TECHNICAL INFORMATION

13V" HIGH-RESOLUTION COLOR DISPLAY MONITOR MODEL C-3470

OCT. 1982

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE MITSUBISHI DENKI BLDG., MARUNOUCHI TOKYO 100. TELEX J24532 CABLE MELCO TOKYO

First Edition, First Printing

SECTION 1
SPECIFICATIONS

Mitsubishi Electric, MODEL C-3470 SERIES COLOR DISPLAY MODULE is a high resolution module for clear display of 2,000 characters in alphabet, numerals and graphic symbols.

This module is equipped with IN-LINE GUNS/SHADOW MASK CRT and a PCB with solid state active elements.

MODEL C-3470 SERIES features stable convergence, easy maintenance, compact style. This standard model accepts TTL inputs for R.G.B. video, HD and VD signals. This model is supplied without a cabinet.

1. FEATURE

(A) Compact style

Width, height and depth are small enough to replace monochrome monitors.

(B) All solid state except for CRT

All active elements except for CRT are solid state elements as IC or Transistor.

(C) Easy maintenance

PCB can be replaced without use of special tools and most of parts can be checked and replaced without disassembling any constructions.

(D) Anti spark circuit

All circuits are designed to avoid damage caused by spark in the CRT.

(E) Stable convergence

Self convergence assemblies are mounted on the CRT. Complicated convergence procedures are not necessary, because electric convergence circuits are not equipped.

2. ELECTRICAL SPECIFICATION

2.1 AC Power Voltage : AC 100 ~ 120 V or 220 ~ 240 V ± 10% Tap selectable

2.2 AC Power Frequency : 50 or 60 Hz

2.3 Power Consumption : Max. 80W

2.4 Input Signal

(a) Connector : Miniature nylon connector Molex 1625-15P (03-06-2151)

(b) Sorts of inputs

This module accepts positive TTL inputs for R.G.B. video, HD and VD signals. (ALL POSITIVE GOING)

Video signals are terminated by 470 ohm pull-up resistors.

Minimum input impedance of HD/VD is 2.2 K ohm.

* Refer the interface circuit. Another inputs versions are available to order.

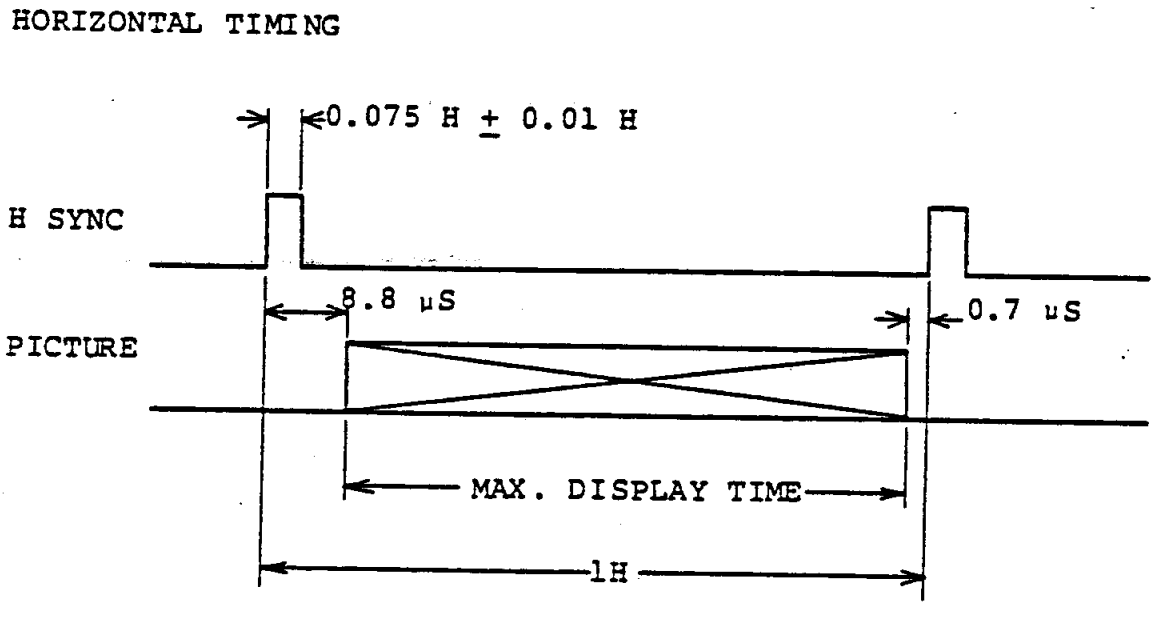
  Please contact Mitsubishi when you need special inputs.

(c) Timing requirements

Fig. 1 shows Timing Chart for recommendation of input signals.

The module input signals conform generally with EIA-STD-RS170 and RS343.

Fig. 1 Recommendable Timing Chart



VERTICAL TIMING

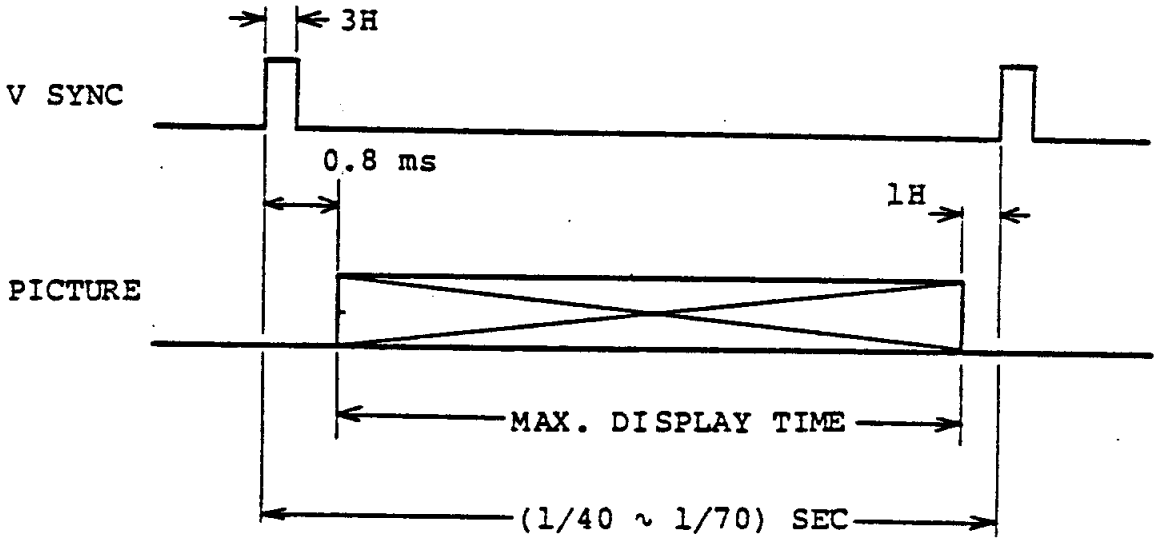
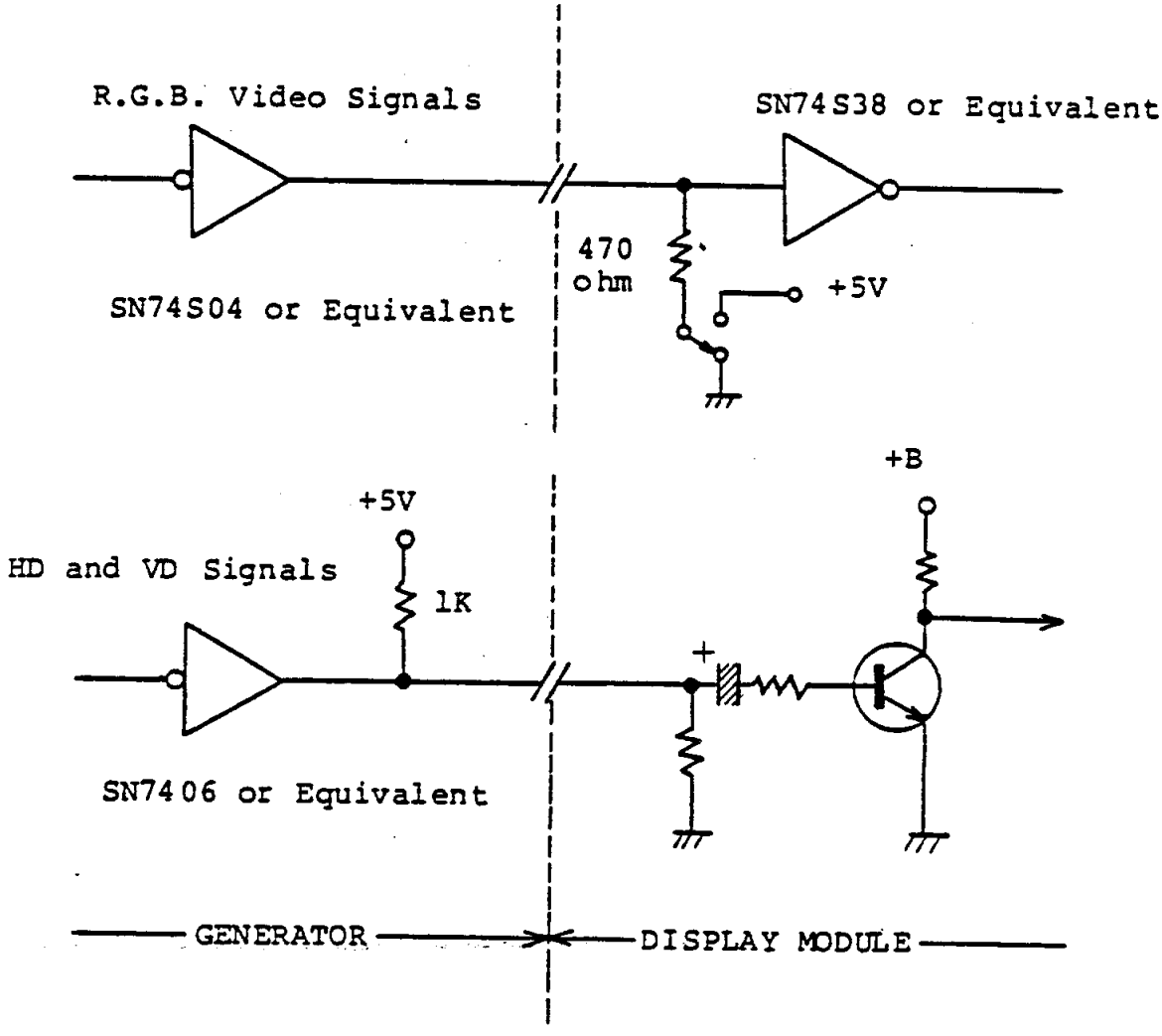


Fig. 1 Recommendable Timing Chart (Cont.)

(d) Interface Circuit



High level shall be 2.0 ∿ 5.0 V
Low level shall be 0 ∿ 0.8 V

Fig. 2 Interface Circuit

Table 1 Signal Input Pin Connection

Connector : MOLEX 1625-15P

Pin No.	Signal	Pin No.	Signal
1	HD	(4)	SG-HD
2	Red	(5)	SG-R
3	Green	(6)	SG-G
7	Blue	(10)	SG-B
15	VD	(14)	SG-VD

SG : Signal Ground

2.5 Scanning Frequency

Scanning Frequencies shall be specified by users before order is placed.

Vertical frequency	:	50 ∿ 60 Hz
Horizontal frequency:		One spetify frequency between 15.0 and 18.0 kHz
		One specify frequency between 19.0 and 24.0 kHz

2.6 Max. Effective Screen

250 W x 190 H (mm) is available. Users are requested to advise timings and actual area of use. In order to avoid trouble caused by timings, manufacturer wants signal source made by user.

2.7 Linearity

Linearity measured by cross-hatch method is better than 7%.
Calculation formula is as follows.

$$\frac{MAX - MIN}{MEAN} \times \frac{1}{2} \times 100 \ (\%)$$

Raster distortion is less than 2 %.

2.8 Convergence

Shall not deviate more than 0.5 mm in a centrally located area bounded by a circle.
The diameter of this circle is equal to picture height.
Elsewhere, the deviation shall not exceed 0.8 mm.

2.9 Raster Size Regulation

Rester Size Change caused by change of CRT beam current 0 to 200 μA is less than 1% of raster height.

2.10 Pulse Characteristics

Pulse rise and fall times of the video amplifier are better than 20 ns.

2.11 Ambient Temperature

Ambient temperature shall be 0 °C to +50 °C for chassis without cover.

2.12 Warm-Up Time

Warm-up time is 20 minutes maximum. At the end of warm-up period, no adjustments or service is necessary to meet the specifications contained herein.

2.13 Package Environment

Package air temperature

This equipment with stands room air temperature of -30 °C to 60 °C and 50 cm free drops encountered during transportation, handling and storage.
Also this withstands to Rleative Humidity of 0 to 95%.

2.14 CRT

14" (13"V) Self-convergence type,dot-phospher shadow mask tube and in-line electron gun.

Phosphors are Red, Green and Blue for the standard model.

In order to reduce FLICKER, Long Persistance Phosphors are recommended.

AT1429LBL8	R.G. Sky-Blue Long
AT1429LBL5	R.G. Long, B. Medium

2.15 Degaugging

Automatic Degaussing Circuit

3. Identification and Marking

The following markings are provided.

1) DHHS Warning labels on the CRT or chassis.

2) High voltage warning labels on the chassis.

3) Rating labels on the chassis to show power source, model number, etc.

4) Serial number label on the chassis.

4. Spare Parts

Fuses and connectors are furnished in the package.
Connectors MOLEX 1625-15R (Signal)
MOLEX 3191-03R (POWER)

5. Controls

The Contrast control located on the rear panel.

6. Configulation

1) Dimension

Refer to attached Drawings Fig. 3

2) Weight

15 kg without cover

7. DOCUMENTATION

The following documents are arranged and supplied to the users.

1) Service manual containing circuits description, operating Procedures, maintenance instruction parts list and schematic diagram.

2) Specification

3) Drawings showing outline of equipment and details for installation.

SECTION 2
INSTALLATION

2.1 GENERAL

This section explains how to install the color display module and how to verify its basic operation. Like most commercial TV receivers, the module is thoroughly adjusted and checked out at the factory, but it may require certain minor adjustments to adapt it to a particular display generator or other controller and to compensate for minor adjustment disturbances caused during shipment. For convenient reference, complete adjustment procedures and other basic checks are consolidated in Section 3, but only selected, simple procedures should be necessary for initial installation.

2.2 UNPACKING

The monitor is normally packaged in a separate shipping container unless it is incorporated into a system by MITSUBISHI ELECTRIC CORPORATION.
Carefully open the top of the container.
Remove the inside packing material and lift out the monitor.

2.3 ASSEMBLY

The color display module is supplied without cabinet.
The line voltage apply through the connector (PA) to the module.

2.4 CAUTION BEFORE "POWER ON"

Please make sure that PCBs, wires, connectors, components and structures are in perfect mechanical order and not damaged during transportation. Particular attention should be paid to the anode cap of the CRT.

Check the position of the line voltage plug (PE) and the value of the line fuse before plugging in the line cord.

The plug (PE) and fuse are mounted on the PCB-POWER, with voltage settings.

Table 2-1 Rear Panel Connectors

CONNECTOR	FUNCTION	CONNECTOR TYPE
VA Pin No.		
1 (2)	Red	Miniature Nylon Connector molex 10P
3 (4)	Green	
5 (6)	Blue	
7 (8)	HD	
9 (10)	VD	
PA	Power Input 100 ∿ 120 VAC/ 220 ∿ 240 VAC	

SECTION 3
CIRCUIT DESCRIPTION

3.1 DETAILED DISCRIPTION

This section contains detailed descriptions of circuits operation for the Model C-3470 Color Display Monitor according to Fig. 3-1. In reading this section, reference should be made to the monitor schematic diagrams.

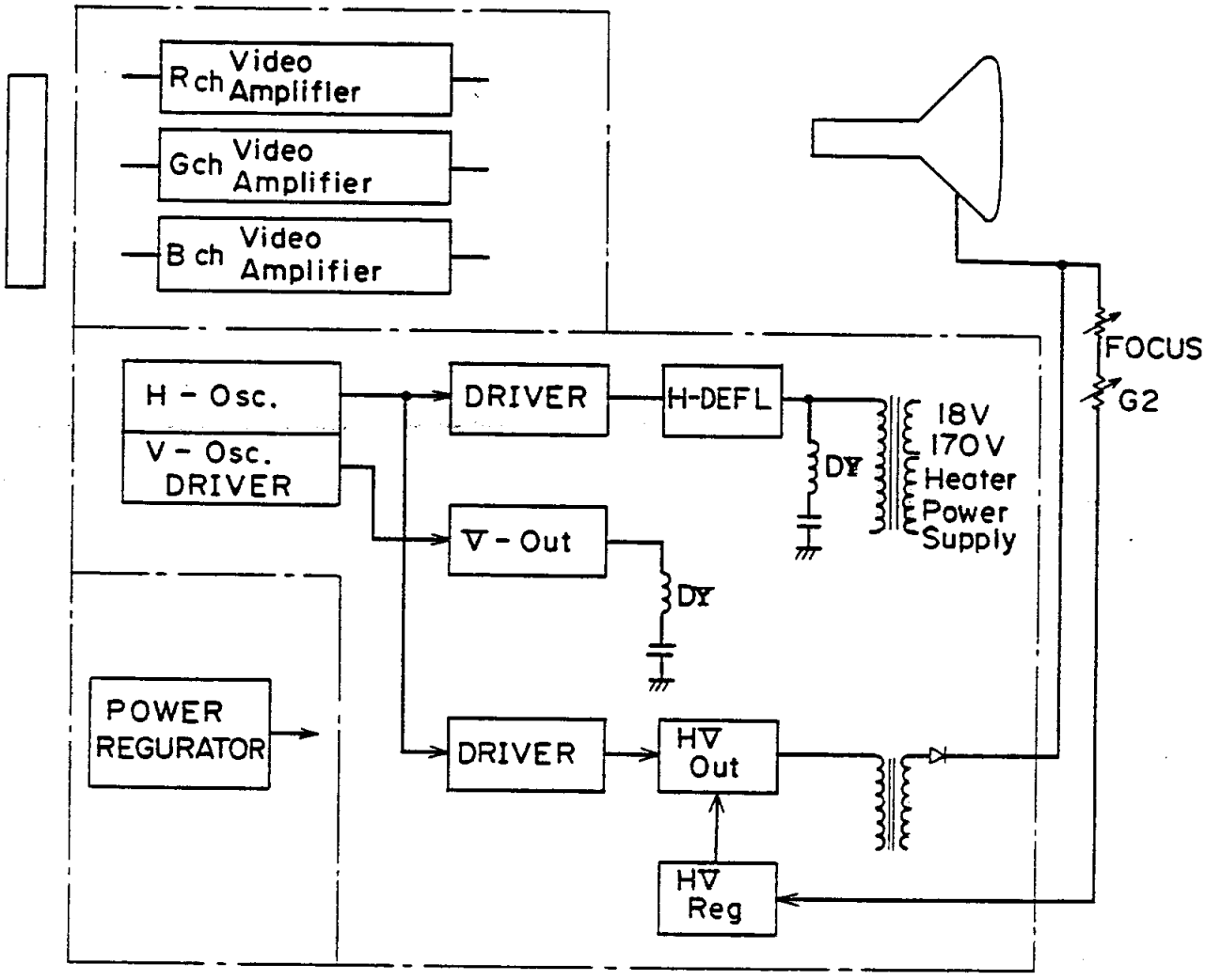


Fig. 3-1 Block diagram of the Model C-3470

3.2 VIDEO-CIRCUIT

3.2.1 Video Amplifiers

This circuits amplify the input signal to the active level.

The color monitor contains three video amplifiers, one for each primary color. These three amplifiers for the red, green, and blue CRT guns are identical. Therefore, the operation of only one channel (RED) is described here.

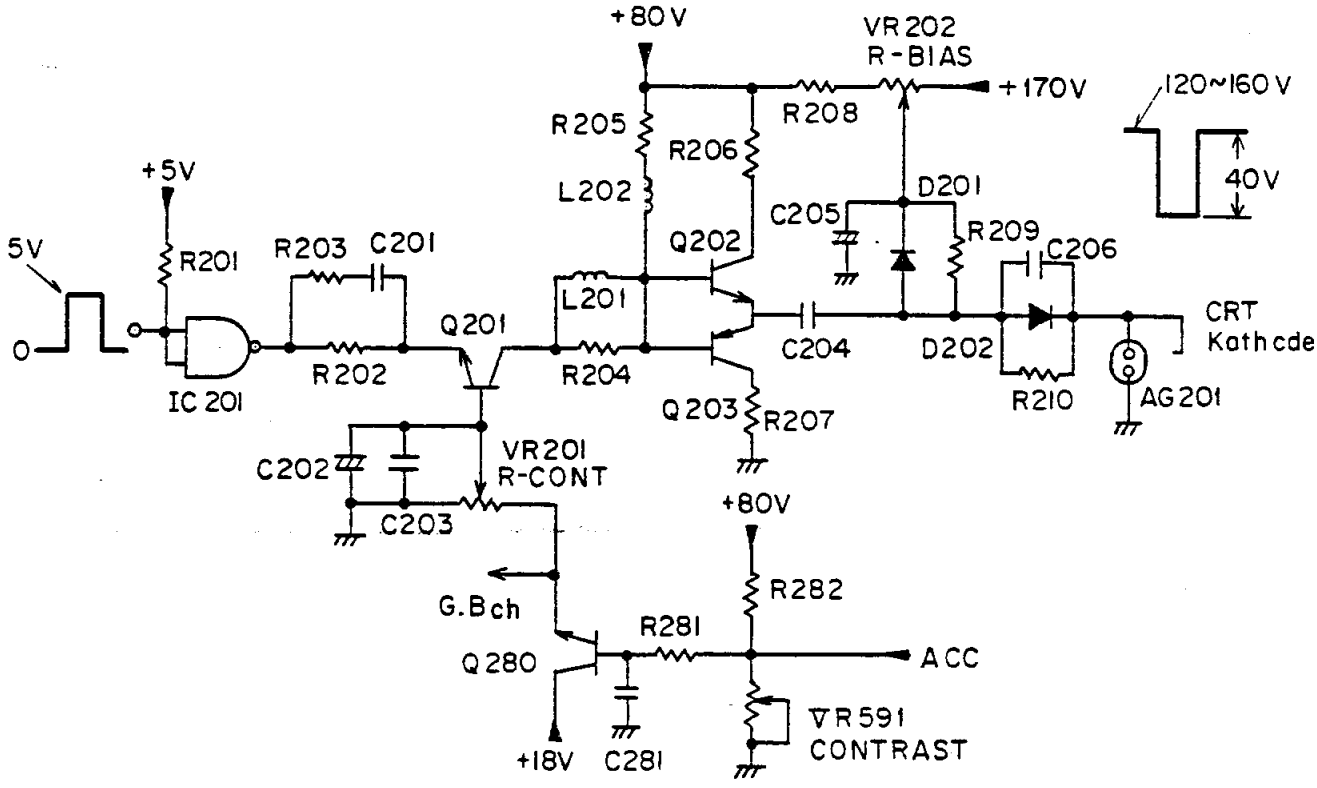


Fig. 3-2 Schematic diagram of the Video Amplifier

Input signal from the generator is applied to the buffer IC201. The output of IC201 is open-collector output stage, and it's output transistor and Q201 form a cascade amplifier.
This cascade amplifier amplifies the input signal to enough amplitude of voltage to drive the cathode of the CRT, and it is applied to the collector of Q201.

The emitter peaking formed with R203, C201 and series, parallel peaking formed with L201, L202 are high frequency emphasizing circuit.

The output signal from Q201 collector is transformed into low impedance by emitter-follower formed with Q202 and Q203, and applied to the cathode of the CRT through the capacitor C204. As following figure, this signal is clamped by the clamp circuit formed with C204, D201, and R209.

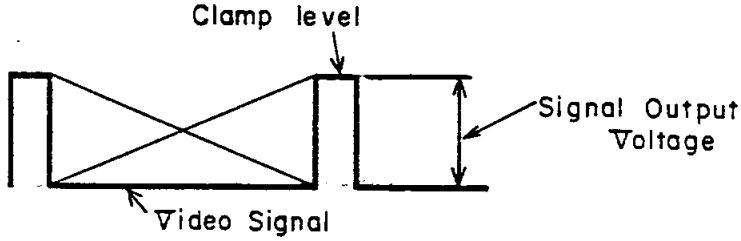


Fig. 3-3 The wave form of Clamp Circuit

The clamp level in this figure is adjustable by VR202 (R-BIAS).
This is the circuit adjusting the cut-off voltage of each 3 guns identically.

VR201 (R-CONT) and VR591 (CONTRAST) is for adjusting signal output voltage. There are VR231 (G-CONT) for green channel and VR261 (B-CONT) for blue (white) channel like VR201 (R-CONT), and adjusting signal voltage of each circuit to balance 3 colors. VR591 (CONTRAST) is adjustable the signal voltage of 3 colors at the same time, and adjusts the brightness of the screen.

Electric discharge gap AG201 and R210 are prepared for the circuit protection at the time of flushover inside of the CRT.

3.2.2 Sync Circuit

The positive-polarity horizontal sync signal (HD) from the connector VA, pin #7 is applied to the base of Q501 via C501 and R502.
The negative-polarity horizontal sync signal (HD) at the collector of Q501 is applied to the IC401, pin #16.

The positive-polarity vertical sync signal (VD) from the connector VA, pin #9 is applied pulse invertor Q401.
The negative-polarity output pulse of Q401 is applied to the IC401, pin #8.

3.2.3 ACC Circuit (Automatic Contrast Control)

The ACC circuit controls the video signal output for the stable picture. The schematic diagram is shown as Fig. 3.4.

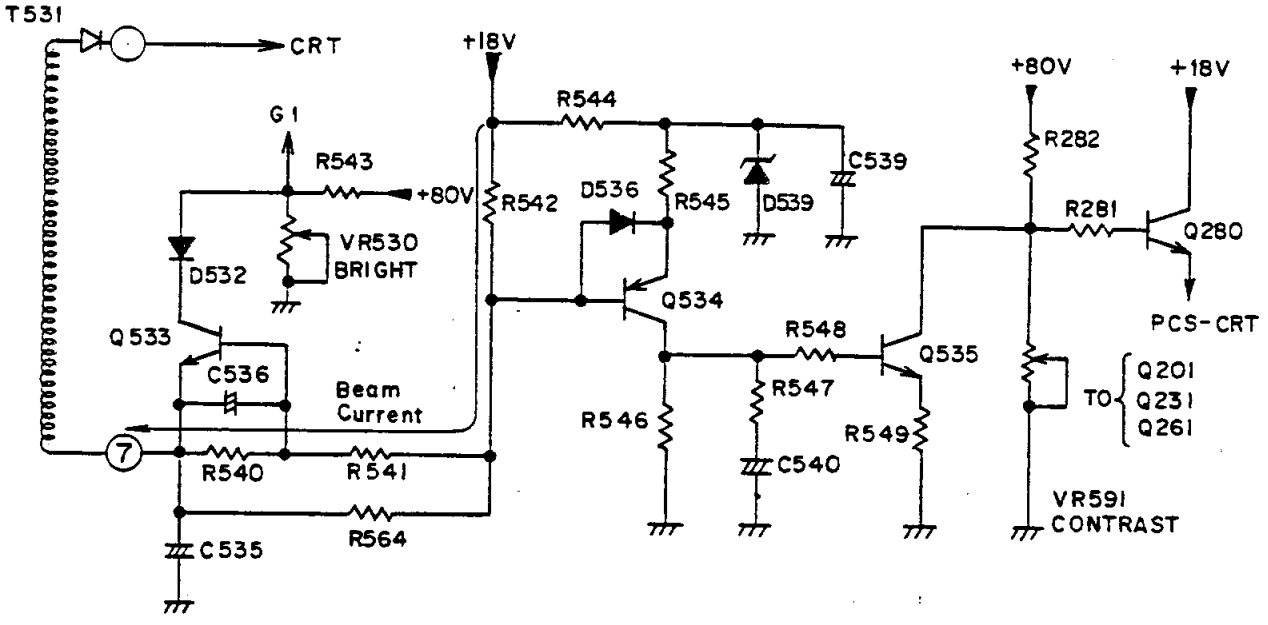


Fig. 3.4 ACC Circuit

Q534 is turn on when the beam current increases more than a certain level. Then Q535 is turned on, and the collector voltage devided by R282 and VR591 begins decreasing. This collector is connected to Q280 of the video output circuit, and control the video output level.

3.3 HORIZONTAL DEFLECTION CIRCUIT

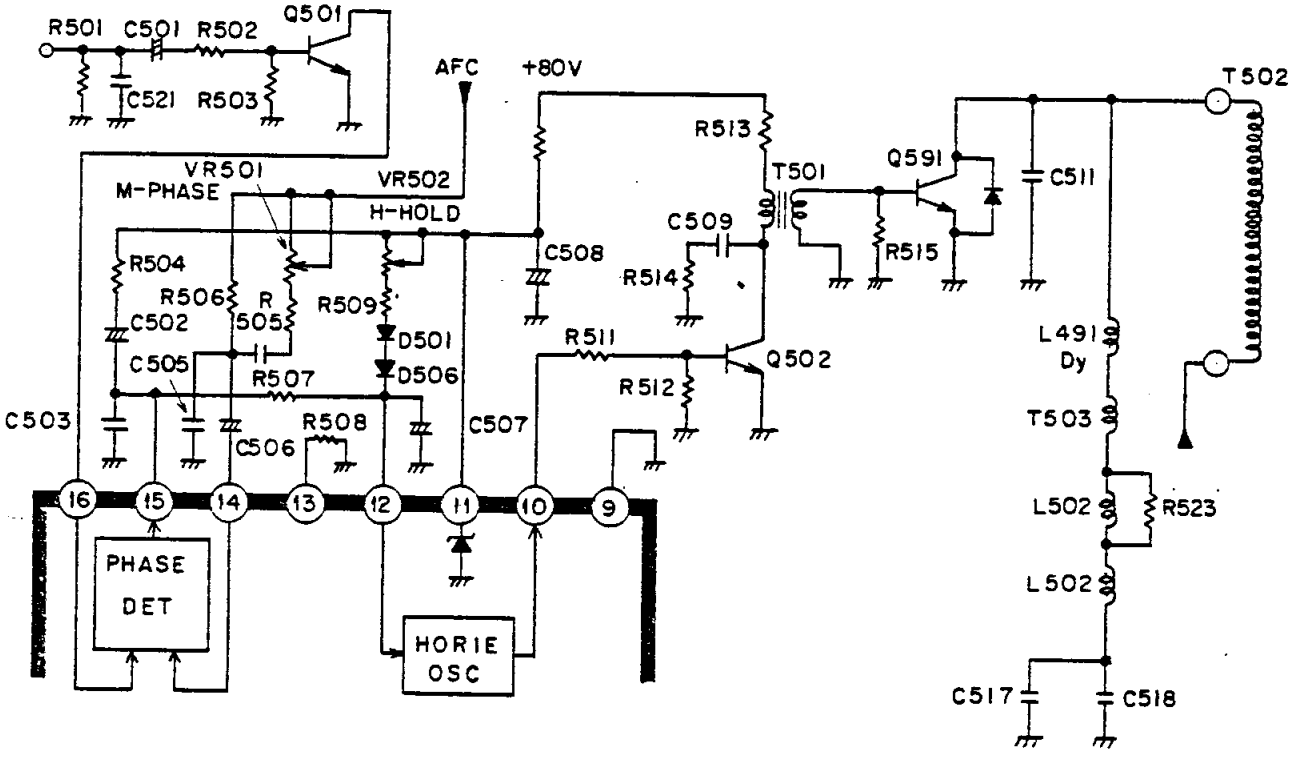


Fig. 3-5 Horizontal Deflection Circuit

Horizontal deflection circuit is composed of oscilater, driver and output stage.

Not only as a deflection circuit, but also this circuit is used as a power supply of heater voltage and so on.

Schematic diagram of horizontal deflection circuit is shown as Fig. 3-5.

3.3.1 Output Circuit

Fig. 3-6 is a fundamental diagram of horizontal deflection circuit. In this circuit, transistor TR acts as switch with dumper diode D. Therefore the equivalent circuit is shown as Fig. 3-7.

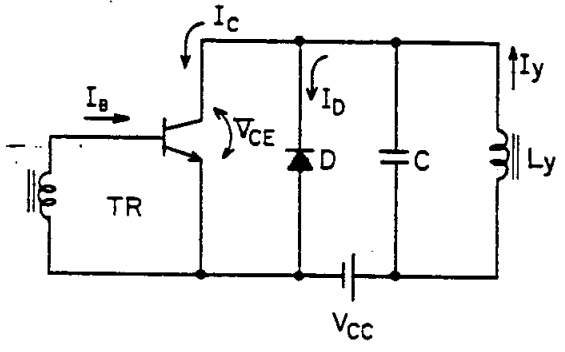


Fig. 3-6 Fundamental Circuit

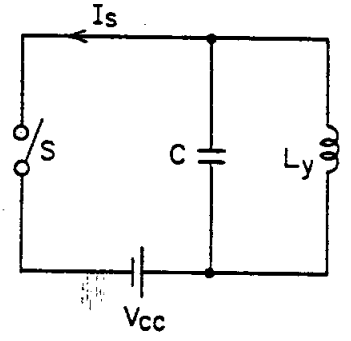


Fig. 3-7 Equivalent Circuit

Following, the action of this circuit is described using Fig. 3-6, Fig. 3-7 and Fig. 3-8.

When switch is turned on at the time tl, the current of deflection yoke Ly increase linearlly. When switch is opened at a suitable time t2, current Is becomes zero at once. However Iy doesn't become zero at

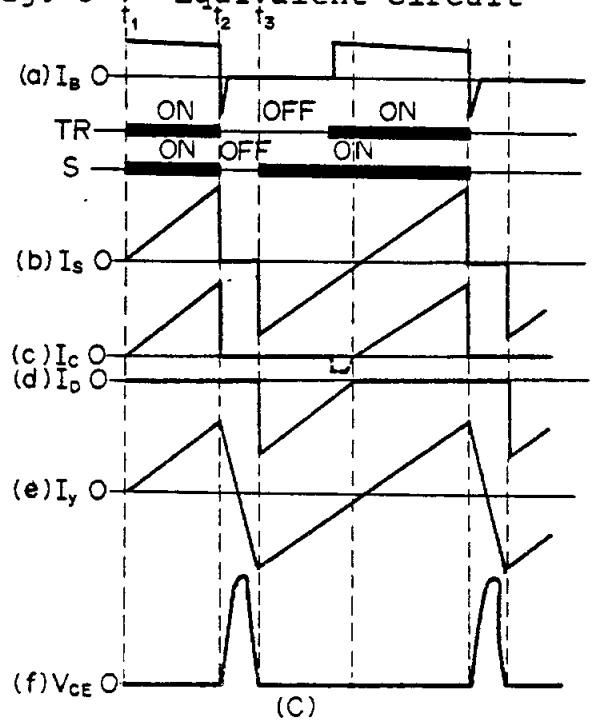


Fig. 3-8 Wave form of each part

once, and flows into capacitor C, and oscillates.

At the time t3 when the half cycle is completed, Iy becomes maximum of reverse. Then when switch S is turned on the oscillation stops and 1 cycle is completed. The energy flows out during the time from t1 to t2, and at the time t3 the energy flows back to the power supply, therefore power loss of this circuit is very small. The period from t2 to t3 is depends on resonance frequency of Ly and C. During this period, deflection current changes from positive peak to negative peak, and the voltage between both sides of C is shown as Fig. 3-8-(f).

The description as mentioned above is the fundamental action of horizontal deflection circuit. However, in the practical circuit horizontal output transformer T502 is connected in parallel to the deflection yoke.

DC voltage from 80V power supply is supplied to T502 and it supplies the pulse to AFC circuit or makes 18 volts and 170 volts power supply for the heater of CRT using this pulse.

In the practical circuit there are resistance element of the circuit, therefore deflection current of the deflection yoke is not change lineally. To correct it, linearity modulating coil L503 is prepared in series of the deflection yoke. As to horizontal linearity, because of the curveture of the front CRT, there are a tendency to extend in the both sides and be shortened in the center of the CRT. To correct it, capacitor C517 and C518 are connected in series to the deflection yoke.

The amplitude adjusting coil L502 and PCC transformer T503 is connected in series to the deflection yoke.

3.3.2 Horizontal Centering Circuit

VR503 (H-CENT) is adjustable the DC current of the deflection yoke, and scans the rasters right and left.

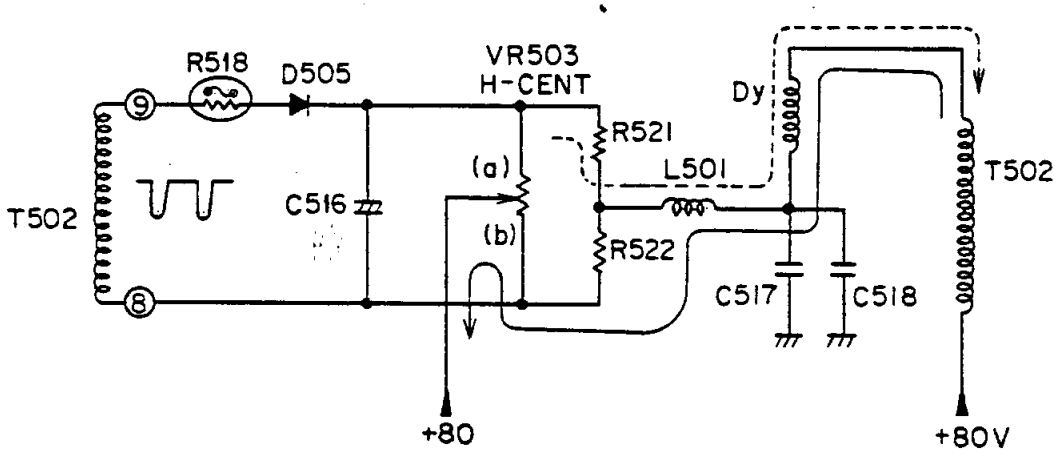


Fig. 3-9

In above figure, there are retrace pulse between pin #9 and #8 of T502. D505 and C515 supplies DC voltage V_B by rectifying the retrace pulse.

In case VR503 inclines to side (a), the current flows like the real line and the raster moves right side. In case VR503 inclines to side (b), the current flows like the dotted line and the raster moves left side. This changing width is approximately $\pm$5 mm.

3.3.3 Horizontal Oscillater and Driver

All signal processing is performed by IC401 same as vertical circuit. DC voltage is applied to the pin #12.
The oscillation frequency depends on the charge and discharge time constant of C507, which can be adjusted by VR (H-HOLD).

The sawtooth wave voltage supplied here is changed to rectangular wave in order to drive Q502 in next stage, and supplied to pin #10.

The horizontal sync signal flowed into pin #16 and VR502 (H-HOLD) adjusts oscillating frequency to be synchronized with input signal frequency.

The flyback pulse from pin #3 of horizontal output transformer T502 is applied to the horizontal oscillation circuit for synchronization stability. And it is supplied to pin #14 through the integrating circuit formed with R506 and C505 for better synchronization stability.

VR501 (H-PHASE) is prepared for adjusting video position.

Because drive output enough to drive output circuit cannot be obtained in oscillation circuit output, drive circuit formed with Q502 and T501 amplifies the pulse.
This circuit supplies forward base current enough to saturate the output transistor and reverse base current enough to be turn off the output transistor.

3.4 PCC CIRCUIT

In this monitor, side pincushion shown as Fig. 3-9-(a) is modulated by following method.

In order to decrease the deflection current of the top and bottom of the screen, horizontal deflection current is modulated shown as Fig. 3-10-(b).

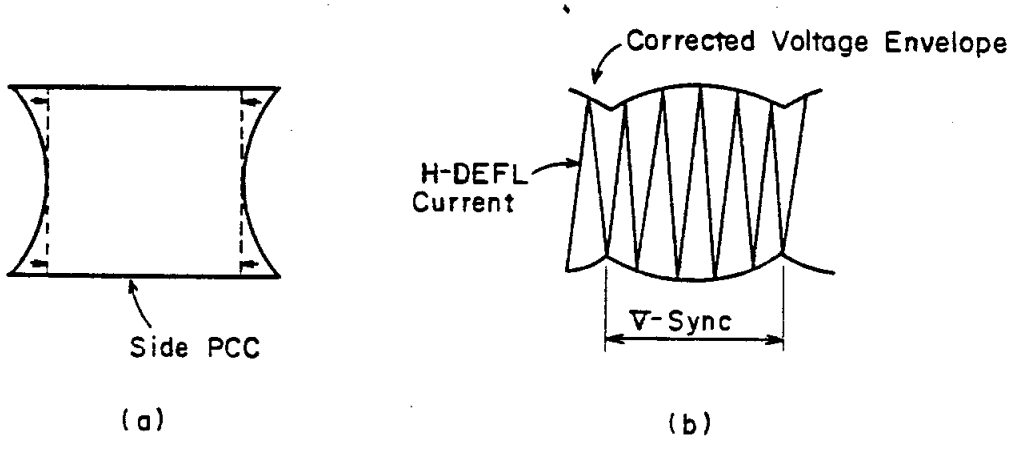


Fig. 3-10 Side PCC and Waveform of PCC Circuit

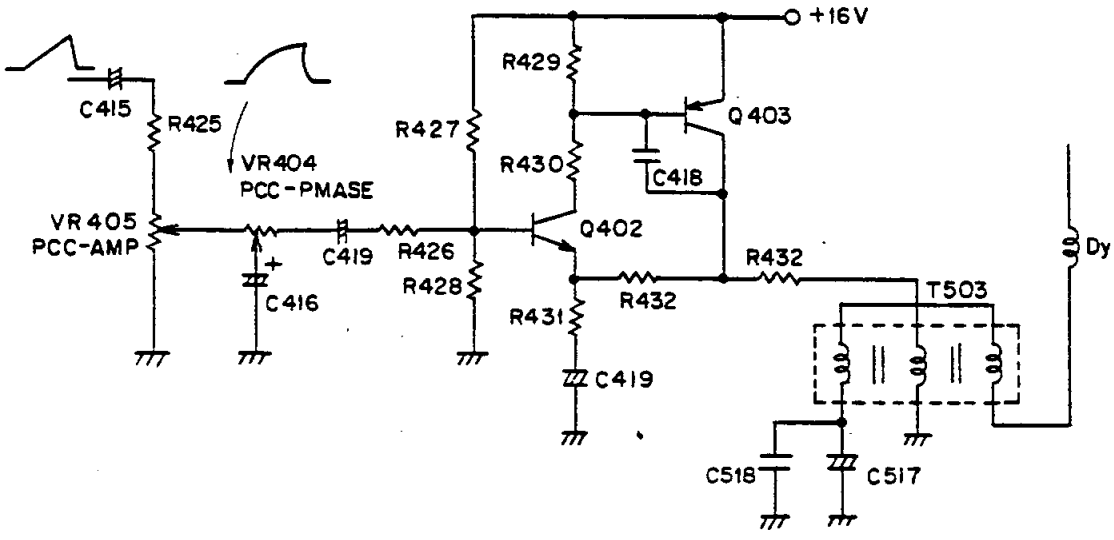


Fig. 3-11 PCC Circuit

The sawtooth wave voltage supplied from vertical circuit supplied parabolic voltage through the integurating circuit formed with VR404 and C416, and it is added to PCC transformer through the output stage formed with Q402 and Q403. Because secondary coil of T503 is connected in series to horizontal deflection yoke, the inductance of secondary coil can be adjusted by parabolic current of primary side of T503. And then pincushion is corrected.

VR405 (PCC-AMP) adjusts quantity and VR404 (PCC-PHASE) adjusts position of correction.

3.5 HIGH VOLTAGE CIRCUIT

This is the circuit for supplying stable DC high voltage to CRT anode. The operation of high voltage output circuit is the same as that of horizontal deflection output circuit.

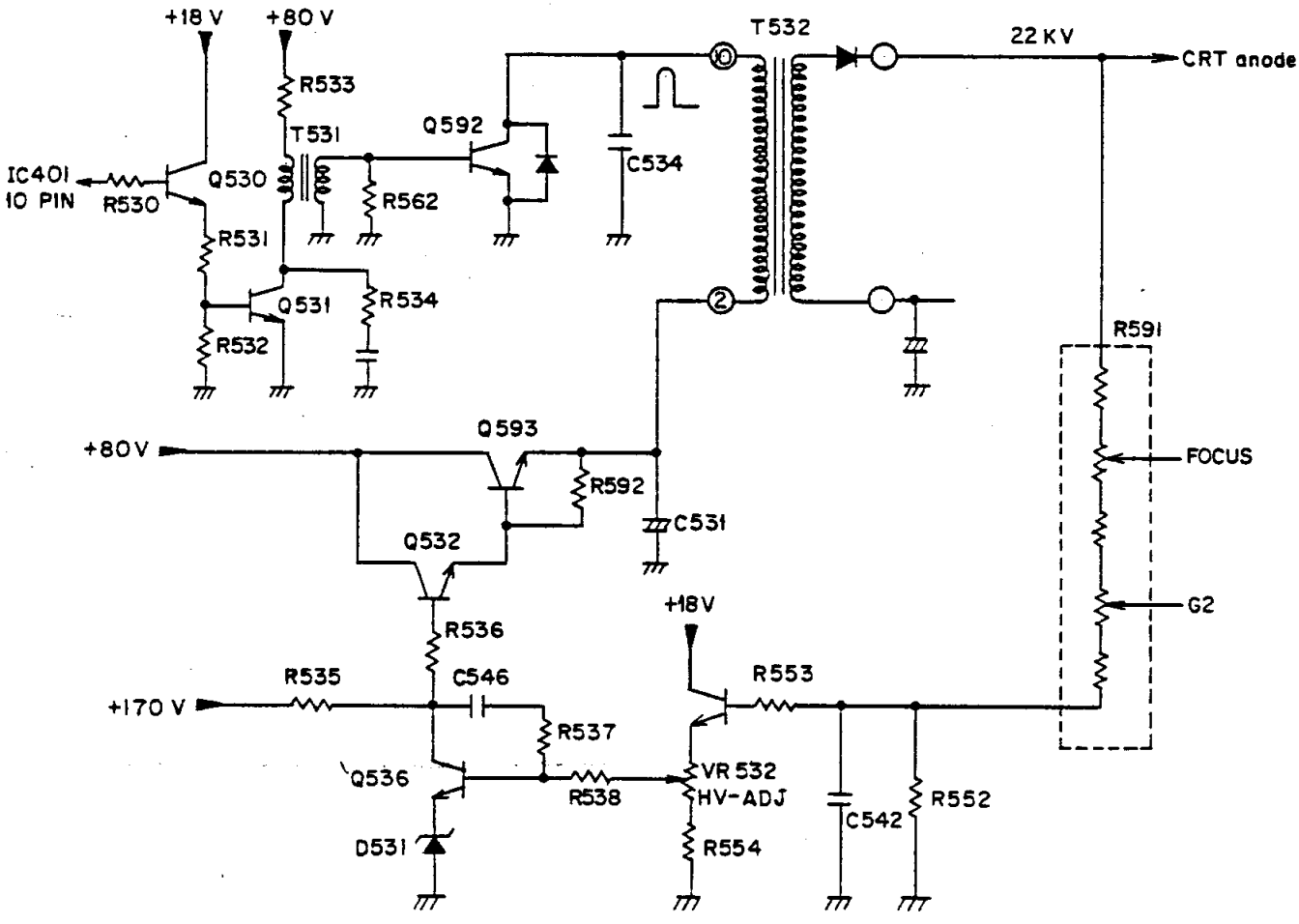


Fig. 3-12 High Voltage Circuit

The rectangulation wave voltage passes through the buffer transistor Q530, and in the driver circuit and output circuit as mentioned above, the voltage wave

shown as Fig. 3-13 is obtained and supplied to pin #10 of T532. This flyback pulse is risen to more than 20 kV by T532, and rectified by the diode inside of T532 and the capacity in the CRT.

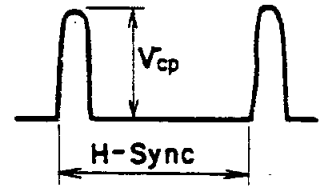


Fig. 3-13 Voltage waveform

The beam current (anode current of the CRT) changes according to video signal. The circuit controls the power supply to pin #2 of T532 for the stable high voltage.
Q593 is a series regulation. Q536, D531 and R535 form the error amplifier, R591 and R552 form senser.

When the anode current increases (for example, white all of the screen), high voltage output decreases and the sensed voltage of R552 also decreases. At the same time, the base voltage of Q536 decreases and collector voltage increases, as a result, the emitter voltage of Q593 and the input power voltage of flyback transistor T532 increase, therefore high voltage output increases.

By contraries, in case the anode current decreases and high voltage output increases, the operation is contrary to that mentioned above, as a result, high voltage output decreases.

Therefore the stable high voltage is always obtained regardless of the anode current.

VR532 (HV-ADJ) is an adjuster for setting high voltage output.

3.6 HIGH VOLTAGE SAFETY CIRCUIT

The high voltage safety circuit that stops the high voltage output when the output increases more than a certain extent is provided. This safety circuit is provided to prevent occasional increase of the high voltage that may cause radiation of harmfull level.

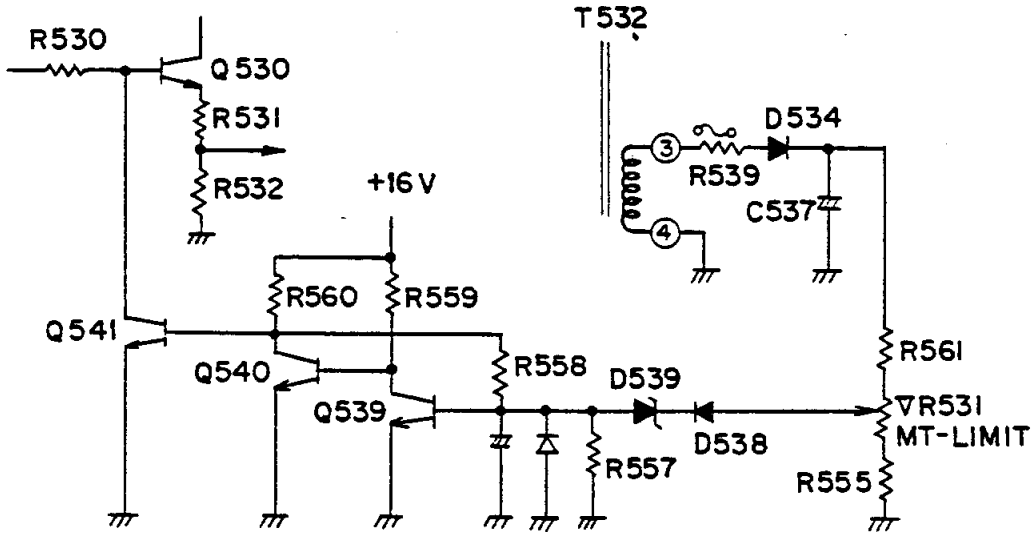


Fig. 3-14 High Voltage Safety Circuit

The flyback pulse of the third coil of T532 is rectified by D534, and this voltage is in proportion to the high voltage output. When high voltage output increases, Q539 is turned on by the voltage devided R561, VR531, and R555, and Q540 in next stage is turned off. Then Q541 is turned on, and the rectangular wave voltage flows into Q541, and high voltage output circuit stops the operation.

VR531 (HV-LIMT) is an adjuster for setting this stopping level of high voltage.

HV AND SAFETY CIRCUIT

****
* Safety Circuit is provided to prevent occasional *
* increase of the high voltage that may cause *
* radiation of harmfull level. No modification *
* shall be applied on the high voltage and *
* safety circuit. *
****

3.7 VERTICAL DEFLECTION CIRCUIT

Schematic diagram of the vertical deflection circuit is shown following figure.

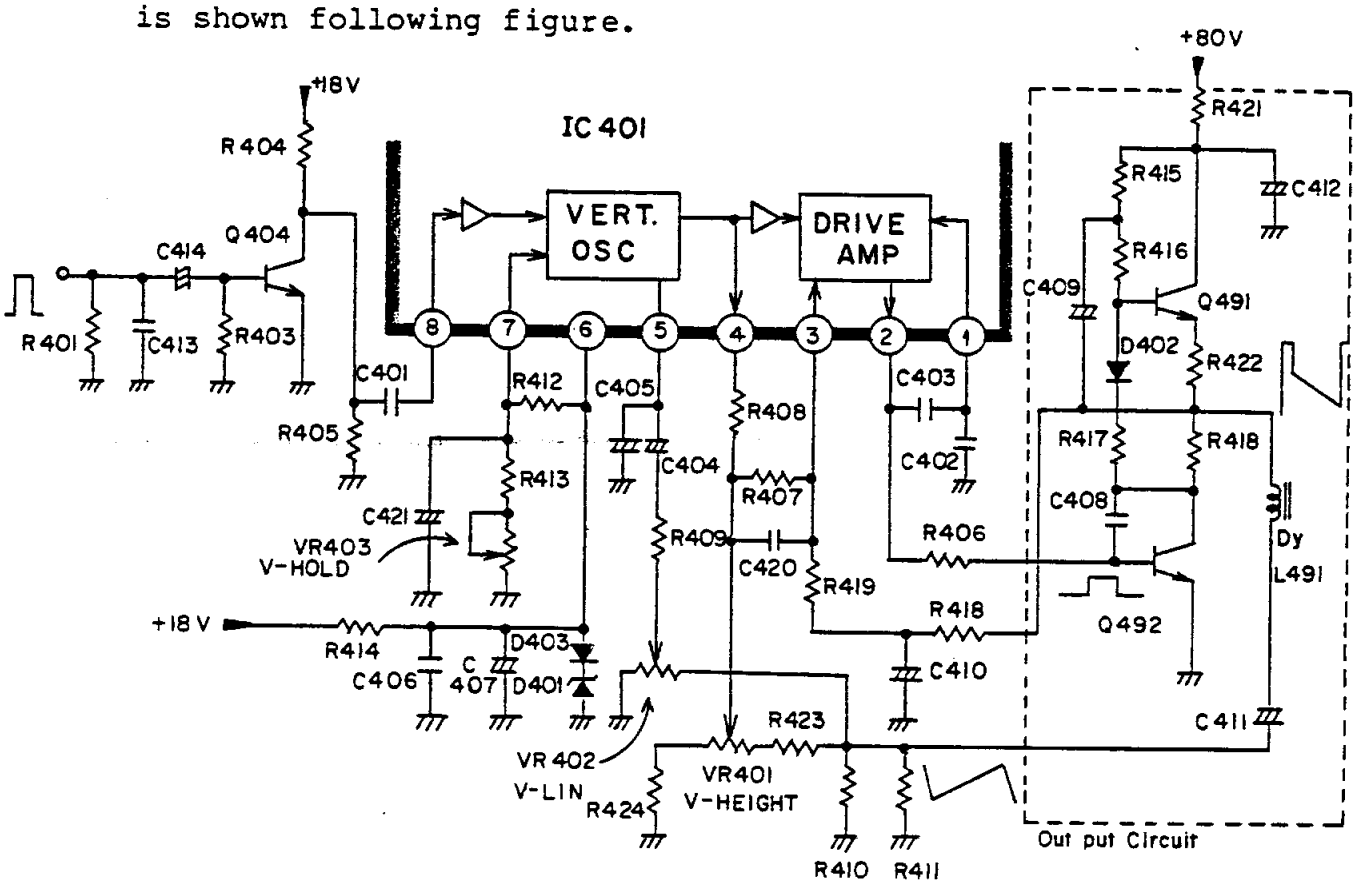


Fig. 3-15 Vertical Deflection Circuit

3.7.1 Output Circuit

In the output stage of this stage, OTL circuit called SRPP (Shunte Regulated Push Pull) is used.

SRPP can decrease the reactive current loss by means of activating the load resistance of A-class-amplifier.

Fundamental operation is explained as follows:

The part shown by dotted line in Fig. 3-15 is a vertical output circuit. When the power is turned on, Q491 is turned on by forward bias made by R415, R416, D402, R418, and R422. At the same time, collecter current flows into C411 from L491 (DY), and C411 is charged.

This current is a sawtooth wave current, and the magnetic field in proportion to the current amplitude deflects the electric beam inside the CRT.
Then, when Q492 is turned on, according to the charging voltage of C411, the current flows into Q492 through L491, R418. This current deflects the electric beam as above-mentioned during the half cycle of the vertical sawtooth wave current. According to the on-off action of Q491 and Q492, the deflection current is flowed into deflection yoke, and the electric beam is scanned vertically.

When Q492 is turned on and charging current of C411 flows into Q492, Q491 is turned "OFF" according to the potential of R418.

R421 and C412 are selected so as to decrease the power loss of Q491 by decreasing the voltage between collector and emitter as shown in Fig. 3-16.

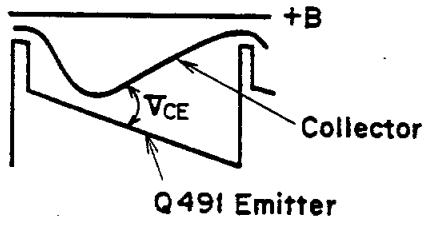


Fig. 3-16 Wave form of Collector and Emitter

3-7-2 Vertical Oscillator, Driver

The signal processing of Oscillation and drive circuit is performed inside of IC401, therefore in this section, the part of each pin and additional circuit are explained except description inside of IC.

When DC voltage is added on pin #7 the action of oscillation circuit is started. The oscillating frequency depends on the charge and discharge time constant of C405, which is adjustable by VR403 (V-HOLD) connected to pin #7.
Because the input vertical synchronized signal flows into pin #8, VR403 (V-HOLD) adjusts oscillating frequency to be synchronized with input signal frequency.

The oscillation output is added to the output circuit from pin #2 through the drive stage. In order to correct the linearity of the screen, the deflection current adjusted by VR402 (V-LIN) is added to pin #5. And VR401 (V-HEIGHT) adjusts the vertical amplitude.

For the stabilization of DC-voltage and linearity, the voltage distributed by R418, R419, R407, and C410 is applied to pin #3 as a DC-feedback.

3.8 PCB-POWER CIRCUIT

3.8.1 Power Regulator Circuit

Fig. 1 shows blockdiagram of power circuit.

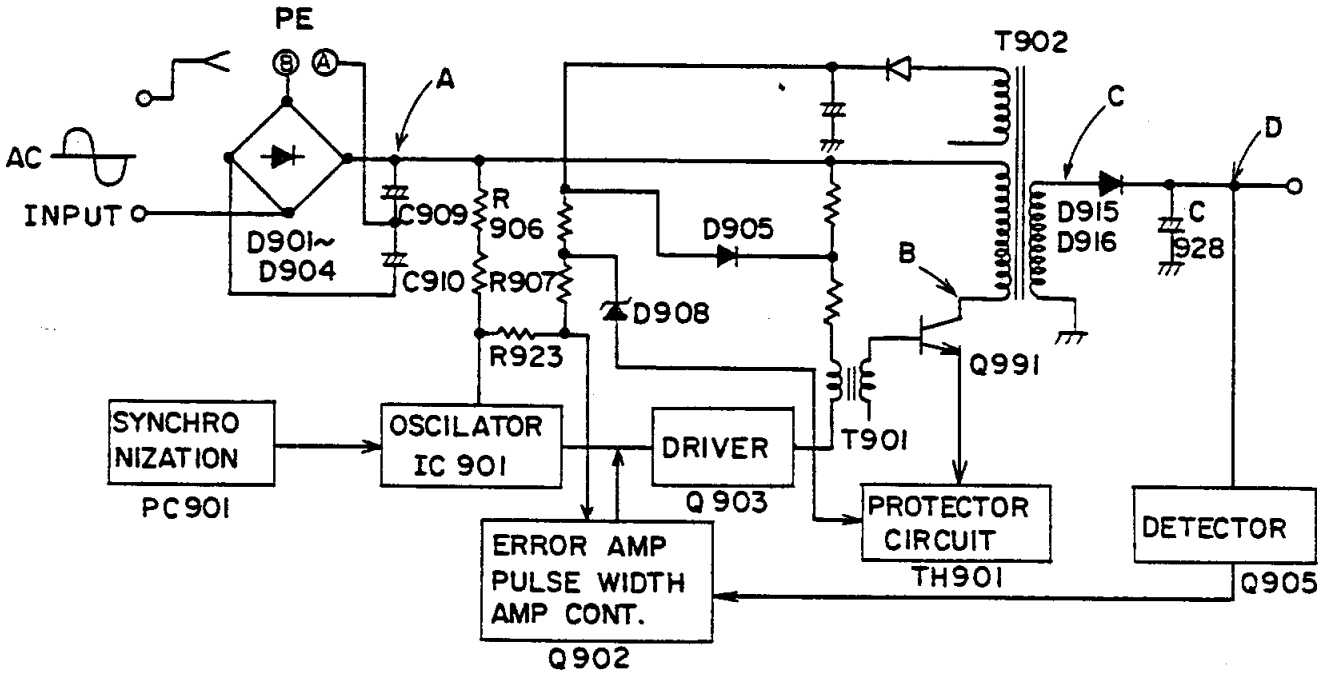


Fig. 3-17 Power Regulator Circuit

1. Rectifier circuit

(1) In case of AC100-120V input
Input alternative voltage is rectified by doubler which is composed of D904-C909,

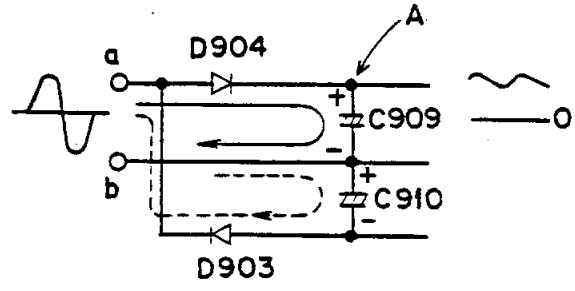


Fig. 3-18 Rectifier Circuit

D903-C910. When terminal "a" is positive, current flows C909 through D904 and C909 charges up, and at next half cycle, terminal "a" is negative (terminal "b" is positive) current flows C910 through D903, as a result, output rectified voltage is sum of C909 voltage and C910 voltage.

(2) In case of AC200-240V input
Input alternative voltage is rectified by a bridge rectifier which is composed of D902, C909, C910, D903 and D904, C909, C910, D901. As a whole, output voltage at "A" point is same voltage at both AC100-120V input and AC200-240V input.

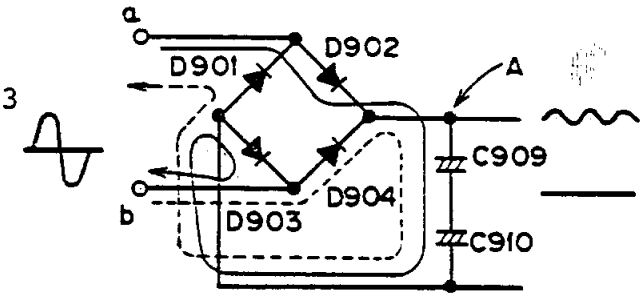


Fig. 3-19 Bridge Rectifier

2. Output circuit

Rectified DC voltage is switched by Q991 and at "B" point, switched voltage is obtained.

Secondary rectifier circuit

At "C" point of output transformer T902 secondary circuit, switching pulse, which is opposite polarity of "B" is induced and rectified by D915, D916, C928. At "D" point, rippleless DC voltage is obtained.

3. Oscillater, driver

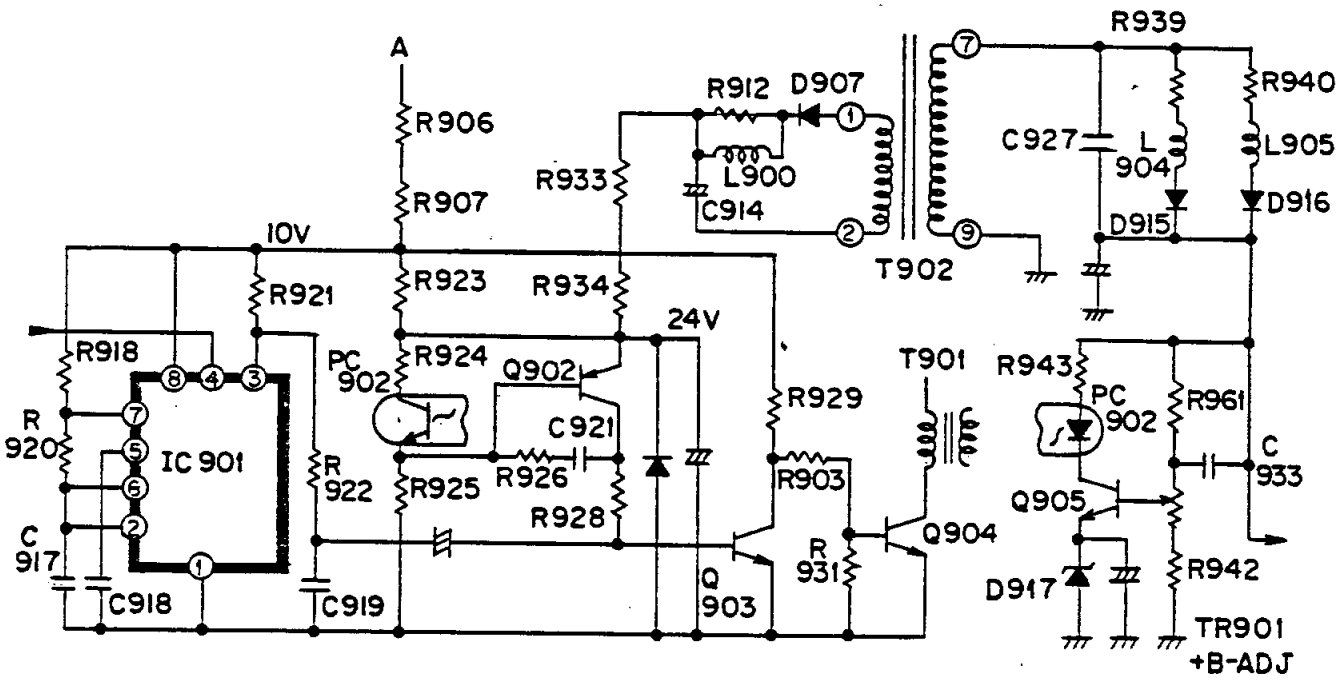


Fig. 3-20 Oscillater driver

Oscillater circuit depends on IC901 operation, its frequency is decided by R918, R920, C917. At turn on, DC voltage is supplied to IC901 from "A" point through R906, R907 and IC901 begins to oscillate, after that, DC power supply which is made from pulse at T902 terminal 1 by D907, C914 is supplied to IC901 through R933, R934, R923. +10V, +24V DC power supply are made as above mentioned. Oscillator output signal of IC901 comes out at terminal 3 as a priodical square wave, and it is made into ramp wave signal by integlator R922, C919. This ramp wave signal is amplified by Q903, Q904 and drives output switching transistor Q991.

4. Voltage control circuit

At secondary circuit of output transformer T902, switched voltage appears and it is made into DC voltage by rectifying. This DC voltage changes according to input voltage or load current, but it is stabilized as mentioned below. At "C" point of secondary circuit of T902, E3 voltage which is opposite polarity of primary circuit generates as shown Figure (C). E3 is proportional to primary circuit voltage E, that is, depending directly on voltage variation at "B" point.

In order to stabilize DC output voltage, it is necessary to control E1 to get constant value. In this display monitor, to realize above purpose, pulse width control system is adopted.

Switching voltage signal at primary circuit of T902 is proportional to DC supply voltage at "A", if E1 changes by ΔE1 as shown Figure (C), E1 voltage can be stabilized by changing pulse duty ratio

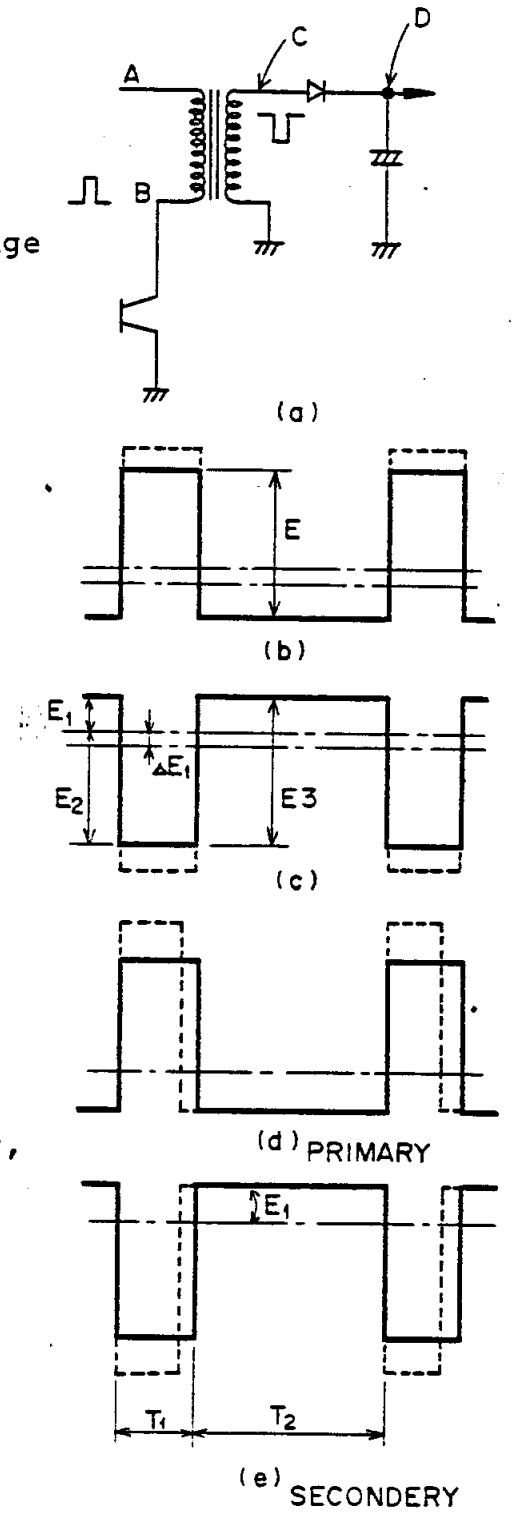


Fig. 3-21 Voltage Control Circuit

as shown Figure (d), (e).

For example, when input voltage increases and pulse amplitude goes up, constant El voltage can be obtained by setting Tl/Tl+T2 smaller.
On the contrary when input voltage decreases and pulse amplitude goes down, El voltage can be conpensated by setting Tl/Tl+T2 bigger.

5. Error Amplifier

In order to do above control, output DC voltage deviation is detected and amplified by Q905 lighting photocouple PC902 to transfer to Q902. For example, if output DC voltage increase, Q905 colector voltage goes down, PC902 photocoupler turn on and base bias of Q902 increase, Q902 impedance changes to high impedance, therefore Q903 base voltage goes down.

This base bias controls turn on duty of Q903 B - E . Potential of ramp wave which comes from ramp generator through C922 changes according to above base bias, if original bias is real line as shown figure, in this case, turn on duty Tl/Tl+T2 changes smaller like dotted line.

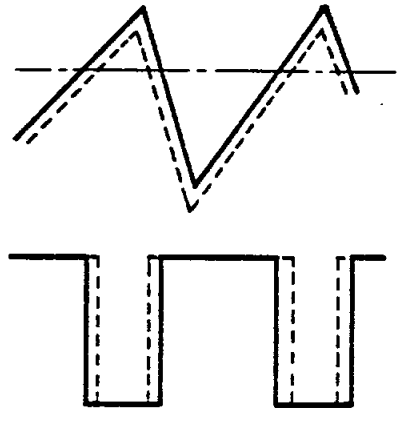


Fig. 3-22

As mentioned above, output DC voltage is stabilized by controling pulse width, even if input AC voltage varies or load current changes.

The reason why photocoupler is used for transfering output voltage variation is for insulation between primary circuit and secondary circuit.

6. Synchronization

At switching power supply, there are some cases display screen is interfared by switching noise, because of high frequency. To get rid of this interfarance, switching circuit is synchronized by horizontal scanning rate.

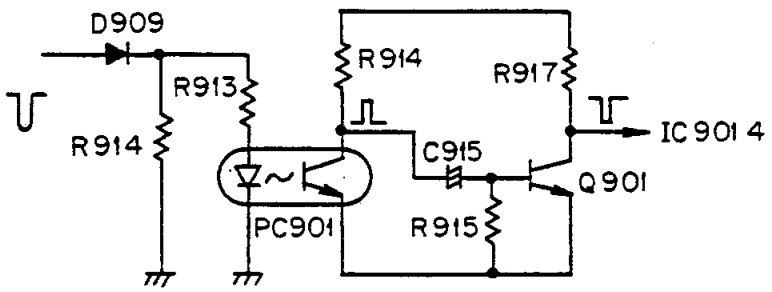


Fig. 3-23 Synchronization

Horizontal pulse of deflection circuit is used as synchronization signal. Another photo coupler is used for isolation between primary circuit and secondary circuit and horizontal sync signal is supplied to Q901 base through PC901, C915 and this signal wave form is shaped, inverted to feed to feed to IC901 terminal 4.

Therefore IC901 ramp oscillator frequency is locked to horizontal scanning frequency.

3.8.2 Automatic Degaussing Circuit

Positors RP901, RP902 and degaussing coil L991 composed a automatic degaussing (ADG) circuit to demagnetic the shadow mask and internal shield in the CRT.
Positor shows low resistance value in normal temperature, for example, eight ohm at 25°C.
When apply AC line voltage, about 16 Ap-p current flows three in degaussing coil. After seconds, resistance of positor increase rapidly by itself heating and degaussing current decrease less than 160 mAp-p.

The ADG circuit does a better job of degaussing the internal shield and shadow mask in the CRT than is possible with an external degaussing coil.

However, an external hand-held coil is more effective for degaussing chassis parts which may have become strongly magnetized during handling or transportation. Therefore, we recommend external degaussing at the time of installation of the monitor.

No routine external degaussing is needed.

For this initial degaussing, the HOZAN, Model HC-21 or similar degaussing coil is recommended. Connect the degaussing coil to a 120-volt AC line and hold the coil about one inch away from the CRT and chassis. More the coil slowly in a circular motion parallel to the front of the monitor for a few seconds. Then slowly back away several feet from the monitor and turn off the degaussing coil.

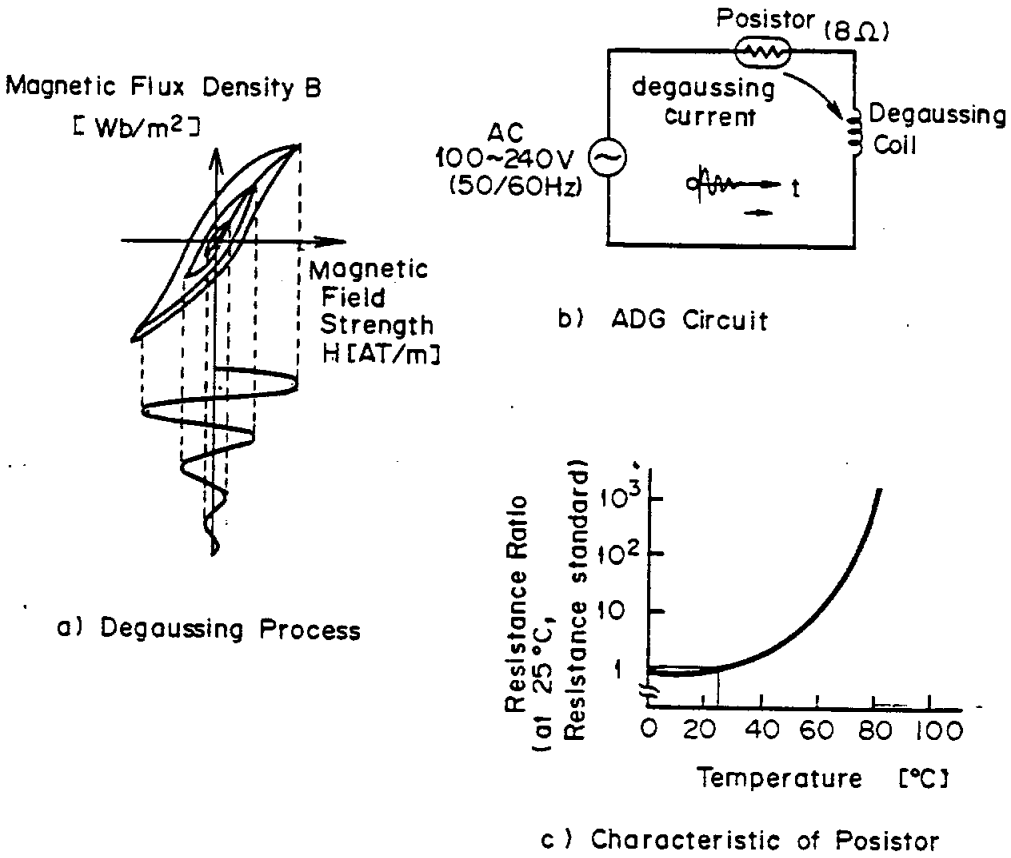


Fig. 3-24 Automatic Degaussing Circuit

3.9 LOW VOLTAGE DC POWER SUPPLIES

The primary dc power source is +B1 (+80V) switching regulator on the PCB-POWER. Other power sources (+16V dc, CRT Heater (6.3V), H-CENT, +B2 (+170V)) are shown in Fig. 3-9.

These power sources obtained from horizontal output transformer T502 by pulse rectification.

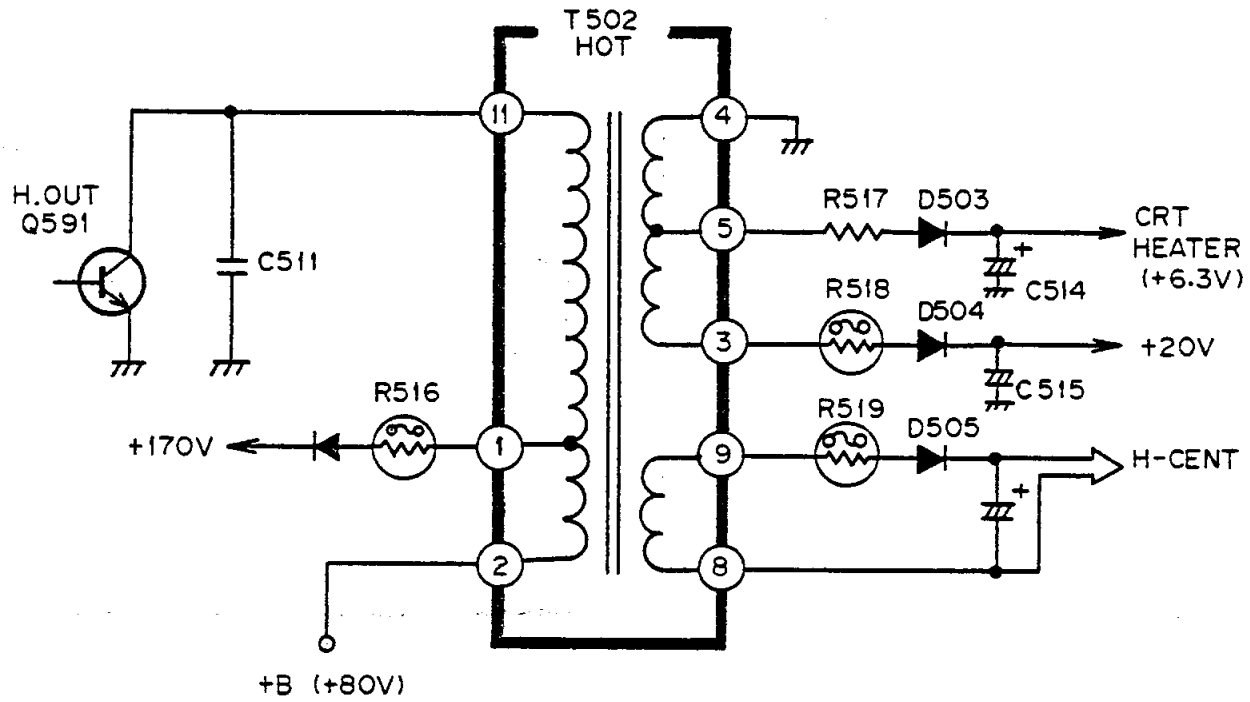


Fig. 3-25 Low Voltage Power Supply Circuits

SECTION 4
MAINTENANCE

SAFETY PRECAUTIONS

(NOTICE) Observe all cautions and safety related notes located inside the monitor cabinet and on the monitor chassis.

WARNING

1. Operation of these monitors outside the cabinet or with the cover removed, involves a shock hazard from the monitor power supplies. Work on the monitor should not be attempted by anyone who is not throughly familiar with precautions necessary when working on high voltage equipment.

2. Do not install, remove or handle the picture tube in any manner unless shatter-proof goggles are worn.
People not so equipped should be kept away while handling picture tube. Keep picture tube away from the body while handling.

X-RADIATION WARNING

The surface of picture tube may X-Radiation. Precaution during servicing and if it possible use of a lead apron of metal for shielding is recommended.
To avoid possible exposure to X-Radiation and electrical shock hazard, the high voltage compartment must be kept in place whenever the chassis is in operation. When replacing picture tube, use only designated replacement part since it is a critical component with regard to X-Radiation at noted above.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in color display monitor have special safety related characteristics.
These characteristics are often not evident form visual inspection not can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have these special safety characteristics are identified in this service manual.

Electrical components having such features are identified by shading on the schematic diagram and the parts list of this service manual and by marking on the supplementary sheet for this chassis to be issued subsequently, therefore replacement of any safety parts should be identical invalue and characteristics.

ALIGNMENT PROCEDURE

Monitor alignment procedures contained in this section should be follow whenever a major component is replaced: such as a CRT, deflection yoke, or circuit board.
Some alignment may also be required periodically to correct for component ageing. Degaussing should be performed periodically whenever it is suspected that degaussing is required. These alignment procedures should be performed in the order given herein. Due to interaction, some portions of the alignment procedures may require repeating.

For quick reference, all maintenance adjustments are listed in Table 4-1, together with the location, circuit designator and related paragraph for each control. Figure 4-1 through 4-3 shows the location of all adjustments.

In the following alignemnt procedures it is assumed that proper line voltage and frequency are available. A video source with proper line rate is required for application to the red, green, and blue inputs. The green video must contain composite sync or a proper signal supplied to the external sync input. After all inputs have been connected, the Horizontal Hold (VR502) and the Vertical Hold (VR401) must be adjusted for a stable picture. Approximately 30 minutes should be allowed for warm-up before proceeding.

4.1 RECOMMENDED ALIGNMENT/MAINTENANCE EQUIPMENT

The following test equipment items, or equivalent substitutions are recommended to alignment or maintenance the monitor.

1.	Signal Generator	
2.	High Voltage Meter	- SINGER Type-ESH Electrostatic volt-meter, Class 1.0 30 kV or High voltage Probe to 30 kV
3.	AC Voltmeter	YOKOGAWA Type 2013 Class 0.5
4.	DC Voltmeter	YOKOGAWA Type 2011 Class 0.5
5.	Volt-Ohm-Ammeter	AC, DC, ohms 1% on DC
6.	Degaussing Coil	HOZAN Type HC-21

7.	Variac	Swing line voltage ± 10%
8.	Convergence Error Gaugw	RCA Type PIX503G
9.	Luminescence Meter	Minolta Type nt-1°
10.	Magnifying Glass	8-10 Power
11.	Alignment Tools	

4.2 SETTING

4.2.1 Set the Control VRs as following.

a. Center position

PCB-MAIN	VR401	VR402
	VR403	VR404
	VR405	VR406
	VR501	VR502
	VR503	VR530
	VR532	FOCUS
	SCREEN	
PCB-CRT	VR201	VR231
	VR261	
PCB-POWER	VR901	
MISSELANEOUS	VR591 (CONT)	

b. Full counter clockwise position

PCB-MAIN	VR531 (HV-LIMIT)	
PCB-CRT	VR202	VR232
	VR262	

4.2.2 Insert a connector (PE) on the PCB-POWER to the AC line input voltage (100 ∿ 120 V or 220 ∿ 240 V AC)

4.3 DEGAUSSING

The display monitor should be degaussed before set-up and adjustment procedure are performed. The display monitor is equipped with Automatic Degaussing Circuit.

Other parts of the monitor may also require degaussing. This would be indicated by poor color purity or convergence which cannot be corrected by normal alignment. Degaussing of the monitor chassis is performed manually by using a commercial degaussing coil. The following procedure should be adhered to when using a degaussing coil:

a. With the coil switch in the OFF position and perpendicular to the screen, turn the switch to the ON position.

b. Turn the coil parallel to the screen and, with a circular motion, slowly bring the coil to the monitor.

c. Continuing the circular motion, pass the coil over the front, top, and sides of the monitor for approximately two minutes.

d. Then, moving in a circular motion and with the coil perpendicular to the monitor, slowly back away 6 to 8 feet and turn the coil switch OFF.

NOTE: Degaussing Coil - HOZAN, Type HC-21

4.4 HORIZONTAL AND VERTICAL HOLD CONTROLS

Set Hor. Hold (VR502) and Vert. Hold (VR403) on the PCB-MAIN for stable picture.

4.5 DC SOURCE VOLTAGE ADJUSTMENT

a. Check the AC input line voltage is within 100 ∿ 120 V AC or 220 ∿ 240 V AC.

b. Supply a line voltage to the PCB-POWER through the connector (PA).

c. Connect the DC voltmeter to the collector of Q593 on the RADIATOR-D and the chassis. Adjust +B1 Control (VR901) on the PCB-POWER at DC V.

4.6 HIGH VOLTAGE AND HV LIMITER ADJUSTMENT

a. Remove a line voltage.

b. Connect a high voltage meter between the anode cap of CRT and the chassis.

c. Supply a line voltage.

d. Turn High Voltage Control (VR532) on the PCB-MAIN gradually clockwise until a reading of 25.8 ± 0.3 kV is achieved.

If High Voltage value cannot be obtained, adjust the +B1 Control (VR901) to get 25.8 ± 0.3 kV.

e. Turn High Voltage Limiter Control (VR531) gradually clockwise to operate the High Voltage Safety Circuit and goes out the raster.

f. Remove a line voltage.

g. Reset the High Voltage Control (VR532) to the center position and supply a line voltage.

h. Adjust High Voltage Control (VR532) for 22 ± 0.3 kV at anode cap of CRT.

NOTICE

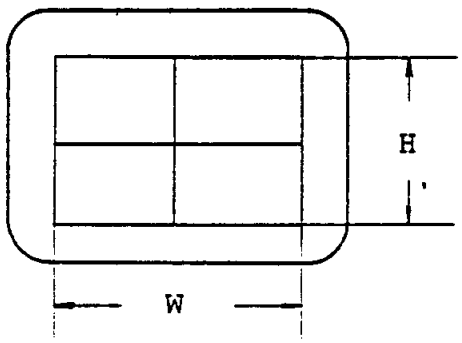
High Voltage Control (VR532) and HV Limiter Control (VR531) are critical components and never adjust or replace these components in the field servicing.

4.7 WIDTH AND HEIGHT ADJUSTMENT

a. Select a OUT-LINE test pattern.

b. Adjust Hor. Width Control (L503) and Vert. Height Control (VR401) for a OUT-LINE pattern size.

WIDTH x HEIGHT : 250 ± 5 x 180 ± 5



4.8 VERTICAL LINEARITY ADJUSTMENT

a. Select a cross-hatch test pattern.

b. Adjust Vert. Linearity Control (VR402) for uniform spacing of cross-hatch at top/bottom and center of viewing area.

4.9 SIDE PCC ADJUSTMENT

a. Select a cross-hatch test pattern.

b. Observe the vertial lines at the left and right sides, adjust PCC Phase Control (VR404) and PCC Amp Control (VR405) on the PCB-MAIN to obtain straight vertical edges at the right and left sides of the screen.

4.10 HORIZONTAL CENTERING ADJUSTMENT

a. Select a OUT-LINE test pattern.

b. Adjust Hor. Centering Control (VR503) to center the raster on the screen.

4.11 VERTICAL CENTERING ADJUSTMENT

a. Select a OUT-LINE test pattern.

b. Vertical centering correction is selected by the position of connector (DH).

Three selections of vertical centering are provided. To select no vertical centering correction, the connector (DH) is plugged into connector (DH) receptacle pin 2. Plugging the connector (DH)

into pin 1 or pin 3 will deflect the entire raster vertically.

The direction of raster movement may be reversed by selecting the connector (DH) when plugged into pin 1 or pin 3.

c. Adjust Vert. Centering Control (VR406) to center the raster on the screen.

4.12 VIDEO PHASE ADJUSTMENT

a. Select a OUT-LINE test pattern.

b. Ensure Hor. Hold Control (VR502) has been adjusted.

c. Adjust Brightness Control (VR530) and Contrast Control (VR591) for a picture of suitable contrast with the dim raster.

d. Adjust Hor. Phase Control (VR501) to center the OUT-LINE picture on the raster.

4.13 GRAY SCALE TRACKING ADJUSTMENT

4.13.1 Cathode Bias and Screen Bias adjustment

a. Select a WHITE-FIELD test pattern.

b. Turn the Contrast Control (VR591) fully counter-clockwise.

c. Connect the DC voltmeter to the cathode of D202, D232 or D262 on the PCB-CRT. Set the R, G, B-Bias Controls (VR202, VR232 and VR262) on the PCB-CRT at DC + 150 $\pm$ 3 V.

d. Connect the DC voltmeter to the connector (DC), pin 3 on the PCB-MAIN. Set the Brightness Control (VR530) at DC + 30 ± 0.5 V.

e. Turn Screen Bias Control (R591) located High Voltage resistor block
Observe the raster color to determine which CRT beams are visible.

f. Adjust the R, G, B - Bias Controls (VR202, VR232 and VR262) as required to equalize the three beam intensities resulting a grey raster.

4.13.2 Video Drive adjustment

a. Prior to performing the video drive adjustment, the cathode bias and screen bias adjustment must be proper.

b. Select a WHITE-FIELD test pattern.

c. Set the Contrast Control (VR591) to the center of the range.

d. Set the three Contrast Controls (VR201, VR231 and VR261) on the PCB-CRT fully clockwise position.

e. Observe the highlight color and adjust the three Contrast Controls (VR201, VR231 and VR261) to obtain white highlights.

4.14 FOCUS ADJUSTEMNT

a. Select a DOT test pattern.

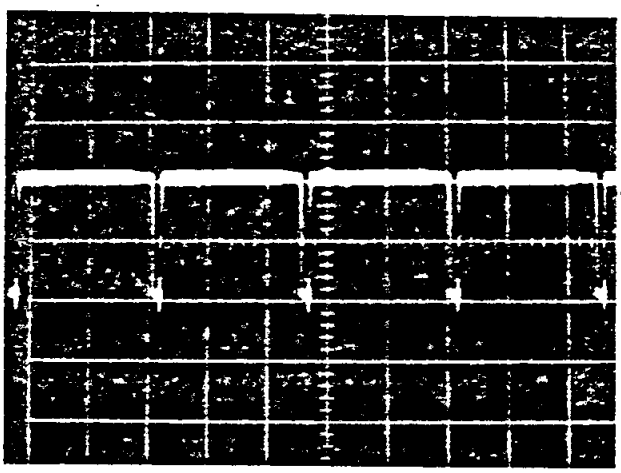
b. Adjust the Contrast Control (VR591) for a normal display

c. Adjust the Focus Control (R591) located High voltage resistor block (Fig.) for best overall focus, observating both the center and corners of the screen.

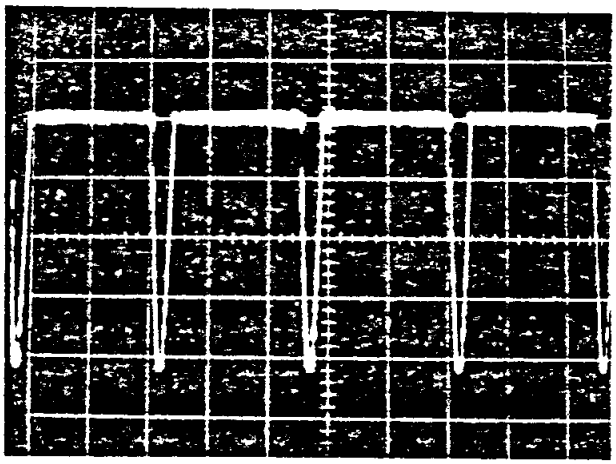
4.15 WAVEFORM DATA

Each waveform, in Fig. 4-4a through 4-4q, is labeled with the waveform number, the vertical scaling in volts per division and the horizontal scaling in time per division. The waveforms are ferenced by waveform number in the schematic diagram contained in Fig. 5-1. when measuring waveforms proper line voltage and video, HD and VD inputs must be applied to the monitor. Connect the vertical sync pulse to the oscilloscope external-trigger-imput and adjust the time base to that specified on the waveform label. The vertical sync pulse may be obtained from the video source or from vertical circuit in the monitor at R410/R411 on the PCB-MAIN. When observing horizontal circuit waveforms, sync may be obtained from horizontal pulse at CONNECTOR-PB #2 on the PCB-MAIN.

Note: When madsuring waveforms of primary power circuit, Oscilloscope GND terminal must be connected to primary GND point, for example, emitter of Q901.

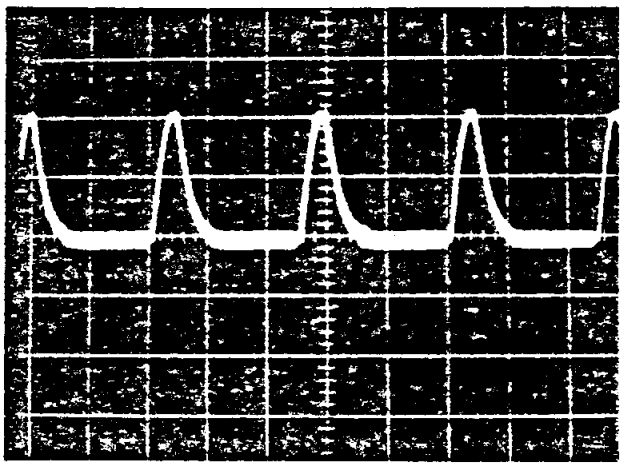


(1) Q901 COLL, 5V, 20μs

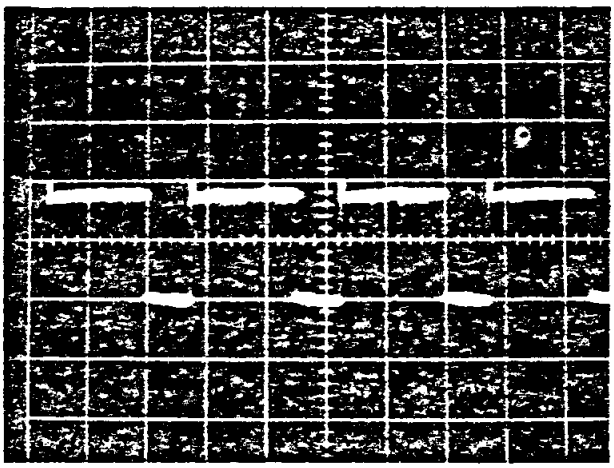


(2) CONNECTOR (PB) #2, 20V, 20μs

Fig. 4-4 a. Waveforms (PCB-POWER)

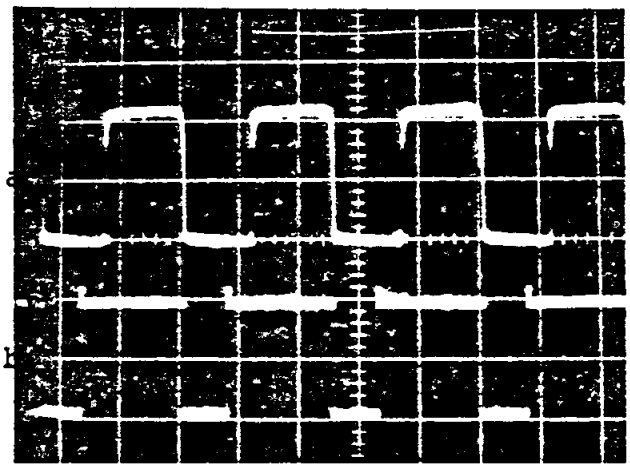


(3) Q901 BASE, 1V, 20μs

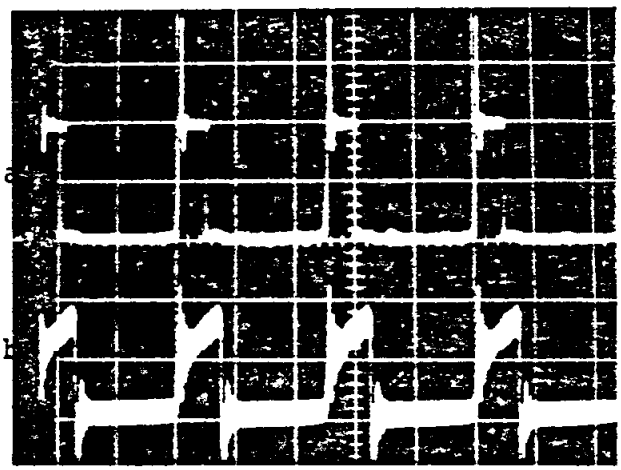


(4) IC901 #3, 5V, 20μs

Fig. 4-4 b. Waveforms (PCB-POWER)

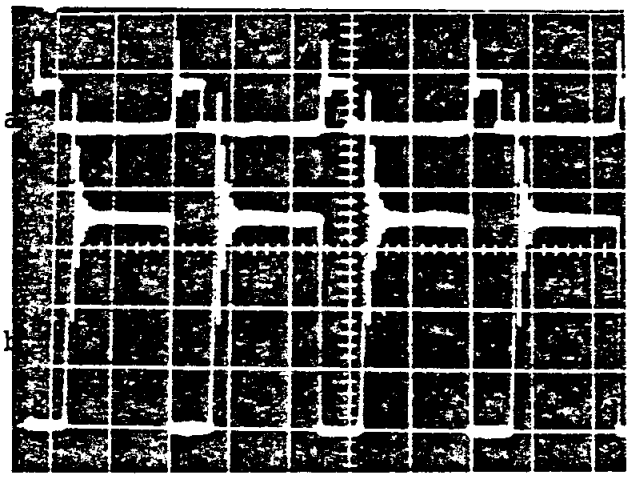


(5) a. Q903 COLL, 2V, 20μs
b. IC901 #3, 5V

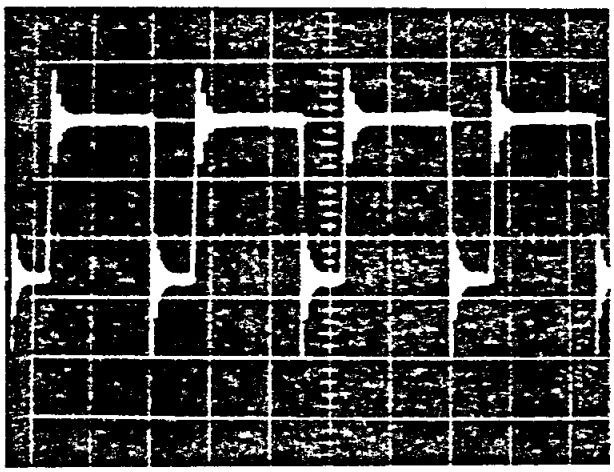


(6) a. Q904 COLL, 20V, 20μs
b. Q991 BASE, 2V

Fig. 4-4 c. Waveforms (PCB-POWER)

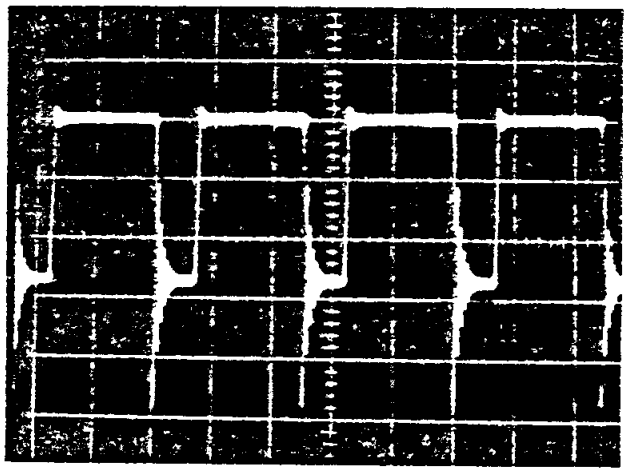


(7) a. Q904 COLL, 50V, 20μs
b. Q991 COLL, 100V



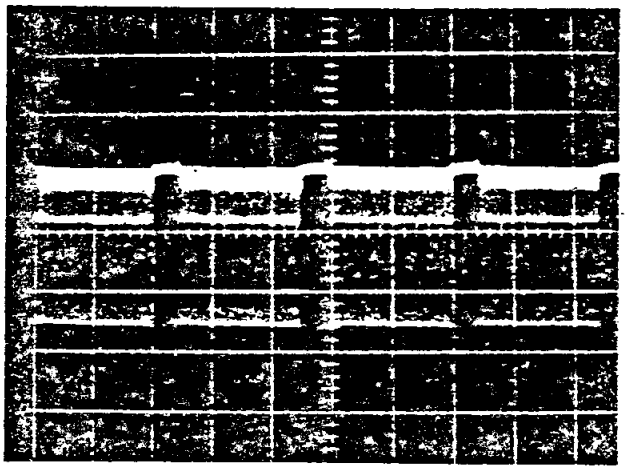
(8) T902 #1, 50V, 20μs

Fig. 4-4 d. Waveforms (PCB-POWER)

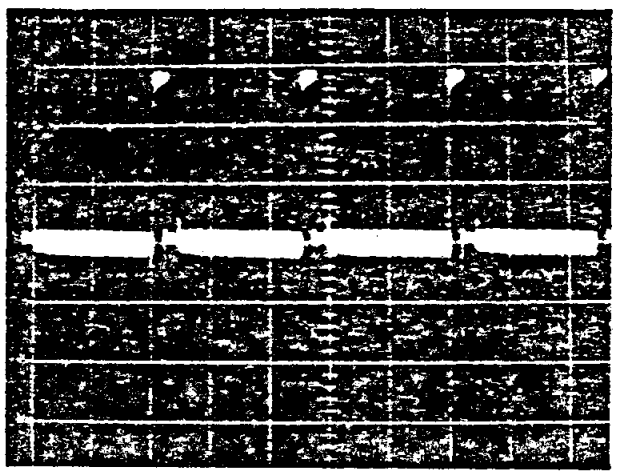


(9) T902 #7, 100V, 20μs

Fig. 4-4 e. Waveforms (PCB-POWER)

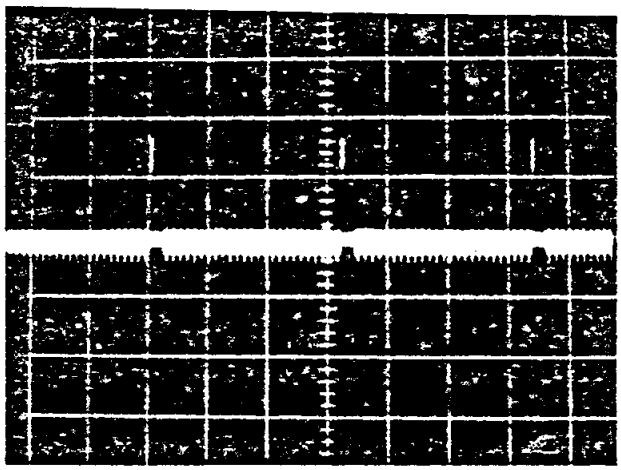


(10) CONNECTOR-VA #1, 2V, 20μs

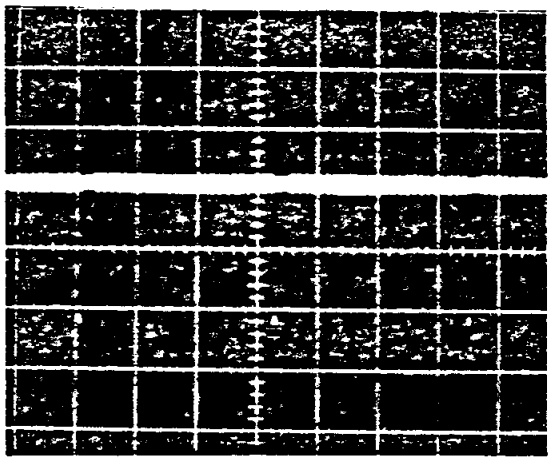


(11) CONNECTOR-VA #7, HD, 1V, 20μs

Fig. 4-4 f. Waveforms (PCB-MAIN)

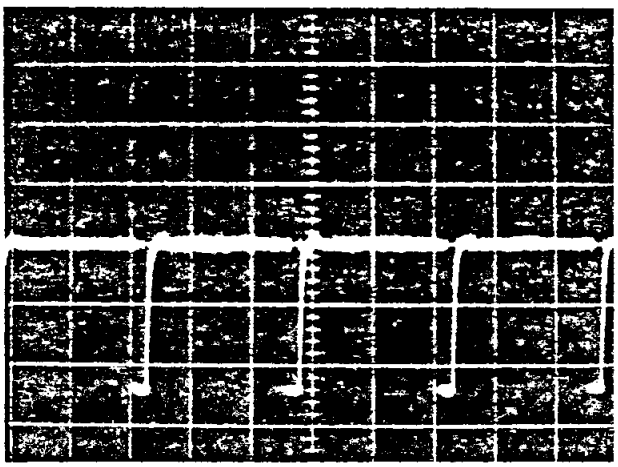


(12) CONNECTOR-VA #9, VD, 1V, 5ms

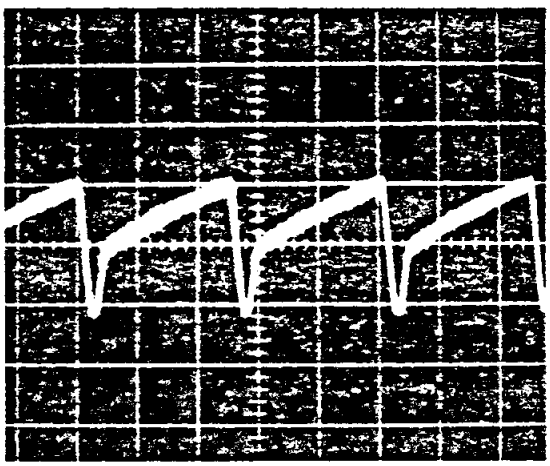


(13) Q401 COLL, 1V; 5ms

Fig. 4-4 g. Waveforms (PCB-MAIN)

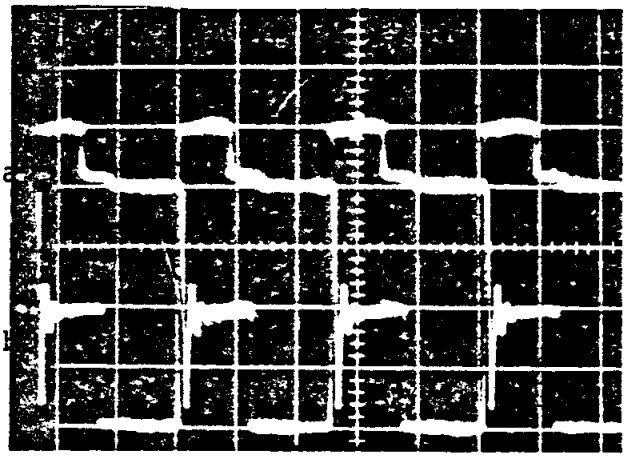


(14) Q501 COLL, 5V, 20μs

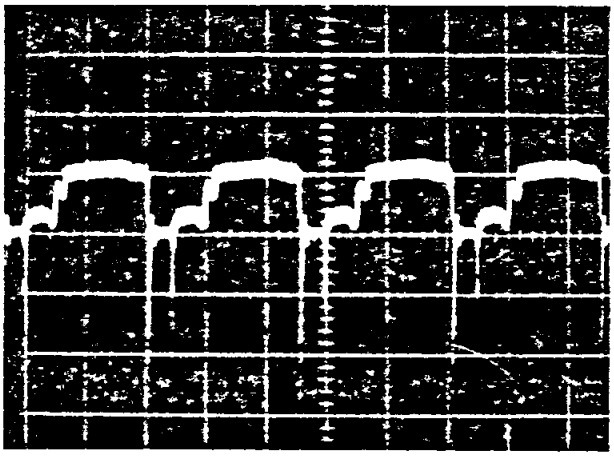


(15) IC401 #14, 2V, 20μs

Fig. 4-4 h. Waveforms (PCB-MAIN)

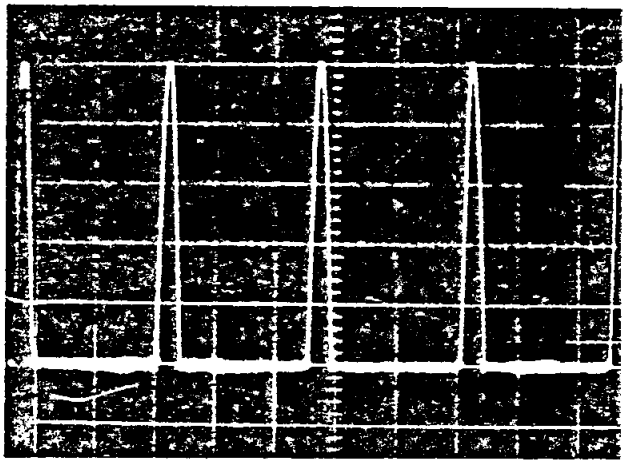


(16) a. IC401 #10, 5V, 20μs
b. Q502 COLL, 50V

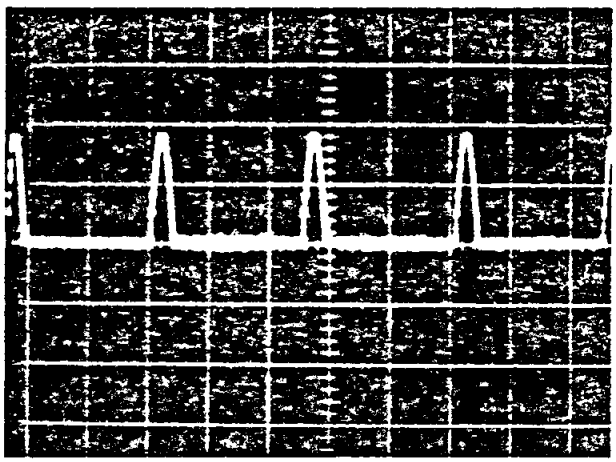


(17) Q591 BASE, 2V, 20μs

Fig 4-4 i. Waveforms (PCB-MAIN)

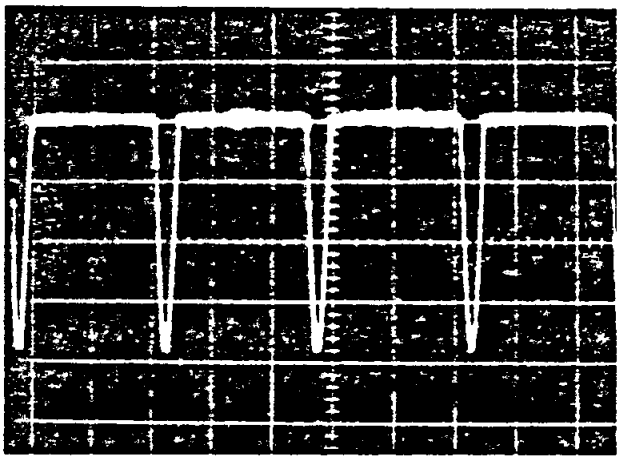


(18) Q591 COLL, 800 Vp-p, 20μs

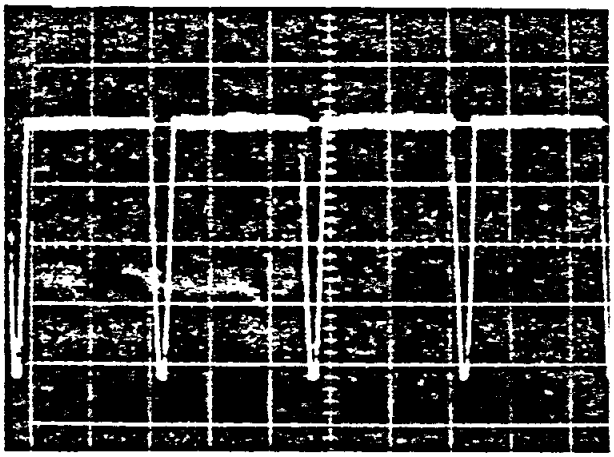


(19) T502 #1, 50V, 20μs

Fig 4-4 j. Waveforms (PCB-MAIN)

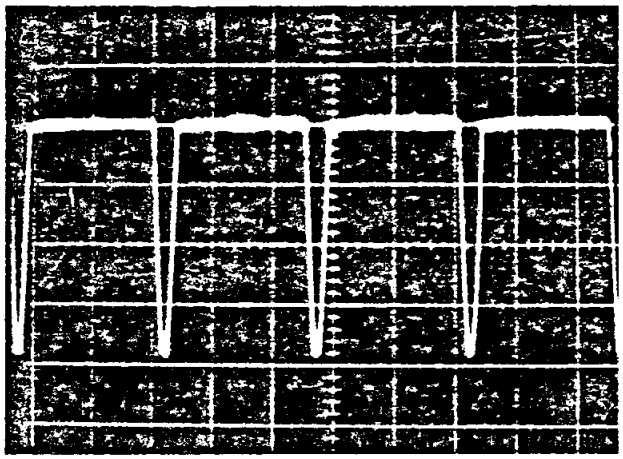


(20) T502 #3, 50V, 20μs

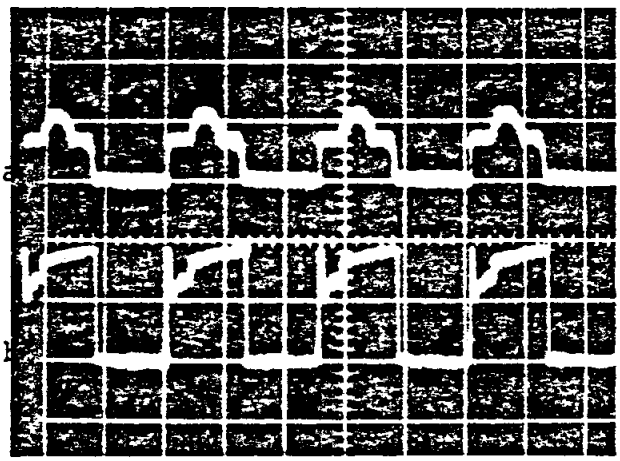


(21) T502 #5, 20V, 20μs

Fig 4-4 k. Waveforms (PCB-MAIN)

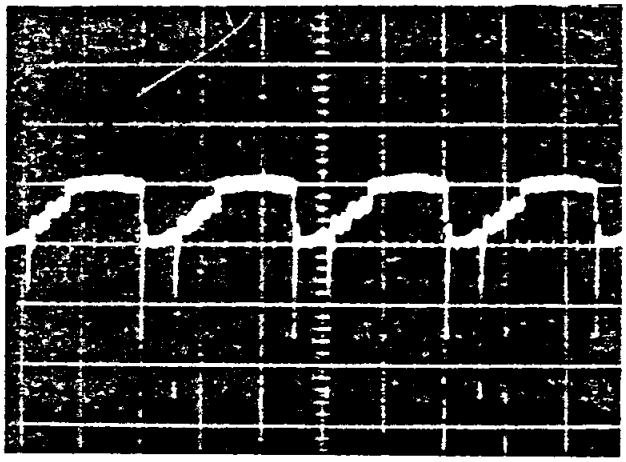


(22) T502 #8(GND)-#9, 5V, 20μs

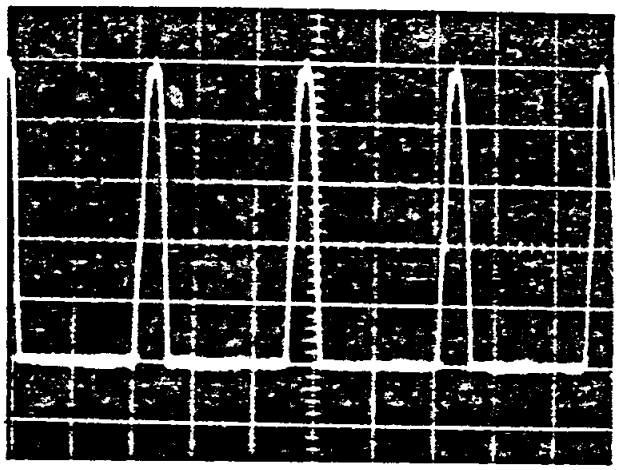


(23) a. Q531 BASE, 1V, 20μs
b. Q531 COLL, 50V

Fig. 4-4 l. Waveforms (PCB-MAIN)

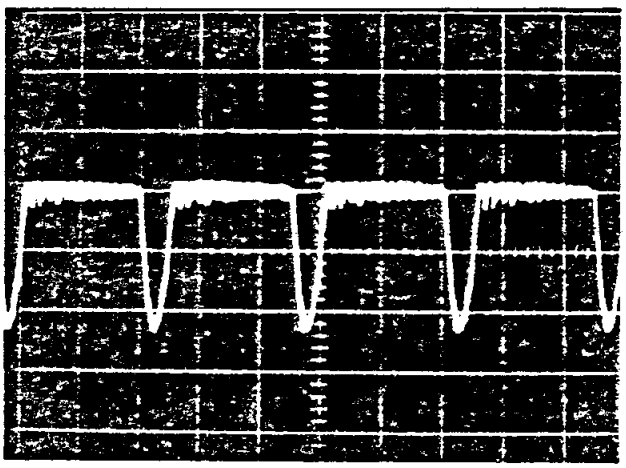


(24) Q592 BASE, 2V, 20μs

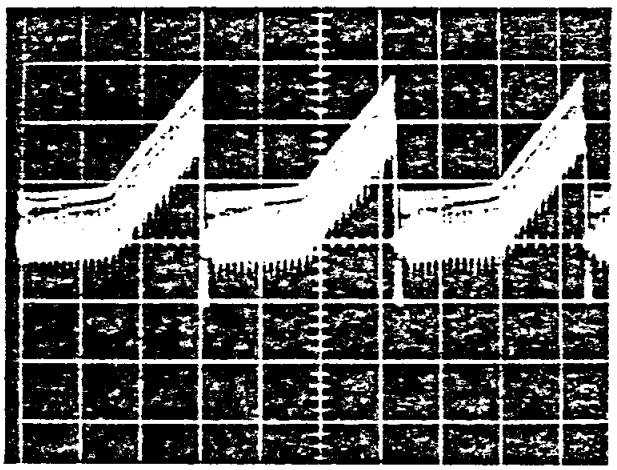


(25) Q592 COLL, 100V, 20μs

Fig. 4-4 m. Waveforms (PCB-MAIN)

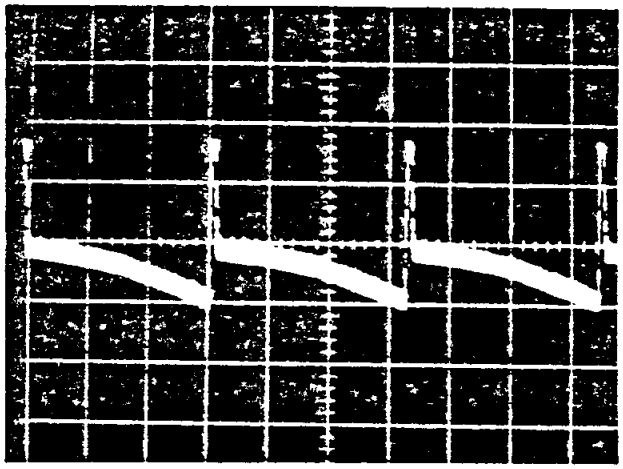


(26) T531 #3, 50V, 20μs

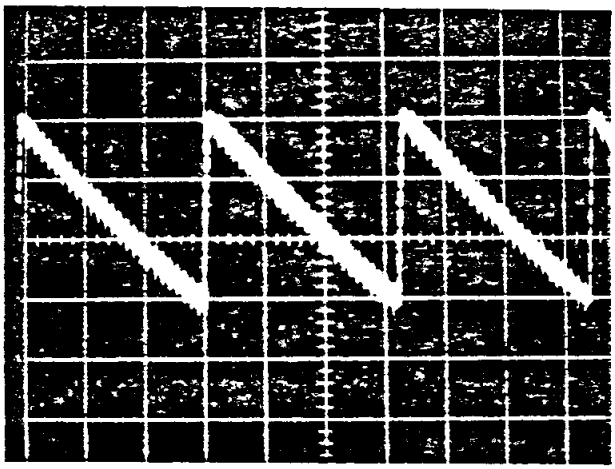


(27) IC401 #2, 0.5V, 5ms

Fig. 4-4 n. Waveforms (PCB-MAIN)

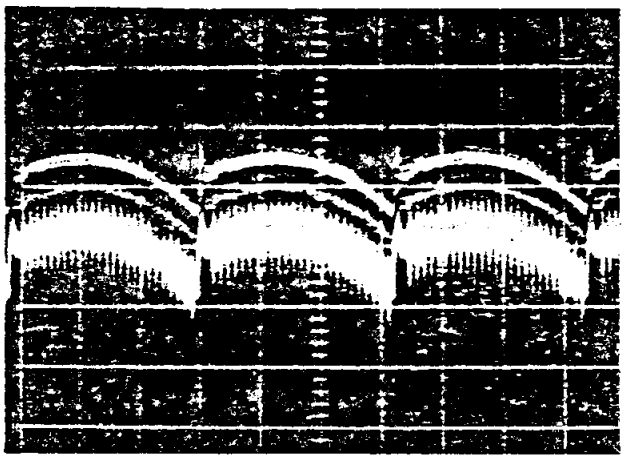


(28) Q492 COLL, 20V, 5ms

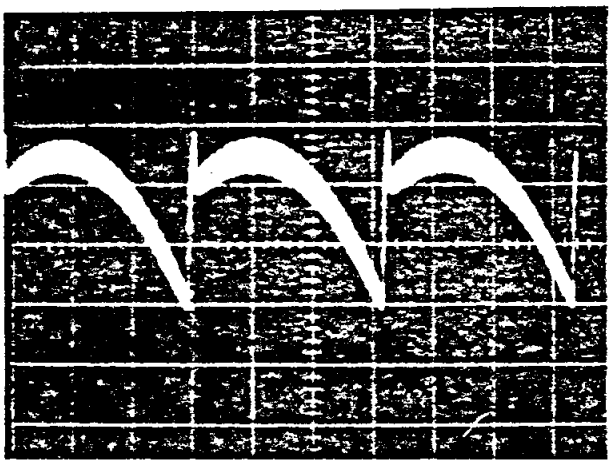


(29) R410/R411, 1V, 5ms

Fig. 4-4 o. Waveforms (PCB-MAIN)

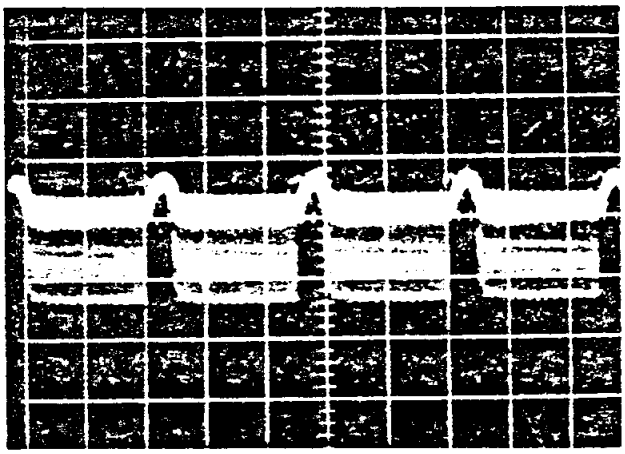


(30) Q402 BASE, 0.2V, 5ms

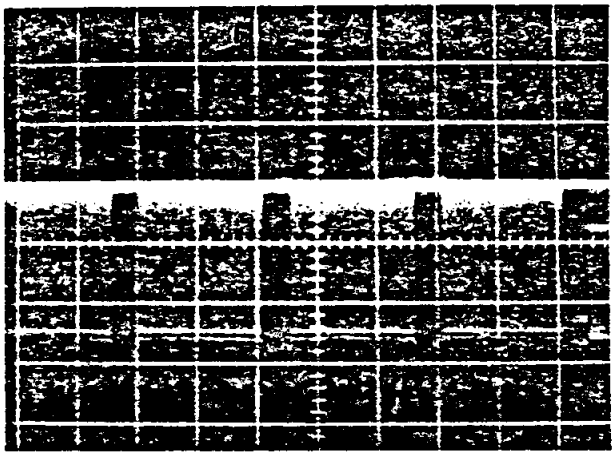


(31) Q403, COLL, 2V, 5ms

Fig 4-4 p. Waveforms (PCB-MAIN)



(32) Q201 EMIT, 0.5V, 20μs



(33) Q202 EMIT, 20V, 20μs

Fig. 4-4 q. Waveforms (PCB-CRT)

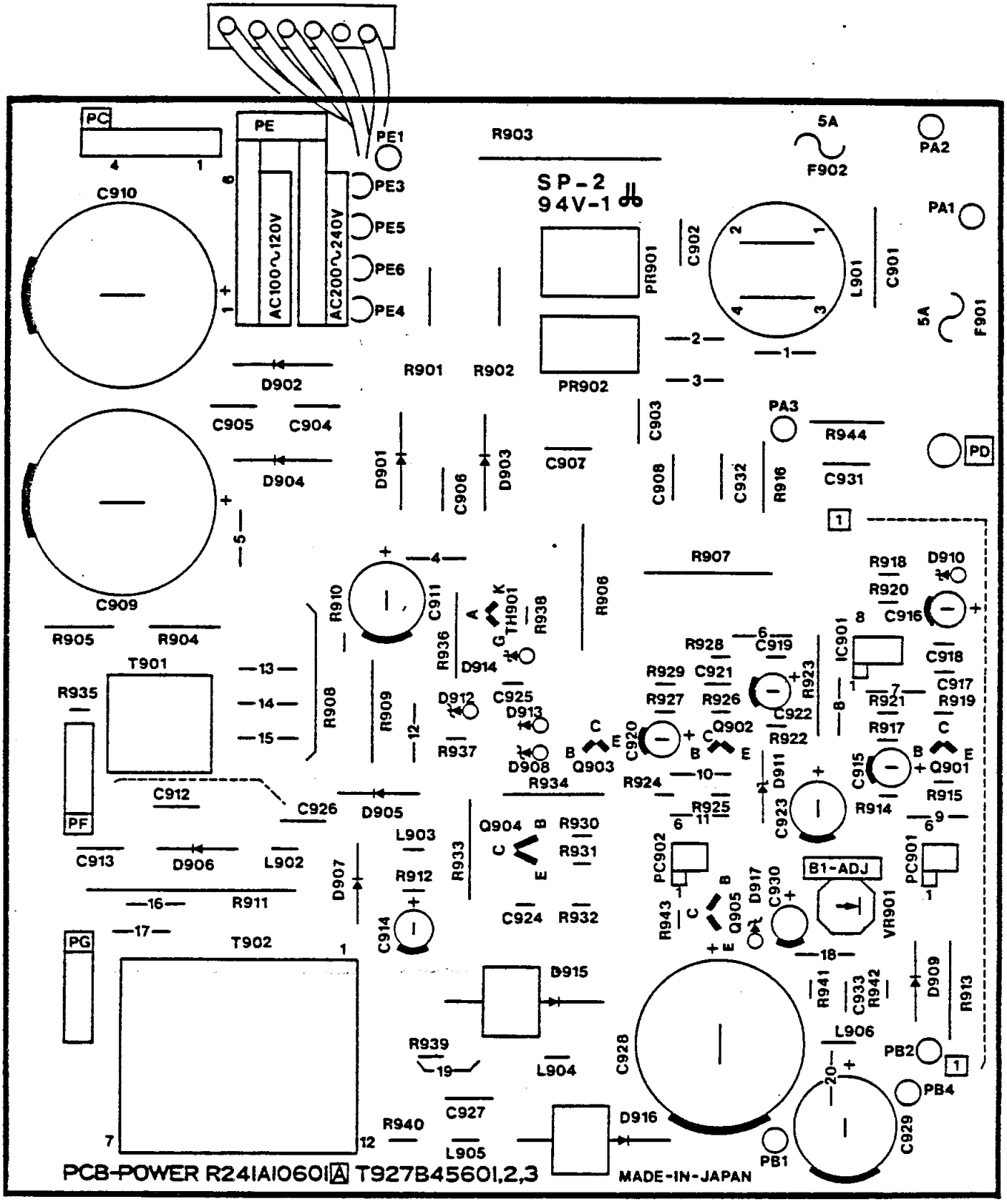


Fig. 4-1 PCB-POWER Location

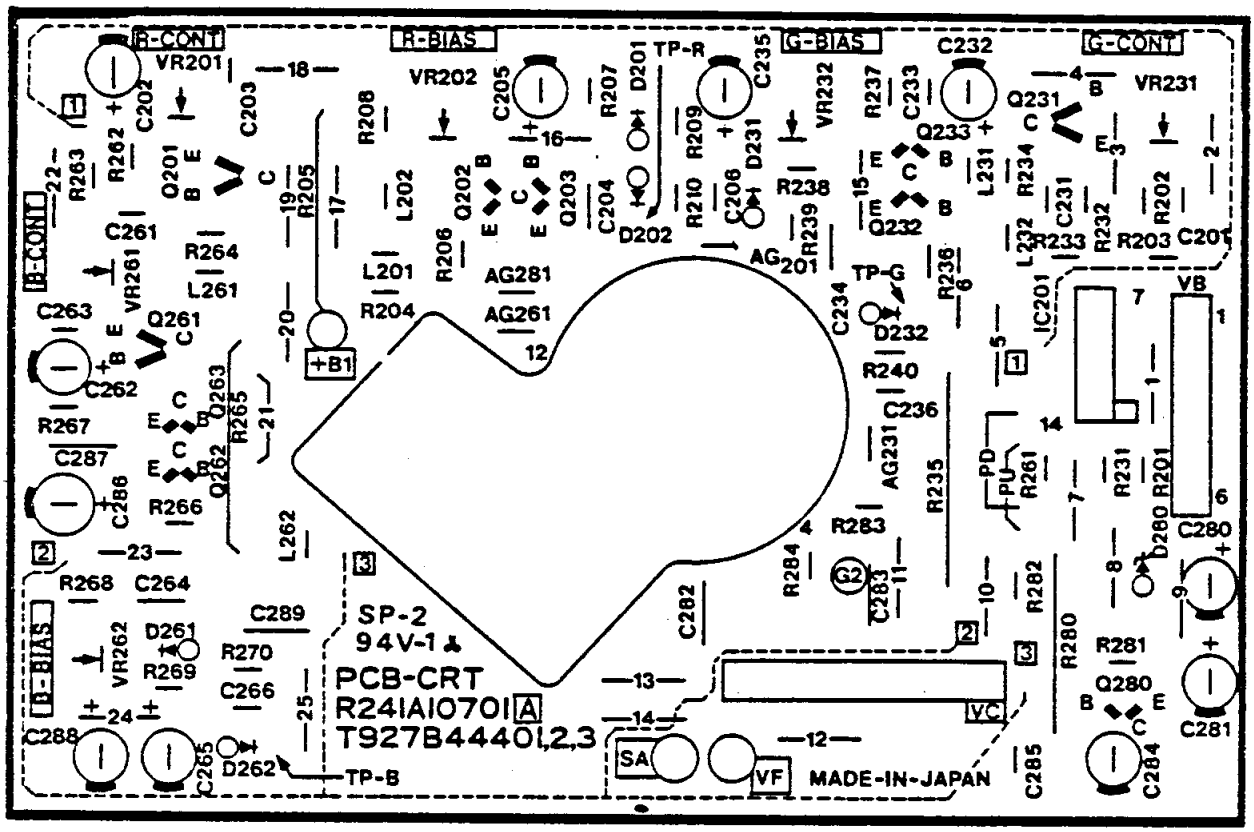


Fig. 4-3 PCB-CRT Location

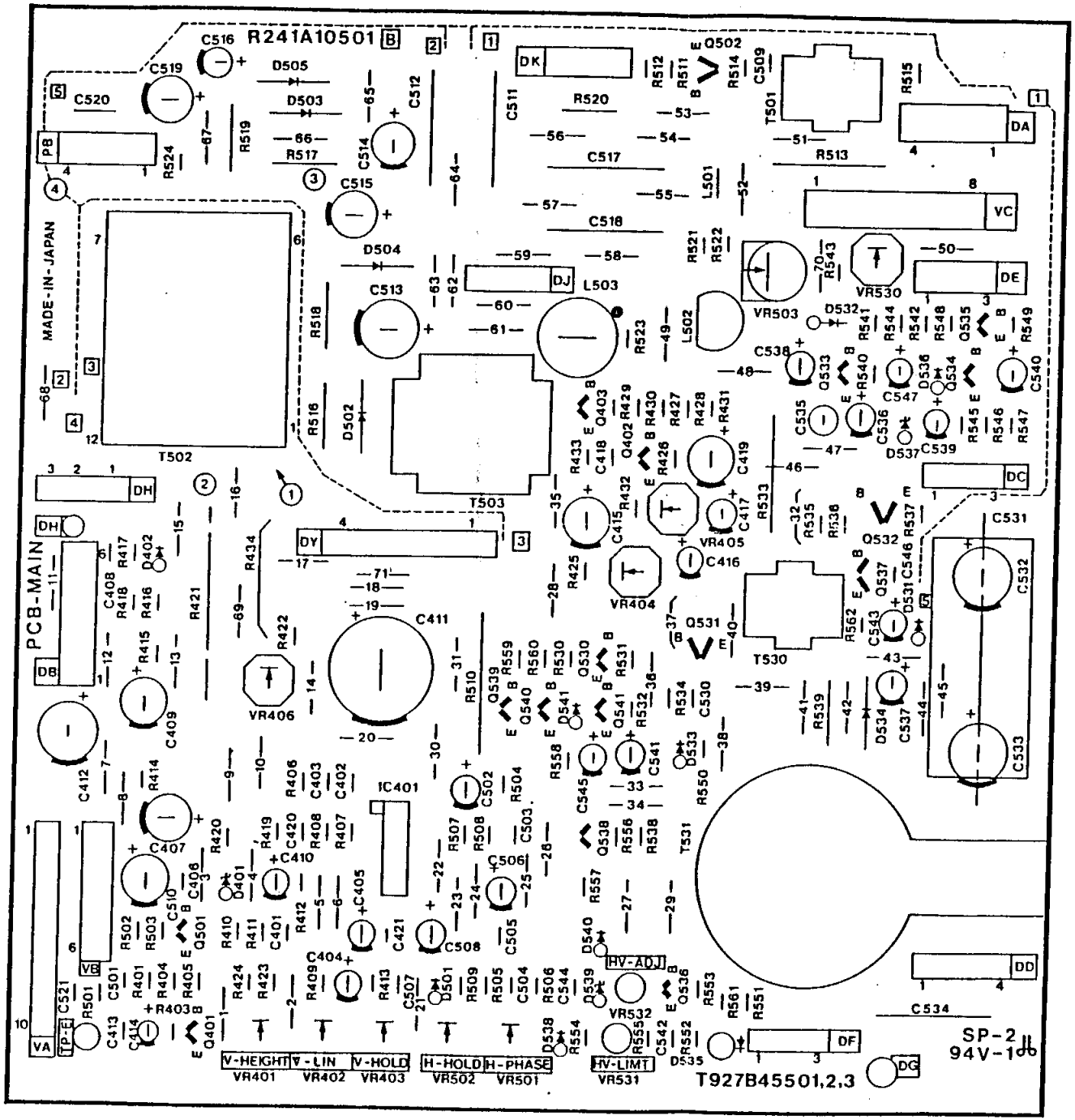


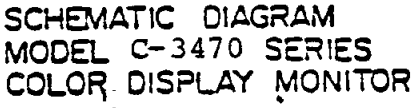
Fig. 4-2 PCB-MAIN Location

SECTION 5
SCHEMATIC DIAGRAMS

MODEL: C-3470

The complete schematic diagram for the monitor is contained in four sections.

Fig.5-1



The numbered references on the schematic diagrams are the waveform designators for the waveforms contained in Fig. through Fig.

NOTE 1:

1. The unit of resistance "ohm" entirely omitted.
   Accordingly, K=1000 ohms,
   M=1000K ohms
2. The wattage of resistor, not specifically designated, is 1/4 Watt.
3. Resistors, not specifically designated, are: Fixed carbon film resistor.
4. The marks of resistor are as follow:
   - S : Composition (Solid type) resistor
   - CE : Cemented resistor
   - MB : Metal oxide film resistor (type B)
   - W : Wire wound resistor
5. The tolerance of resistor value, not specifically designated, is ±5%, K = ±10%, M = ±20%
6. The unit of capacitance, not specifically designated,
   a) μF, for numbers less than 1
   b) pF, for numbers great than 1

7. Capacitors, not specifically designated are: ceramic Capacitors except electrolytic capacitors.

8. The marks of capacitors are as follow:

   (MF) : Polyester film capacitor

   (PC) : Paper capacitor (type C)

   (PP) : Polypropylene film capacitor

   (PL) : Plastic film capacitor

   (TAN) : Tantalum capacitor

   : Electrolytic capacitor

9. The PC work voltage of capacitor, not specifically designed is 50V.

10. The tolerance of capacitor value, not specifically designated,
    is: ±10% for polyester capacitor
        ±5% for ceramic capacitor
    and J=±5%, K=±10%, M=±20%, $P=\pm^{100}_{0}\%$
        C=±0.25pF, D=±0.5pF, F=±1pF, $Z=^{+80}_{-20}\%$

11. Specific Symbol

    Zener Diode, SCR (Thyristor)

    Triac, Air Gap

    Posistor

NOTE 2:

1. DC voltage were measured from points indicated to the circuit ground with a VTVM. Line voltage at 100V AC on signal applied.

2. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

SECTION 6
PARTS LIST

MODEL: C-3470

The following table contains a list of replaceable sub-assemblies, and Chassis piece parts. In order to expedite delivery of replacement part orders.

Specify: 1. Model Number
2. Part Number and Description
3. Quantity

Unless full information is supplies, delay in execution of orders will result.

RESISTOR

MARK	TOLERANCE
J	±5%
K	±10%
M	±20%
F	±1%

CAPACITOR

MARK	TOLERANCE	MARK	TOLERANCE
J	±5%	Z	+80% -20%
K	±10%	C	±0.25pF
M	±20%	P	±0.5pF
P	+100% -0%	F	±1pF

* R100 : Critical component

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	TUBE		
V291	254P47301	Picture Tube	AT1429LB22-TC05
	ICs		
IC201	271P03801	IC	SN74S38N
IC401	262P50101	"	HA11414
IC901	266P71902	"	M51841P
	TRANSISTORS		
Q201Q231Q261	270P51401/ 270P51406	TRANSISTOR	2SC1507(1)/2SC1505L
Q202Q232Q262	270P51102	"	2SC2229-Y
Q203Q233Q263	270P51002	"	2SA949-Y
Q270	260P04003	"	2SC620-D
Q401	260P17105	"	2SC710-D
Q402	260P17706	"	2SC711A-EF
Q403	260P18603	"	2SB647A-B
Q491	270P50701	"	2SC2168
Q492	270P50701	"	2SC2168
Q501	260P17105	"	2SC710-D
Q502	270P51401/ 270P51406	"	2SC1507(1)/2SC1505L
Q530	260P04003	"	2SC620-D
Q531	270P51401/ 270P51406	"	2SC1507(1)/2SC1505L
Q532	270P51201	"	2SC2317
Q533	260P35301	"	2SC1515K
Q534	270P16504	"	2SA628-F
Q535	260P17105	"	2SC710-D

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	TRANSISTORS		
Q536	260P17703	TRANSISTOR	2SC711A-G
Q537	260P35202	"	2SC1749-C,D
Q538	270P16504	"	2SA628-F
※Q539	260P17105	"	2SC710-D
※Q540	260P17105	"	2SC710-D
※Q541	260P17105	"	2SC710-D
Q591	270P52101	"	2SD870
Q592	270P52101	"	2SD870
Q593	260P21909	"	2SC1106
Q901	260P17106	"	2SC710-D,E
Q902	270P16503	"	2SA628A-E
Q903	260P17706	"	2SC711A-E,F
Q904	270P51401	"	2SC1507(1)
Q905	260P35202	"	2SC1749-C,D
Q991	270P50201	"	2SC2027

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	DIODE & OTHERS		
D201D231D261	274P51601	DIODE	ISS145
D202D232D262	264P20901	"	RC-2
D208	264P19303	"	MZ305-B
D281	264P19601	"	RU-2
D401	264P19306	DIODE	MZ312-B
D402	264P04502	"	IS2076A
D403	264P04502	"	IS2076A
D501	264P04502	DIODE	IS2076A
D502	264P19601	"	RU-2
D503	264P19601	"	RU-2
D504	264P19601	"	RU-2
D505	264P19601	"	RU-2
D506	264P04702	"	IS2076A
D531	264P19303	DIODE	MZ305-B
D532	264P19601	"	RU-2
※ D534	264P19601	"	RU-2
D535	264P15101	"	GL3AR1
D536	264P04502	"	IS2076A
D537	264P22004	"	MZ306-B
※ D538	264P04502	"	IS2076A
※ D539	264P22004	"	MZ306-B
※ D541	264P04502	"	IS2076A
D901	264P14701	DIODE	RM-2C
D902	264P14701	"	RM-2C
D903	264P14701	"	RM-2C
D904	264P14701	"	RM-2C
D905	264P19601	"	RU-2
D906	264P19601	"	RU-2
D907	264P19601	"	RU-2

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	DIODE & OTHERS		
D908	264P22108	DIODE	MZ336-B
D909	264P19601	"	RU-2
D910	264P22006	"	MZ310-B
D911	264P14405	"	MZ424-A2
D912	264P22008	"	MZ304-B
D913	264P04502	"	IS2076A
D914	264P19305	"	MZ303-B
D915	264P06808	"	S-15C
D916	264P06808	"	S-15C
D917	264P22001	"	MZ307-B
PC901	278P50101	PHOTO-COUPLER	PC614
PC902	278P50101	"	PC614
TH901	264P08208	THYRISTOR	CR02AM2

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION
	TRANSFORMERS	
T501	336P00504	Transformer-H-DRIVE
T502	409P50501	Transformer-H-OUT
T503	349C00902	Transformer-PCC-SIDE
T530	336P00504	Transformer-H-DRIVE
※T531	334P51001	FBT
T901	336P00801	Transformer-H-DRIVE
T902	350P16702	Transformer-POWER

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	COILS		
L201L231L261	325C08103	L-PEAK	10MHK
L202L232L262	325C08103	"	10MHK
L501	409p00605	L-PEAK	4.7MHK
L502	335D01301	H-L-WIDTH	ELH16F750
L503	333P00702	H-L-LIN	MLH-23/LH15J53
L901	351P00602	LINE-FILTER	
L902	321C03106	L-RF	15MHK
L903	321C01304	"	560MHK
L904	321C03102	"	6.8MHK
L905	321C03102	"	6.8MHK
L991	T409C05203	COIL-DEGAUSSING 14"	

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	CAPACITORS		
C201C231C261	155P31402	C-C	SL50V 330P-J
C202C232C262	181P26605	C-ELE	04W50V 10M
C203C233C263	142P02009	C-C	B50V 1000P-K
C204C234C264	172P08709	C-PP-P	630V0.01M-K
C205C235C265	180P04301	C-ELE	04W250V0.47M
C206C236C266	155P11006	C-C	SL500V5P-D
C-231	155P31308	"	SL50V 120P-J
C280	181P26100	C-ELE	04W10V100M
C281	181P26603	"	04W50V3.3M
C282	154P03106	C-C	YN2KV220P-K
C283	142P01402	"	E500V10000P-P
C284	181P26400	C-ELE	04W25V47M
C285	142P02308	C-C	F50V0.01M-Z
C286	181P26901	C-ELE	04W100V47M
C287	142P01402	C-C	E500V10000P-P
C288	180P04302	C-ELE	04W250V1M
C289	142P01402	C-C	E500V10000P-P
C401	172P01204	C-MF	50V0.022M-K
C402	172P01202	C-MF	50V0.01M-K
C403	142P02009	C-C	B50V1000P-K
C404	189D02808	C-TAN	25V3.3M-K
C405	189D02808	"	25V3.3M-K
C406	172P01202	C-MF	50V0.01M-K
C407	181P26401	C-ELE	04W25V100M
C408	142P01007	C-C	B500V330P-K
C409	181P26902	C-ELE	04W100V10M
C410	189D05807	C-TAN	35V22M-K
C411	185D02709	C-ELE	H100V680M-M
C412	181P26905	"	04W100V47M
C413	142P02009	C-C	B50V1000P-K
C-414	181P26602	C-ELE	04W50V2.2M

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	CAPACITORS		
C415	181P26905	C-ELE	04W100V47M
C416	189D07507	C-TAN	35V10M-K
C417	181P26605	C-ELE	04W50V10M
C418	142P02007	C-C	B50V680P-K
C419	181P26005	C-ELE	04W6.4V470M
C420	172P01109	C-MF	50V332K
C421	172P01206	"	50V473K
C501	142P02308	C-C	F50V103Z
C502	181P26601	C-ELE	04W50V1M-M
C503	142P02107	C-C	B50V4700P-K
C504	142P01005	B500V221K	C-C
C505	172P01203	C-MF	50V0.015M-K
C506	181P26601	C-ELE	04W50V1M-M
C507	172P12100	C-MF	50V5600P-J
C508	181P26400	C-ELE	04W25V47M-M
C509	142P01007	C-C	B500V330P-K
C510	181P26401	C-ELE	04W25V100M-M
C511	189D51006	C-P-PP	1.2KV0.0082M-J
C513	180P04306	C-ELE	04W250V10M-M
C514	181P26401	"	04W25V100M-M
C515	181P26403	"	04W25V330M-M
C516	181P26400	"	04W25V47M-M
C517	189D007202	C-M-MF	200V0.68M-K
C518	189D07206	"	200V0.1M-K
C519	180P04306	C-ELE	04W250V10M-M
C520	142P01308	C-C	D500V0.01M-M
C521	142P02009	"	B50V1000P-K
C530	142P01101	C-C	B500V680-K
C531	189D07205	C-M-MF	200V6.8M-K

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	CAPACITORS		
C532			
C533			
C534	189D51002	C-P-PP	1.2KV5600P-J
C535	172P01207	C-MF	50V 0.068
C536	181P26100	"	04W10V100M-M
C537	181P26605	"	04W50V10M-M
※ C538	181P26400	"	04W25V47M-M
C539	181P26308	C-ELE	04W25V22M-M
C540	181P26101	"	04W10V220M-M
C541	181P26400	"	04W25V47M-M
C542	172P01109	C-MF	50V332-K
※ C544	181P26603	C-ELE	50V3.3M-M
C545			
C546	142P01103	C-C	B500V1000P-K
C904	154P03202	C-C	B1KV1000P-K
C905	154P03202	"	B1KV1000P-K
C906	154P03202	"	B1KV1000P-K
C907	189D51901	C-M-P	250V2200P-K
C908	189D51901	"	"
C909	185D04803	C-ELE	04W200V470M
C910	185D04803	"	04W200V470M
C911	181P26906	"	04W100V100M
C912	172P08803	C-P-PP	630V2200P-J
C913	172P08803	"	630V2200P-J
C914	181P26809	C-ELE	04W100V2.2M
C915	181P26601	"	04W50V1M

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	CAPACITORS		
C916	181P26602	C-ELE	04W50V2.2M
C917	172P01007	C-MF	50V0.01M-J
C918	172P01007	"	50V0.01M-J
C919	172P01204	"	50V0.022M-K
C920			
C921	172P01207	C-MF	50V0.068M-K
C922	181P26602	C-ELE	04W50V2.2M
C923	181P26505	"	04W35V220M
C924	142P01007	C-C	B500V330P-K
C925	172P01206	C-MF	50V0.047M-K
C926	154P03506	C-C	YN2KV330P-K
C927	154P03506	"	YN2KV330P-K
C928	185D04804	C-ELE	04W160V470M
C929			
C930	181P26605	"	04W50V10M
C931			
C932	154P03105	"	YN2KV1000P-K
C933	172P01707	C-MF	100V0.068M-K

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	RESISTORS		
R201R231R261	103P32201	R-C-25	1/4W 470-J
R202R232R262	103P32104	"	1/4W 120-J
R203R233R263	103P32005	"	1/4W 22-J
R204R234R264	103P32301	"	1/4W 3.3K-J
R205R235R265	103C05203	R-METAL	3W 1.5K-J
R206R236R266	103P32103	R-C-25	1/4W 100-J
R207R237R267	103P32103	"	1/4W 100-J
R208R238R268	103P32401	"	1/4W 22K-J
R209R239R269	103P32508	"	1/4W 560K-J
R210R240R270	101P68103	R-COMP	1/2W 680-J
R233	103P32104	R-C-25	1/4W 120-J
R280	103C07104	R-M	2W 120-J
R281	103P32206	R-C-25	1/4W 1.2K-J
R282	103P32406	"	1/4W 56K-J
R283	109C51507	R-C	1/2W 220K-J
R284	101P56503	R-COMP	1/2W 5.6M-J
R401	103P32303	R-C-25	1/4W 4.7K-J
R402			
R403	103P32303	"	1/4W 4.7K-J
R404	103P32305	"	1/4W 6.8K-J
R405	103P32205	"	1/4W 1 K-J
R406	103P32203	"	1/4W 680-J
R407	103P32303	"	1/4W 4.7K-J
R408	103P32401	"	1/4W 22K-J
R409	103P32400	"	1/4W 18K-J
R410	109C51004	R-C	1/2W 8.2-J
R411	109C51004	"	1/2W 8.2-J
R412	103P32307	R-C-25	1/4W 10K-J
R413	103P32308	"	1/4W 12K-J
R414	109C51202	R-C	1/2W 270-J
E415	109C51303	"	1/2W 2.2K-J

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	RESISTORS		
R416	109C51303	R-C	1/2W 2.2K-J
R417	109C51007	"	1/2W 15-J
R418	109C51005	"	1/2W 10-J
R419	103P32307	R-C-25	1/4W 10K-J
R420	103P32400	"	1/4W 18K-J
R421	102P08306	R-CEMENT	10W 150-K
R422	109C51206	R-C	1/2W 560-J
R423	103P32009	R-C-25	1/4W 47-J
R424	103P32100	"	1/4W 56-J
R425	103P32209	"	1/4W 2.2K-J
R426	103P32205	"	1/4W 1K-J
R427	103P32408	"	1/4W 82K-J
R428	103P32403	"	1/4W 33K-J
R429	103P32303	"	1/4W 4.7K-J
R430	103P32303	"	1/4W 4.7K-J
R431	103P32107	"	1/4W 220-J
R432	103P32305	"	1/4W 6.8K-J
R433	109C51108	R-C	1/2W 120-J
R434	103C07308	R-METAL	2W1.8K-J
R501	103P32303	R-C-25	1/4W 4.7K-J
R502	103P32202	"	1/4W 560-J
R503	103P32303	"	1/4W 4.7K-J
R504	103P32304	"	1/4W 5.6K-J
R505	103P32204	"	1/4W 820-J
R506	109C51405	R-C	1/2W 22K-J
R507	103P32403	R-C-25	1/4W 33K-J
R508	103P32105	"	1/4W 150-J
R509	103P32305	"	1/4W 6.8K-J
R510	103C05301	R-METAL	3W 6.8K-J
R511	103P32205	R-C-25	1/4W 1K-J
R512	103P32201	"	1/4W 470-J

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	RESISTORS		
R513	103C07208	R-METAL	2W 1.8K-J
R514	103P32406	R-C-25	1/4W 56K-J
R515	103P32007	"	1/4W 33-J
R516	109P01307	R-FUSE	1/2W 4.7-K
R517	102P03303	R-W-P	2W 1-K
R518	109P01305	R-FUSE	1/2W 1.2-K
R519	109P01307	"	1/2W 4.7-K
R520	102P03303	R-W-P	2W 1-K
R521	109C51005	R-C	1/2W 10-J
R522	109C51005	"	1/2W 10-J
R523	109C51202	"	1/2W 270-J
R524	101P10003	R-COMP	1/2W 10-J
R530	103P32209	R-C-25	1/4W 2.2K-J
R531	103P32205	"	1/4W 1K-J
R532	103P32201	"	1/4W 470-J
R533	103C07302	R-METAL	2W 3.9K-J
R534	103P32309	R-C-25	1/4W 15K-J
R535	109C51502	R-C	1/2W 82K-J
R536	103P32205	R-C-25	1/4W 1K-J
R537	103P31503	"	1/4W 220K
R538	103P322205	"	1/4W 1K-J
※ R539	109P01305	R-FUSE	1/2W 1.2-K
R540	103P32204	"	1/4W 820-J
R541	103P32307	"	1/4W 10K-J
R542	103P32402	R-C-25	1/4W 27K-J
R543	103P32601	"	1/4W 1M-J
R544	103P32301	"	1/4W 3.3K-J
R545	103P32205	"	1/4W 1K-J
R546	103P32302	"	1/4W 4.7K-J
R547	103P32203	"	1/4W 680-J
R548	103P32205	"	1/4W 1K-J

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	RESISTORS		
R549	103P32205	R-C-25	1/4W 1K-J
R550			
R551	103P32303	"	1/4W 4.7K-J
R552	103P32500	"	1/4W 120K-J
R553	103P32205	R-C-25	1/4W 1K-J
R554	103P30305	R-METAL	1/4W 2.7K-F
R555	103P30205	"	1/4W 1K-F
R556			
R557	103P32405	R-C-25	1/4W 47K-J
※ R558	103P32209	R-C-25	1/4W 2.2K-J
※ R559	103P32309	"	1/4W 15K-J
※ R560	103P32309	"	1/4W 15K-J
※ R561	103P30305	R-METAL	1/4W 6.8K-F
R562	109C51101	R-C	1/2W 33-J
R591	101P331E3	R-COMP	1/2W 330K
R901	109D50603	R-CEMENT-W	3W 100-K
R902	109D50604	"	3W 330-K
R903	109D50201	"	10W 4.7
R904	101P15403	R-COMP	1/2W 150K-J
R905	101P15403	"	1/2W 150K-J
R906	103C07403	R-METAL	2W 33K-J
R907	103C07403	"	2W 33K-J
R908	109C03104	"	3W 120K-J
R909	103D08205	"	1W 1K-J
R910	109C51206	R-C	1/2W 560-J
R911	103D11208	R-M	4W 3.9K-J
R912	109C51307	R-C	1/2W 4.7K-J
R913	103D08205	R-M	1W 1K-J
R914	103P32202	R-C-25	1/4W 560-J
R915	103P32406	"	1/4W 56K-J
R916	101P22503	R-COMP	1/2W2.2M-J
R917	103P32209	R-C-25	1/4W 2.2K-J

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	RESISTORS		
R918	103P32302	R-C-25	1/4W 3.9K-J
R919	103P32103	"	1/4W 100-J
R920	103P32300	"	1/4W 2.7K-J
R921	103P32303	"	1/4W 4.7K-J
R922	103P32302	"	1/4W 3.9K-J
R923	103D08203	R-METAL	1W 680-J
R924	103P32103	R-C-25	1/4W 100-J
R925	103P32400	"	1/4W 18K-J
R926	103P32204	"	1/4W 1.2K-J
R927			
R928	103P32403	"	1/4W 33K-J
R929	103P32301	"	1/4W 3.3K-J
R930	103P32209	"	1/4W 2.2K-J
R931	103P32301	"	1/4W 3.3K-J
R932	103P32305	"	1/4W 6.8K-J
R933	103D08200	R-METAL	1W 390-J
R934	103D08106	"	1W 180-J
R935	109C51102	R-C	1/2W 39-J
R936	102P03302	R-W-P	2W 2.2-J
R937	103P32209	R-C-25	1/4W 2.2K-J
R938	103P32205	"	1/4W 1K-J
R939	102P03208	R-W-P	2W 0.68-K
R940	102P03208	"	2W 0.68-K
R941	109C51408	R-C	1/2W 39K-J
R942	103P32301	R-C-25	1/4W 3.3K-J
R943	109C51405	R-C	1/2W 22K-J
R944	101P22503	R-COMP	1/2W 2.2M-J
R564	103P32409	R-C-25	1 4W 100K-J
R565			

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	VARIABLE RESISTORS		
VR201 VR231	129D07305	Semifixed	1/2W B-1K
VR261	"	"	"
VR202 VR232	129D05906	"	"
VR262	"	"	"
VR401	129C03502	Semifixed	1/2W B-200
VR402	129C03603	"	1/2W B-50K
VR403	129C03508	"	1/2W B-5K
VR404	129C03506	"	1/2W N-2K
VR405	129C03508	"	1/2W B-5K
VR406	129C03506	"	1/2W B-2K
VR501	129C02603	Semifixed	1/2W B-50K
VR502	129C03508	"	1/2W B-5K
VR503	129D50501	"	1.4W 120
VR530	129C03608	Semifixed	1/2W B-1M
※ VR531	129C50802	"	1/2W B-20K
※ VR532	129C50802	"	1/2W B-20K
VR591	129C50505	VR-STD	
VR901	129C05004	Semifixed	1/2W B-1K

Table 6-1 PARTS LIST C-3470

SYMBOL NO.	PART NO.	DESCRIPTION	
	MISCELLANEOUS		
AG201 AG231	224D01901	AIR-GAP	
AG261		"	
AG281	224D01901	"	
PR901	275P50401	POSISTOR	PTH451B02BG8ROH140
PR902	275P50402	"	PTH451B01GB360M270
		T927B44401	ASSY-PCB-CRT
		T927B45501	ASSY-PCB-MAIN
		T927B45601	ASSY-PCB-POWER
		T927C34701	ASSY-RADIATOR-D
		T927C34801	ASSY-PCB-TR
F 901	283D02006	FUSE-UL	S-5A
"	(283D02005)	"	(S-3A)

SECTION 7

MECHANICAL PARTS LIST

MODEL: C-3470

The complete mechanical drawings for the C-3470 monitor is contained in six sections.

Fig.7-1	Assy-Radiator-D
Fig.7-2	Assy-PCB-Power
Fig.7-3	Assy-Power-Unit
Fig.7-4	Assy-PCB-CRT
Fig.7-5	Assy-PCB-Main
Fig.7-6	Assy-Display

FIGURE AND INDEX NUMBERS

Items in this section are referenced by figure and index numbers to the illustrations which appear on the mechanical drawings.

INDENTATION SYSTEM

This mechanical parts list is indented to indicate item relationships. Following is an example of the indentation system used in the Description column.

Assembly and/or Component
  Detail Part of Assembly and/or Component
  mounting hardware for Detail Part
    Parts of Detail Part
    mounting hardware for Parts of Detail Part
mounting hardware for Assembly and/or Component

Mounting hardware always appears in the same indentation as the item it mounts, while the detail parts are indented to the right. Indented items are part of, and included with, the next higher indentation.

Mounting hardware must be purchased separately, unless otherwise specified.

PARTS ORDERING INFORMATION

Replacement parts are available from or through Mitsubishi Electronics America, Inc.

Changes to monitors are sometimes made to accommodate improved components as they become available, and to give you the benefit of the latest circuit improvements developed in our engineering department. It is therefore important, when ordering parts, to include the following information in your order: Part number, instrument type or number, serial or model number, and modification number if applicable.

If a part you have ordered has been replaced with a new or improved part, Mitsubishi Electronics America, Inc. will contact you concerning any change in part number.

Change information, if any, is located at the rear of this manual.

Table 7-1 Assy-Radiator-D

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-1-11	599B15601	RADIATOR-D	1
7-1-18	101P33103	R-COMP 1/2W 330-K	1
7-1-19	270P52101	TR	2
7-1-20	260P21909	TR	1
7-1-22	449D1401	SOCKET-TR	3
7-1-23	221D00901	INSULATOR	3
7-1-24	641D35701	SAFETY-COVER	3
7-1-27	650P30200	SCREW-F-FE-PAN	3
7-1-28	650P30106	SCREW-F-FE-PAN	3
7-1-29	650P30006	SCREW-F-FE-PAN	3
7-1-31	650P30100	SCREW-F-FE-PAN	1
7-1-32	683D04802	WASHER-TOOTHED	3
7-1-38	249C22501	LEAD-CONNECTOR	1
7-1-39	249C22401	LEAD-CONNECTOR	1
7-1-40	249C22502	LEAD-CONNECTOR	1

Table 7-2 Assy-PCB-Power

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-2-11	927B46701	ASSY-PCB-POWER-J	1
7-2-18	442D04801	FUSE-CLIP	4
7-2-19	283D02006	FUSE-UL	1
7-2-20	283D02006	"	1
7-2-24	450D03604	PIN-BOAD	1
7-2-25	450D03606	"	2
7-2-27	452D03101	PIN-GT	2
7-2-28	452D05408	CONNECTOR-MALE	1
7-2-30	249C23201	LEAD-CONNECTOR	1
7-2-31	249C22503	"	1
7-2-32	249C23001	"	1
7-2-34	140H50101	PVC-UL	1
7-2-35	141H14101	PVC-UL	1

Table 7-3 Assy-Power-Unit

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-3-11	599B15701	FRAME-POWER	1
7-3-13	927B45601	ASSY-PCB-POWER	1
7-3-18	270P50201	TR	1
7-3-19	449D01901	SOCKET-TR	1
7-3-20	221D00901	INSULATOR	2
7-3-24	650P30106	SCREW-F-FE-PAN	2
7-3-25	683D04802	WASHER-TOOTHED	2
7-3-31	249C24403	LEAD-CONNECTOR	1
7-3-35	561C03701	PCB-SUPPORTER-B	4
7-3-49	221D00801	SPACER	1
7-3-50	592D19001	HOLDER-TR	1
7-3-51	680P23001	WASHER-SPRING	1
7-3-52	650P30101	SCREW-F-FE-PAN	1

Table 7-4 Assy-PCB-CRT

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-4-11	927B46801	ASSY-PCB-CRT-J	1/2
7-4-15	449C03101	SOCKET-CRT	1
7-4-17	450D03601	PIN-BOARD	2
7-4-18	452D05402	CONNECTOR-MALE	1
7-4-19	452D05404	"	1
7-4-20	680P23001	WASHER-SPRING	3
7-4-21	580D50501	RADIATOR	3
7-4-22	650P30006	SCREW-F-FE-PAN	3
7-4-23	452D03101	PIN-GT	6
7-4-25	249C22801	LEAD-CONNECTOR	1
7-4-26	249C22802	"	1
7-4-30	111H26101	PVC-UL	1
7-4-31	111H20101	"	1
7-4-32	111H14101	"	1

Table 7-5 Assy-PCB-Main

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-5-11	927B46601	ASSY-PCB-MAIN-J	1
7-5-15	927C34701	ASSY-RADIATOR-D	1
7-5-17	599C18601	FRAME-L	1
7-5-18	599C18401	FRAME-FRONT	1
7-5-19	599C18501	FRAME-REAR	1
7-5-20	599D30501	BRACKET-FOCUS	1
7-5-23	452D05408	CONNECTOR-MALE	3
7-5-24	452D05409	"	3
7-5-25	452D05402	"	2
7-5-26	452D05404	"	1
7-5-27	452D05406	"	1
7-5-28	450D03601	PIN-BOARD	2
7-5-29	450D03603	"	1
7-5-31	452D03101	PIN-GT	4
7-5-33	242D22605	LEAD-CONNECTOR	1
7-5-34	249C22402	"	1
7-5-35	249C22901	"	1
7-5-36	081H15202	SILICON-WIRE-UL	1
7-5-37	081H18202	"	1
7-5-38	081H22202	"	1
7-5-39	111H34101	PVC-UL	1
7-5-40	669D07707	TAP-SCREW-F-PAN	11
7-5-41	650P30008	SCREW-F-FE-PAN	6
7-5-42	650P30006	SCREW-F-FE-PAN	2
7-5-47	599D31801	STOPPER	2
7-5-49	669D10706	TAP SCREW	2
7-5-50	599D33301	SPACER-FBT	1
7-5-57	641D34302	BAND	2
7-5-58	540D07402	LEAD-CLAMPER	2

Table 7-6 1/2 ASSY DISPLAY

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-6-11	599A10801	FRAME BASE	1
7-6-12	599B09301	BRACKET-CRT	1
7-6-13	599B09302	BRACKET-CRT	1
7-6-14	599C08901	HOLDER-CRT	2
7-6-16	599D32301	BRACKET	1
7-6-17	630D18401	SPACER	2
7-6-23	927B45502	ASSY-PCB-MAIN	1
7-6-24	947B35502	ASSY-POWER-UNIT	1
7-6-25	927C36701	ASSY-TERMINAL	1
7-6-26	927B44402	ASSY-PCB-CRT	1
7-6-28	927C26901	ASSY-EARTH-WIRE	1
7-6-29	409C05203	COIL-DEGAUSSING	1
7-6-36		CRT	1
7-6-44	771D03904	PAD	4
7-6-45	539D53401	INSULATOR	1
7-6-47	249C23401	LEAD-CONNECTOR	1
7-6-48	249C22701	"	1
7-6-50	669D17105	SCREW-SEMS-W	11
7-6-51	650D40106	SCREW-F-FE-PAN	4
7-6-52	669D10403	SCREW	7
7-6-53	652P40008	SCREW-F-FE-TRUSS	8
7-6-54	650P30008	SCREW-F-FE-PAN	
7-6-58	683D01206	WASHER	8
7-6-59	683D01503	WASHER-TOOTHED	4
7-6-60	670P15001	NUT-HEX	4
7-6-65	641D34302	BAND	11
7-6-66	640D31702	CLAMPER	4
7-6-67	540D09001	CLAMPERS	7
7-6-68	540D07901	LEAD-CLAMPER	1
7-6-70	095Y51302	SOFT-TAPE	1
7-6-73	854B03200	NAME-PLATE	1
7-6-74	853D03601	LABEL	1

Table 7-6 2/2 ASSY DISPLAY

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-6-75	851D76801	LABEL WARNING	1
7-6-76	850D02701	NUMBER-PLATE	1

Table 7-7 ASSY-TERMINAL

FIG & INDEX NO.	PART NO.	DESCRIPTION	Q'TY
7-7-11	599C24701	CONNECTOR-BOARD	1
7-7-13	927C34901	ASSY-VR	1
7-7-15	457D01002	FUSE-HOLDER	1
7-7-17	249C27601	LEAD-CONNECTOR	1
7-7-18	249C27501	LEAD-CONNECTOR	1
7-7-21	161H25201	PVC-UL	1
7-7-23	283D02006	FUSE-UL S-5A	1

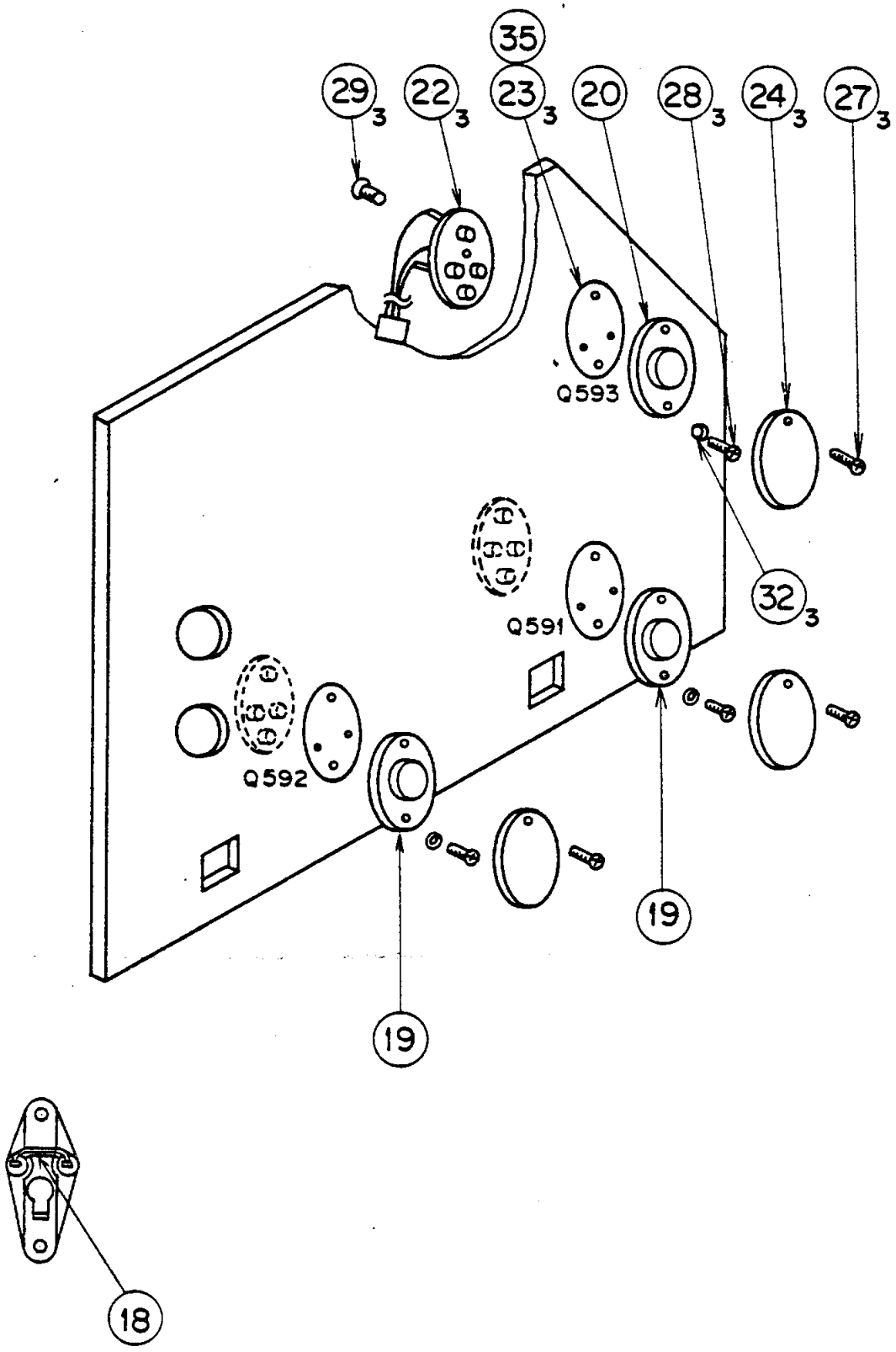


Fig. 7-1
Assy-Radiator-D

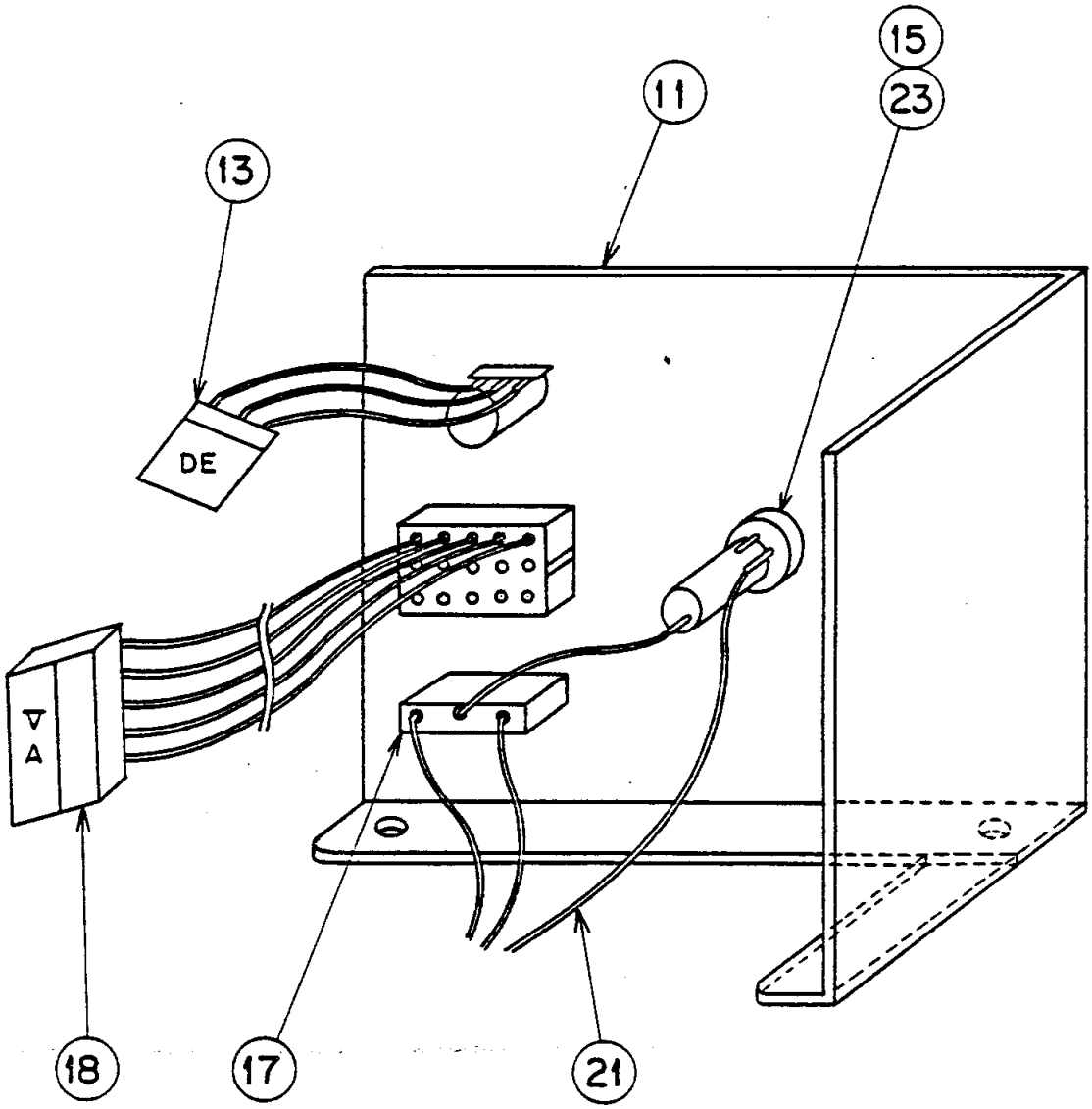


Fig. 7-7

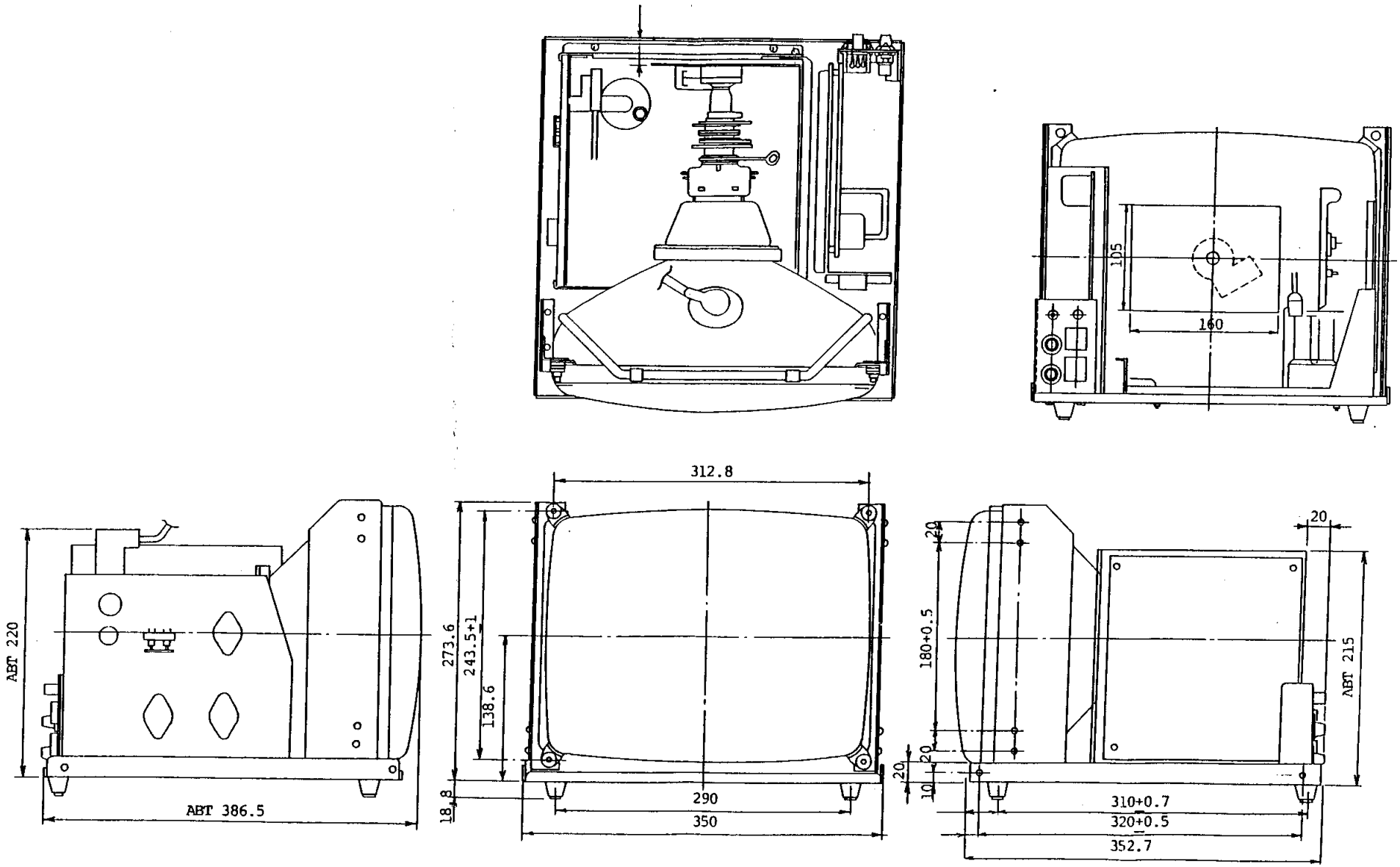
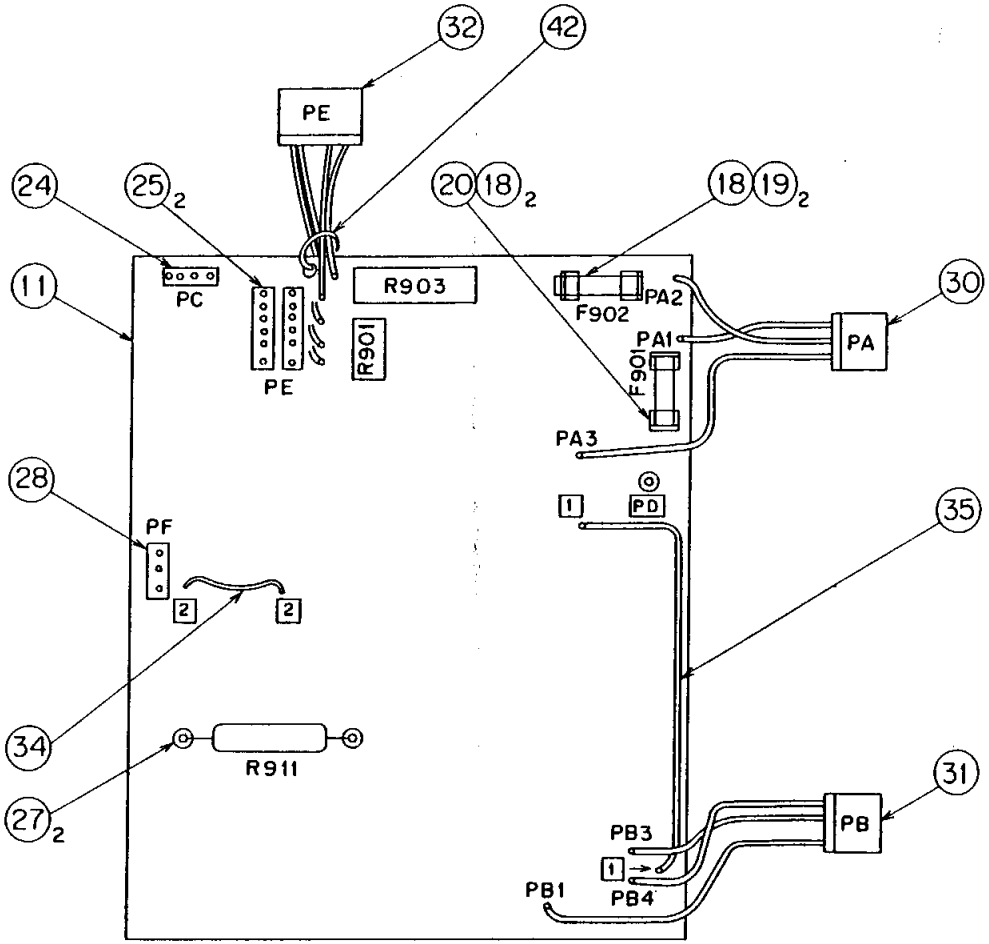


Fig. 1-1

Configuration, color
Monitor Model C-3470



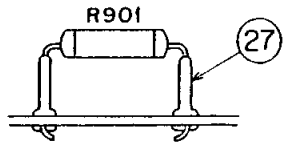


Fig. 7-2

Assy-PCB-Power

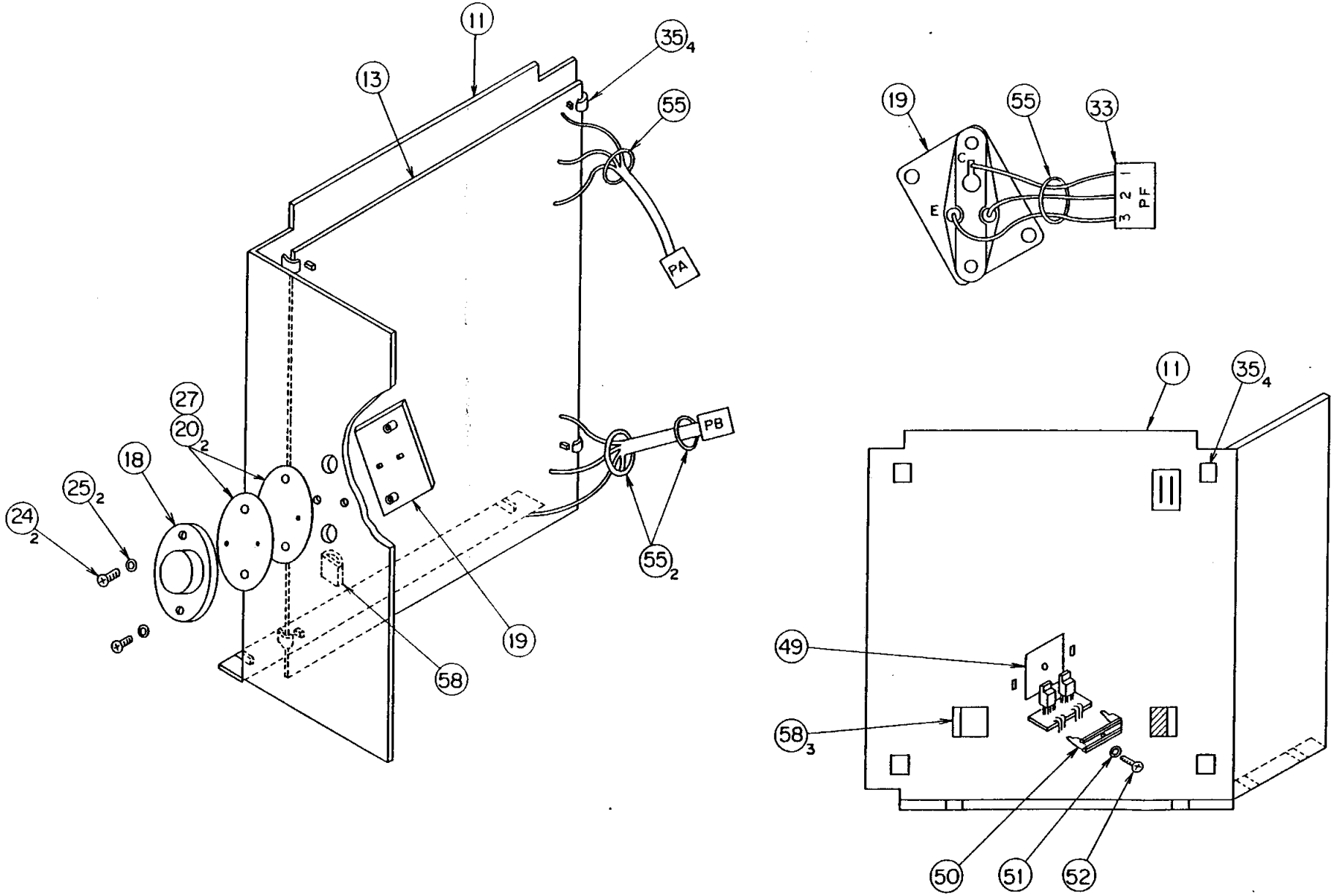
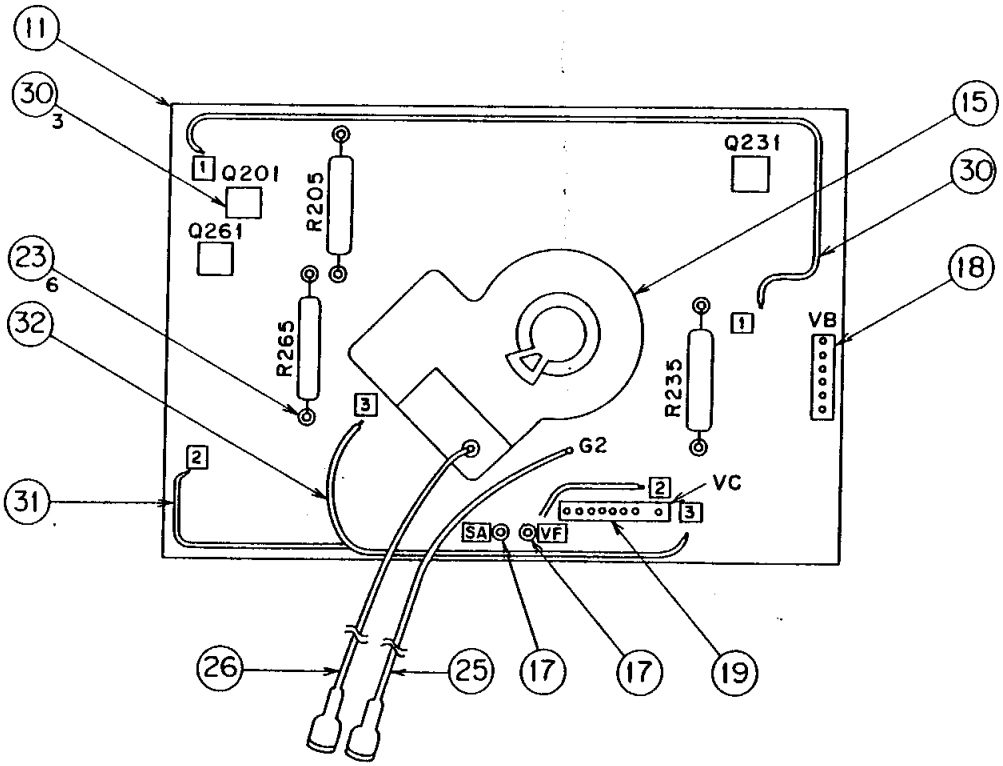
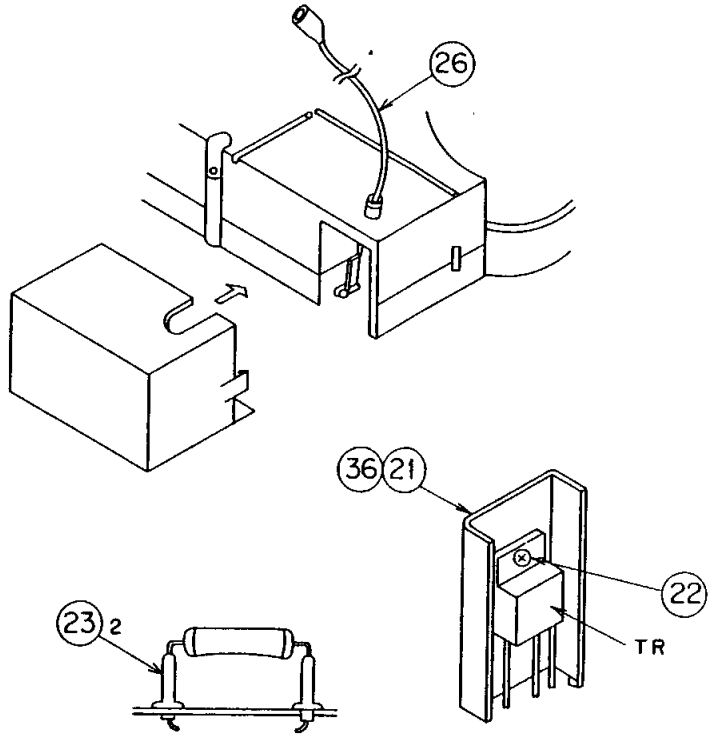


Fig. 7-3

Assy-Power-Unit

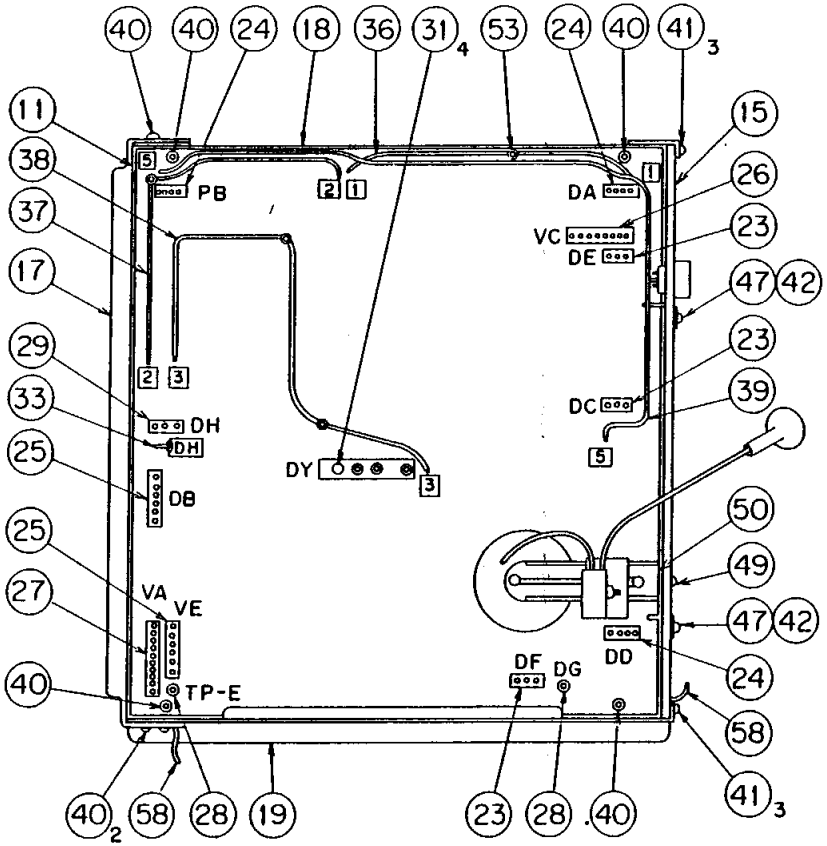


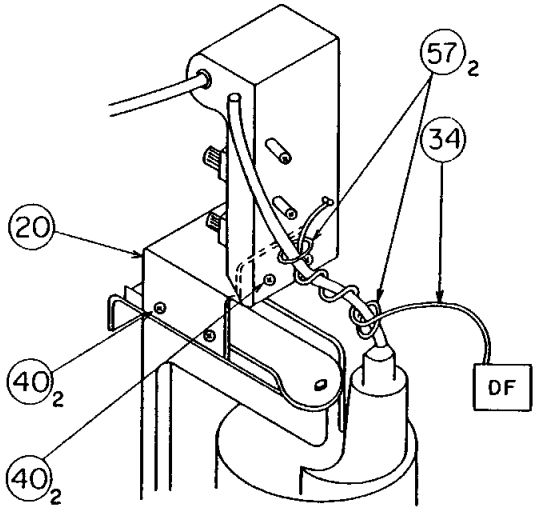


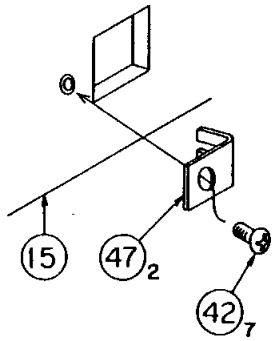
Q201, Q231, Q261 Q202 Q232, Q262 Q203, Q233, Q263 Q280

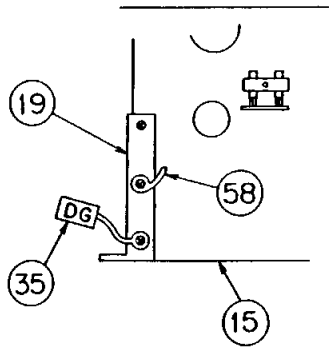
Fig. 7-4

Assy-PCB-CRT









Q403, Q533 ECB

Q502, Q531 Q532, Q537 BCE

BCE

Fig. 7-5
Assy-PCB-Main

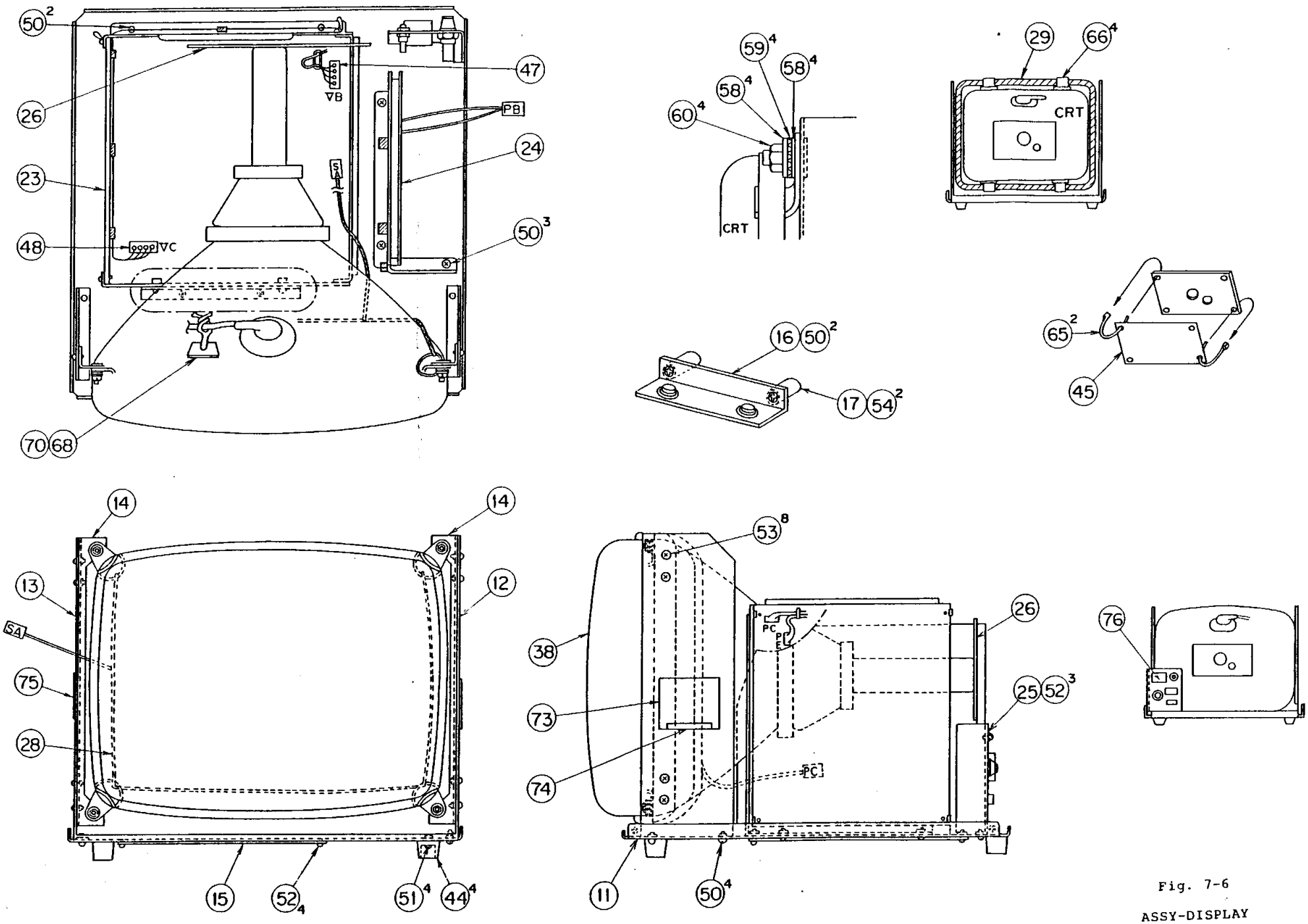
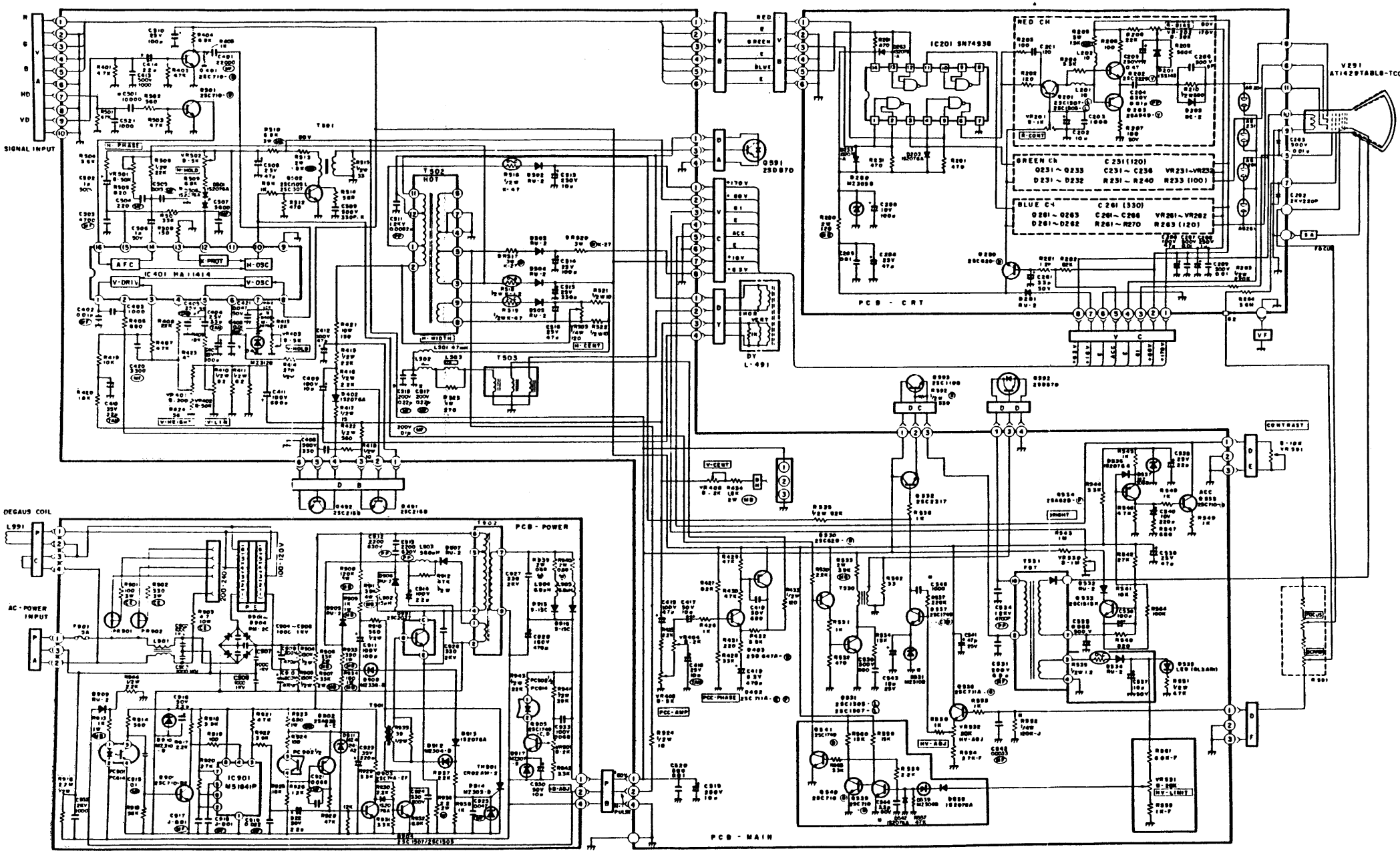


Fig. 7-6

ASSY-DISPLAY



NOTICE
The elements which marked "*" are changed by Horizontal Frequency

* NOTE : This schematic is based on chassis labeled "H", "I", "J"

C501 : 10000 ; "B"~"C" label and no label. 10000P ; "B" label
C544 : 0.47MF ; "B"~"E" label and no label. 3.3MF ; "E" label
C546 : 470F ; No label. 10000+220K(R537) ; "B" label
D531 : MZ3058 ; No label. MZ3108 ; "B" label
D403 : None ; No label. 1S2076A ; "B" label
R522 : 82K ; No label. 120K ; "B" label
D506 : None ; No label. 1S2076A ; "B" label

Schematic Diagram Model C-3470
Color Display Monitor