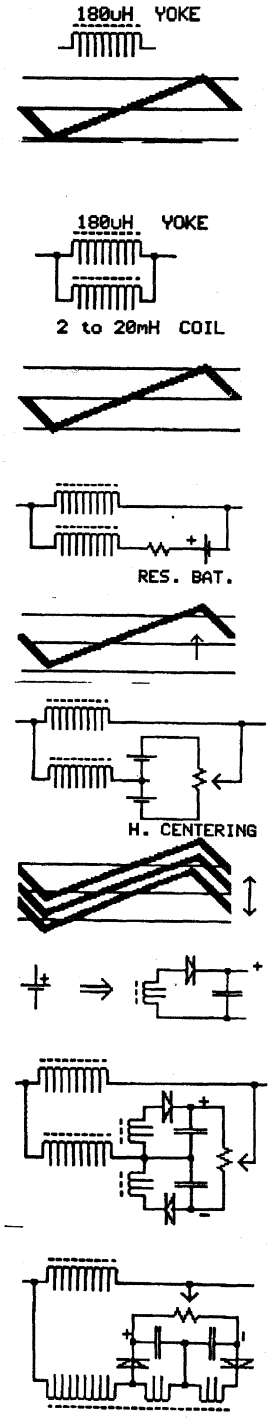
Capacitor C415 corrects outside versus center linearity in the horizontal scan. The voltage on The S cap has a parabola plus the DC horizontal supply. Reducing the value of S cap increases this parabola thus reducing the size of the outside characters and increasing the size of the center characters.

3.10. HORIZONTAL LINEARITY

In the yoke current path there is a saturable coil. Just like a size coil, any inductance in series with the yoke will reduce the size of the picture. This saturable coil will change inductance depending on the amplitude and direction of current flow. At the start of a trace the linearity coil has an inductance of 20 percent of that of the yoke. By the center of the trace, the linearity inductance has decreased to about 4 percent of the yoke where it remains for the

rest of the trace. Adjust this variable inductor so the right and left sides of the picture are the same size.

3.11. HORIZONTAL DC CENTERING



In the horizontal section of a monitor the yoke has DC on the cold end and a flyback pulse on the hot side. The current ramps in a sawtooth fashion center around zero. If a parallel coil is added the current through the yoke is not effected.

With the addition of a battery and limiting resistor the DC current is added to the current ramp. A plus and minus supply gives full control of the DC offset current.

The batteries or power sources are created off a small secondary winding turning the parallel coil into a transformer. The final circuit has no AC effect on the yoke but can cause a +/- current flow through the yoke.

3.12. FLYBACK TRANSFORMER

The flyback transformer is separate from the horizontal section. This is done to allow greater flexibility when changing frequency and tube size. A small independent 'horizontal' section powers the flyback transformer and creates the high voltage.

3.13. X-RAY SHUT DOWN

When a fault in the high voltage section is detected the horizontal base drives are shut down. An over current condition in the high volt supply or an overvoltage condition will trip a TL431(IC405)/ 2N2907(Q413,Q414) latch. Turning off the power resets the latch.

3.14. TUBE BIAS SUPPLIES

Focus and G2 supplies come from a bleeder located in the flyback transformer.

3.15. FOCUS

The focus voltage is obtained form the flyback transformer. There is no focus modulation used in this color monitor.

3.16. MASTER BRIGHTNESS

The G2 voltage comes from the flyback transformer.

3.17. HIGH VOLTAGE REGULATOR

The patented high voltage regulator sits between the supply and the top of the primary of the flyback transformer. An onboard switching regulator is powered from the 17 volt supply. The regulator watches the second anode voltage through a 300-mega Ohm resistor in the flyback transformer. During flyback, the regulator pulls the top of the flyback transformer negative while the flyback pulse is raising the other end. In this way the size of the pulse, as seen by the flyback transformer, is varied to keep the second anode voltage constant independent of load.

The regulator should be adjusted by "high voltage adjustment" to the desired high voltage.

4. VERTICAL DEFLECTION

The TDA 1670(IC301) incorporates all the necessary functions for providing the yoke of a monitor or television receiver with the current required for vertical deflection. Incorporated in silicon is a synchronizable oscillator, ramp generator, voltage regulator, voltage doubler and power amplifier.

4.1. VERTICAL OSCILLATOR

The oscillator is an integrator (pins 4 to 3 of IC301) and a two threshold comparator which switches pin 6 of IC301 high or low to allow the charging of C303. D301 allows the charge and discharge ramps to have adjustable slopes. Vertical sync pulses come in on pin 5 of IC301.

The V. Hold VR sets the oscillator frequency.

4.2. RAMP GENERATOR

The ramp generator is made up of a current generator, controlled by current in pin 7 of IC301, and the capacitor from pin 9 of IC301 to ground. The slope, and thus the size of the linear ramp, is adjustable by setting the current pulled from pin 7 of IC301 This ramp also appears buffered on pin 10 of IC301 at a much lower impedance.

4.3. VERTICAL POWER AMPLIFIER

A power amplifier, with input on pin 12 of IC301, compares the ramp on pin 10 of IC301 to the current ramp through the yoke. R308 and C307 stabilize the high gain power amplifier. Yoke current flows from pin 1 of IC301, through the yoke, the DC blocking capacitor and a current sampling resistor to ground. Voltage which represents yoke current is then fed back to the input of the amplifier to be compared with the reference ramp

The output stage of the power amplifier is supplied by the 25 volt supply during a trace, and by the vertical flyback generator circuit during a retrace.

The power output stage is thermally protected by sensing the junction temperature and shutting off the current source of the power stage.

The DC bias point is maintained by the divider R310, R311, and R312, Capacitors C309 and C308 find the average output voltage. This voltage is then fed back into the input of the buffer amplifier where it is compared to a reference. Any difference in these two voltages causes the DC bias point of the power amplifier to self-adjust.

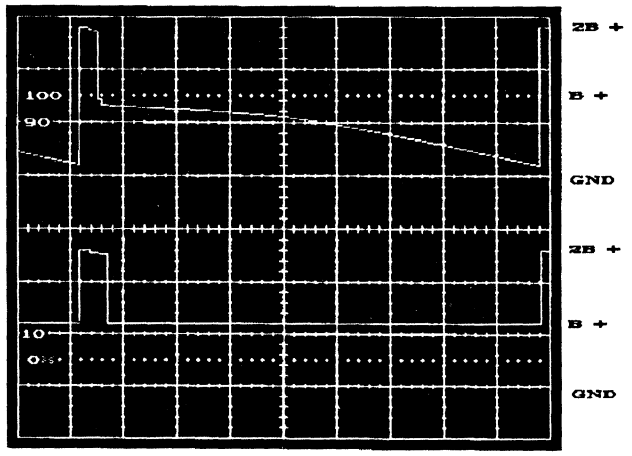


diagram 4.

4.4. VOLTAGE DOUBLER

In order to obtain sufficiently short flyback times, a voltage greater than that required during scanning must be applied to the yoke.

The flyback generator, during flyback only, supplies (to the power amplifier) a voltage equal to double the supply voltage. Pin 15 of IC301 charges a capacitor up to the supply voltage during a trace and then sets this capacitor on top of the power supply during a retrace, thus doubling the available voltage.

4.5. VERTICAL LINEARITY

Vertical linearity is achieved by feeding a current ramp into the size pin 7 of the TDA1670(IC301). By varying the V. LIN VR the size and direction of the correction ramp can adjusted from positive through zero and to negative.

In the diagram V1 and V2 are two out of phase ramps that are subtracted to achieve a current ramp

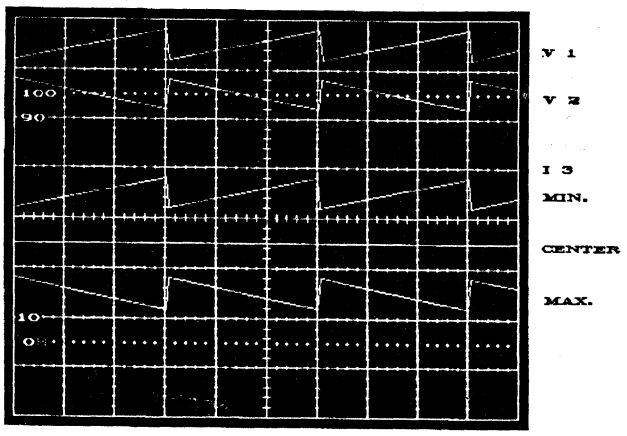


diagram5.

which is variable over a range shown by the bottom three traces.

4.6. VERTICAL CENTERING

A current source is connected to the cold side of the vertical yoke. Transistor Q301 can pull DC current from the yoke causing the picture to move up the page. Potentiometer VR305 should be set to center the DATA vertically, not the raster, on the screen.

5. SYNC PROCESSING

To help understand the complex sync processing please refer to both the schematic and the timing diagrams throughout this document.

5.1. COMPOSITE SYNC

Composite sync comes either from the TTL sync input or from composite video through the sync striper Q116. A CMOS 'XOR' exclusive-or gate automatically restores sync polarity if necessary.

See the section on 'POLARITY RESTORATION'.

5.2. VERTICAL

Vertical sync is detected by a low pass filter and an 'XOR' gate. Vertical sync comes from either the vertical/blanking input or the composite sync input.

5.3. HORIZONTAL

Horizontal sync undergoes several stages of processing. See the sections on POLARITY RESTORATION, XOR/NTSC, and DATA CENTERING.

5.4. BACK PORCH

Back porch clamping pulses are created by detecting the trailing edge of sync. The width of this pulse should be a little shorter than the back porch. Half of the 74LS221 sets the pulse width of the back porch.

5.5. POLARITY RESTORATION

The polarity restoration circuit, an XOR gate, will restore sync polarity if it was fed inverted into the TTL sync input. The RC time constant in the low pass filter is about .1 second.

If the input is low with short positive pulses a low pass filter inputs a low to the XOR input B. The output of the XOR gate will be the same as the input. Likewise if the input is high with short low going pulses the low pass filter will input a high to the B input of the XOR gate causing it to invert the sync. This way the syncs coming out of the polarity restoration circuit will always have short positive pulses except during vertical.

5.6. HORIZONTAL DURING VERTICAL

XOR/NTSC

The H. sync is fed into another exclusive-or gate that looks the same as the first but the time constant is about 200 nano seconds. For normal operations the capacitor should be jumpered out. This will allow sync to flow through unchanged.

In some computers to get vertical sync they simply invert horizontal sync. This very nonstandard process will cause tearing at the top of the page. The phase lock loop in the horizontal section will sense that the sync edge had moved over and will try to compensate. Normally composite sync looks inverted but actually the horizontal pulse is moved forward so the raising edges are in place. With C188 in place the output of the exclusive or gate will have an 200 nano second pulse on both edges of the horizontal sync pulse.

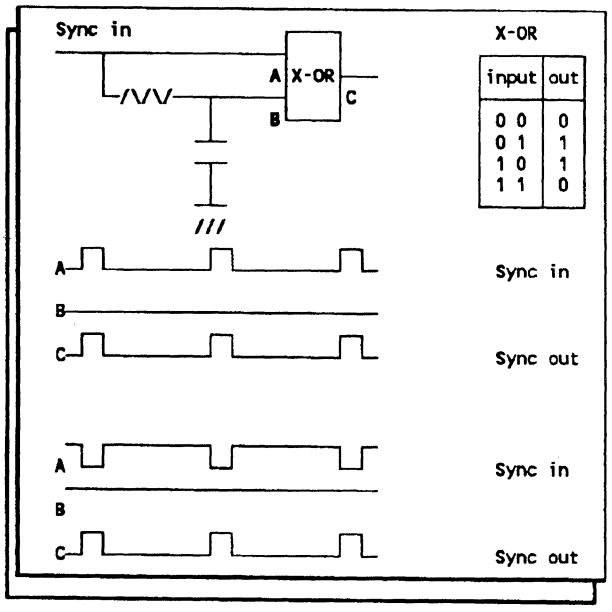


diagram6

The 74LS221(IC106) looks at the raising edge of sync. Normally the raising edge is the first edge but during vertical sync it is the second edge. In the case of "inverted H sync" for vertical sync the 74LS221(IC106) must look at the first edge all of the time whether the edge is raising or falling. To do this the XOR gate produces a 200 nano second pulse on both edges. The 74LS221(IC106) will trigger on the first pulse and ignore the second.

5.7. DATA CENTERING

The half of the 74LS221(IC106) on the video board is used for data centering. The one shot triggers with the leading edge of sync and time out with the back edge of the flyback pulse. The data centering potentiometer should be set to center the picture within the raster.

6. VIDEO

6.1. PREAMP

The LM1201 is a wide band video amplifier intended for use in high resolution monitors. The LM1201 contains a 100 MHz amplifier, driver, a black level clamp, a background level control and an 0 to 40 dB attenuator circuit for contrast.

A video preamplifier is AC coupled and biased through a resistor from a 2.4 volt reference. The preamplifier drives an attenuator whose gain is controlled by pin 4 (IC101, IC102, IC103). The bias level is maintained by comparing the output of the attenuator with the voltage on pin 2 (IC101, IC102, IC103). In the center of the LM1201 is a one transistor amplifier where the gain of each channel is matched to set white level. Another amplifier buffered by an emitter follower, brings the video out on pin 8 (IC101, IC102, IC103).

6.2. CLAMP

The clamp input pin 9 (IC101, IC102, IC103) watches the power amplifier's output during the back porch. Any difference in pin 9 and pin 6 (IC101, IC102, IC103) during clamping will be amplified and used to drive a current source which modifies the voltage on pin 2 (IC101, IC102, IC103). This clamp voltage will be used to set bias level.

6.3. POWER VIDEO AMPLIFIER

This two transistor cascode amplifier has both emitter and collector peaking to get the best frequency response. The resistor on the base reduces the chance of oscillation and also helps to protect the amplifier from tube arcs. The amplifier is buffered by an PNP/NPN emitter follower. The output of the amplifier is isolated from tube arcing by a carbon composition resistor and an arc arrestor.

6.4. REGULATORS

Four voltages are used to run the video amplifier and sync processing circuit. The 150 volts is used by the back ground to set black level. The 65 volts is used by the video power output amplifier. The 25 volts is reduced to 12 volts by the 7812 regulator for use by the LM1201. The 8 volts lights the filament through a resistor and powers all of the digital logic through a 7805 regulator.

7. TUBE BIASING

7.1. PROTECTION

All elements of the tube have arc protection. The arc current should be returned through the arc ground, not the signal ground, back to the tube in a short direct low impedance path.

7.2. BYPASSING

Grid bypassing is referenced back to the 65 volt supply. Then the 65 volts is bypassed to ground. This wires all biasing grids in common mode for maximum ripple rejection of the high current 65 volt supply.

7.3. HEATER

The heater is powered from 8 volts dropped by a power resistor.

DISASSEMBLY INSTRUCTIONS

As you see the disassembly diagram, you can disassemble the PCB from the chassis as the following procedures.

1. Disassemble cabinet

(1) Remove the 4 screws ((1)) retaining the rear cabinet (cover rear).

(2) Remove the 4 screws ((2)) retaining the front cabinet (cover front).

2. Disassemble chassis

(1) Remove the 10 screws ((3)) retaining the chassis top (shield top).

(2) Remove the 2 screws ((4)) retaining the chassis rear (chassis rear).

(3) Remove the 5 screws ((5)) retaining the chassis side (chassis assy).

(4) Remove the 6 screws ((6)) retaining the chassis side (chassis assy).

3. Disassemble PCB

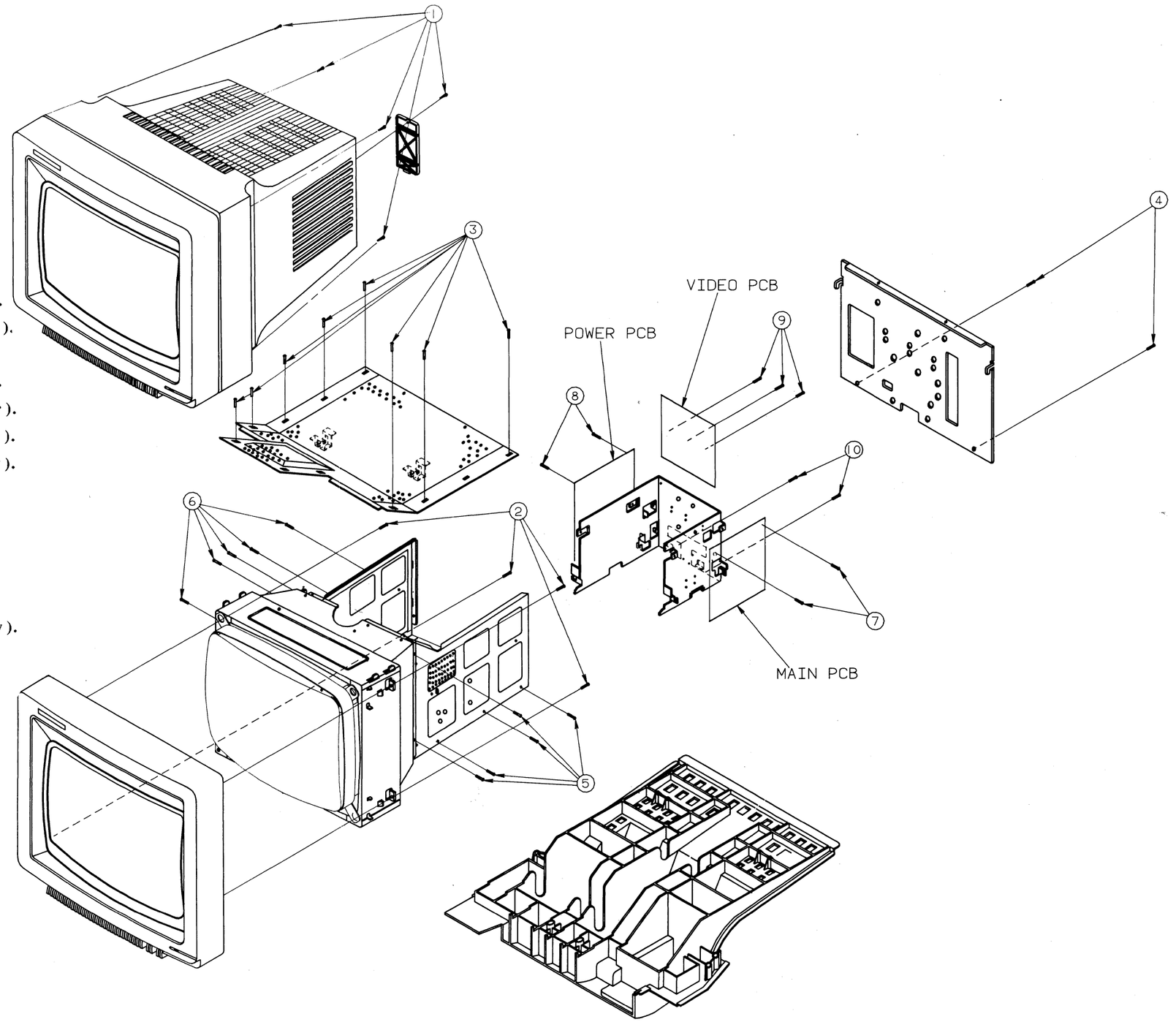
(1) Remove the 2 screws ((7)) retaining the main PCB.

(2) Remove the 2 screws ((8)) retaining the power PCB.

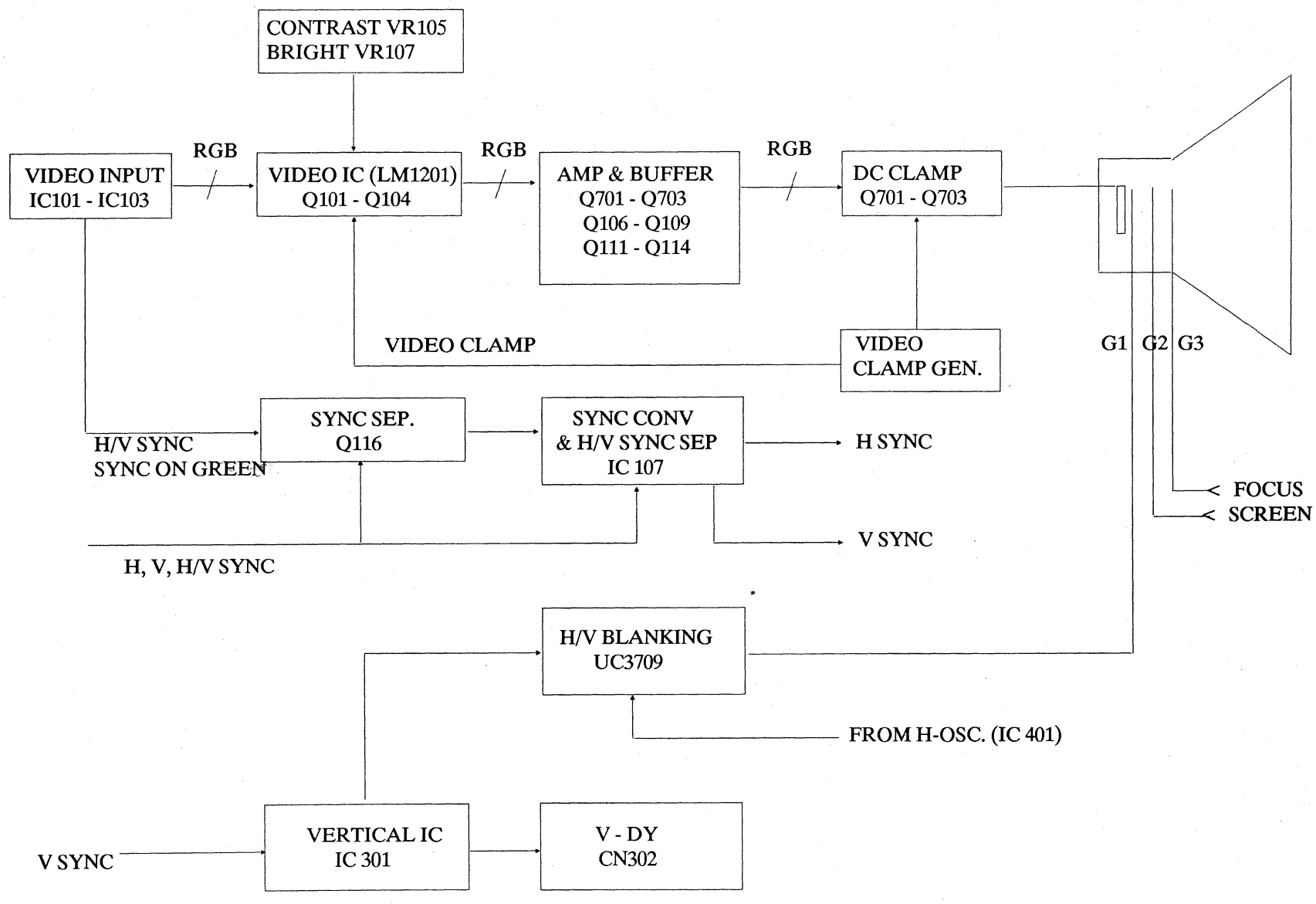
(3) Remove the 6 screws ((9)) retaining the video PCB.

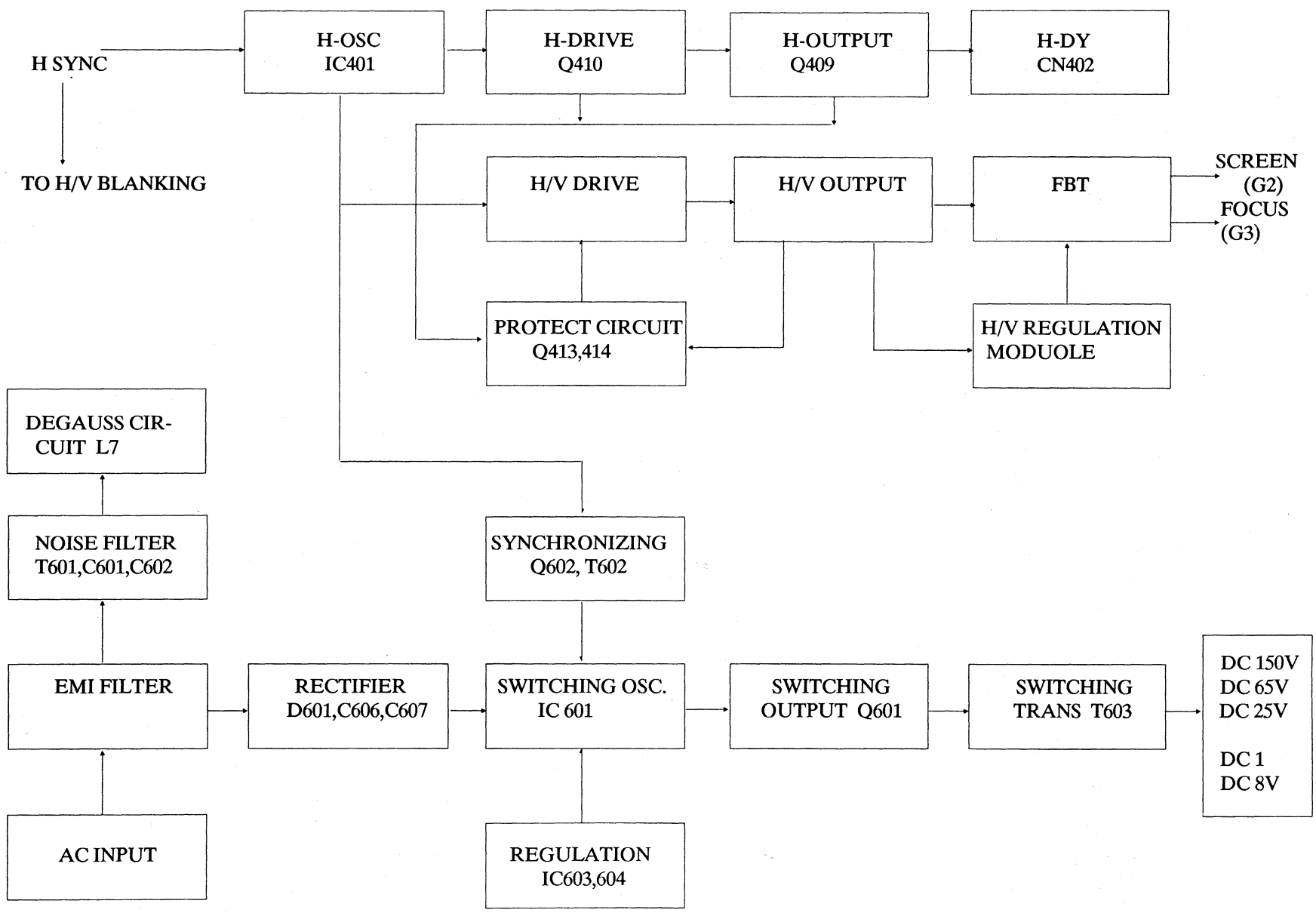
4. Remove the 2 screws ((10)) retaining the chassis PCB (shield PCB).

The shield PCB will be separated from the chassis bottom (chassis assy).



BLOCK DIAGRAM





ADJUSTMENTS ON INSTALLATION

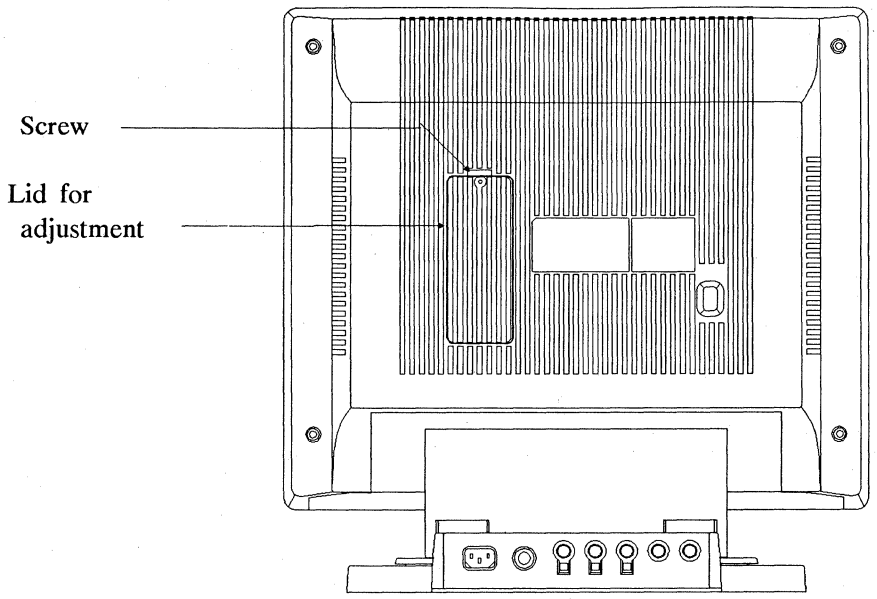
HOW TO ADJUST

Before attempting any of the following adjustments, the display should be powered up for a period of 20 minute prior to the adjustment.

1. Switch on the power, and confirm the power indicator (green light). If it does not:
   a) Check power source and connections
   b) Check fuse
   c) Call a service engineer.
2. Turn the contrast and brightness controls clockwise fully.
3. If no picture appears,
   a) Check the sync signal
   * H/V separate sync mode
   : sync signal input
   * H/V composite sync mode
   : sync signal input
   * Composite sync on green mode
   : green sync signal input

   Three type of sync mode, H/V separate sync mode, H/V composite sync mode and composite sync on green mode are automatically selectable. The priority is H/V composite sync.
   b) Check the 75 ohm termination switch.
   This unit included beam current limit circuit. If limit circuit is operated, no picture appears. After checking termination switch, switch on the power again.
4. When a picture appears, notice the stability of the picture. If it is not stable or it is not displayed at the center, swicth off the mains supply and remove the lid for adjustment at back cover by removing only one screws (refer to Fig. 2).
5. Power on and adjust controls with **plastic driver**. Note that it is important to use a plastic driver. Otherwise the adjustment could result in a short circuit and breakdown of dispaly.
6. To display appropriate picture on screen, adjust the control with plastic driver, refer to Fig. 3. and Table 1.
7. If you want to readjust another controls - *Focus, Screen, H-center, H-linearity, R.G.B-drive, R.B-bias, NTSC/XOR Selector* - remove the back cover by removing only four screws.(refer to Fig. 4, 5, 6, 7, and Table 2).
8. In the case of horizontal stripes at top position, change the NTSC/XOR selector switch.
9. If there is any problem or trouble in the readjustment above, contact the supplier of the equipment.

Finally, power off and replace covers as it was . Turn brightness and contrast controls to their normal operating position of yours.


Screw
Lid for
adjustment

g. 2.

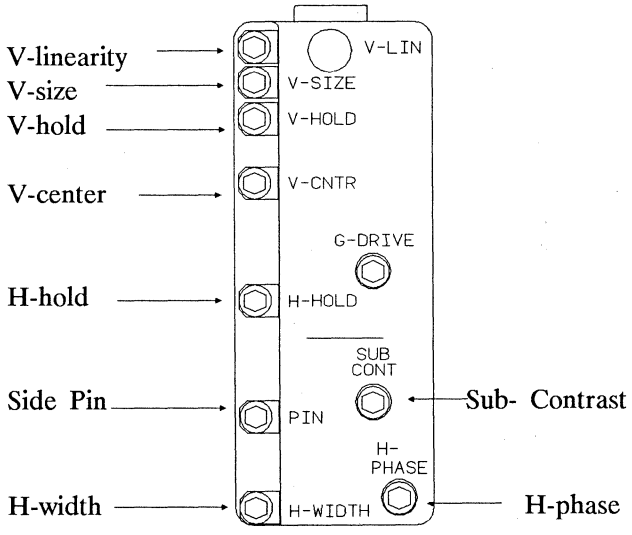
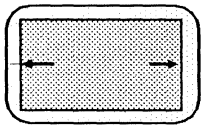
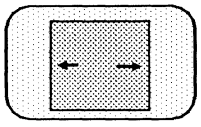
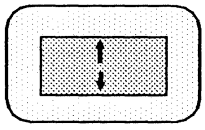
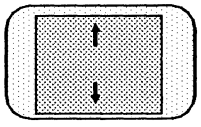
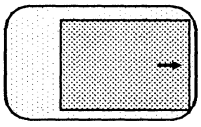
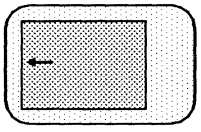
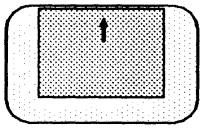
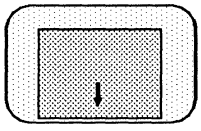
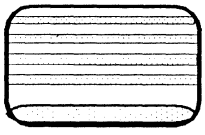
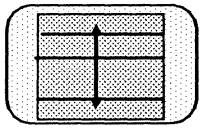
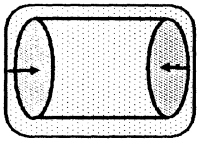
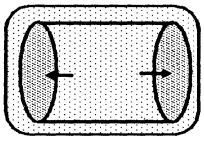
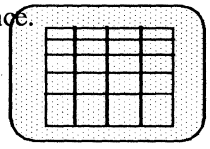
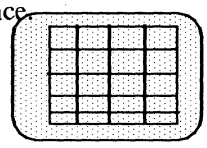

V-linearity
V-size
V-hold
V-center
H-hold
Side Pin
H-width
V-LIN
V-SIZE
V-HOLD
V-CNTR
G-DRIVE
H-HOLD
SUB
CONT
PIN
H-
PHASE
H-WIDTH
Sub- Contrast
H-phase

Fig. 3

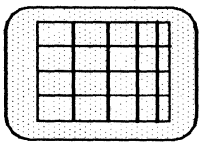
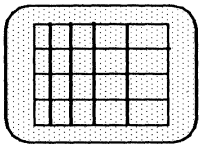
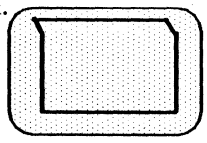
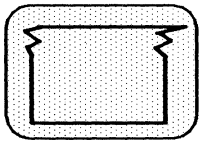
Adjustment shown below is required when signals other than the recommended signal are received.

Condition	Position to be adjusted	Condition	Position to be adjusted
Picture too wide. 	Adjust H width VR402	Picture too narrow. 	Adjust H width VR402
Picture shortened vertically. 	Adjust V size VR301	Picture stretched vertically. 	Adjust V size VR301
Picture deviated to the right 	Adjust H phase VR106 (Adjust H center position VR403)	Picture deviated to the left 	Adjust H phase VR106 (Adjust H center position VR403)
Picture deviated upward 	Adjust V center position VR305	Picture deviated downward 	Adjust V center position VR305
Picture has horizontal stripes. 	Adjust H hold VR401	Picture rolls vertically 	Adjust V hold VR303

(Table. 1)

Condition	Position to be adjusted	Condition	Position to be adjusted
Vertical lines are not straighten. 	Adjust Side Pin VR304	Vertical lines are not straighten. 	Adjust Side Pin. VR304
Horizontal lines are not display with equal space. 	Adjust V linearity. VR302	Horizontal lines are not display with equal space. 	Adjust V linearity. VR302

(Continued Table. 1)

Condition	Position to be adjusted	Condition	Position to be adjusted
Vertical lines are not display with equal space. 	Adjust H linearity. L403	Vertical lines are not display with equal space. 	Adjust H lineraity. L403
Vertical lines are not straighten at top position. 	Adjust H hold VR401	Picture has horizontal stripes at top position. 	Check NTSC/XOR switch. SW106

(Table. 2)

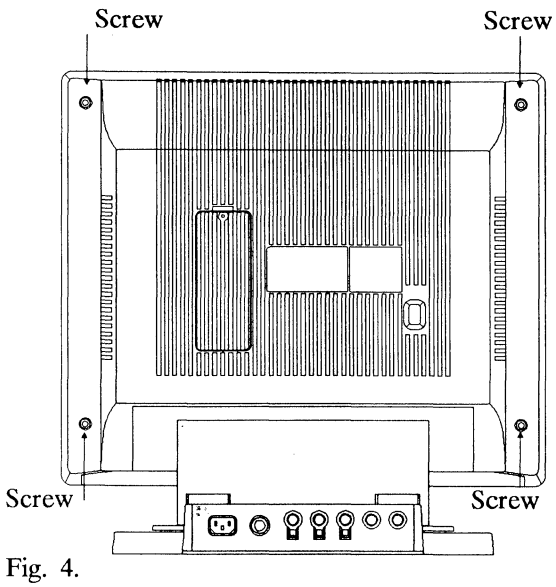


Fig. 4.

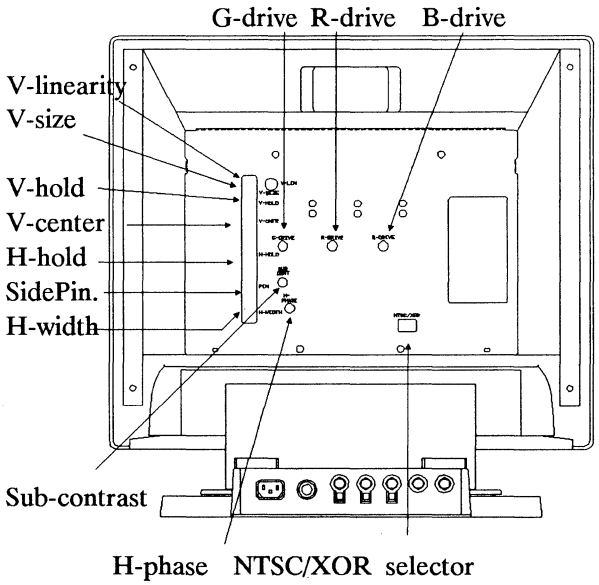


Fig. 5

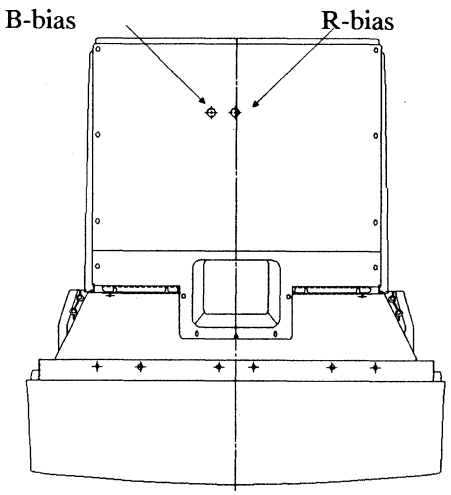


Fig. 6.

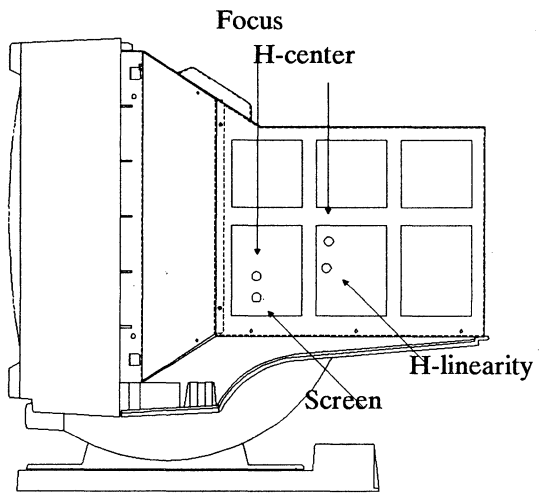


Fig. 7.

ALIGNMENT INSTRUCTIONS

Note : This adjustment requires the connection of a personal computer to the Monitor. Although the Monitor is adjusted before it is delivered, readjustment may be required when the setting postion is changed or when a component is replaced.

1. B+ Adjustment

(1) Operate the monitor.
(2) Connect the plus pole of DVM(Digital Multi Meter) to the GT pin with B+ marking and connect the other pole(GND) to chassis GND.
(3) Rotate the B+ voltage adjusting control(VR601) to provide a DC150V.

2. Horizontal Frequency Adjustment

(Instrument in use : frequency counter,scope probe)
(1) Connect the plus pole of the scope probe to RED wire of DY and the minus pole to chassis frame.
(2) At self raster,adjust the horizontal frequency control(VR401) so that the horizontal frequency is 62.7KHz.
(Free running frequency : 62.7KHz ± 500Hz)

3. Horizontal Phase Adjustment

Adjust VR106(horizontal phase control) so that the image(or test pattern) is placed on the center of the raster.

4. Vertical Frequency Adjustment

(Instrument in use : frequency counter,scope probe)
(1) Connect the GND pole of the scope probe to chassis frame and the scope probe to DY pin connected to yellow wire.
(2) At self raster, adjust VR303 so that the vertical frequency is 54Hz.
(Free running frequency : 54 ± 2Hz)

5. Focus Adjustment

(1) Operate to display the full white pattern on the screen.
(2) Adjust the contrast control so that the brightness is 15F/L.
(3) Change the pattern into alphabetical characters on the screen.
(4) Rotate the focus adjusting control in FBT for the best focus.

6. Side Pincushion Adjustment

Adjust the side pincushion control(VR304) until the side line becomes straight.

7. Horizontal Linearity Adjustment

Adjust the horizontal linearity control(L403) until the horizontal linearity is best.

8. Vertical Linearity Adjustment

Adjust the vertical linearity control(VR302) until the vertical linearity is best.

9. Horizontal Centering Adjustment

Adjust VR403 until the horizontal center is set at screen center. (Horizontal centering tolerance is ± 3 mm)

10. Vertical Centering Adjustment

Adjust VR406 until the vertical center is set at screen center. (Vertical centering tolerance is ± 2 mm)

11. Width Adjustment

Adjust the horizontal width control(VR402) so that the horizontal width of displayed pattern is 360 mm.(Tolerance is ± 5 mm)

12. Vertical Size Adjustment

Adjust the vertical size control(VR301) so that the vertical size of displayed pattern is 270mm. (Tolerance is ± 5 mm)

13. Color Purity Adjustment

The display monitor must have been operating 20 minutes prior to this procedure, and with the faceplate of the CRT at room temperature. The dispaly monitor is equipped with an automatic and manual degaussing circuit. However, if the CRT shadow mask has become excessively magnetized, it may be necessary to degauss it with a manual.

(1) Check for the correct location of all neck components. Refer to Figure 9.
(2) Rough in the static convergence at the center of the CRT, as explained in the static convergence procedure.
(3) Rotate the contrast control to the center of its range and rotate the brightness control to its maximum clockwise position.
(4) To obtain a blank raster. Rotate the screen control(part of F.B.T) clockwise until a normal raster is obtained.
(5) Rotate the red bias(VR701) and blue bias (VR702) controls to the maximum counterclockwise positions.Rotate the screen control VR sufficiently in a clockwise direction to produce a green raster.
(6) Loosen the deflection yoke clamp screw and pull the deflection yoke as close as possible to the purity and convergence magnets assembly.
(7) Begin the following adjustment with the tabs on the round purity magnet rings set together. Initially, move the tabs on the round purity magnet rings to the side of the CRT neck. Then, slowly separate the two tabs while at the same time rotating them to adjust for a uniform green vertical band at the center of the CRT screen. Refer to the Figure 8.
(8) Carefully slide the deflection yoke forward to achieve green purity (uniform green screen).

Note : *Center purity is obtained by adjusting the tabs on the round purity magnet rings. Outer edge purity is obtained by sliding the deflection yoke forward. tighten the deflection yoke clamp screw.*

(9) Check for red and blue field purity by reducing the output of the screen control and alternately increasing the output of the red(VR701) and blue(VR702) bias controls, and touch up the adjustment, if required.
(10) Perform the "White balance Adjustment" procedures.

14. Screen Adjustment

Operate the computer to display the full white pattern on screen.
Adjust screen VR(in FBT) so that back raster appears at brightness and contrast VR max, but disappears at brightness VR center(detent position) and contrast VR max.

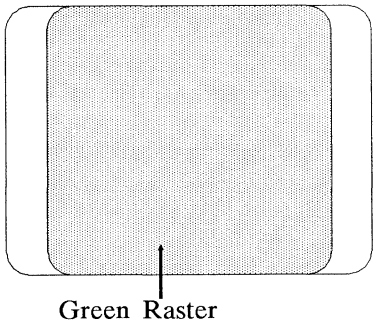


Fig 8. Color Purity Adjustment

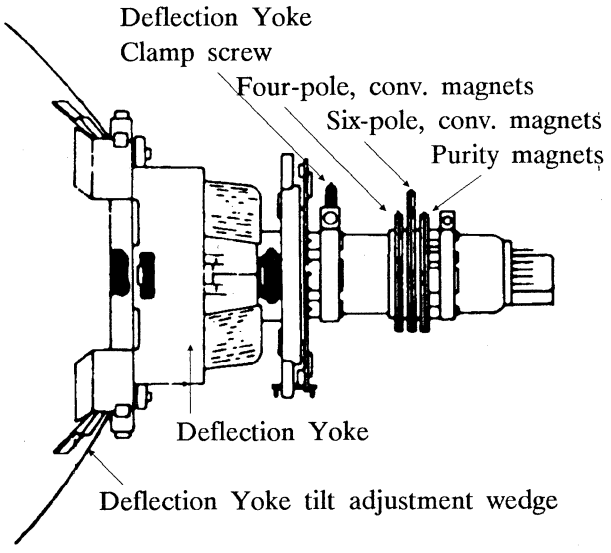


Fig 9. Picture tube neck components location

15. White Balance Adjustment

(instrument In Use :

(1) Operate the computer to display the full white pattern on screen. (Refer to Timing Chart)

(2) Turn the screen control fully clockwise. Turn the red and blue bias control counterclockwise. Set the brightness control and the red, green and blue drive controls at the center positions.

(3) Rotate the screen control counterclockwise until a raster (either the red, green or blue) appears dimply on the screen.

(4) Rotate two bias controls counterclockwise until the raster becomes somewhat white: position rotated controls must be the ones which control the colors other than the raster's colors.

Note :

Adjust VR701 if red appears.

Adjust VR702 if blue appears.

Adjust screen control if green appears.

(5) Rotate the red, green and blue drive (VR101, VR102, VR103) controls until the raster is white.

(6) Set the brightness control at its maximum position and adjust the Sub-Contrast control until a reading of 26 ± 1 F/L appears.

(7) Turn the brightness control in either direction to check that the picture maintains a good white balance.

(8) Repeat steps 3 thru 7 for readjustment.

16. Static(center) Convergence

Switch the monitor ON and warm up for 15 minutes. Operate the computer in such a way that the cross hatch pattern is displayed on screen. (Fig 10.) Convergence error should not be over 0.5 mm in corner, 0.3mm in center

Proceed as follows.

(1) Locate the pair of four pole magnet rings.

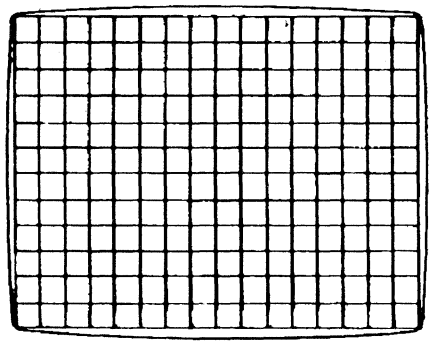
(2) Rotate the individual rings (change spacing between tabs) to converge the vertical red and blue lines.

(3) Rotate the pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue lines. (Refer to Fig. 11.)

(4) After completing the red and blue center convergence, locate the pair of six pole magnet ring.

(5) Rotate the individual rings (change spacing between tabs) to converge the vertical red and blue (magenta) and green lines.

(6) Rotate the pair of rings (maintaining spacing between tabs) to converge the horizontal red and blue (magenta) and green lines. Refer to figure 12.



Horizontal:
16 Lines Min.

Vertical :
12 Lines Min.

Fig. 10. Crosshatch Pattern

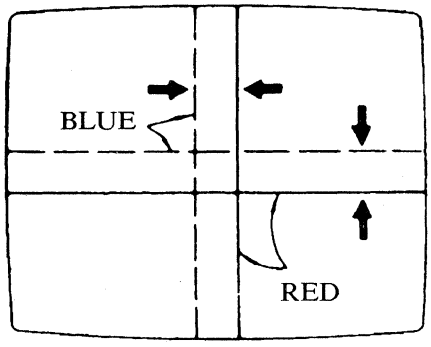


Fig. 11. Static Convergence A

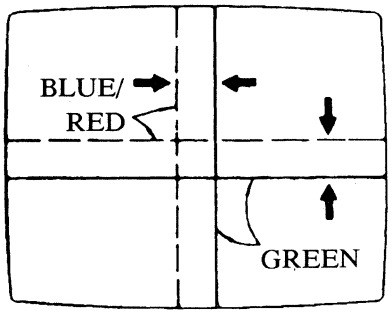


Fig. 12. Static Convergence B

17. Dynamic Convergence

Dynamic convergence (convergence of the three color fields at the edge of the CRT screen) is accomplished by the proper insertion and positioning of the three wedges between the edge of deflection yoke and the funnel of the CRT.

This is accomplished in the following manner:

(1) Switch the display monitor ON and allow it to warm up for 20 minute.

(2) Apply the crosshatch pattern (Fig. 10) from the computer to the display monitor. Observe spacing between lines around the edges of the CRT.

(3) Tilt the deflection yoke up and down. Insert tilt adjustment wedges 1 and 2 between the deflection yoke and the CRT until the misconvergence illustrasted in Figure 13 has been corrected.

(4) Tilt the deflection yoke right and left. Insert tilt adjustment wedge 3 between the deflection yoke and the CRT until the misconvergence illustrated in Figure 14 has been corrected.

(5) Alternately change the spacing between, and depth of insertion of, the three wedges until proper dynamic convergence is obtained.

(6) Check purity and readjust, if necessary.

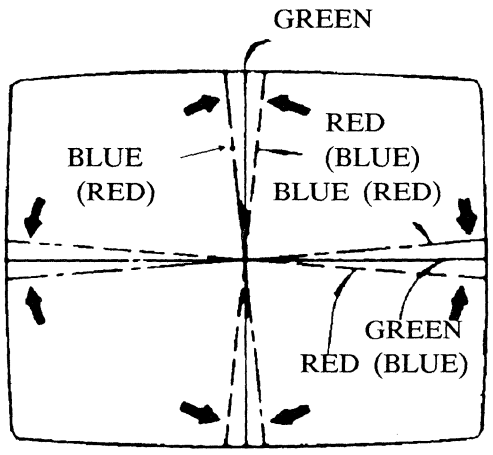


Fig. 13. Dynamic Cinvergence A

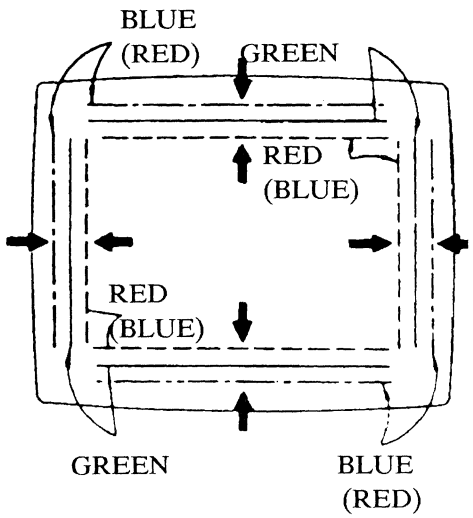


Fig. 14. Dynamic Convergence

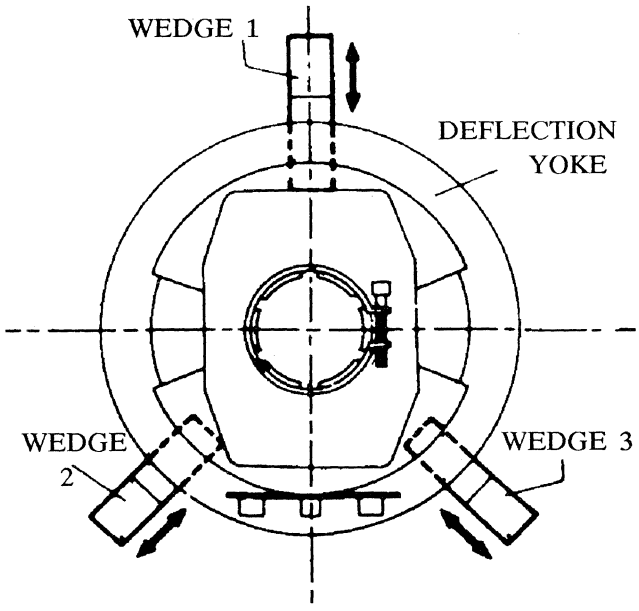
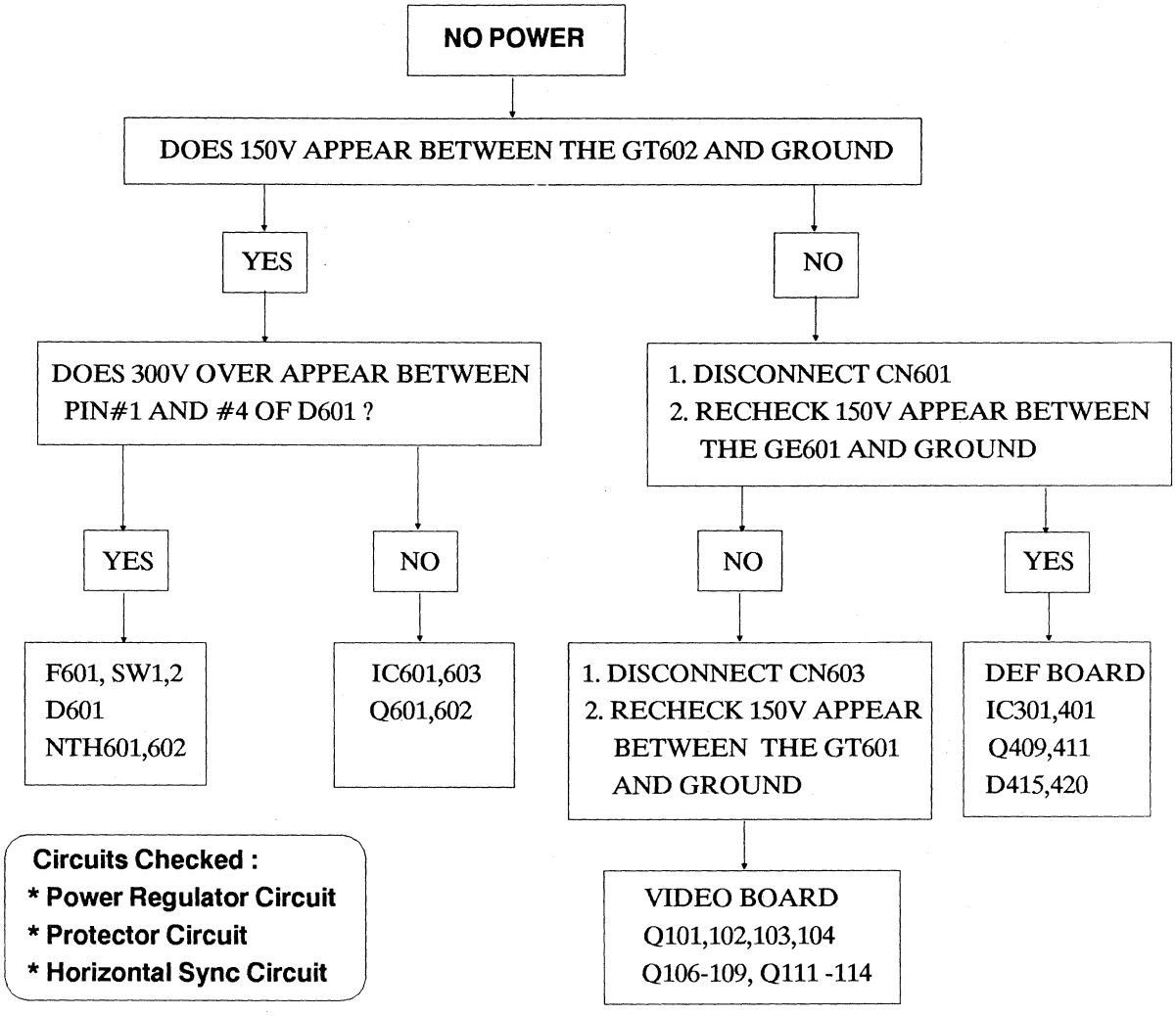
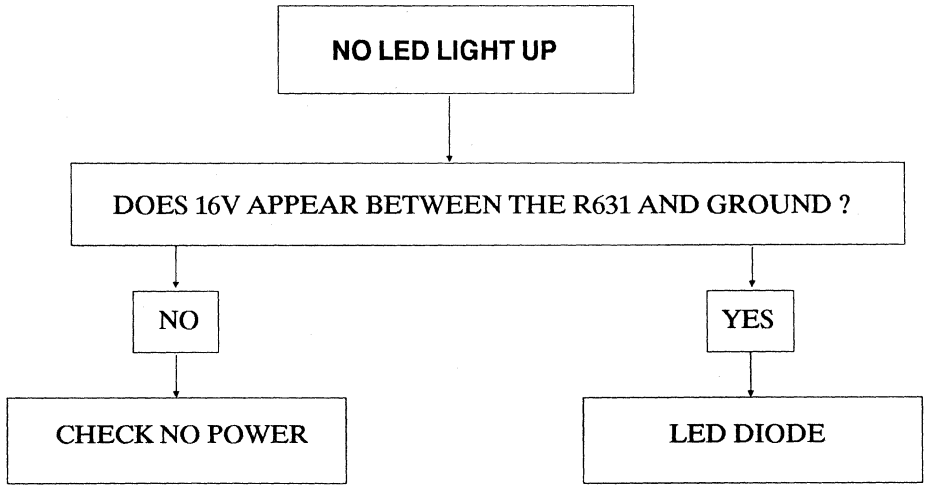
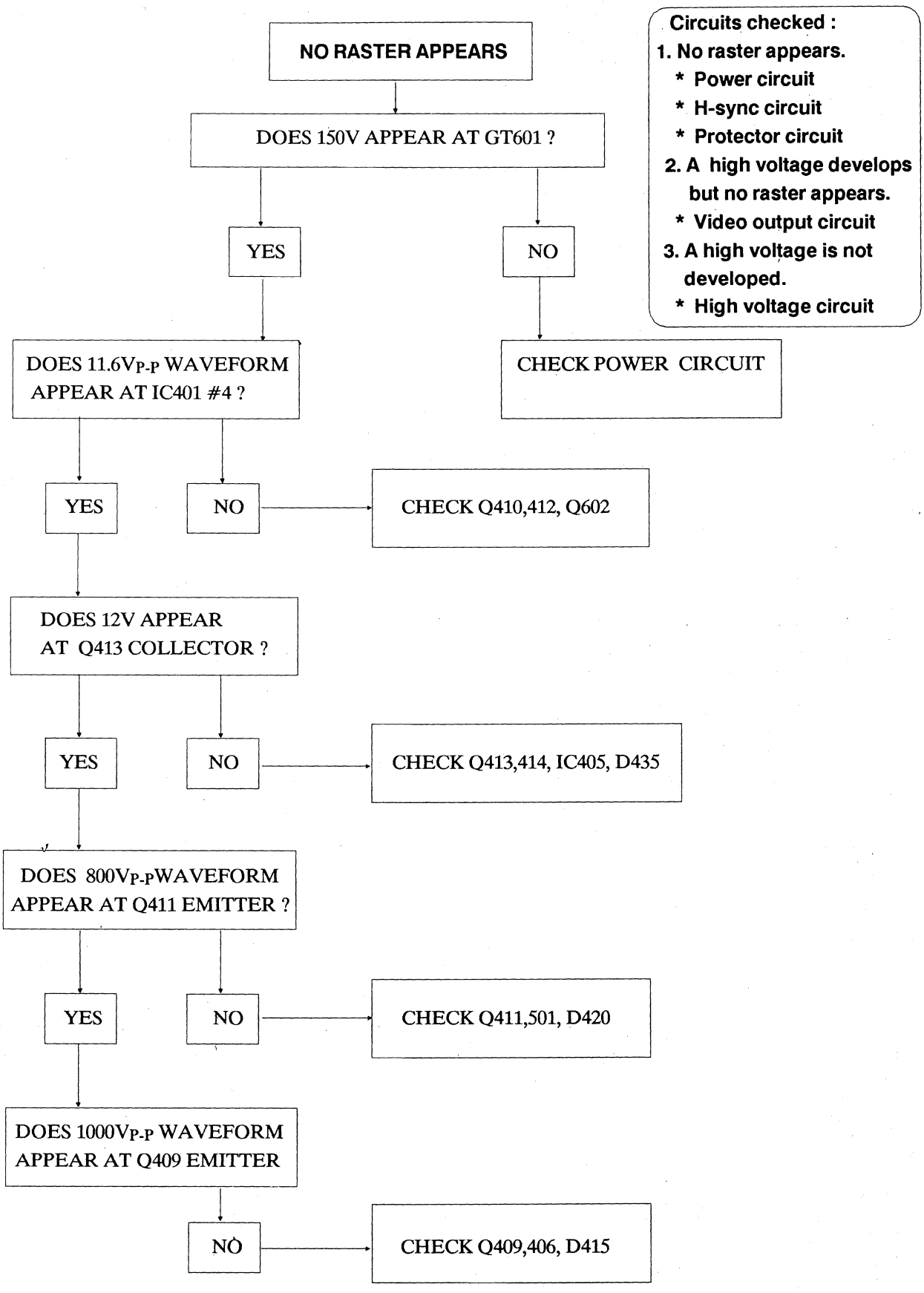


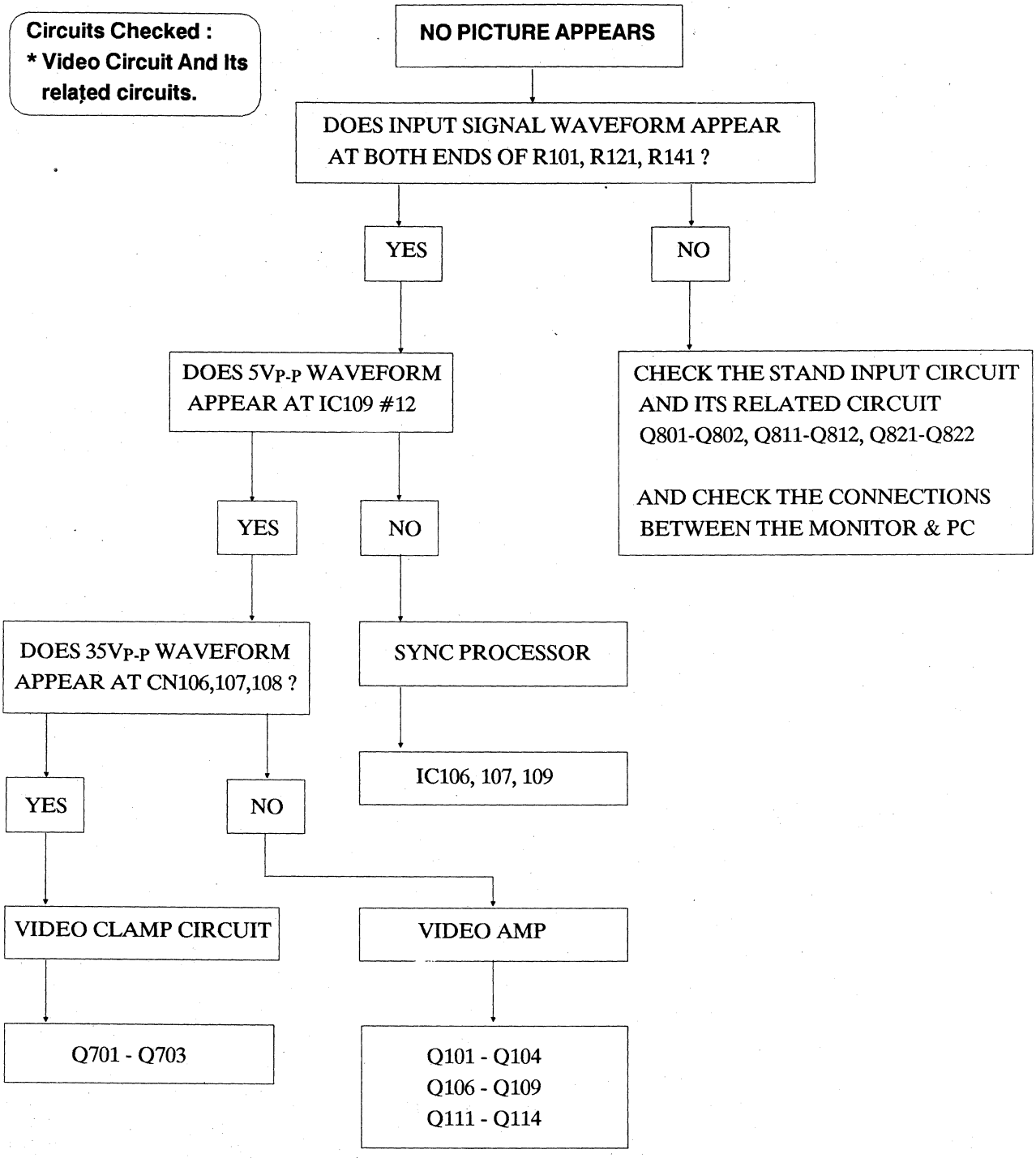
Fig. 15. Deflection Yoke Rear View

TROUBLE SHOOTING GUIDE

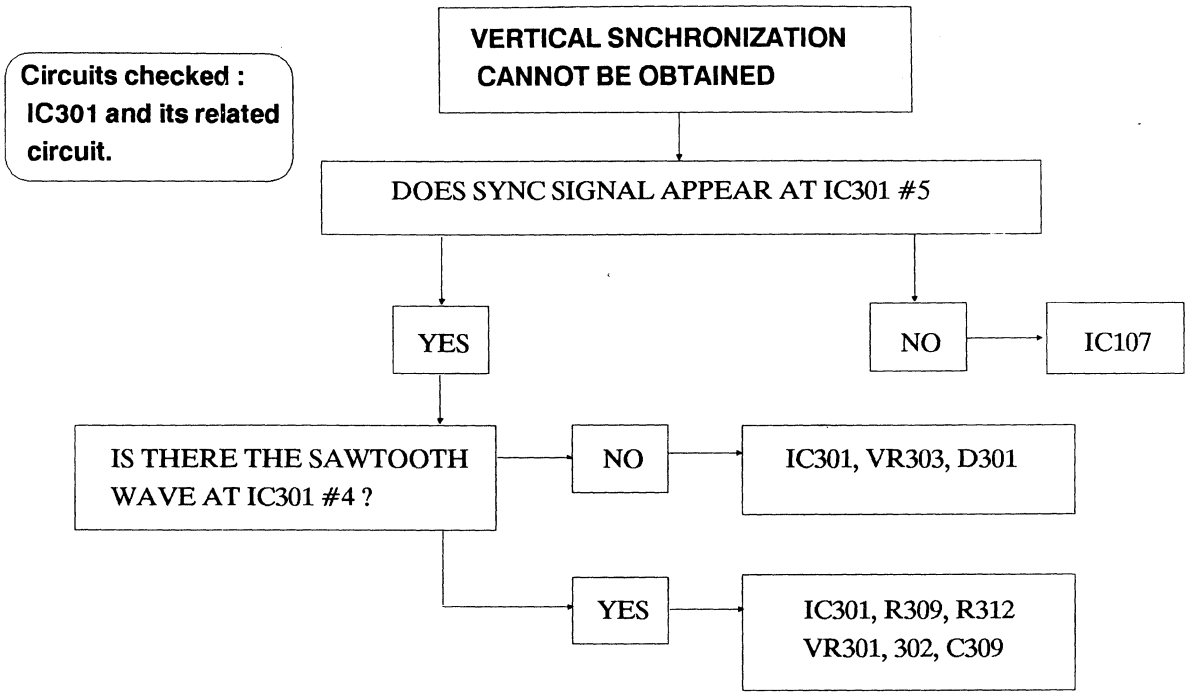


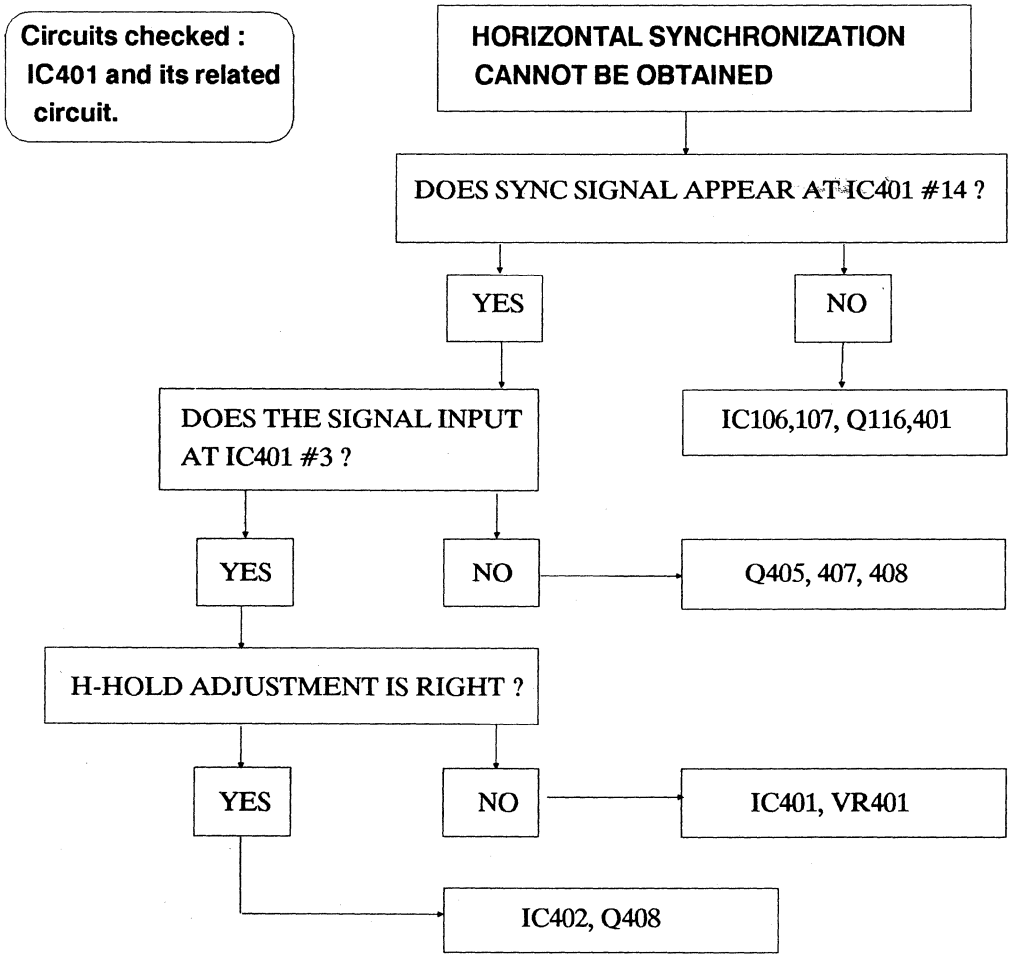



NO RASTER APPEARS
DOES 150V APPEAR AT GT601 ?
YES
NO
CHECK POWER CIRCUIT
DOES 11.6VP-P WAVEFORM APPEAR AT IC401 #4 ?
YES
NO
CHECK Q410,412, Q602
DOES 12V APPEAR AT Q413 COLLECTOR ?
YES
NO
CHECK Q413,414, IC405, D435
DOES 800VP-PWAVEFORM APPEAR AT Q411 EMITTER ?
YES
NO
CHECK Q411,501, D420
DOES 1000VP-P WAVEFORM APPEAR AT Q409 EMITTER
NO
CHECK Q409,406, D415
Circuits checked :
1. No raster appears.
* Power circuit
* H-sync circuit
* Protector circuit
2. A high voltage develops but no raster appears.
* Video output circuit
3. A high voltage is not developed.
* High voltage circuit



Note : If the picture does not appear, fully rotate the brightness contrast control clockwise before inspecting.


Circuits checked :
IC301 and its related circuit.
VERTICAL SNCHRONIZATION CANNOT BE OBTAINED
DOES SYNC SIGNAL APPEAR AT IC301 #5
YES
NO
IC107
IS THERE THE SAWTOOTH WAVE AT IC301 #4 ?
NO
IC301, VR303, D301
YES
IC301, R309, R312 VR301, 302, C309


Circuits checked :
IC401 and its related circuit.
HORIZONTAL SYNCHRONIZATION CANNOT BE OBTAINED
DOES SYNC SIGNAL APPEAR AT IC401 #14 ?
YES
NO
IC106,107, Q116,401
DOES THE SIGNAL INPUT AT IC401 #3 ?
YES
NO
Q405, 407, 408
H-HOLD ADJUSTMENT IS RIGHT ?
YES
NO
IC401, VR401
IC402, Q408

SIDE PINCUSHION CANNOT BE OPERATED

IC404, C416, R419, C454, R425

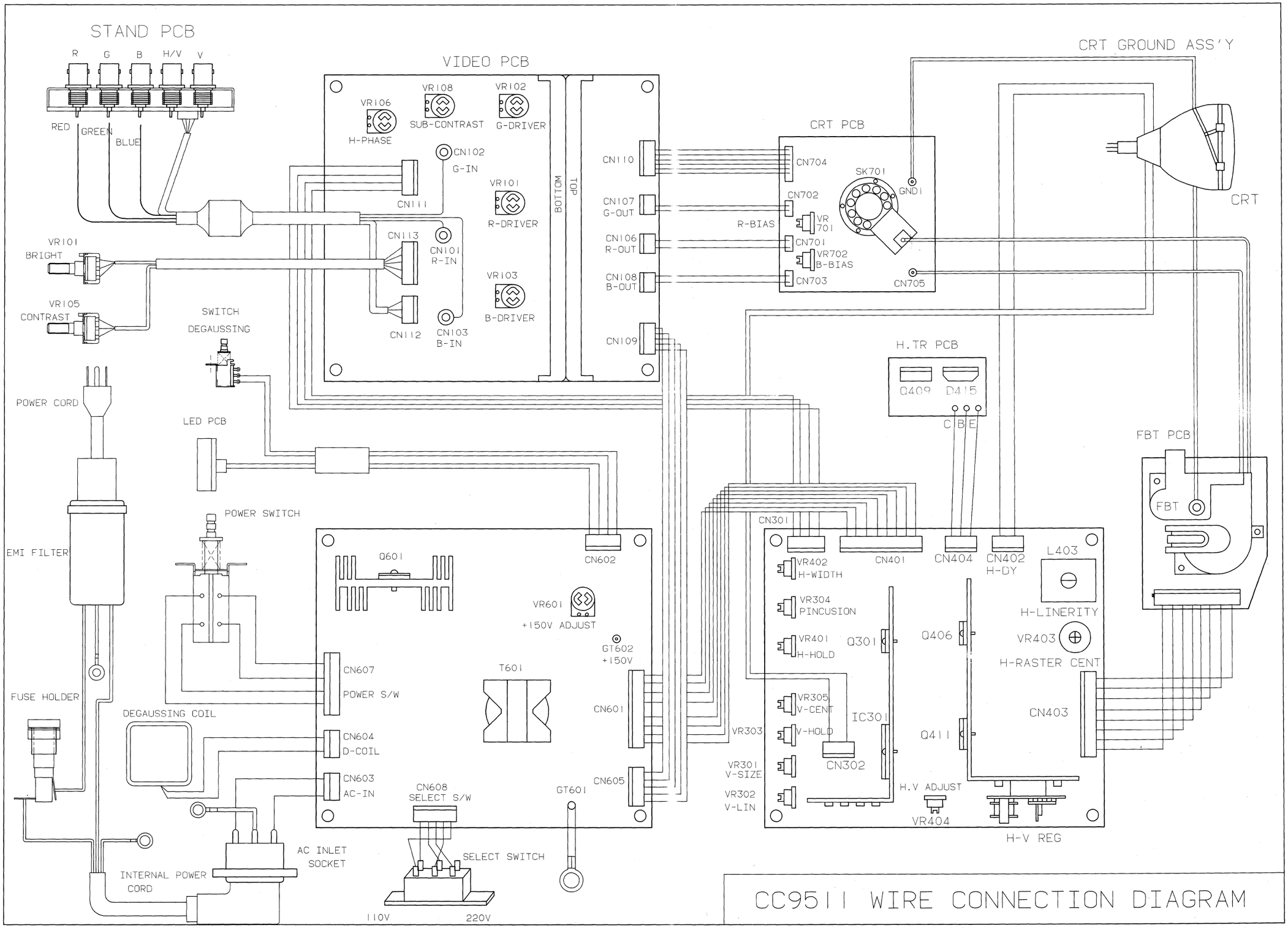
NO SPECIRFIC COLOR APPEARS

THE RASTER IS COLORED IN RED OR CYAN.	CHECK THE RED VIDEO CIRCUIT (Q101 - Q104)	IC101, Q101 - 104 VR101,701 R701.702
THE RASTER IS COLORED IN GREEN OR MAGENTA.	CHECK THE GREEN VIDEO CIRCUIT (Q106 - Q109)	IC102, Q106 - Q109 VR102,R703,704,705,706
THE RASTER IS COLORED IN BLUE OR YELLOW.	CHECK THE BLUE VIDEO CIRCUIT (Q111 - Q114)	IC103, Q111 - Q114 VR103,702, R707,708
THE SIGNAL WITH R.G.B CAN BE VARIED CONTRAST THE CONTRAST CONTROL	CHECK THE CONTRAST CIRCUIT (IE101 -IC103 AND THE RELATED CIRCUIT)	IC101 - IC103, VR105 VR108, R104, C104,R124 R124, 124, R144, C144

Circuits checked :

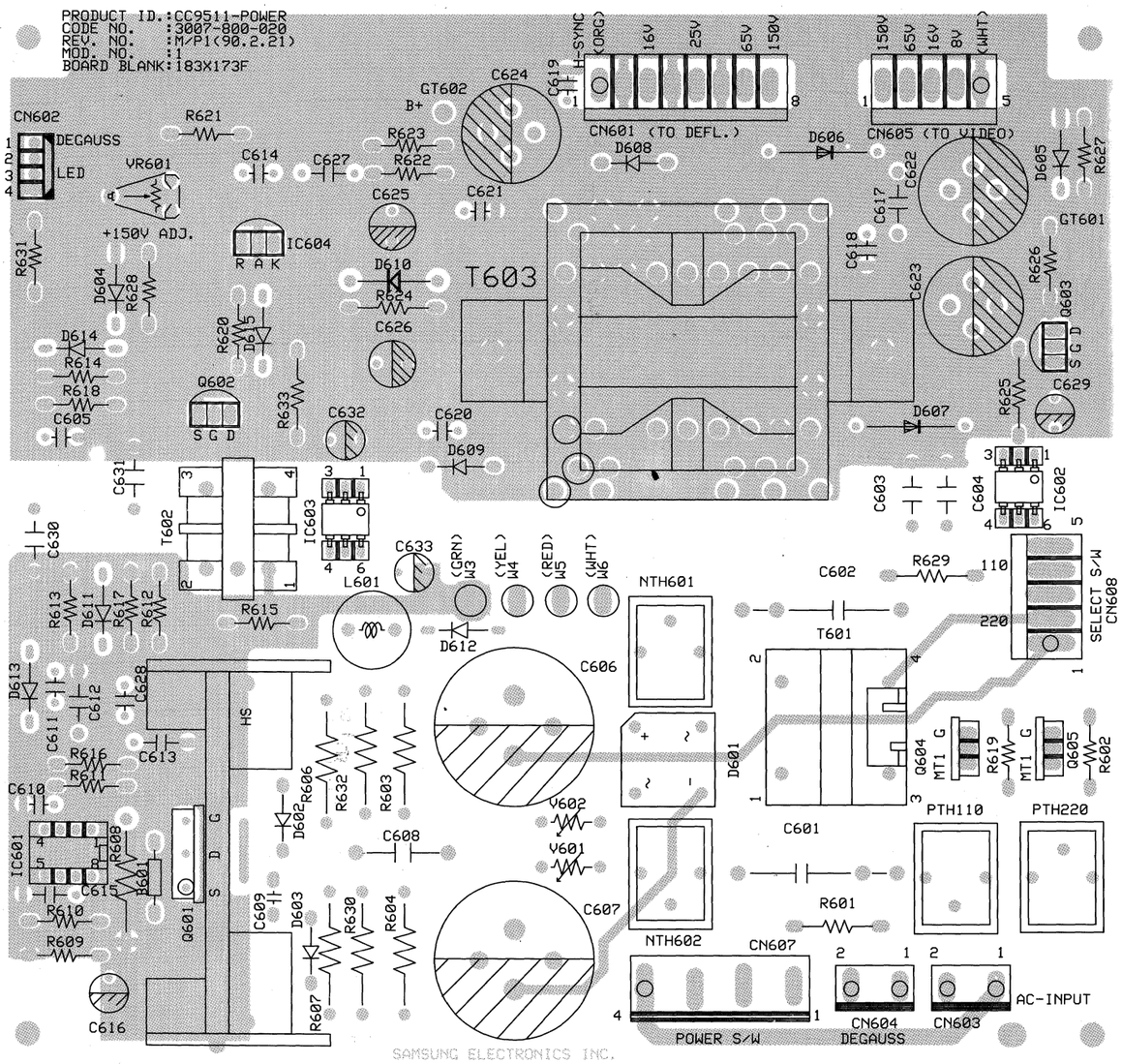
- **IC101 - IC103 and its related circuit**
- **Q101 - Q104 and its related circuit**
- **Q106 - Q109 and its related circuit**
- **Q111 - Q114 and its related circuit**

WIRING DIAGRAM AND PARTS LOCATION

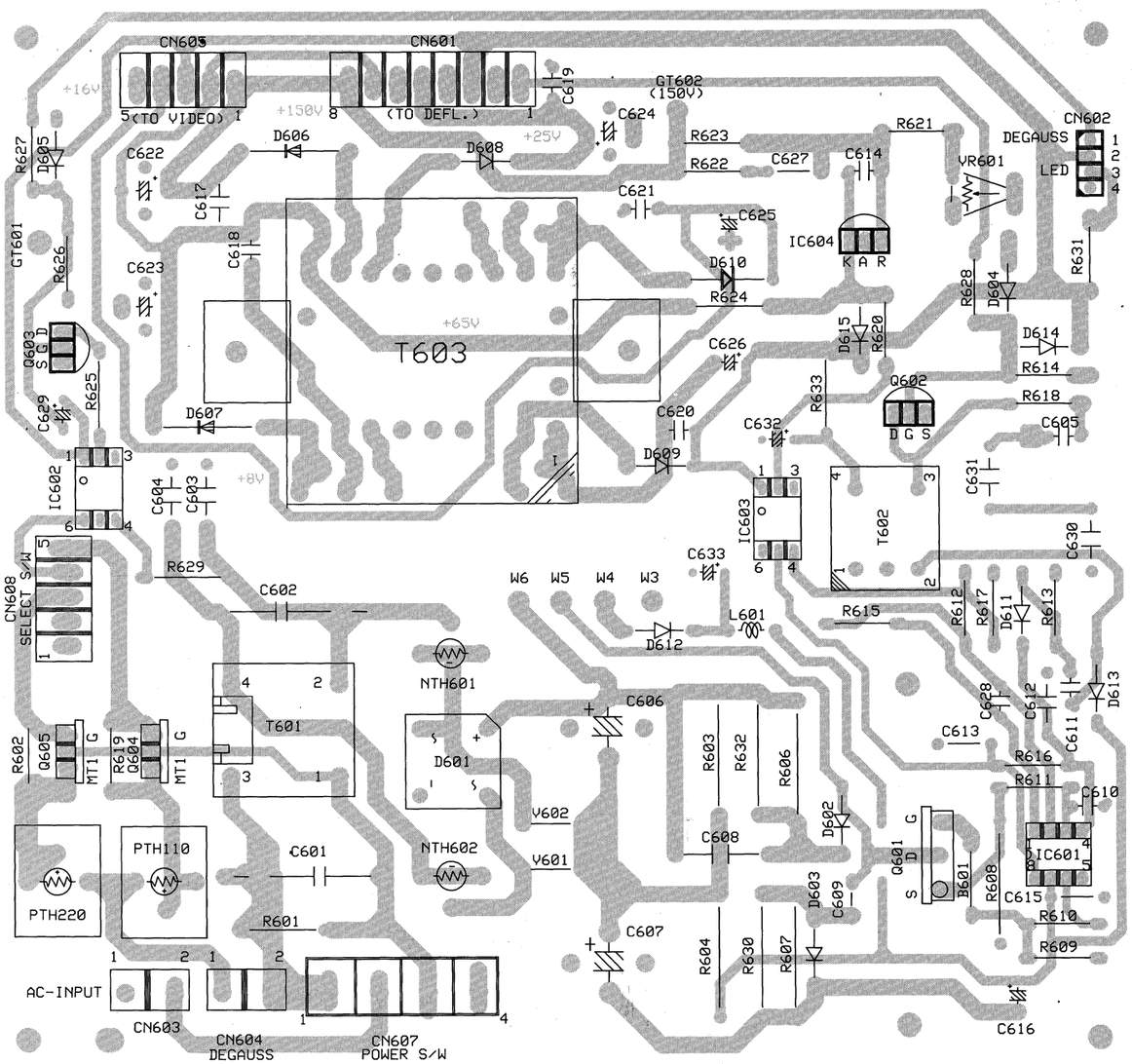


PRINTED CIRCUIT BOARDS

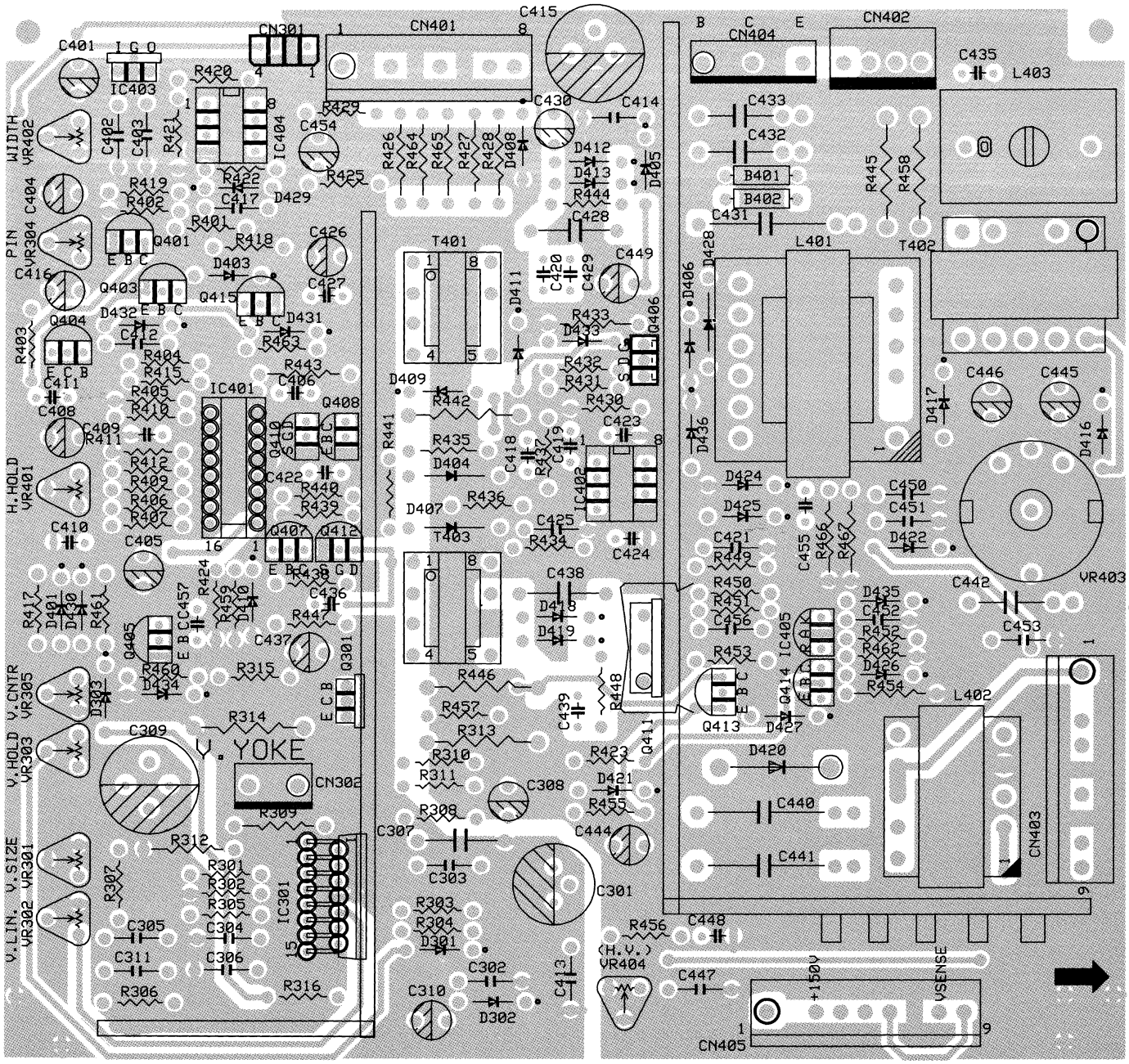
1. POWER PCB (TOP VIEW)



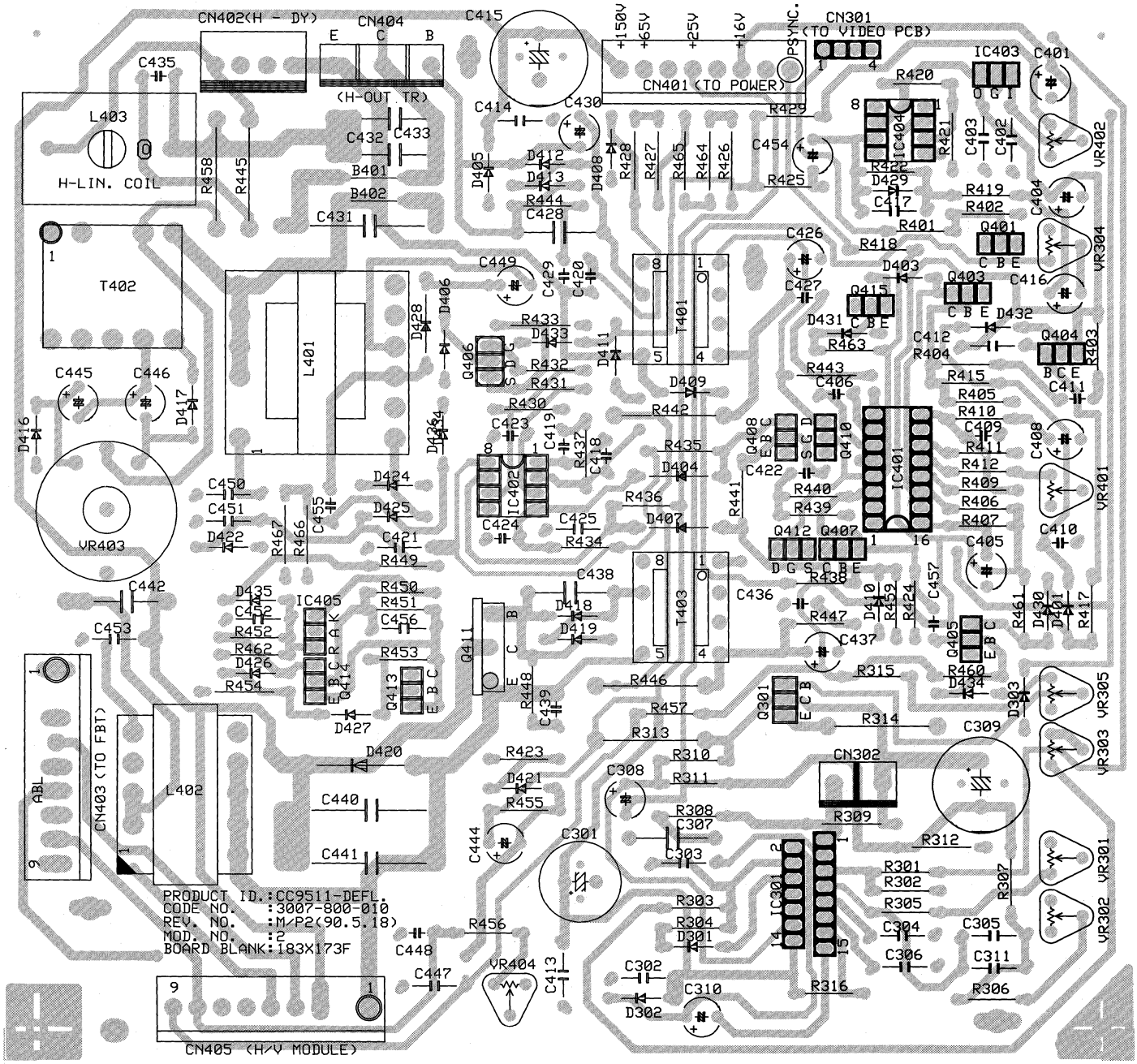
POWER PCB (BOTTOM VIEW)



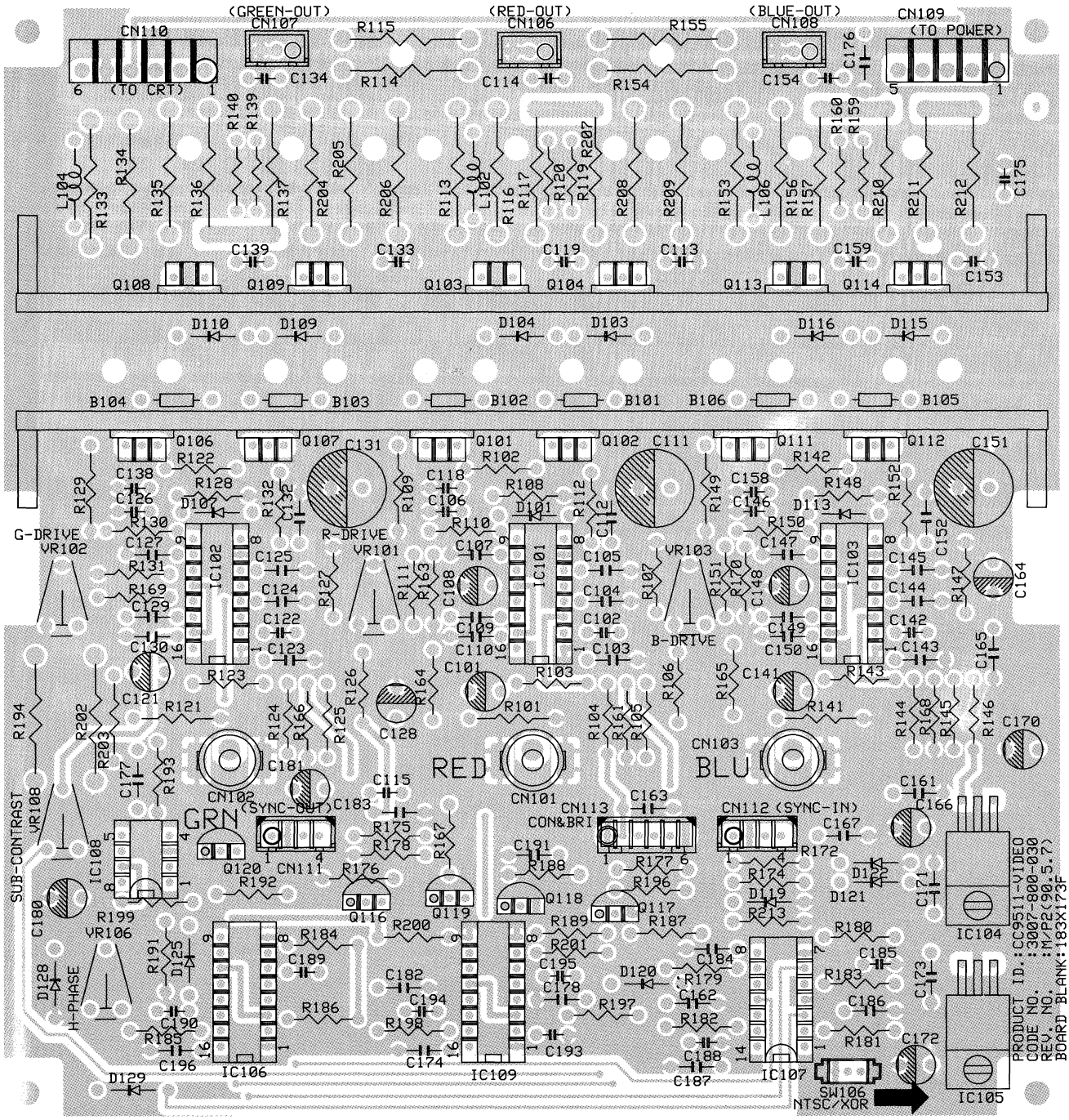
2. DEFLECTION PCB (TOP VIEW)



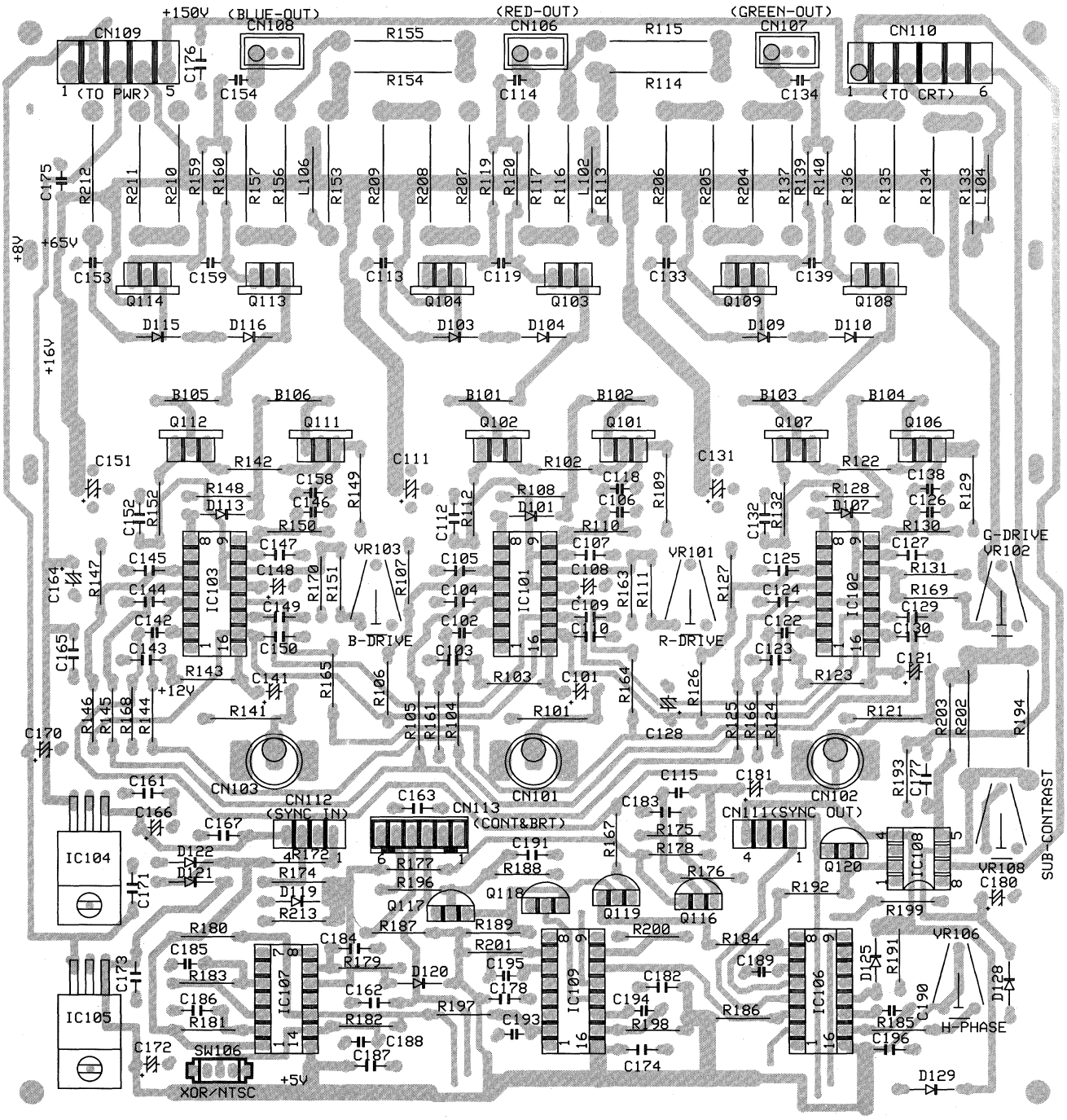
DEFLECTION PCB (BOTTOM VIEW)



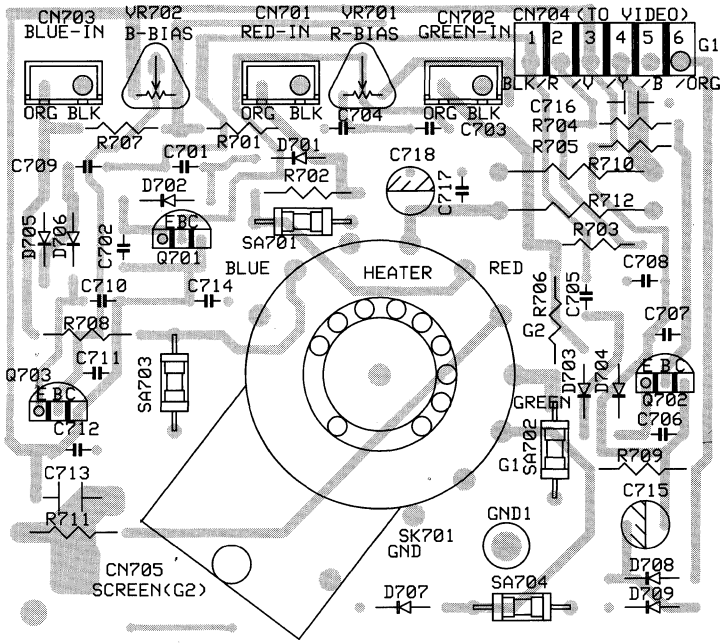
3. VIDEO PCB (TOP VIEW)



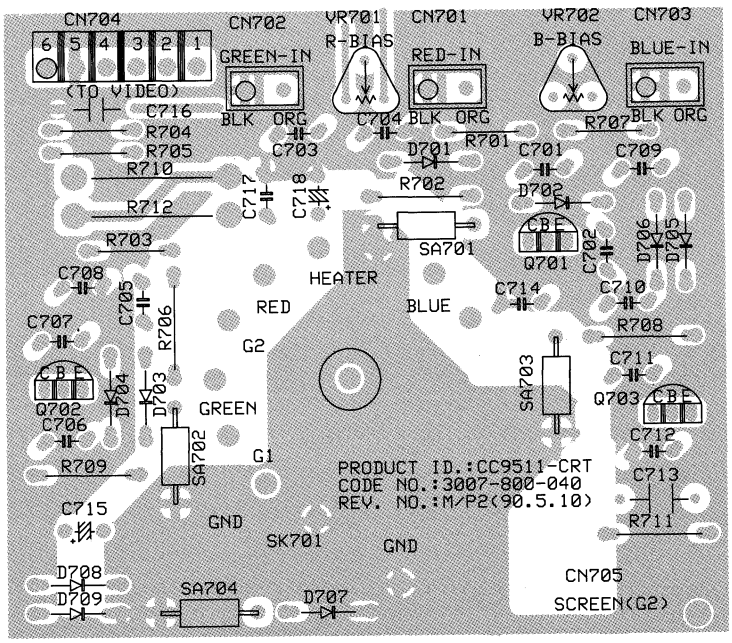
VIDEO PCB (BOTTOM VIEW)



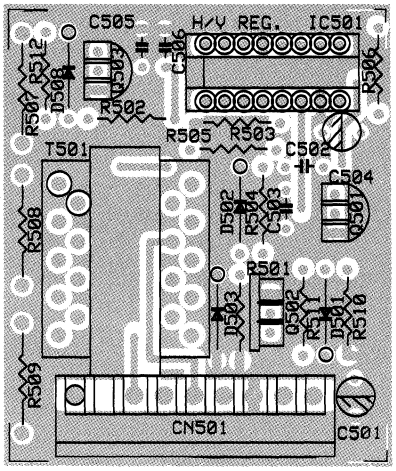
4. CRT PCB (TOP VIEW)



CRT PCB (BOTTOM VIEW)

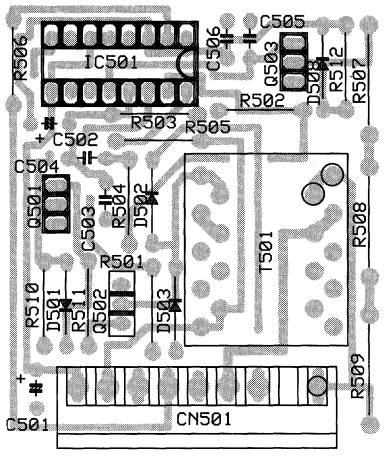


5. H/V REGULATION MODULE PCB (TOP VIEW)

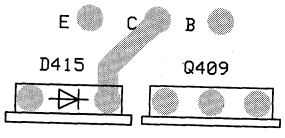


COMP. PRINT

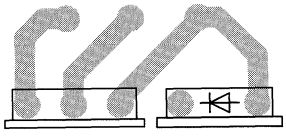
H/V REGULATION MODULE PCB (BOTTOM VIEW)



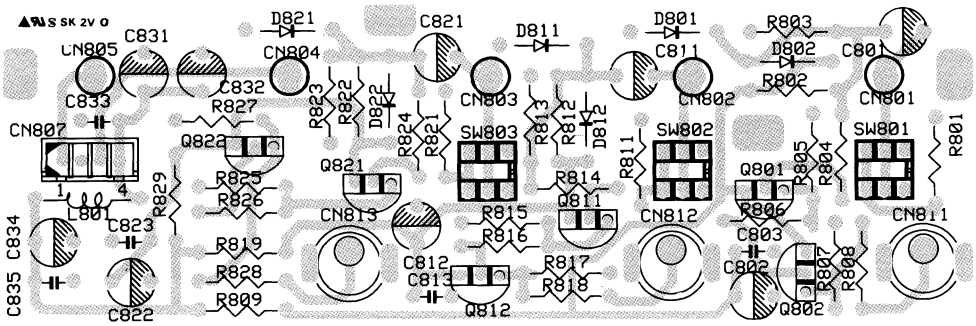
6. OUTPUT TR PCB (TOP VIEW)



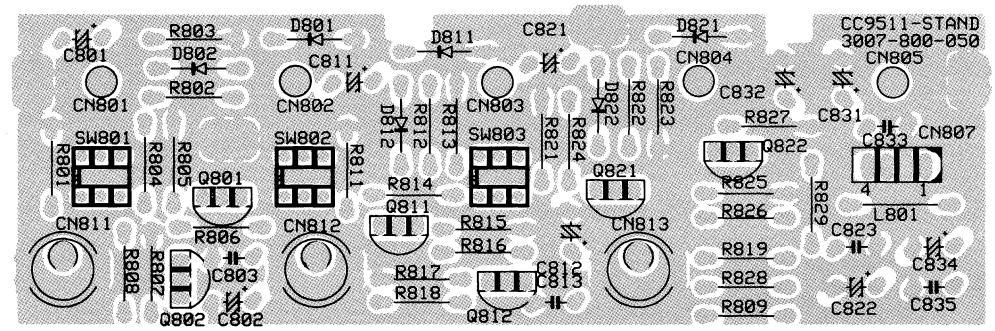
OUTPUT TR PCB (BOTTOM VIEW)



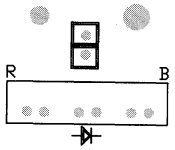
7. STAND PCB (TOP VIEW)



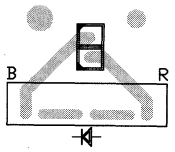
STAND PCB (BOTTOM VIEW)



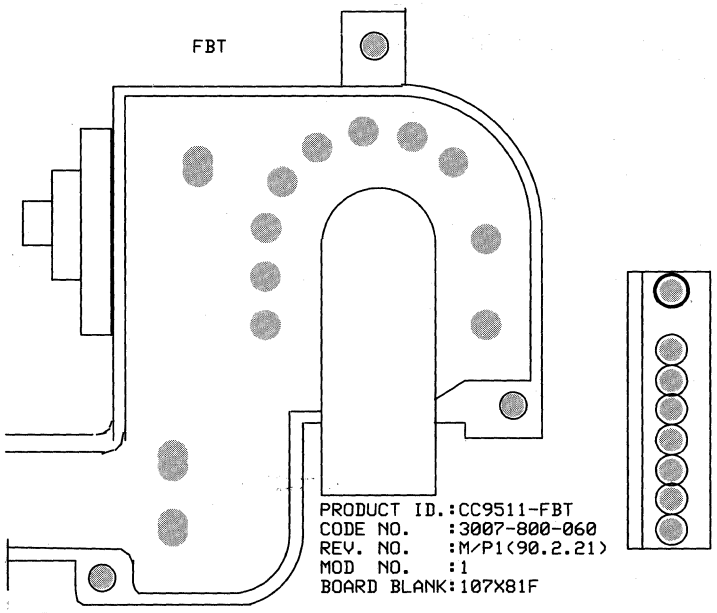
8. LED PCB (TOP VIEW)



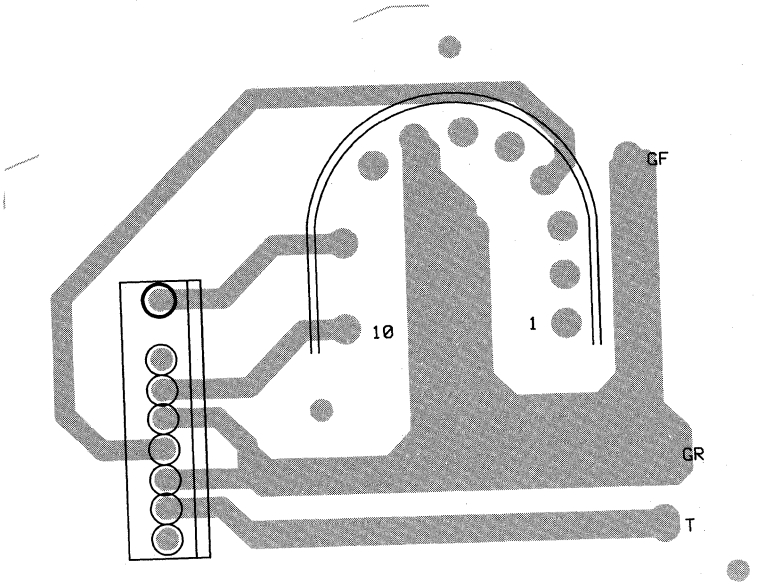
LED PCB (BOTTOM VIEW)



7. FBT PCB (TOP VIEW)

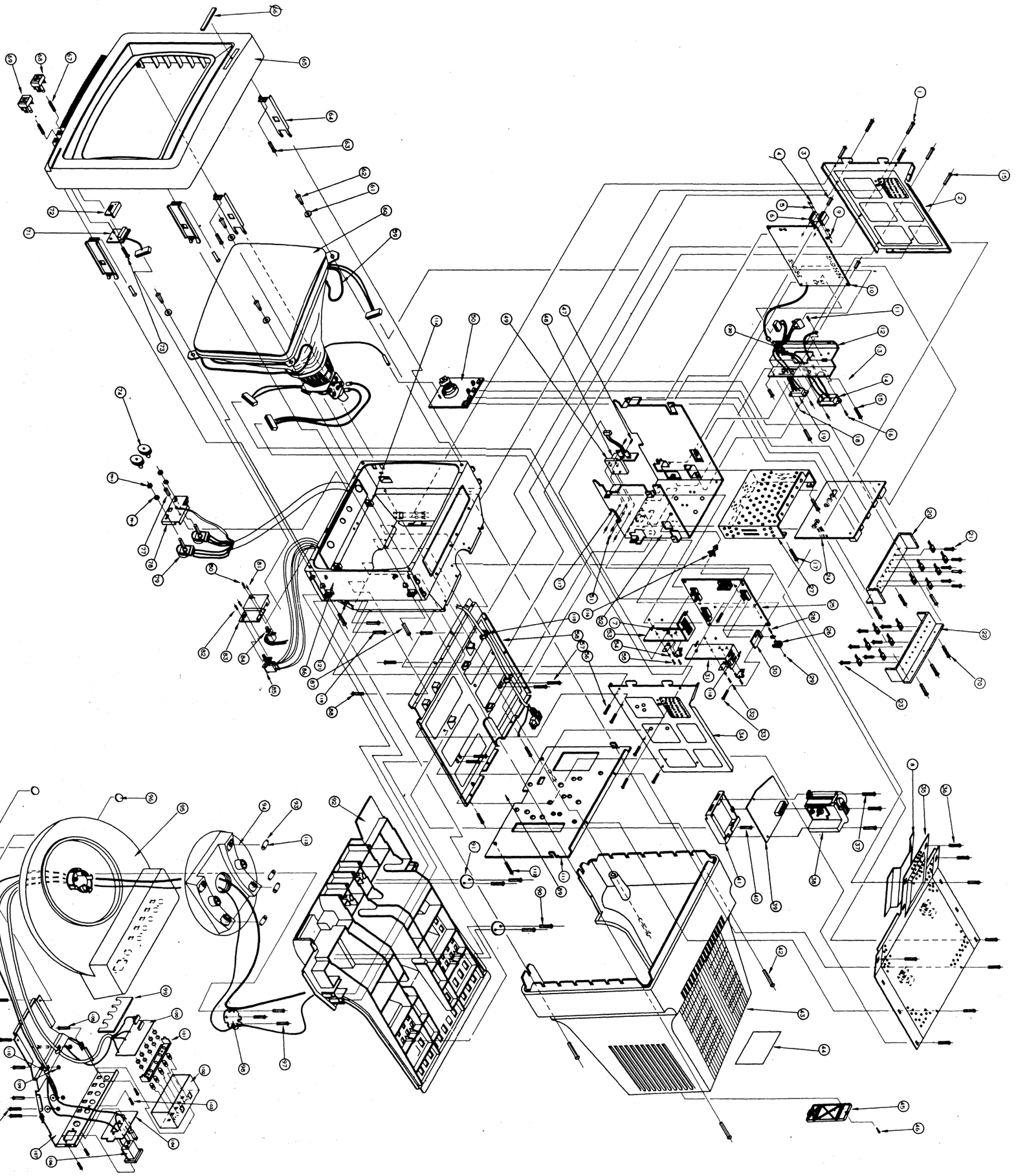


FBT PCB (BOTTOM VIEW)



CABINET EXPLODED VIEW/PARTS LIST

1. CABINET EXPLODED VIEW



2. CABINET PARTS LIST

NO	CODE - NO	DESCRIPTION	SPECIFICATION	Q'TY
1	7154-230-081	SCREW-TAP PH	2S-3X8 FE FZY W/WASHER	5
2	0C903-000-3300	CHASSIS ASSY	CC9511	
3	7048-130-081	SCREW RH	+M3X8 FE FZY	2
4	7028-123-001	NUT HEX	2-M3 FE FZY	2
5	3934-103-120	INSULATOR TR	3.8 8D 2-5H N66 VO	2
6	5683-700-410	HEAT SINK POWER	A6061 EXTR	1
7	6813-700-110	SPACER CARD	NYLON 6/6 94V2 NATURAL	1
8	3933-701-610	BARRIER TOP	PVC SHEET TO.5	1
9	7048-130-121	SCREW RH	+M3X12 FE FZY	2
10	3007-800-020	PCB POWER	173.5X183.5	1
11	7108-126-041	SCREW TAP PH	2S-3X6 FE FZY W/WASHER	1
12	6612-709-810	PANEL S/W	SECC-1 T1.0	1
13	7108-126-041	SCREW TAP PH	2S-3X6 W/WASHER	1
14	3354-706-410	SOCKET AC		1
15	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	3
16	7118-530-083	SCREW TAP PH	2S-3X8 FE FZB	2
17	7108-126-041	SCREW TAP PH	2S-3X6 FE FZY W/WASHER	2
18	7108-126-041	SCREW TAP PH	2S-3X6 W/WAHSER	2
19	3519-108-210	SWITCH	TCH SLIDE	1
20	5683-708-220	HEAT SINK VIDEO	A1050S H-14 T2.0(TOP)	1
21	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	6
22	5683-708-220	HEATSINK VIDEO	A1050S H-14 T2.0(BOT)	1
23	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	6
24	0C905-000-4110	PCB VIDEO	CC9511	1
25	0C905-000-4090	PCB MAIN	CC9511	1
26	5684-706-510	HEAT SINK VIDEO	A1050S H14 T1.0	1
27	4541-703-910	SHIELD-VIDEO	SECC-1 TO .8	1
28	7048-130-121	SCREW RH	+M3X8 FE FZY	1
29	7208-123-001	NUT HEX	2-M3 FE FZY	1
30		H/V MODEUL PCB		1
31	5682-705-310	HEAT SINK DEF R	A1050S H14 T2.0	1
32	7048-130-121	SCREW RH	+M3X12 FE FZY	2
33	7048-130-081	SCREW TAP RH	2S-3X8 FE FZY	2
34	0C903-000-3300	CHASSIS ASSY	CC9511	
35	4542-703-810	SHIELD TOP	A1050S H14 TO.8	1
36	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	8
37	7148-530-101	SCREW TAP RH	2S-3X10 FE FZY	3
38	0C904-000-4420	ASSY FBT	CC9511	1
39	3007-800-060	PCB FBT	76X107	1
40	7148-530-061	SCREW TAP RH	2S-3X6 FE FZY	1

NO	CODE - NO	DESCRIPTION	SPECIFICATION	Q'TY
41	6612-712-110	BRKT. FBT	SECC-1 T1.0	1
42	7128-540-101	SCREW TAP TH	2S-4X10 FE FZY	4
43	6000-720-010	COVER REAR	PC VO GP5006AF	1
44	8033-742-110	LABEL RATING	POLYESTER T1.0	1
45	7602-772-010	DOOR REAR	PC VO GP5006AF	1
46	7148-530-102	SCREW TAP RH	2S-3X10 FE FZW	1
47	7148-530-061	SCREW TAP RH	2S-3X8 FE FZY	2
48		PCB TR		1
49	5683-709-010	HEAT SINK H/OUT		1
50	0C905-000-4150	PCB CRT	CC9511	
51	7148-530-121	SCREW TAP RH	2S-3X12 FE FZY	4
52	4540-700-110	SHIELD PCB	A1050S H14 T1.6	1
53	5682-706-610	HEAT SINK DEF L	A1050S H14 T2.0	1
54	3934-103-120	INSULATOR	3.8 8D 2-5H N66 VO	1
55	7048-130-121	SCREW RH	+M3X12 FE FZY	2
56	7154-230-081	SCREW TAP RH	2S-3X8 FE FZY W/WASHER	5
57	7154-700-410	SCREW TAP RH	2S-5X25 FE FZY	4
58	0C903-000-3300	CHASSIS ASSY	CC9511	
59	2479-015-010	COIL DEGAUSSING	701X0.7	1
60	0C904-000-4390	CRT ASSY	CC9511	1
61	7334-700-710	WASHER SPRING	SPC-1 T1.6	4
62	7128-550-201	SCREW TAP RH	2S-5X20 FE FZY	4
63	7148-540-161	SCREW TAP RH	2S-4X16 FE FZY	4
64	6612-710-010	BRKT MOUNT	SECC-1 T1.0	4
65	6000-733-010	COVER FRONT	PC VO GP5006AF #70805	1
66	8024-726-110	FRONT LOGO	POLYCABONATE TO.25	1
67	6674-713-710	SPRING COIL	SUS-302 WPA PI 0.5	2
68	7622-704-620	KNOB DEGAUSS	ABS VO GP5006AF	1
69	7622-704-610	KNOB POWER	ABS VO GP5006AF	1
70	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	6
71	0C905-000-4290	ASSY LED		1
72	7653-701-810	LED LENS	ACRYL NTR	1
73	7148-530-081	SCREW TAP RH	2S-3X8 FE FZY	1
74	7623-711-110	KNOB VR	G.E LEXAN BE3030	2
79-2		NUT HEX		
79-1		WASHER		
77	7108-126-041	SCREW TAP PH	2S-3X6 FE FZY W/WASHER	1
78	6613-720-410	BRKT VR	SECC-1 T1.0	1
79	0C905-000-4070	ASSY VR		1
80	7108-126-041	SCREW TAP PH	2S-3X6 FE FZY W/WASHER	1
81	7048-126-041	SCREW RH	+M2 6X4 FE FZY	1
82	7048-130-061	SCREW RH	+M3X6 FE FZY	2

NO	CODE - NO	DESCRIPTION	SPECIFICATION	Q'TY
83	6613-720-310	BRKT POWER	SECC-1 T1.0	1
84	3529-705-110	SWITCH PUSH	SPJ222G	1
85	3529-703-610	SWITCH PUSH	ESB 90702V	1
86	0C903-000-3300	CHASSIS ASSY	CC9511	
87	7148-540-081	SCREW TAP RH	2S-4X8FE FZY	4
88	7418-530-081	SCREW TAP RH	2S-3X8 FE FZY	3
89	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	2
90	7148-530-121	SCREW TAP RH	2S-3X12 FE FZY	4
91	8302-701-110	ST/STOPPER	ACETAL NTR	2
92	6000-721-010	COVER BOTTOM	PC VO GP5006AF	1
93	5113-700-410	BAR	SM 20C	4
94	8300-705--010	STAND TOP	PC VO GP5006AF	1
95	8300-706-010	STAND BOTTOM	PC VO GP5006AF	1
96	6834-702-710	FOOT STAND	CR HB GRY	5
97	7128-540-121	SCREW TAP TH	2S-4X12 FE FZY	3
98	6613-722-110	BRKT STAND	SCEE-1 T1.2	1
99	4524-708-510	SHIELD BNC R	A1050S H14T0.5	1
100	0C905-000-416	PCB STAND	CC9511	1
101	6612-711-810	BRKT BNC	BSS3 T1.0	1
102	4542-708-410	SHIELD BNC F	A1050S H14T0.5	1
103	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	4
104	6613-720-510	BRKT FOCUS	SECC-1 T1.0	1
105	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	4
106	3354-706-910	SOCKET	AC008	1
107	4541-704-310	SHIELD STAND	A1050S H14T0.5	1
108	7048-130-061	SCREW RH	+M3X6 FE FZY	4
109	7208-123-001	NUT HEX	2-M3 FE FZY	4
110	4553-700-910	EARTH PLATE	SUS304 T0.5	2
111	6121-705-210	CHASSIS REAR	SECC-1 T1.0	1
112	7154-230-081	SCREW TAP PH	2S-3X8 FE FZY W/WASHER	2
113	5113-700-310	BUSHING	SM20C	4
114	6813-700-410	WIRE SADDLE	NYLON 6/6 NTR	8
115	6813-700-510	WIRE SADDLE	NYLON 6/6 NTR	4
116	6814-701-410	SPACER SUPPORT	NYLON 6/6 NTR	1
117	6054-705-220	COVER BUSHING	NYLON 6/6 NTR	1
118	6804-701-310	SPONGE	CR FOAM BLK	1
119	7128-550-201	SCREW TH	2S-5X20 FE FZY	4
120	6604-706-910	WIRE HOLDER	NYLON 6/6 NTR	1
121	6613-722-110	BRKT CHASSIS	SECC-1 T1.2	2

3.ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristic important to safety. Before replacing any of these components, read carefully the SAFETY NOTICE on page 4 of this service manual. do not degrade the safety of the product through improper servicing. Components marked with an ▲ are related to the X-ray protection circuit.

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C905-000-4090	ASSY-MAIN PCB;CC9511	
		CAPACITORS	
C301	01607-905-331	C-ELEC.105C;CE04W 35V 330UF 105C RA/KM	
C302	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C303	01517-323-104	C-M,POLYESTER;CF922 100V 0.1M-J	
C304	01517-323-473	C-M,POLYESTER;CF 922M 100V 0.047UF-J	
C305	01517-323-473	C-M,POLYESTER;CF 922M 100V 0.047UF-J	
C306	01517-323-104	C-M,POLYESTER;CF922 100V 0.1M-J	
C307	01517-323-224	C-M,POLYESTER;CF922M 100V 0.22M-J	
C308	01607-906-470	C-ELEC.105C;CE04W 50V 47M RA/KM	
C309	01607-903-222	C-ELEC.;105C CE04W 16V 2200M RA/KM	
C310	01607-906-470	C-ELEC.;CE04W(T) 50V 47M 105C RA/KM	
C311	01502-523-563	C-POLYPROPYLENE;CF922M 100V 0.056UF-J	
C401	01608-905-470	C-ELECTROLYTIC;CE04W(T) 35V 47M	
C402	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C403	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C404	01608-905-470	C-ELECTROLYTIC;CE04W(T) 35V 47M	
C405	01608-905-470	C-ELECTROLYTIC;CE04W(T) 35V 47M	
C406	01502-523-272	C-POLYPROPYLENE;CQ922M 100V 0.0027-J	
C408	01608-906-109	C-ELECTROLYTIC;CE04W(T) 50V 1M	
C409	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
C410	01407-057-470	C-CERAMIC TEMP;CC45(T) CH 50V 47-J	
C411	01502-723-471	C-POLYPROPYLENE;CQ921M(T)100V 470-J	
C412	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C413	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C414	01509-125-590	C-POLYESTER;CQ921M 200V 0.1M-K	
C415	01607-910-220	C-ELEC. 105C RA; CE04W 250V 22MF (16X25)	
C416	01608-904-100	C-ELECTROLYTIC;CE04W(T) 25V 10M	
C417	01517-323-104	C-M,POLYESTER;CF922 100V 0.1M-J	
C418	01505-723-102	C-POLYESTER;CQ921M(T) 100V 0.001-J	
C419	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
C420	01417-618-101	C-CERAMIC,HK;CK45(T) B1KV 100K	
C421	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C422	01505-723-182	C-POLYESTER;CQ921M(T) 100V 0.0018-J	
C423	01417-318-471	C-CERAMIC HK;CK45(T) B 50V 470-K	
C424	01505-723-102	C-POLYESTER;CQ921M(T) 100V 0.001-J	
C425	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C426	01607-906-470	C-ELEC.105C;CE04W 50V 47M RA/KM	
C427	01417-344-102	C-CERAMIC,HK;CD45(T) F 50V 1000-Z	
C428	01517-323-109	C-M,POLYESTER;CF922M 100V 1.0M-J	

REF. NOs Not Used : C312 ~ C400, C407,

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
C429	01505-723-223	C-POLYESTER;CQ921M(T) 100V 0.022-J	
C430	01607-906-100	C-ELEC.105C;CE04W 50V 10M RA/KM	
C431	01502-573-472	C-POLYPROPYLENE;CQ922M 1.6KV 4700P-J	⚠
C433	01518-333-334	C-M.POLYPROPYLENE;CQ922M 200V 0.33M-J	
C435	01505-723-223	C-POLYESTER;CQ921M(T) 100V 0.022-J	
C436	01417-344-102	C-CERAMIC,HK;CD45(T) F 50V 1000-Z	
C437	01607-906-470	C-ELEC.105C;CE04W 50V 47M RA/KM	
C438	01517-323-109	C-M,POLYESTER;CF922M 100V 1.0M-J	
C439	01505-723-223	C-POLYESTER;CQ921M(T) 100V 0.022-J	
C440	01502-573-222	C-POLYPROPYLENE;CQ922M 1.6KV 0.0022MF-J	⚠
C442	01518-333-334	C-M,POLYPROPYLENE;CQ922M 200V 0.33M-J	
C444	01607-906-470	C-ELEC.105C;CE04W 50V 47M RA/KM	
C445	01607-906-470	C-ELEC.105C;CE04W 50V 47M RA/KM	
C446	01607-906-470	C-ELEC.105C;CE04W 50V 47M RA/KM	
C447	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C448	01505-723-273	C-POLYESTER;CQ921M(T) 100V 0.027-J	
C449	01607-905-331	C-ELEC. 105C;CE04W 35V 330UF 105C RA/KM/RQ	
C450	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C451	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	▲
C452	01607-906-100	C-ELECTROLYTIC;105'C CE04W 50V 10UF RA/KM	▲
C453	01419-901-100	C-CERAMIC, HK; CK45 B 1KV 0.01U-K	
C454	01608-906-100	C-ELECTROLYTIC;CD04W(T) 50V 10M	
C456	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C457	01502-723-471	C-POLYPROPYLENE; CQ 921M(T) 100V 470-J	
		DIODES	
D301	02169-301-417	DIODE;1N4148(T)	
D302	02169-201-067	DIODE;1N4002(T)	
D303	02169-301-417	DIODE;1N4148(T)	
D401	02169-301-417	DIODE;1N4148(T)	
D403	02169-301-417	DIODE;1N4148(T)	
D404	02169-301-417	DIODE;1N4148(T)	
D405	02169-101-490	DIODE;1N4937GP	
D406	02169-101-490	DIODE;1N4937GP	
D407	02169-301-417	DIODE;1N4148(T)	
D408	02188-201-610	DIODE;ESJA58-06	
D409	02188-201-610	DIODE;ESJA58-06	
D410	02169-301-417	DIODE;1N4148(T)	
D411	02169-301-417	DIODE;1N4148(T)	
D412	02169-201-067	DIODE;1N4002(T)	
D413	02169-201-067	DIODE;1N4002(T)	
D416	02169-101-490	DIODE;1N4937GP	

REF. NOs Not Used : C432, C434, C441, C443, C455, D304~D302,D400, D402, D414, D415

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
D417	02169-101-490	DIODE;1N4937GP	
D418	02169-201-067	DIODE;1N4002(T)	
D419	02169-201-067	DIODE;1N4002(T)	
D420	02169-301-070	DIODE;MUR4100	
D421	02189-406-247	DIODE-ZENER;1N5242B(T)	▲
D422	02169-301-417	DIODE;1N4148(T)	
D424	02169-301-417	DIODE;1N4148(T)	▲
D425	02169-301-417	DIODE;1N4148(T)	▲
D426	02169-301-417	DIODE;1N4148(T)	
D427	02169-301-417	DIODE;1N4148(T)	
D428	02169-208-500	DIODE;FE3D	
D429	02169-301-417	DIODE;1N4148(T)	
D430	02169-301-417	DIODE;1N4148(T)	
D431	02169-301-417	DIODE;1N4148(T)	
D432	02169-301-417	DIODE;1N4148(T)	
D433	02169-301-417	DIODE;1N4148(T)	
D434	02169-301-417	DIODE;1N4148(T)	
D435	02169-404-930	DIODE-ZENER;MTZ20B (ROHM)	▲
		COILS AND TRANSFORMERS	
L401	02449-435-510	COIL-HOR, WIDTH;200X15X15X15 TN	⚠▲
L402	02429-061-710	COIL-CHOKE;EE2825, 800UH	⚠▲
L403	02449-735-610	COIL-LINEARITY;HL2121C	⚠
T401	02849-033-010	TRANS-HOR, DRIVE;EI2218, 13X111 TN	⚠
T402	02449-435-610	COIL-HOR, CENTER;EI3026	⚠
T403	02849-033-010	TRANS-HOR, DRIVE;EI2218, 13X111 TN	⚠
		TRANSISTORS	
Q301	02149-302-720	TRANSISTOR;TIP29C	
Q401	02139-104-220	TRANSISTOR;MPS2222A	
Q403	02139-104-220	TRANSISTOR;MPS2222A	
Q404	02139-201-210	TRANSISTOR;KSR2001	
Q405	02139-104-220	TRANSISTOR;MPS2222A	
Q406	02139-104-230	TRANSISTOR;MTP2N85	
Q407	02139-104-220	TRANSISTOR;MPS2222A	
Q408	02139-104-220	TRANSISTOR;MPS2222A	
Q410	02139-307-060	FET;VN0606M	
Q411	02159-301-220	TRANSISTOR;MJH16002A	
Q412	02139-307-060	FET;VN0606M	
Q413	02139-104-290	TRANSISTOR;PN2907	
Q414	02139-104-290	TRANSISTOR;PN2907	
Q415	02139-104-290	TRANSISTOR;PN2907	

REF. NOs Not Used : D423, Q302~Q400, Q402, Q409

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
		RESISTORS	
R301	01018-277-472	R-CARBON;RD 1/4T 4.7K-J	
R302	01018-277-472	R-CARBON;RD 1/4T 4.7K-J	
R303	01018-277-153	R-CARBON;RD 1/4T 15K-J	
R304	01018-277-752	R-CARBON;RD 1/4T 7.5K-J	
R305	01018-277-274	R-CARBON;RD 1/4T 270K-J	
R306	01018-277-474	R-CARBON;RD 1/4T 470K-J	
R307	01018-277-244	R-CARBON;RD 1/4T 240K-J	
R308	01018-277-229	R-CARBON;RD 1/4T 2.2-J	
R309	01016-377-221	R-CARBON;RD 1/2T 220-J(S)	
R310	01018-277-242	R-CARBON;RD 1/4T 2.4K-J	
R311	01018-277-122	R-CARBON;RD 1/4T 1.2K-J	
R312	01048-375-082	R-METAL,FILM;RM 1/2T 0.82-F	
R313	01045-527-331	R-METAL OXIDE;RS 2P 330-J	
R314	01085-527-470	R-METAL,OXIDE;RS 2P 47-J(S)	
R315	01018-277-561	R-CARBON;RD 1/4T 560-J	
R316	01018-377-472	R-CARBON;RD 1/2T 4.7K-J	
R401	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R402	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R403	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R404	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R405	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R406	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R407	01018-277-100	R-CARBON;RD 1/4T 10-J	
R409	01018-277-822	R-CARBON;RD 1/4T 8.2K-J	
R410	01018-277-332	R-CARBON;RD 1/4T 3.3K-J	
R411	0101l8-277-823	R-CARBONiRD 1/4T 82K-J	
R412	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R415	01018-277-153	R-CARBON;RD 1/4T 15K-J	
R417	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R418	01018-277-220	R-CARBON;RD 1/4T 22-J	
R419	01018-277-472	R-CARBON;RD 1/4T 4.7K-J	
R420	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R421	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R422	01018-277-225	R-CARBON;RD 1/4T 2.2M-J	
R423	01018-277-102	R-CARBON;RD 1/4T 1K-J	▲
R424	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R425	01018-277-683	R-CARBON;RD 1/4T 68K-J	
R426	01048-375-154	R-METAL, FILM;RM 1/2T 150K-T	
R427	01048-375-154	R-METAL, FILM;RM 1/2T 150K-T	
R428	01048-375-154	R-METAL, FILM;RM 1/2T 150K-T	
R429	01048-275-202	R-METAL,FILM;RM 1/4T 2.0K-F	
R430	01018-277-104	R-CARBON;RD 1/4T 100K-J	
R431	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R432	01018-277-229	R-CARBON;RD 1/4T 2.2-J	
R433	01088-375-189	R-METAL,FILM;RM 1/2T 1.8-F(S)	
R434	01018-277-393	R-CARBON;RD 1/4T 39K-J	

REF. NOs Not Used : R317~R400, R408, R413, R141, R416

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
R435	01018-277-331	R-CARBON;RD 1/4T 330-J	
R436	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R437	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R438	01016-377-104	R-CARBON;RD 1/2T 100K-J	
R439	01018-277-221	R-CARBON;RD 1/4T 220-J	
R440	01018-277-152	R-CARBON;RD 1/4T 1.5K-J	
R441	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R442	01085-627-181	R-METAL,OXIDE(M);RS 3P 180-J	
R443	01016-377-221	R-CARBON;RD 1/2T 220-J(S)	
R444	01018-277-220	R-CARBON;RD 1/4T 22-J	
R445	01085-527-221	R-METAL,OXIDE;RS 2P 220-J(S)	
R446	01045-527-821	R-METAL,OXIDE;RS 2P 820-J	
R447	01016-377-221	R-CARBON;RD 1/2T 220-J(S)	
R448	01018-277-220	R-CARBON;RD 1/4T 22-J	
R449	01018-277-181	R-CARBON;RD 1/4T 180-J	▲
R450	01018-277-472	R-CARBON;RD 1/4T 4.7K-J	
R451	01018-277-681	R-CARBON;RD 1/4T 680-J	
R452	01018-277-472	R-CARBON;RD 1/4T 4.7K-J	
R453	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R454	01018-377-272	R-CARBON;RD 1/2T 2.7K-J	
R455	01018-277-153	R-CARBON;RD 1/4T 15K-J	▲
R456	01048-275-134	R-METAL,FILM;RM 1/4T 130K-F	
R457	01018-277-100	R-CARBON;RD 1/4T 10-J	
R458	01045-427-100	R-METAL OXIDE;RS 1P 10-J	
R459	01018-277-822	R-CARBON;RD 1/4T 8.2K-J	
R460	01018-277-183	R-CARBON;RD 1/4T 18K-J	
R461	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R462	01018-227-821	R-CARBON; RD 1/4P 820-J	▲
R463	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R464	01048-375-154	R-METAL, FILM;RM 1/2T 150K-T	
R465	01048-375-154	R-METAL, FILM;RM 1/2T 150K-T	
		ICs	
IC301	02119-101-200	IC-VERT;TDA1670	
IC401	02109-307-050	IC-CMOS PLL;MC14046B	
IC402	02119-601-940	IC-PWM CONTROLLER;UC3842	
IC403	02119-601-700	IC-REGULATOR ; MC7812C,SST	
IC404	02119-201-510	IC-OP AMP;KF351	
IC405	02119-601-420	IC-SHUNT REGULATOR;TL431C	▲
		CONTROLS	
VR301	01241-110-014	VR-SEMI;CET 117A B200K (V-SIZE)	
VR302	01241-110-005	VR-SEMI;CET 117A B50K (V-LINEARITY)	
VR303	01241-110-008	VR-SEMI;CET 117A B10K (VHOLD)	
VR304	01241-110-002	VR-SEMI;CET 117A B1K (H-SIDE PIN)	
VR305	01241-110-002	VR-SEMI;CET 117A B1K (V-CENTER)	

REF. NOs Not Used :IC302~IC400

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
VR401	01241-110-008	VR-SEMI;CET 117A B10K (H-HOLD)	
VR402	01241-110-002	VR-SEMI;CET 117A B1K (H-WIDTH)	
VR403	01296-101-001	VR-WIRE,WOUND;68810-003/005 3W680HM STYPE	(H-CENTER)
VR404	01241-110-010	VR-SEMI;CET 117A B100K (HIGH VOLTAGE ADJ)	
		CONNECTORS	
CN301	03344-156-140	CONNECTOR-WAFER;5267-04A MOLEX(TO VIDEO)	
CN302	03344-159-010	CONNECTOR-WAFER;5096-02C(MOLEX) (V-DY)	
CN401	03344-112-070	CONNECTOR-WAFER;5273-08A (TO POWER)	
CN402	03344-112-030	CONNECTOR-WAFER;5273-04A (MOLEX) (H-DY)	
CN403	03344-117-150	CONNECTOR-WAFER;5277-08A (TP FBT)	
CN404	03344-159-020	CONNECTOR-WAFER;5096-03C MOLEX	
CN405	03344-117-150	CONNECTOR-WAFER;5277-08A (TO H/V REGULATOR)	

REF. NOs Not Used : CN303~CN400

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C905-000-4100	ASSY-POWER PCB;CC9511	
		CAPACITORS	
C601	01535-829-104	C-M,PAPER;PME271M 610(0.1UF)	⚠
C602	01535-829-104	C-M,PAPER;PME271M 610(0.1UF)	⚠
C603	01535-829-472	C-M,PAPER;PME271Y 447(0.0047UF)	⚠
C604	01535-829-472	C-M,PAPER;PME271Y 447(0.0047UF)	⚠
C605	01417-344-102	C-CERAMIC,HK;CD45(T) F 50V 1000-Z	
C606	01607-910-471	C-ELEC 105 C;CE04W 250V 470M (25.4X50)	
C607	01607-910-471	C-ELEC 105 C HA;CE04W 250V 470M (25.4X50)	
C608	01502-554-473	C-POLYPROPYLENE; CQ922M 630V 0.047M-K	
C609	01419-901-220	C-CERAMIC,HK;CK45 B 1KV 220-K	
C610	01417-318-471	C-CERAMIC HK;CK45(T) B 50V 470-K	
C611	01417-318-471	C-CERAMIC HK;CK45(T) B 50V 470-K	
C612	01502-513-153	C-POLYPROPYLENE(MX);CQ922M 50V 0.015M-J	
C613	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C614	01417-344-102	C-CERAMIC,HK;CD45(T) F 50V 1000-Z	
C615	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C616	01607-905-220	C-ELECTROLYTIC; CE04W(T) 35V 22M (105C RA TYPE)	
C617	01509-125-590	C-POLYESTER;CQ921M 200V 0.1M-K	
C618	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C619	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C620	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C621	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C622	01607-909-101	C-ELEC. 105C; CE04W 160V 100MF 105C RA/KM	
C623	01607-908-680	C-ELECTROLYTIC;CE04W 100V 68M 105C RX	
C624	01607-905-102	C-ELEC 105'C;CE04W 35V 1000UF KM	
C625	01607-905-101	C-ELEC 105'C;CE04W 35V 100UF 105'C RA/KM	
C626	01607-905-101	C-ELEC 105'C;CE04W 35V 100UF 105'C RA/KM	
C627	01461-169-806	C-CERAMIC,AC;CKS45 B 250V 2200P-Z(DE0807E222Z250V)	
C628	01505-723-102	C-POLYESTER; CQ921M(T) 100V 0.001-J	
C629	01608-906-047	C-ELECTROLYTIC;CE04W(T) 50V 0.47M	
C630	01416-649-472	C-CERAMIC,HK;DE7150F 472M VA-1-KC	⚠
C631	01416-649-472	C-CERAMIC,HK;DE7150F 472M VA-1-KC	⚠
C632	01608-904-470	C-ELECTROLYTIC;CE04W(T) 25V 47M	
C633	01608-906-100	C-ELECTROLYTIC;CD04W(T) 50V 10M	
C634	01416-618-471	C-CERAMIC, HK; CK45 B 1KV 470-K	
		DIODES	
D601	02169-210-620	DIODE-BRIDGE;KBPC106	
D602	02169-301-527	DIODE;1N4948GP(T)	
D603	02169-301-527	DIODE;1N4948GP(T)	
D604	02169-301-417	DIODE;1N4148(T)	
D605	02169-301-417	DIODE;1N4148(T)	
D606	02169-301-070	DIODE;MUR4100	
D607	02169-301-070	DIODE;MUR4100	
D608	02169-208-500	DIODE;FE3D	
D609	02169-208-500	DIODE;FE3D	
D610	02169-208-500	DIODE;FE3D	
D611	02169-301-417	DIODE;1N4148(T)	

REF. NOs Not Used :

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
D612	02169-101-490	DIODE;1N4937GP	
D613	02169-301-417	DIODE;1N4148(T)	
D614	02189-301-417	DIODE;1N4148(T)	
D615	02169-301-417	DIODE;1N4148(T)	
		COILS AND TRANSFORMERS	
B601	02429-048-010	COIL-CHOKE;l.5UH + -20%	
L601	02429-857-110	COIL-CHOKE;280UH	
T601	02429-647-910	COIL-LINE FILTER;UF3438S, 100X100 TN	⚠
T602	02899-004-310	TRANS-SYNC;3MH (11X16MM)	
T603	02879-004-910	TRANS-SMPS;PQ5050 H7C1	⚠
		TANSISTORS	
Q601	02149-601-690	FET;MTH 8N90	
Q602	02139-307-060	FET;VN0606M	
Q603	02149-601-811	FET;MPF 910	
Q604	02179-002-020	TRIAC;MAC210A6	
Q605	02179-002-020	TRIAC;MAC210A6	
		RESISTORS	
R601	01028-378-334	R-COMPOSITION;RC 1/2T 330K-K	⚠
R602	01018-277-221	R-CARBON;RD 1/4T 220-J	
R603	01045-427-104	R-METAL,OXIDE;RS 1P 100K-J	
R604	01045-427-104	R-METAL,OXIDE;RS 1P 100K-J	
R606	01085-627-104	R-METAL,OXIDE;RS 3P 100K-J(S)	
R607	01045-527-682	R-METAL,OXIDE;RS 2P 6.8K-J	
R608	01038-217-228	R-WIRE, WOUND;RW 1P 0.22-J	
R609	01018-277-104	R-CARBON;RD 1/4T 100K-J	
R610	01018-277-229	R-CARBON;RD 1/4T 2.2-J	
R611	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R612	01018-277-104	R-CARBON;RD 1/4T 100K-J	
R613	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R614	01018-277-104	R-CARBON;RD 1/4T 100K-J	
R615	01048-275-513	R-METAL,FILM;RM 1/4T 51K-F	
R616	01018-277-202	R-CARBON;RD 1/4T 2K-J	
R617	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R618	01018-277-221	R-CARBON;RD 1/4T 220-J	
R619	01018-277-221	R-CARBON;RD 1/4T 220-J	
R620	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R621	01048-275-042	R-METAL,FILM;RD 1/4T 2.44K-F	
R622	01018-277-682	R-CARBON;RD 1/4T 6.8K-J	
R623	01048-375-154	R-METAL, FIlM;RM 1/2T 150K-T	

REF. NOs Not Used : R605

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
R624	01018-377-473	R-CARBON;RD 1/2T 47K-J	
R625	01018-377-152	R-CARBON;RD 1/2T 1.5K-J	
R626	01018-277-154	R-CARBON;RD 1/4T 150K-J	
R627	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R628	01018-277-220	R-CARBON;RD 1/4T 22-J	
R629	01018-277-222	R-CARBON; RD 1/4T 2.2K-J	
R630	01045-527-682	R-METAL,OXIDE;RS 2P 6.8K-J	
R631	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R632	01085-627-104	R-METAL,OXIDE; RS 3P 100K-J(S)	
R633	01016-377-471	R-CARBON;RD 1/2T 470-J(S)	
R634	01016-377-391	R-CARBON; RD 1/2T 390-J(S)	
		ICS	
IC601	02119-601-940	IC-PWM CONTROLLER;UC3842	
IC602	02119-901-410	OPTO-COUPLER;MOC3021	
IC603	02119-901-280	OPTO-COUPLER;CNY17-2	
IC604	02119-601-420	IC-SHUNT REGULATOR;TL431C	
		CONTROLS	
V601	02189-102-010	VARISTOR;V150-LA10A	
V602	02189-102-010	VARISTOR;V150-LA10A	
NTH601	02189-601-370	THERMISTOR-N;NTH5013	
NTH602	02189-601-370	THERMISTOR-N;NTH5013	
PTH110	02189-605-040	POSISTOR;PTH451C06BG080N140	
PTH220	02189-605-470	POSISTOR;PTH451C40BG200N270	
VR601	01241-108-001	VR-SEMI;CET 92A B200 (B + ADJ)	
		CONNECTORS	
CN601	03344-112-070	CONNECTOR-WAFER;5273-08A (TO DEFLECTION)	
CN602	03344-156-140	CONNECTOR-WAFER;5267-04A MOLEX (TO LED & MANUAL-D)	
CN603	03344-159-010	CONNECTOR-WAFER;5096-02C(MOLEX) (AC INPUT)	
CN604	03344-159-010	CONNECTOR-WAFER;5096-02C(MOLEX) (TO D-COIL)	
CN605	03344-112-040	CONNECTOR-WAFER;5273-05A(MOLEX) (TO VIDEO)	
CN607	03344-159-030	CONNECTOR-WAFER;5096-04C(MOLEX)	
CN608	03344-112-040	CONNECTOR-WAFER;5273-05A(MOLEX)	
GT602	03124-700-810	PIN-GT; 14.2MM 2.35PI	
Q601A	03914-100-340	PLATE-MICA; 5-13X19 TO.09 RECT	
Q606A	03914-100-340	PLATE-MICA; 5-13X19 TO.09 RECT	
Q601B	03934-103-110	INSULATOR-TR; 4.5-8D 2-2H N66 V-0	
Q606B	03934-103-110	INSULATOR-TR; 4.5-8D 2-2H N66 V-0	

REF. NOs Not Used :

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C905-000-4110	ASSY-VIDEO PCB;CC9511	
		CAPACITORS	
C101	01607-906-100	C-ELEC.105C;CE04W(T) 50V 10M 105C RA/KM	
C102	01505-723-103	C-POLYESTER;CQ92lM(T) 100V 0.01-J	
C103	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C104	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C105	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C106	01407-057-330	C-CERAMIC,TEMP;CC45(T) CH 50V 33-J	
C107	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C108	01607-905-220	C-ELEC.105C;CE04W(T) 35V 22M 105C RA TYPE	
C109	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C110	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C111	01607-908-470	C-ELECTROLYTIC;CE04W 100V 47M 105C RA/KM	
C112	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C113	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C114	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C118	01407-057-470	C-CERAMIC TEMP;CC45(T) CH 50V 47-J	
C119	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C121	01607-906-100	C-ELEC.105C;CE04W 50V 10M 105C RA/KM	
C122	01505-723-103	C-POLYESTER;CQ92lM(T) 100V 0.01-J	
C123	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C124	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C125	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C126	01407-057-330	C-CERAMIC,TEMP;CC45(T) CH 50V 33-J	
C127	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C128	01608-904-100	C-ELECTROLYTIC;CE04W(T) 25V 10M	
C129	01400-150-l04	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C130	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C131	01607-908-470	C-ELECTROLYTIC;CE04W 100V 47M 105C RA/KM	
C132	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C133	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C134	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C138	01407-057-470	C-CERAMIC TEMP;CC45(T) CH 50V 47-J	
C139	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C141	01607-906-100	C-ELEC.105C;CE04W 50V 10M 105C RA/KM	
C142	01505-723-103	C-POLYESTER;CQ92lM(T) 100V 0.01-J	
C143	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C144	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C145	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C146	01407-057-330	C-CERAMIC,TEMP;CC45(T) CH 50V 33-J	
C147	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C148	01607-905-220	C-ELEC.105C;CE04W(T) 35V 22M 105C RA TYPE	
C149	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C150	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C151	01607-908-470	C-ELECTROLYTIC;CE04W 100V 47M 105C RA/KM	
C152	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C153	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C154	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	

REF. NOs Not Used :C115, C116, C117, C120, C135~C137,C140

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
C158	01407-057-470	C-CERAMIC TEMP;CC45(T) CH 50V 47-J	
C159	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C161	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C162	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C163	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C164	01607-905-220	C-ELEC.105C;CE04W(T) 35V 22M 105C RA TYPE	
C165	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C166	01607-905-220	C-ELEC.105C;CE04W(T) 35V 22M 105C RA TYPE	
C167	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C170	01608-905-220	C-ELECTROLYTIC;CE04W(T) 35V 22M	
C171	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C172	01608-905-220	C-ELECTROLYTIC;CE04W(T) 35V 22M	
C173	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C174	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C175	01505-723-104	C-POLYESTER;CQ92lM(T) 100V 0.1M-J	
C176	01509-125-590	C-POLYESTER;CQ92lM 200V 0.1M-K	
C177	01509-125-590	C-POLYESTER;CQ921M 200V 0.1M-K	
C178	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C179	01609-403-200	C-ELECTROLYTIC;CE04W 160V 4.7M	
C180	01607-906-470	C-ELECTROLYTIC; 105C CE4W 50V 47MF RA/KM	
C181	01608-906-047	C-ELECTROLYTIC;CE04W(T) 50V 0.47M	
C182	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C183	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C184	01400-150-104	C-MONOLITHIC CERAMIC;A104Z1JZ5UF5TAAC	
C185	01505-723-562	C-POLYESTER;CQ82lM(T) 100V 0.0056M-J	
C186	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C187	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C188	01407-057-101	C-CERAMIC,TEMP;CC45(T) CH 50V 100J	
C189	01502-723-471	C-POLYPROPYLENE;CQ921M(T) 100V 470-J	
C190	01502-723-471	C-POLYPROPYLENE;CQ921M(T) 100V 470-J	
C191	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
C193	01505-723-102	C-POLYESTER;CQ92lM(T) 100V 0.001-J	
C194	01502-723-471	C-POLYPROPYLENE;CQ921M(T) 100V 470-J	
C195	01502-723-471	C-POLYPROPYLENE;CQ921M(T) 100V 470-J	
C196	01400-150-104	C-MONOLITHIC CERAMIC;A104Z17Z5UF5TAAC	
		DIODES	
D101	02169-301-417	DIODE;1N4148(T)	
D103	02169-201-057	DIODE;1N4001F	
D104	02169-201-057	DIODE;1N4001F	
D107	02169-301-417	DIODE;1N4148(T)	
D109	02169-201-057	DIODE;1N4001F	
D110	02169-201-057	DIODE;1N4001F	
D113	02169-301-417	DIODE;1N4148(T)	
D115	02169-201-057	DIODE;1N4001F	
D116	02169-201-057	DIODE;1N4001F	
D119	02169-301-417	DIODE;1N4148(T)	
D120	02169-301-417	DIODE;1N4148(T)	

REF. NOs Not Used :C155~C157, C160,C168,C169,C192, D102,D105~D106, D108,D111,D112,D114,D117,D118

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
D121	02169-301-417	DIODE;1N4148(T)	
D122	02169-301-417	DIODE;1N4148(T)	
D125	02169-301-417	DIODE;1N4148(T)	
D128	02169-402-030	DIODE-ZENER; 1N4751	
D129	02169-301-417	DIODE;1N4148(T)	
		COILS	
L104	02429-856-917	COIL-PEAKING;R-TYPE 0.39UH	
L105	02429-856-917	COIL-PEAKING;R-TYPE 0.39UH	
L106	02429-856-917	COIL-PEAKING;R-TYPE 0.39UH	
B101	02429-048-010	COIL-CHOKE; 1.5MH +-20%	
B102	02429-048-010	COIL-CHOKE; 1.5MH +-20%	
B103	02429-048-010	COIL-CHOKE; 1.5MH +-20%	
B104	02429-048-010	COIL-CHOKE; 1.5MH +-20%	
B105	02429-048-010	COIL-CHOKE; 1.5MH +-20%	
B106	02429-048-010	COIL-CHOKE; 1.5MH +-20%	
		TRASISTORS	
Q101	02139-302-350	TRANSISTOR;2SC3595 (R PRE AMP)	
Q102	02149-302-580	TRANSISTOR;2SC3597 (R AMP)	
Q103	02139-101-170	TRANSISTOR;2SA1402 (R BUFFER)	
Q104	02149-302-580	TRANSISTOR;2SC3597 (R BUFFER)	
Q106	02139-302-350	TRANSISTOR;2SC3595 (G PRE AMP)	
Q107	02149-302-580	TRANSISTOR;2SC3597 (G AMP)	
Q108	02139-101-170	TRANSISTOR;2SA1402 (G BUFFER)	
Q109	02149-302-580	TRANSISTOR;2SC3597 (G BUFFER)	
Q111	02139-302-350	TRANSISTOR;2SC3595 (B PRE AMP)	
Q112	02149-302-580	TRANSISTOR;2SC3597 (B AMP)	
Q113	02139-101-170	TRANSISTOR;2SA1402 (B BUFFER)	
Q114	02149-302-580	TRANSISTOR;2SC3597 (B BUFFER)	
Q116	02139-104-290	TRANSISTOR;PN2907	
Q117	02139-104-290	TRANSISTOR;PN2907	
Q118	02139-104-290	TRANSISTOR;PN2907	
Q119	02139-104-220	TRANSISTOR;MPS2222A	
Q120	02139-201-197	TRANSISTOR;KSR1001(T)	
Q101A	03934-704-810	PLATE BN THERMAL; TO-126	
Q102A	03934-704-810	PLATE BN THERMAL; TO-126	
Q104A	03934-704-810	PLATE BN THERMAL; TO-126	
Q106A	03934-704-810	PLATE BN THERMAL; TO-126	
Q107A	03934-704-810	PLATE BN THERMAL; TO-126	
Q109A	03934-704-810	PLATE BN THERMAL; TO-126	
Q111A	03934-704-810	PLATE BN THERMAL; TO-126	
Q112A	03934-704-810	PLATE BN THERMAL; TO-126	
Q114A	03934-704-810	PLATE BN THERMAL; TO-126	

REF. NOs Not Used : D123~D124, D126,D127, Q105, Q110, Q115, Q103A,Q105A,Q108A,Q110A,Q113A

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
		RESISTORS	
R101	01016-377-750	R-CARBON;RD 1/2T 75 OHM-J(S)	
R102	01018-277-100	R-CARBON;RD 1/4T 10-J	
R103	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R104	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R105	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R106	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R107	01018-277-561	R-CARBON;RD 1/4T 560-J	
R108	01018-277-221	R-CARBON;RD 1/4T 220-J	
R109	01018-377-330	R-CARBON;RD 1/2T 33-J	
R110	01018-277-100	R-CARBON;RD 1/4T 10-J	
R111	01018-277-101	R-CARBON;RD l14T 100-J	
R112	01018-277-100	R-CARBON;RD 1/4T 10-J	
R113	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R114	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R115	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R116	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R117	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R119	01018-277-100	R-CARBON;RD 1/4T 10-J	
R120	01018-277-100	R-CARBON;RD 1/4T 10-J	
R121	01016-377-750	R-CARBON;RD 1/2T 75 OHM-J(S)	
R122	01018-277-100	R-CARBON;RD 1/4T 10-J	
R123	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R124	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R125	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R126	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R127	01018-277-561	R-CARBON;RD 1/4T 560-J	
R128	01018-277-221	R-CARBON;RD 1/4T 220-J	
R129	01018-377-330	R-CARBON;RD 1/2T 33-J	
R130	01018-277-100	R-CARBON;RD 1/4T 10-J	
R131	01018-277-101	R-CARBON;RD 1/4T 100-J	
R132	01018-277-100	R-CARBON;RD 1/4T 10-J	
R133	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R134	01045-527-390	R-METAL OXIOE;RS 2P 39-J	
R135	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R136	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R137	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R139	01018-277-100	R-CARBON;RD 1/4T 10-J	
R140	01018-277-100	R-CARBON;RD 1/4T 10-J	
R141	01016-377-750	R-CARBON;RD 1/2T 75 OHM-J(S)	
R142	01018-277-100	R-CARBON;RD 1/4T 10-J	
R143	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R144	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R145	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R146	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R147	01018-277-561	R-CARBON;RD 1/4T 560-J	
R148	01018-277-221	R-CARBON;RD 1/4T 220-J	
R149	01018-377-330	R-CARBON;RD 1/2T 33-J	
R150	01018-277-100	R-CARBON;RD 1/4T 10-J	
R151	01018-277-101	R-CARBON;RD 1/4T 100-J	

REF. NOs Not Used : R138

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
R152	01018-277-100	R-CARBON;RD 1/4T 10-J	
R153	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R154	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R155	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R156	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R157	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R159	01018-277-100	R-CARBON;RD 1/4T 10-J	
R160	01018-277-100	R-CARBON;RD 1/4T 10-J	
R161	01018-277-479	R-CARBON;RD 1/4T 4.7-J	
R163	01018-277-151	R-CARBON;RD 1/4T 150-J	
R164	01018-277-100	R-CARBON;RD 1/4T 10-J	
R165	01018-277-100	R-CARBON;RD 1/4T 10-J	
R166	01018-277-479	R-CARBON;RD 1/4T 4.7-J	
R167	01018-277-150	R-CARBON;RD 1/4T 15-J	
R168	01018-277-479	R-CARBON;RD 1/4T 4.7-J	
R169	01018-277-151	R-CARBON;RD 1/4T 150-J	
R170	01018-277-151	R-CARBON;RD 1/4T 150-J	
R172	01018-277-101	R-CARBON;RD 1/4T 100-J	
R174	01018-277-101	R-CARBON;RD 1/4T 100-J	
R175	01018-277-151	R-CARBON;RD 1/4T 150-J	
R176	01018-277-105	R-CARBON;RD 1/4T 1M-J	
R177	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R178	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R179	01018-277-105	R-CARBON;RD 1/4T 1M-J	
R180	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R181	01018-277-105	R-CARBON;RD 1/4T 1M-J	
R182	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R183	01018-277-562	R-CARBON;RD 1/4T 5.6K-J	
R184	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R185	01018-277-472	R-CARBON;RD 1/4T 4.7K-J	
R186	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R187	01018-277-153	R-CARBON;RD 1/4T 15K-J	
R188	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R189	01018-277-222	R-CARBON;RD 1/4T 2.2K-J	
R191	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R192	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R193	01018-277-475	R-CARBON;RD 1/4T 4.7M-J	
R194	01045-527-272	R-METAL,OXIDE;RS 2P 2.7K-J	
R196	01018-277-101	R-CARBON;RD 1/4T 100-J	
R197	01018-277-102	R-CARBON;RD 1/4T 1K-J	
R198	01018-277-223	R-cARBON;RD 1/4T 22K-J	
R199	01018-277-103	R-CARBON;RD 1/4T 10K-J	
R200	01018-277-152	R-CARBON;RD 1/4T 1.5K-J	
R201	01018-277-122	R-CARBON;RD 1/4T 1.2K-J	
R202	01045-527-272	R-METAL,OXIDE;RS 2P 2.7K-J	
R203	01016-377-103	R-CARBON;RD 1/2T 10K-J(S)	

REF. NOs Not Used :R158, R162, R171, R173, R190, R195

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
R204	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R205	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R206	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R207	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R208	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R209	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R210	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R211	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R212	01045-527-390	R-METAL OXIDE;RS 2P 39-J	
R213	01018-277-102	R-CARBON; RD 1/4T 1K-J	
		ICS	
IC101	02119-103-110	IC;LM1201 (R AMP)	
IC102	02119-103-110	IC;LM1201 (G AMP)	
IC103	02119-103-110	IC;LM1201 (B AMP)	
IC104	02119-601-700	IC-REGULATOR;MC7812C,SST	
IC105	02119-602-010	IC-REGULATOR;MC7805(SST)	
IC106	02109-104-600	IC;SN74LS221	
IC107	02109-104-260	IC;74HC86	
IC108	02109-104-950	IC;UC3709	
IC109	02109-104-600	IC; SN74LS221	
		CONTROLS	
VR101	01241-108-001	VR-SEMI;CET 92A B200 (R DRIVE)	
VR102	01241-108-001	VR-SEMI;CET 92A B200 (G DRIVE)	
VR103	01241-108-001	VR-SEMI;CET 92A B200 (B DRIVE)	
VR105	01201-900-010	VR-ROUND,SGL;18SN 20F B1K(M8)	
VR106	01241-108-007	VR-SEMI;CET 92A B10K (H-PHASE)	
VR107	01201-102-032	VR-ROUND,SGL;18SN 20F B10K(TAP)	
VR108	01241-108-011	VR-SEMI;CET 92A B1K (SUB CONTRAST)	
SW106	03519-108-110	SWITCH-SLIDE;SSSJ212K (NTSC/XOR SEL SW)	
		CONNECTORS	
CN101	03343-101-310	JACK;1P (RED)	
CN102	03343-101-310	JACK;1P (GREEN)	
CN103	03343-101-310	JACK;1P (BLUE)	
CN106	03344-154-010	CONNECTOR-WAFER;5268-03A (RED OUTPUT)	
CN107	03344-154-010	CONNECTOR-WAFER;5268-03A (GREEN OUTPUT)	
CN108	03344-154-010	CONNECTOR-WAFER;5268-03A (BLUE OUTPUT)	
CN109	03344-151-250	CONNECTOR-WAFER;5274-05A (TO POWER)	
CN110	03344-151-260	CONNECTOR-WAFER;5274-06A (TO CRT)	
CN111	03344-156-140	CONNECTOR-WAFER;5267-04A MOLEX (TO DEFLECTION)	
CN112	03344-156-140	CONNECTOR-WAFER;5267-04A MOLEX (TO STAND)	
CN113	03344-156-160	CONNECTOR-WAFER;5267-06A MOLEX (CONT & BRIGHT)	

REF. NOs Not Used : VR104, CN104~CN105

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C906-000-1920	ASSY-H/DEF OUT TR;C3897/G3DR	
Q409 D415 TR-PCB	02159-301-530 02169-302-410 03053-610-610	TRANSISTOR;2SC3897(W/MICA) DIODE;CTU-G3DR (W/MICA) CON-3P ASSY, H/DEF TR;5239-05 150MM	
	0C906-000-1840	ASSY-SELECTION S/W;CC9511	
SW601	03053-609-910 03519-108-210	CON-5P ASSY, SEL, S/W;5239-05 150MM SWITCH-SLIDE;V802-12-SS-105-Q	
	0C906-000-1850	ASSY-INLET SOCKET;CC9511	
INLET	03053-609-810 03054-222-490 03114-700-610 03354-706-410	CON-2P ASSY, INLET-SOCKET;5239-03 150MM GROUND,WIRE ASSY;MD-1260R LUG-TERMINAL;JST SRB51T-5 SOCKET AC-INLET;AC008(0.8T)	
LED	0C905-000-4290	ASSY-LED;CC9511	
LED	02309-110-040 03344-156-120	LED;LD701MG CONNECTOR-WAFER;5267-02A(MOLEX)	
	0C905-000-4140	ASSY-FBT;CC9511	
FBT	02859-130-810 03344-117-150	TRANS-FLYBACK;C88LUI-RC CONNECTOR-WAFER;5277-08A	

REF. NOs Not Used :

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C905-000-4150	ASSY-CRT PCB;CC9511	
		CAPACITORS	
C701	01509-125-590	C-POLYESTER;CQ921M 200V 0.1M-K	
C702	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C703	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C704	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C705	01509-125-590	C-POLYESTER;CQ921M 200V 0.1M-K	
C706	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C707	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C708	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C709	01509-125-590	C-POLYESTER;CQ921M 200V 0.1M-K	
C710	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C711	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C712	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C713	01419-901-100	C-CERAMIC,HK;CK45 B 1KV 0.01M-K	
C714	01505-723-104	C-POLYESTER;CQ921M(T) 100V 0.1M-J	
C715	01609-403-200	C-ELECTROLYTIC; CE04W 160V 4.7M	
C716	01419-901-100	C-CERAMIC, HK; CK45 B 1KV 0.01U-K	
C717	01505-723-104	C-POLYESTER; CQ921M(T) 100V 0.1M-J	
C718	01607-905-220	C-ELECTROLYTIC; CE04W(T) 35V 22M (105C RA TYPE)	
		DIODES	
D701	02169-301-417	DIODE;1N4148(T)	
D702	02169-301-417	DIODE;1N4148(T)	
D703	02169-301-417	DIODE;1N4148(T)	
D704	02169-301-417	DIODE;1N4148(T)	
D705	02169-301-417	DIODE;1N4148(T)	
D706	02169-301-417	DIODE;1N4148(T)	
D707	02169-202-080	DIODE; ISS83	
D708	02169-202-080	DIODE; ISS83	
D709	02169-201-067	DIODE;1N4002(T)	
		TRANSISTORS	
Q701	02139-204-080	TRANSISTOR; MPSA92 (RED BIAS)	
Q702	02139-204-080	TRANSISTOR; MPSA92 (GREEN BIAS)	
Q703	02139-204-080	TRANSISTOR; MPSA92 (BLUE BIAS)	
		RESISTORS	
R701	01018-277-104	R-CARBON;RD 1/4T 100K-J	
R702	01028-378-390	R-COMPOSITION;RC 1/2T 39-K	
R703	01018-277-104	R-CARBON;RD 1/4T 100K-J	
R704	01018-277-473	R-CARBON;RD 1/4T 47K-J	
R705	01018-277-683	R-CARBON;RD 1/4T 68K-J	
R706	01028-378-390	R-COMPOSITION;RC 1/2T 39-K	
R707	01018-277-104	R-CARBON;RD 1/4T 100K-J	

REF. NOs Not Used :

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
R708	01028-378-390	R-COMPOSITION;RC 1/2T 39-K	
R709	01028-378-390	R-COMPOSITION;RC 1/2T 39-K	
R710	01057-527-189	R-FUSIBLE;RF 2P 1.8-J	
R711	01028-378-390	R-COMPOSITION;RC 1/2T 39-K	
R712	01057-527-189	R-FUSIBLE; RF 2P 1.8J	
		CONTROLS	
SA701	04569-002-210	SPARK GAP;DSP-301N	
SA702	04569-002-210	SPARK GAP;DSP-301N	
SA703	04569-002-210	SPARK GAP;DSP-301N	
SA704	04569-002-210	SPARK GAP;DSP-301N	
VR701	01241-110-010	VR-SEMI;CET 117A B100K (RED BIAS)	
VR702	01241-110-010	VR-SEMI;CET 117A B100K (BLUE BIAS)	
		CONNECTORS	
CN701	03053-609-710	CON-2P ASSY, VID-CRT;5264-03 100MM (RED OUTPUT)	
CN702	03053-609-710	CON-2P ASSY, VID-CRT;5264-03 100MM (GREEN OUTPUT)	
CN703	03053-609-710	CON-2P ASSY, VID-CRT;5264-03 100MM (BLUE OUTPUT)	
CN704	03053-610-110	CON-6P ASSY, VID-CRT;5239-06 100MM (TO VIDEO)	
CN705	03124-700-810	PIN-GT; 14.2MM 2.35PI	
SK701	03354-707-810	SOCKET-CRT;S008746(H/F)	

REF. NOs Not Used :

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C904-000-4430	ASSY-SHIELD STAND;CC95ll	
		CAPACITORS	
C801	01608-903-470	C-ELECTROLYTIC;CE04W(T) 16V 47M	
C802	01608-903-110	C-ELECTROLYTIC;CE04W(T) 16V 10M	
C803	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
C811	01608-903-470	C-ELECTROLYTIC;CE04W(T) 16V 47M	
C812	01608-903-110	C-ELECTROLYTIC;CE04W(T) 16V 10M	
C813	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
C821	01608-903-470	C-ELECTROLYTIC;CE04W(T) 16V 47M	
C822	01608-903-110	C-ELECTROLYTIC;CE04W(T) 16V 10M	
C823	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
C831	01608-903-470	C-ELECTROLYTIC; CE04W(T) 16V 47M	
C832	01608-903-110	C-ELECTROLYTIC;CE04W(T) 16V 10M	
C833	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
C834	01608-903-470	C-ELECTROLYTIC;CE04W(T) 16V 47M	
C835	01505-723-103	C-POLYESTER;CQ921M(T) 100V 0.01-J	
		DIODES	
D801	02169-301-417	DIODE;1N4148(T)	
D802	02169-301-417	DIODE;1N4148(T)	
D811	02169-301-417	DIODE;1N4148(T)	
D812	02169-301-417	DIODE;1N4148(T)	
D821	02169-301-417	DIODE;1N4148(T)	
D822	02169-301-417	DIODE;1N4148(T)	
		COIL	
L801	02429-855-917	COIL-PEAKING;BAL03 ST 2R7K	
		TRANSISTORS	
Q801	02139-307-460	TRANSISTOR;MPS3866A (RED BUFFER)	
Q802	02139-307-460	TRANSISTOR;MPS3866A	
Q811	02139-307-460	TRANSISTOR;MPS3866A (GREEN BUFFER)	
Q812	02139-307-460	TRANSISTOR;MPS3866A	
Q821	02139-307-460	TRANSISTOR;MPS3866A (BLUE BUFFER)	
Q822	02139-307-460	TRANSISTOR;MPS3866A	

REF. NOs Not Used :

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
		RESISTORS	
R801	01016-377-750	R-CARBON;RD 1/2T 75 OHM-J(S)	
R802	01018-277-273	R-CARBON;RD 1/4T 27K-J	
R803	01018-277-183	R-CARBON;RD 1/4T 18K-J	
R804	01018-277-181	R-CARBON;RD 1/4T 180-J	
R805	01018-277-152	R-CARBON;RD 1/4T 1.5K-J	
R806	01018-277-181	R-CARBON;RD 1/4T 180-J	
R807	01018-277-331	R-CARBON;RD 1/4T 330-J	
R808	01018-277-569	R-CARBON;RD 1/4T 5.6-J	
R809	01016-377-151	R-CARBON;RD 1/2T 150-J(S)	
R811	01016-377-750	R-CARBON;RD 1/2T 75 OHM-J(S)	
R812	01018-277-273	R-CARBON;RD 1/4T 27K-J	
R813	01018-277-183	R-CARBON;RD 1/4T 18K-J	
R814	01018-277-181	R-CARBON;RD 1/4T 180-J	
R815	01018-277-152	R-CARBON;RD 1/4T 1.5K-J	
R816	01018-277-181	R-CARBON;RD 1/4T 180-J	
R817	01018-277-331	R-CARBON;RD 1/4T 330-J	
R818	01018-277-569	R-CARBON;RD 1/4T 5.6-J	
R819	01016-377-151	R-CARBON;RD 1/2T 150-J(S)	
R821	01016-377-750	R-CARBON;RD 1/2T 75 OHM-J(S)	
R822	01018-277-273	R-CARBON;RD 1/4T 27K-J	
R823	01018-277-183	R-CARBON;RD 1/4T 18K-J	
R824	01018-277-181	R-CARBON;RD 1/4T 180-J	
R825	01018-277-152	R-CARBON;RD 1/4T 1.5K-J	
R826	01018-277-181	R-CARBON;RD 1/4T 180-J	
R827	01018-277-331	R-CARBON;RD 1/4T 330-J	
R828	01018-277-569	R-CARBON;RD 1/4T 5.6-J	
R829	01016-377-151	R-CARBON;RD 1/2T 150-J(S)	
		SWITCHS	
SW801	03529-705-210	SWITCH-PUSH;JPVB-2202B(RED SWITCH)	
SW802	03529-705-210	SWITCH-PUSH;JPVB-2202B(GREEN SWITCH)	
SW803	03529-705-210	SWITCH-PUSH;JPVB-2202B(BLUE SWITCH)	
		CONNECTORS	
CN801	03399-100-110	JACK-BNC;227754-1 (AMP) (RED)	
CN802	03399-100-110	JACK-BNC;227754-1 (AMP) (GREEN)	
CN803	03399-100-110	JACK-BNC;227754-1 (AMP) (BLUE)	
CN804	03399-100-110	JACK-BNC;227754-1 (AMP) (H/V)	
CN805	03399-100-110	JACK-BNC;227754-1 (AMP) (V)	
CN811	03343-101-310	JACK; 1P	
CN812	03343-101-310	JACK; 1P	
CN813	03343-101-310	JACK; 1P	
	03053-300-420	GND WIRE-TBC ASSY;0.16X5X24 500M/M	
	04709-088-060	FUSE;250V,3A 51S	⚠

LOC. NO.	CODE NO.	DESCRIPTION : SPECIFICATION	REMARK
	0C905-000-4170	ASSY-AC, INPUT;CC9511	
	03053-817-320	POWER-CORD;EL702 SVT 18AWG,3CX850MM	
	03054-222-490	GROUND,WIRE ASSY;MD-1260R	
	03354-706-910	SOCKET-NOISE FILTER;IA5-S32 250V 3A	
	03364-700-310	HOLDER-FUSE;345621 (20MM)	
	02479-015-010	COIL-DEGAUSSING; 75TX0.65 CC9511	

CC9511 DIFFERENT COMPONENT LIST			
	for Europe		
	03054-812-510	POWER-CORD, AC; LP-34(A)/LS-13 H05 6FT BLACK	
CN602A	03053-609-510	CON-4P ASSY, D/S, LED; 5264-04 700MM (CONNECTED TO CN602 OF POWER PCB)	
CN106A	03053-609-710	CON-2P ASSY, VID-CRT; 5264-03 100MM (CONNECTED TO CN106,107,108 OF VIDEO PCB)	
CN110A	03053-610-110	CON-6P ASSY, VID-CRT; 5239-06 100MM (CONNECTED TO CN110 OF VIDEO PCB)	
	04709-084-970	FUSE; 50T 250V 3.15A 20mm-C SEMKO	⚠
	03053-404-210	CABLE-SIG, INT, ASSY; 2990 LVCC 890MM (CONNECTED BETWEEN CN811 & CN101, CN812 & CN102, CN813 & CN103, CN807 & CN112)	
	03053-818-420	INT, P/CORD-ASSY; LS-13L H05 VV-F 310.75 850MM	⚠
	for America		
	03054-812-520	POWER-CORD, ASSY; LP31.LS13 SVT3/18AWG 6FT BLACK	
CN602A	03053-611-610	CONNECTOR 6P-ASSY; 5264-04, 700MM (FCC) (CONNECTED TO CN602 OF POWER PCB)	
CN106A	03503-611-510	CONNECTOR 6P-ASSY; 5264-03, 200MM (FCC) (CONNECTED TO CN106,107,108 OF VIDEO PCB)	
CN110A	03053-611-410	CONNECTOR 6P-ASSY; 5239-06, 200MM (FCC) (CONNECTED TO CN110 OF VIDEO PCB)	
	04709-088-060	FUSE; 250V, 3A 51S	⚠
	03053-404-610	CABLE-SIG, INT-ASSY; 2990 LVCC, 890mm (FCC) (CONNECTED BETWEEN CN811 & CN101, CN812 & CN102, CN813 & CN103, CN807 & CN112)	
	03053-818-410	INT P/CORD-ASSY; EL702 SVT 18AWG 3C 850mm	⚠
	for Domestic		
	03053-815-610	POWER-CORD AC; LS-14/LS-13 SVT 18AWGx3C 4FT	

SCHEMATIC DIAGRAM

MODEL NO: CC9511

CHASSIS NO: VWA

WARNING : BEFORE SERVICING THIS CHASSIS READ THE "X-RAY RADIATION PRECAUTION" SAFETY PRECAUTION AND PRODUCT SAFETY NOTICE IN MANUAL.

WARNING : THIS EQUIPMENT CONTAINS SAFETY CRITICAL COMPONENTS. ALL PARTS SHOWN IN THE SHADED AREA OF THE SCHEMATIC ARE IMPORTANT TO SAFETY. REPLACE SAFETY CRITICAL COMPONENT ONLY WITH MANUFACTURER'S RECOMENDED PARTS LIST FOR EXACT REPLACEMENTS."

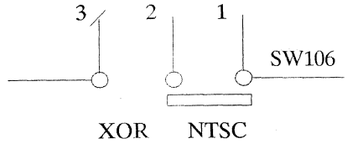
CAUTION : THE SHADED AREA AND MARKS IN THE SCHEMATIC DIAGRAM AND PARTS LIST COMPONENT THAT HAVE SPECIAL CHARACTERISTICS IMPORTANT IN THE ORIGINAL CIRCUIT OR SPECIFIED IN THF PARTS LIST. BEFORE REPLACING ANY OF THESE COMPONENTS. READ CAREFULLY THE PRODUCT SAFETY NOTICE. DO NOT DEGRADE IN THE SAFETY OF THE EQUIPMENT THROUGH IMPROPER SERVICING.

NOTE

1. RESISTANCE IS SHOWN IN OHM K=1,000 M=1,000,000 RATED POWER OF RESISTOR NOT NOTED IN SCHEMATIC DIAGRAM IS 1/4W.
2. CAPACITANCE IS SHOWN IN UF P=UUF. RATED VOLTAGE OF CONDENSER NOT NOTED IN SCHEMATIC DIAGRAM IS 50V.
3. THIS SCHEMATIC DIAGRAM IS SUBJECT TO CHANGE WITHOUT NOTICE FOR FAR FUTHER IMPROVEMENT.

CORRECTION TABLE

1. Blurred Printing (This Page)
(Video Circuit Left Bottom)

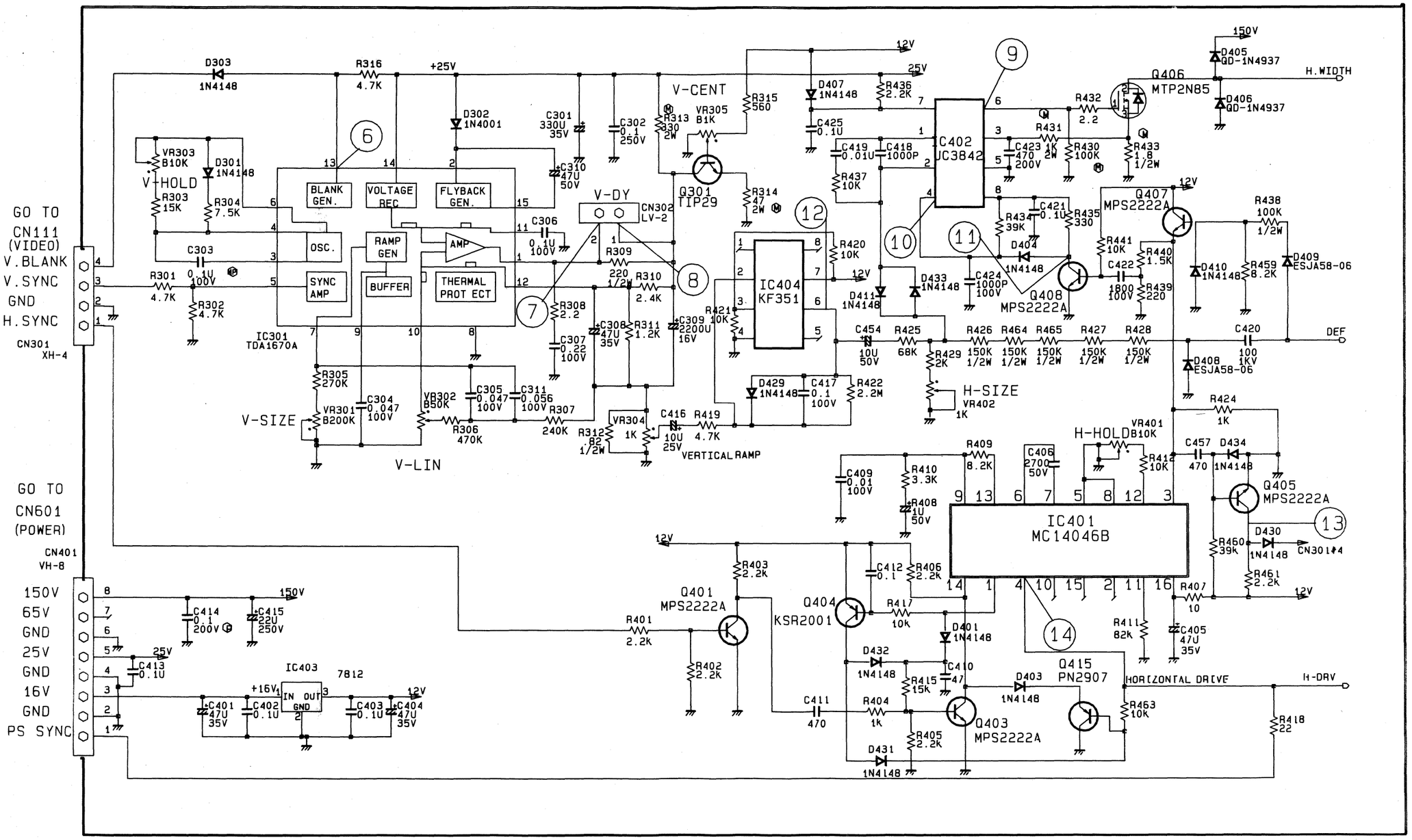


2. BACK COVER

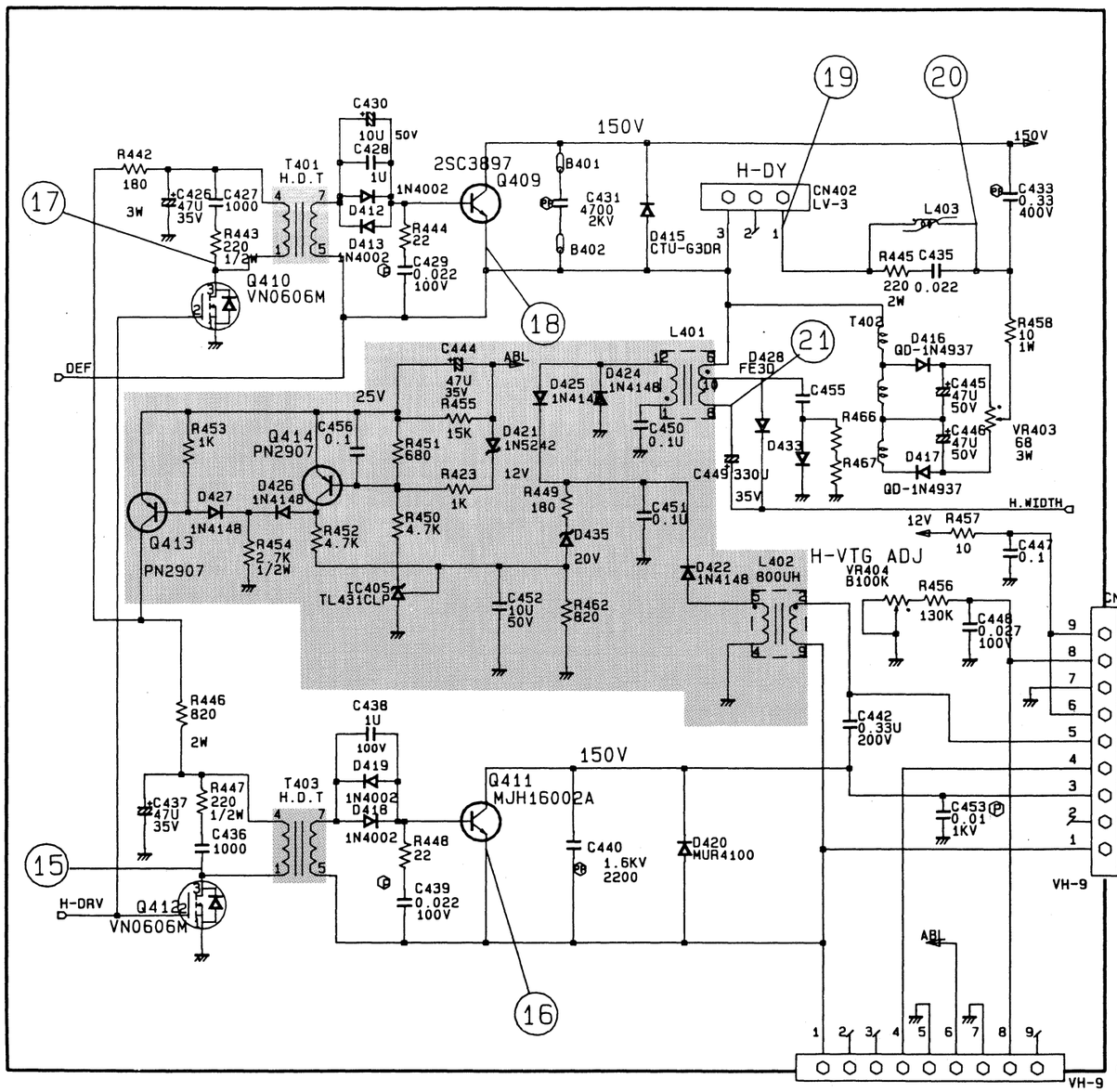
Telex. SECOND K2580
-----> Telex. SECONO K24580

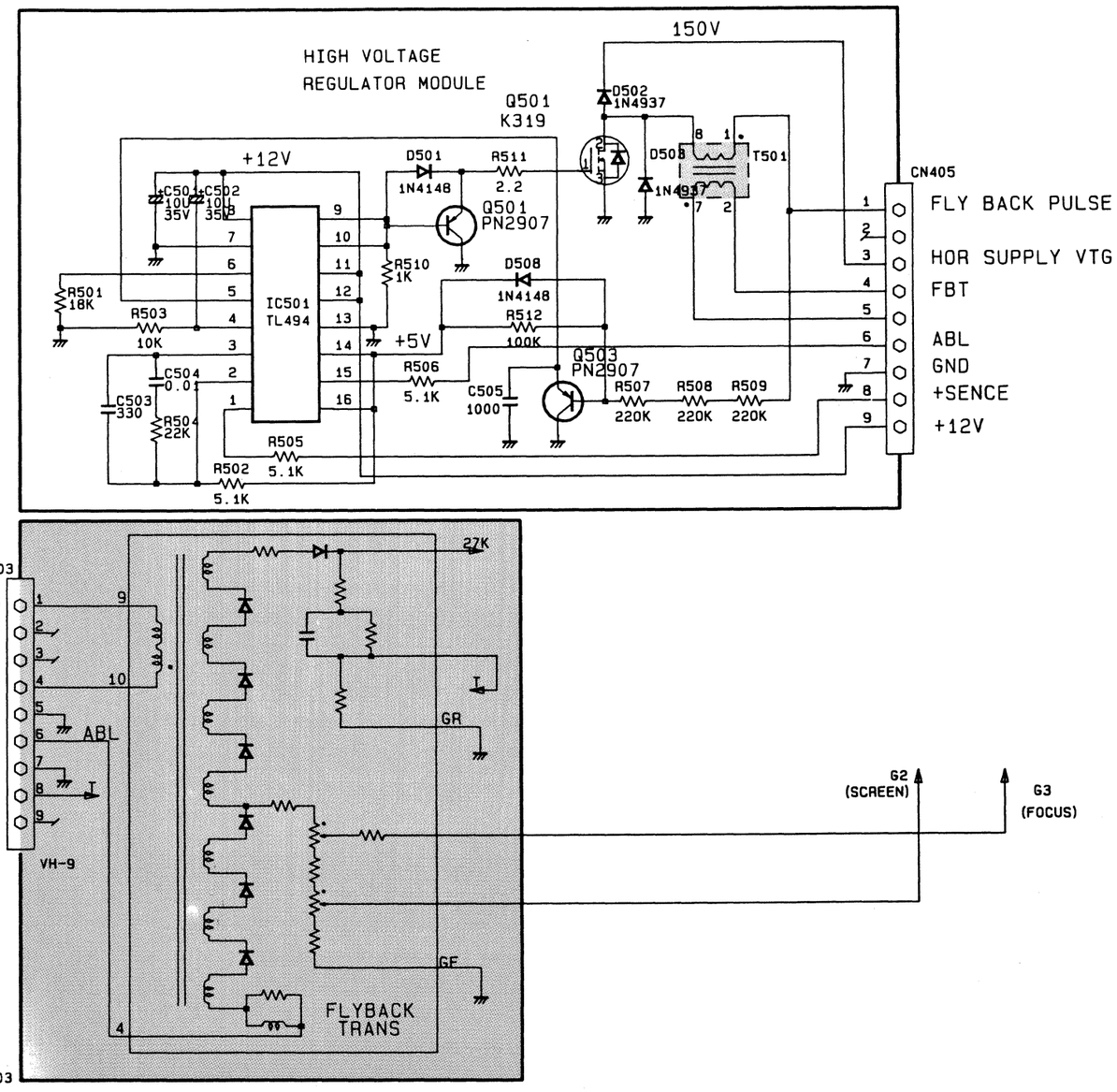
SCHMATIC DIAGRAM (VIDEO)

SCHMATIC DIAGRAM (DEFLECTION)



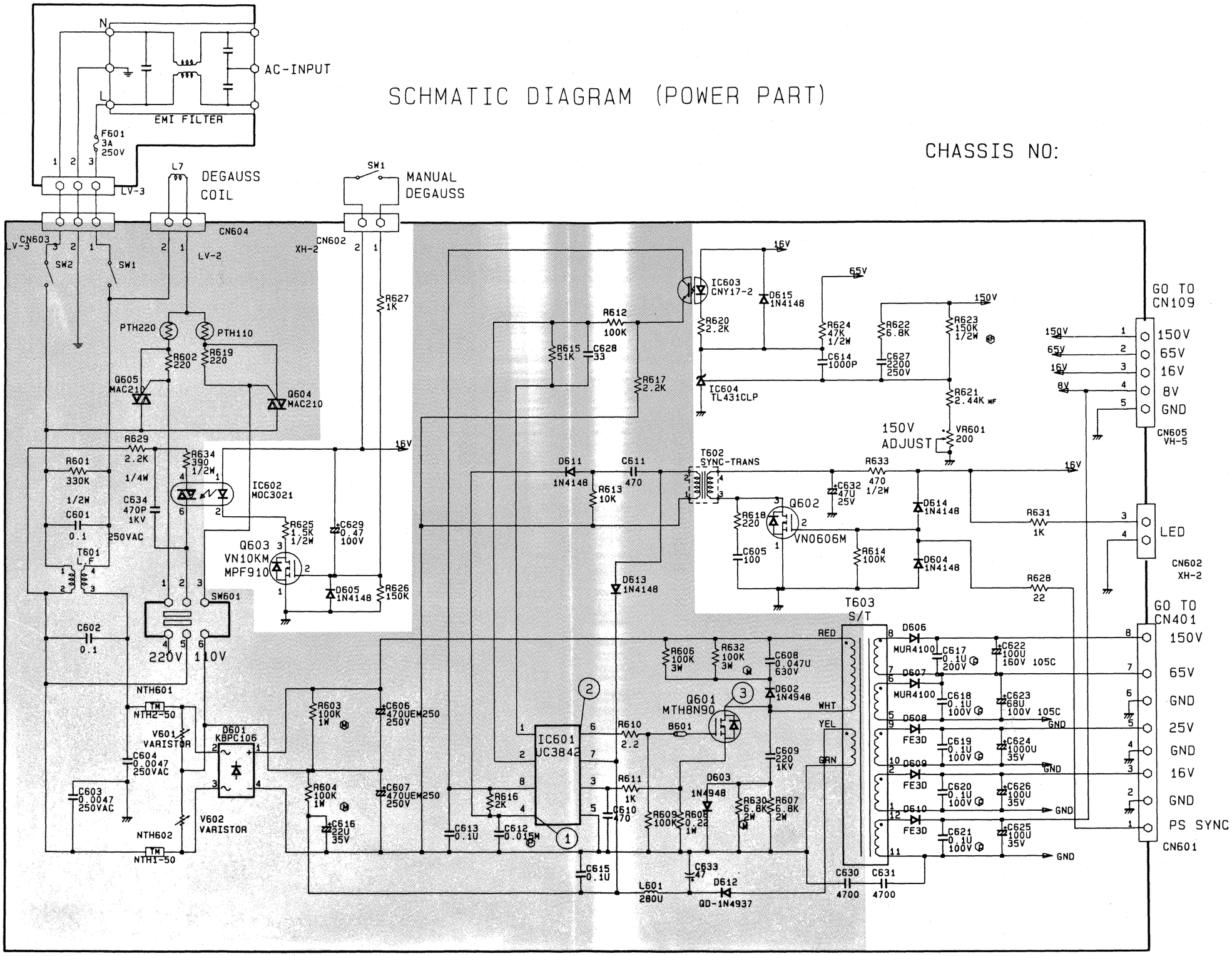
SCHMATIC DIAGRAM (DEFLECTION) CONTINUED...



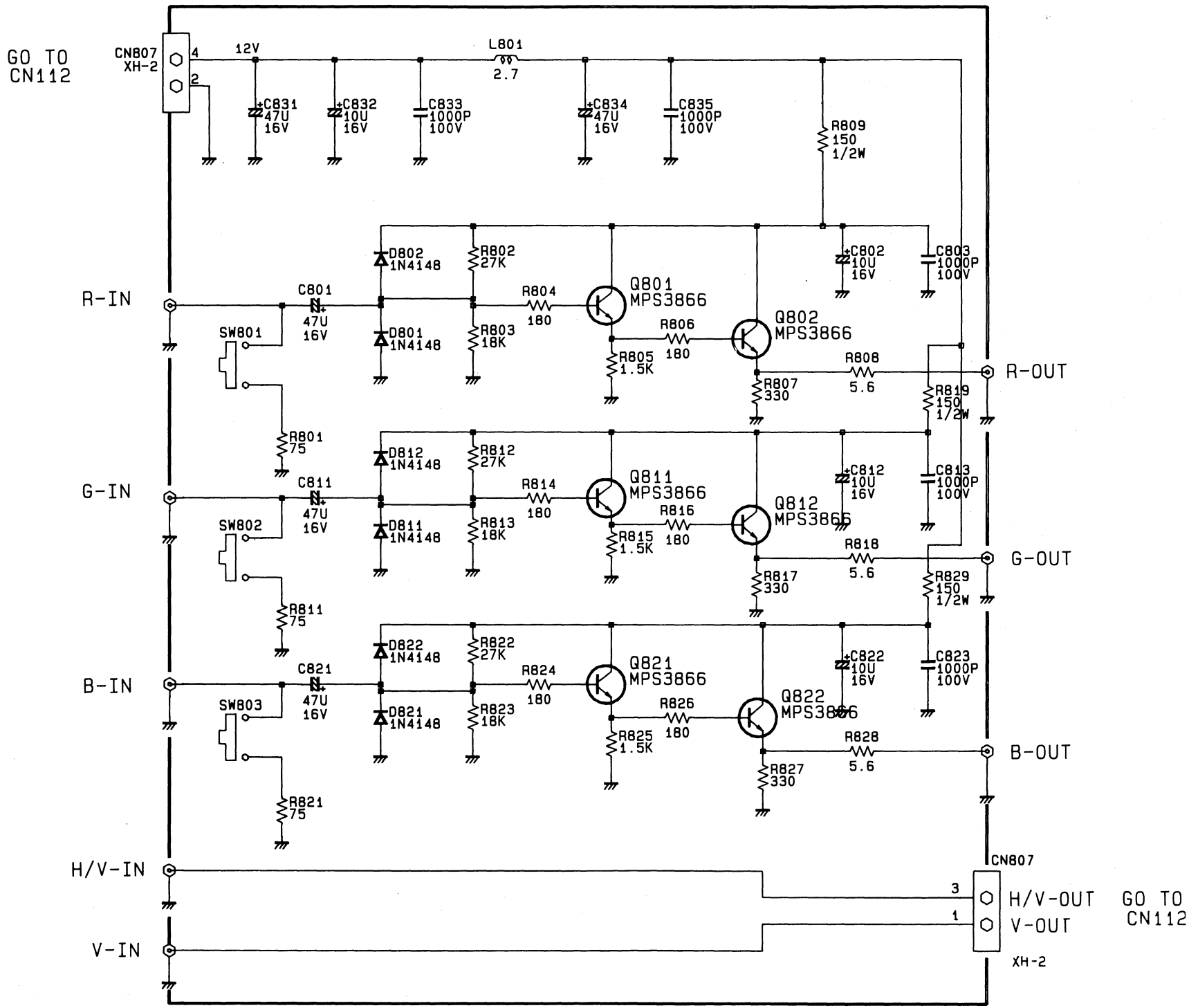


SCHMATIC DIAGRAM (POWER PART)

CHASSIS NO:



SCHEMATIC DIAGRAM (STAND PART)



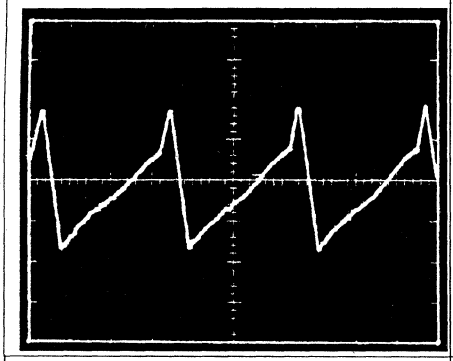
WAVEFORMS

1. The voltage level and waveform at each point are given below on 120VAC power when this set is connected to a personal computer with a signal input at a white pattern with contrast max.

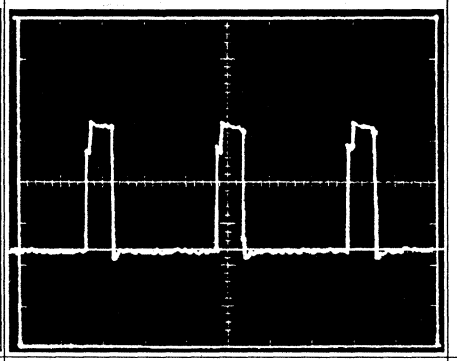
2. indicates the waveform check points. (In the chart, waveforms are measured from the point indicated to chassis ground.)

3. the following words indicate test point, point component, peak-to-peak voltage.

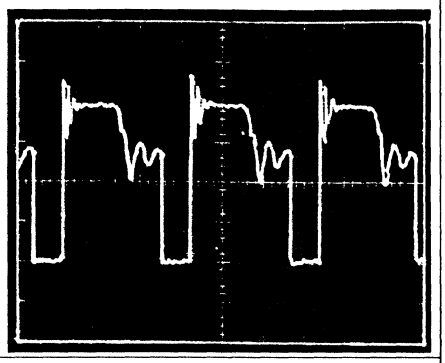
1. IC601 PIN 4 1.7 V_{P-P}



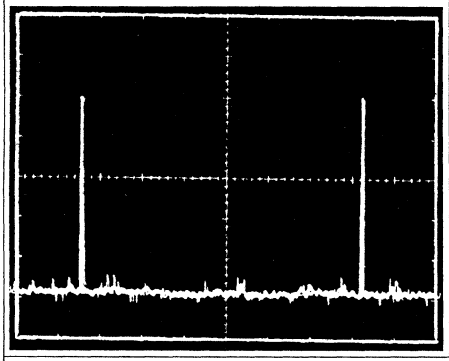
2. IC601 PIN 6 15 V_{P-P}



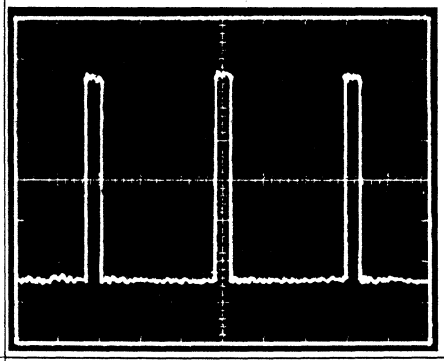
3. Q601 DRAIN 400 V_{P-P}



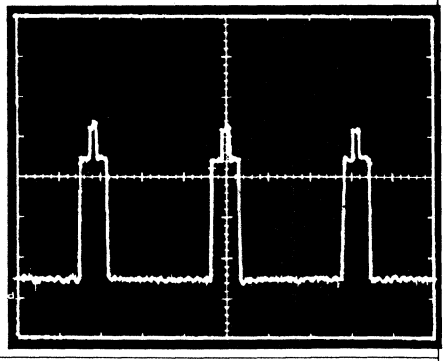
4. IC107 PIN 6 5 V_{P-P}



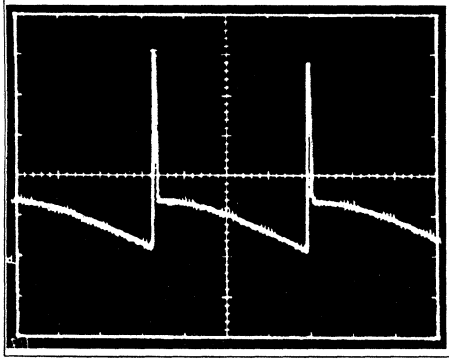
5. IC107 PIN 11 5 V_{P-P}



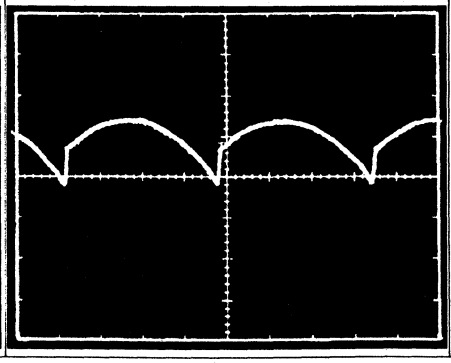
6. IC301 PIN 13 4 V_{P-P}



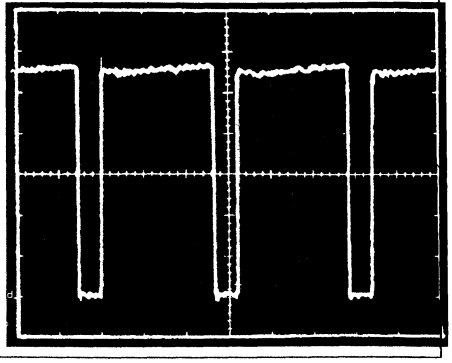
7. V-DY NO 2 50 V_{P-P}



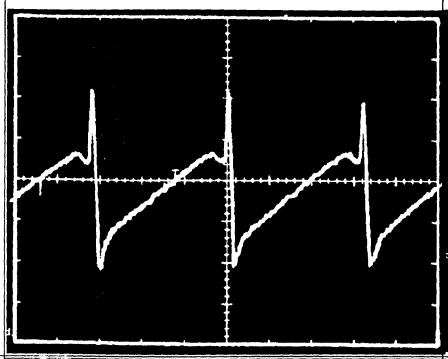
8. V-DY NO 1 3.3 V_{P-P}



9. IC402 PIN 6 11 V_{P-P}

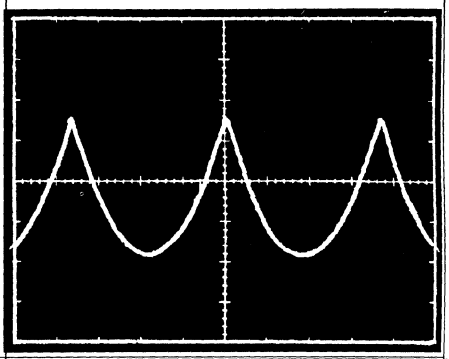


10. IC402 PIN 4 2.1 V_{P-P}

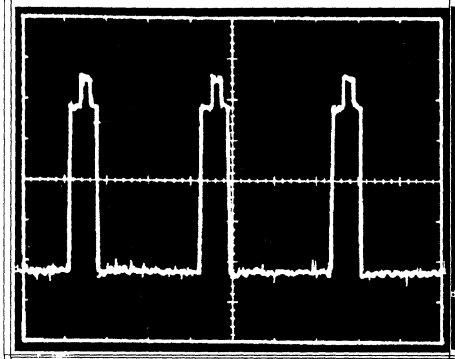


11. Q408 COLLECTOR 3.7 V_{P-P}

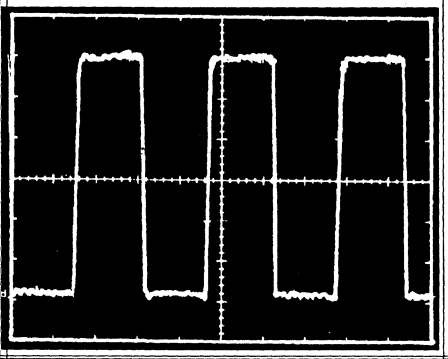
12. IC404 PIN 6 3.4 V_{P-P}



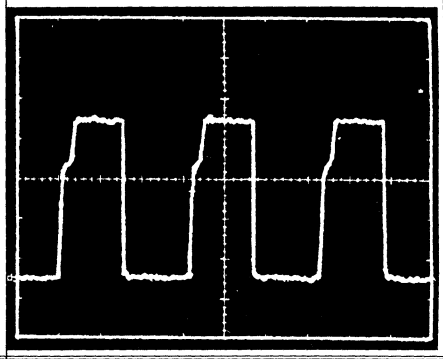
13. Q405 COLLECTOR 4.8 V_{P-P}



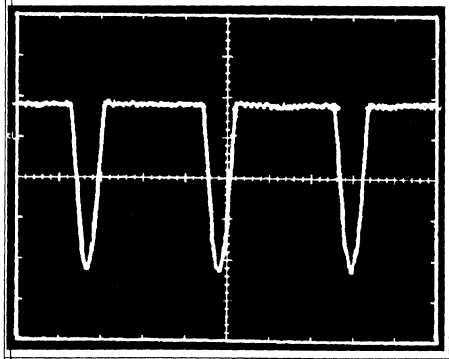
14. IC401 PIN 4 11.6 V_{P-P}



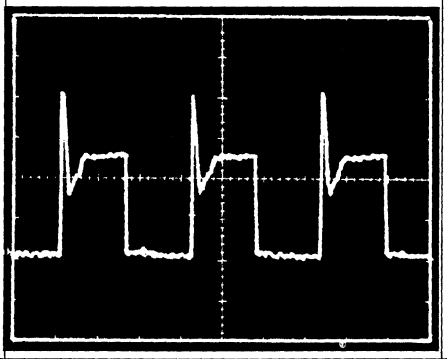
15. Q412 DRAIN 20 V_{P-P}



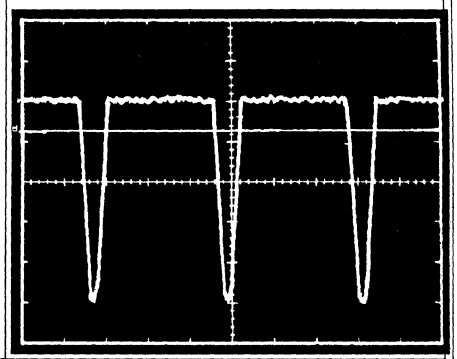
16. Q411 EMITTER 800 V_{P-P}



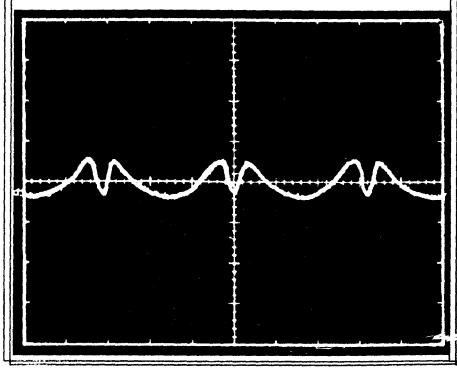
17. Q410 DRAIN 40 V_{P-P}



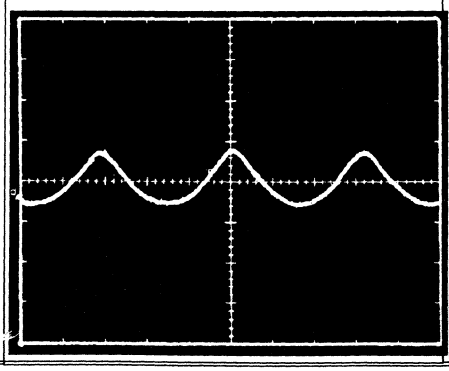
18. Q409 EMITTER 1000 V_{P-P}



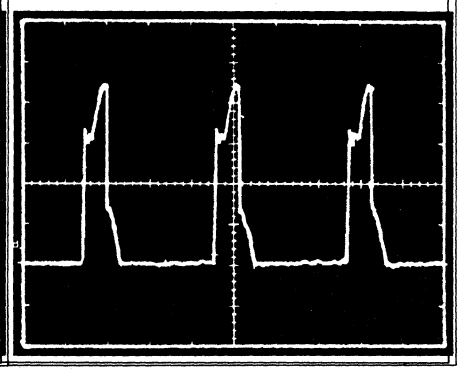
19. H-DY NO 1 48 V_{P-P}



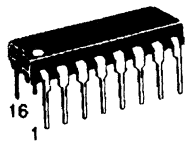
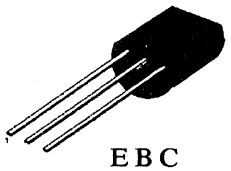
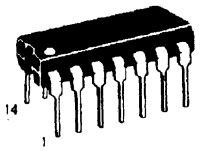
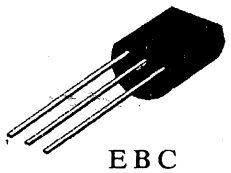
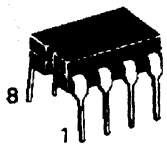
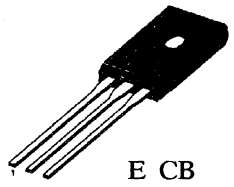
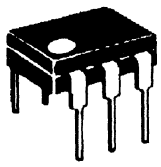
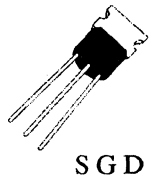
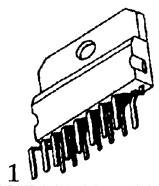
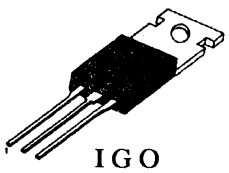
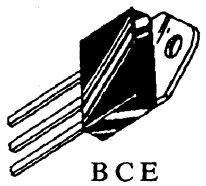
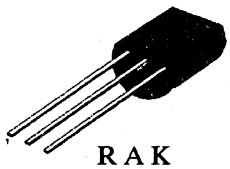
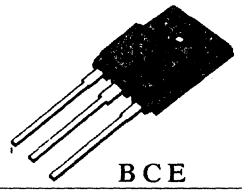
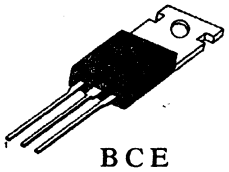
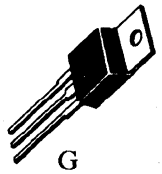
20. L403 OR C435 68 V_{P-P}



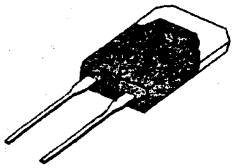
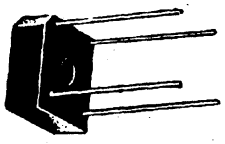
21. L401 NO 8 240 V_{P-P}



SEMICONCUCTOR LEAD IDENTIFICATION

	74LS221 : C106 LM1201 : IC101 - IC103 MC14046B : IC401 TL494CN : IC501		MPS222A : Q401, Q403, Q405 Q407, Q408, Q119, Q404 Q120, Q413 - 415, Q116 - 118
	74HC86N : IC107		MPS2222A : Q701 - Q703 Q801, Q802, Q811, Q812 Q821, Q822
	KF351 : IC404 UC3842 : IC601, IC402 UC3709N : IC108		2SC3595 : Q101, Q106, Q111 2SC3597 : Q102, Q104, Q107 Q109, Q112, Q114 2SA1402 : Q103, Q108, Q113
	CNY17-2 : IC603 MOC3021 : IC602		VN0606M : Q410, Q412, Q602 (FET)
	TDA1670 : IC301		MPF910 : Q603 (FET)
	MC7805 : IC105 MC7812C : IC104, IC403		MJH16002A : Q411
	TL431C : IC604, IC405		2SC3897 : Q409
	TIP29C : Q301		MAC210A6 : Q604,605 (TRIAC)

(CONTINUED.....)

	CTU-G3DR : D415		KBPC106 : D601
 G D S	MTH8N90 : Q601 (FET)		

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