



SPECIFICATIONS

• Power source	AC 115V \pm 15%, 60Hz AC 220V-240V \pm 10%, 50Hz (Not switchable, completely different design.)
• Power consumption	50 Watts Max.
• Input connector	9 Pin D-subminiature connector
• Video signal input	3.4V \pm 1.0V positive
• Dual intensity	3.4V \pm 1.0V(high intensity), positive
• Horizontal sync	TTL level positive
• Vertical sync	TTL level negative
• Picture tube	14" diagonal, 90° deflection 14HBY ** N Phosphor P 39, PLA. PWD. Available
• Scanning frequency	Horizontal-18.43KHz Vertical-50Hz
• Active video period	Horizontal-44.3us Vertical-18.99ms
• Resolution	Horizontal-720 dots Vertical-350 lines
• Active display area	228(H) \times 167(V)mm
• Display character	80 characters with 25 line (7 \times 9 dots)
• Dimensions	318(W) \times 343(H) \times 315(D)mm
• Weight	8.4Kg Approx.

※ NOTE : Specification are subject to change without notice

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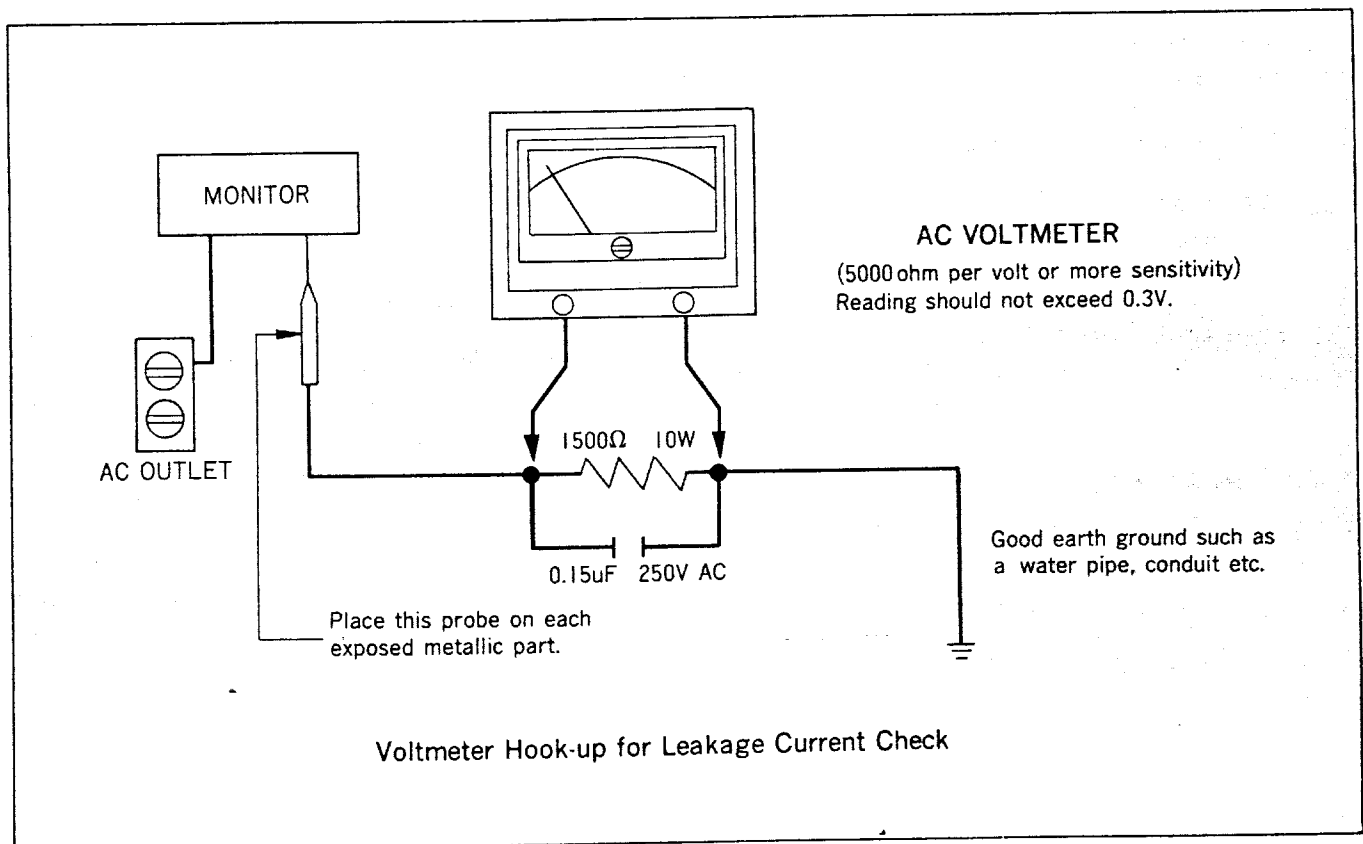
SAFETY PRECAUTION

WARNING: Service should not be attempted anyone unfamiliar with the necessary on this unit. The following precautions are necessary during servicing.

1. Some parts such as a picture tube in the unit have special safety-related characteristics for X-RAY radiation protection.
For continued safety, the parts replacement should be undertaken referring to item 2 below.
2. Many electrical and mechanical in this unit have special safety-related characteristics for protection against shock hazard, fire hazard and others.
These characteristics are often passed unnoticed by a visual inspection and the protection afforded by them cannot 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 manual and its supplements by shading on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in the manual carefully.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are installed properly, such as insulating covers, barriers, strain relief, etc.
4. Before replacing the back cover of the set, thoroughly inspect inside the cabinet to see that no stray parts or tools

have been left inside.,

5. Before returning to the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as terminal, screwheads, metal overlays, control shafts, etc.
To be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly in to a 220V AC outlet (do not use a line isolation transformer during this check). Use an AC voltmeter having 5000 ohms per volt or more sensitivity in the following manner.
Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15mfd(uF), 250V AC capacitor between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time.
Measure the AC voltage across the combination of 1500 ohm resistor and 0.15mfd(uF) capacitor.
Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part.
Voltage measured must not exceed 0.3volts RMS.
This corresponds to 0.2mA AC any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



GENERAL INFORMATION

● MONITOR DESCRIPTION

This 14" Flat screen CRT display monitor is operated in TTL drive mode input.

● OPERATING CONTROLS

- 1) External controls
 - Front
 - Power switch, LED lamp, contrast.
 - Rear
 - 9 Pin D-sub connector, inlet socket for AC power input, V-hold, height(V-size), Brightness.
- 2) Service controls (internal controls)
 - V-linearity, H-width, H-linearity, focus, sub-brightness, horiz. & vert. Centring magnet, input voltage adjustor.

● DISPLAY MONITOR ELECTRICAL CHARACTER

- 1) AC Power Input : $115V \pm 15\% / 230V \pm 10\%$
(Not switchable, completely different design)
Power consumption is 35W under normal viewing condition and uses internal fuse protection.
- 2) Video
 - Input : $3.4 \pm 1.0V$ TTL positive
 - Band Width : 20MHz(-3dB)
- 3) Horizontal Electrics
 - Hold Range : 17.5KHZ-18.9KHZ
AUTO- Adjustment Range
 - Retrace Time : 9.96us (Includes retrace and delay time)
- 4) Vertical Electrics
 - Hold Range : 47Hz to 63Hz
 - Retrace Time : 1.058ms min(includes retrace and delay time)
- 5) Adjustment size range : $228 \times 167(mm)$
(Horizontal, vertical from 5% over scan to 5% under scan)

● MECHANICAL SPECIFICATION

Figure-I shows the mechanical specification for the flat screen CRT display monitor,

● CRT DISPLAY CHARACTERISTICS

- 1) Cathode Ray Tube Specification

- Size : 14" diagonal
- Deflection Angle : 90°
- Glass Area : 77 Square inches
- Implosion Protection : Shrinkage band with mounting lug.
- Phosphor : P 39, PLA. PWD.
- Display size : $253(H) \times 195(V)(mm)$
- FACE : Direct Etched
- Anode Voltage : $13.0 \pm 1KV$
- 2) Picture Quality
 - Resolution : 1100TV line at center, 900TV line at corner at 5 foot lambert with full "E" character.
 - Geometric Distortion : The perimeter of display pattern approaches and ideal rectangle to within $\pm 1.5\%$ of the rectangle height.
 - Linearity : Character height or width shall be within 10% of that of and adjacent character and within 20% of that for any character on the screen.
 - Display Capability : 80 Characters/row, 25 rows.

● ENVIRONMENTAL SPECIFICATION

The monitor is capable of meeting all performance requirement and operate continuously and reliably during and after exposure to any or all of the following environments,

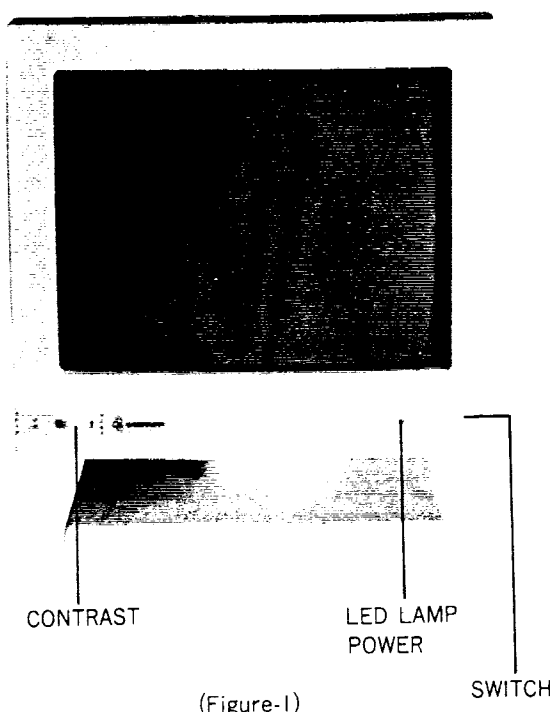
- 1) Temperature
 - Operating : $5^\circ C$ to $+40^\circ C$
 - Storage : $-35^\circ C$ to $+50^\circ C$
- 2) Humidity : 5 to 90 percent
(non condensing)
- 3) Altitude
 - Operating : Up to 10,000 FT
 - Non Operating : Up to 50,000 FT

● X-RADIATION

The CRT display monitor complies with the federal regulation for radiation control as required by the radiation control for health and safety act of 1986 and as implemented by title 21 subchapter J of the code of federal regulation.

- 1) Weight : Approx 8.4Kg
- 2) Others : All components are capable of meeting UL, CSA, FCC, DHHS, requirement.

CONTROLS AND TERMINAL IDENTIFICATION

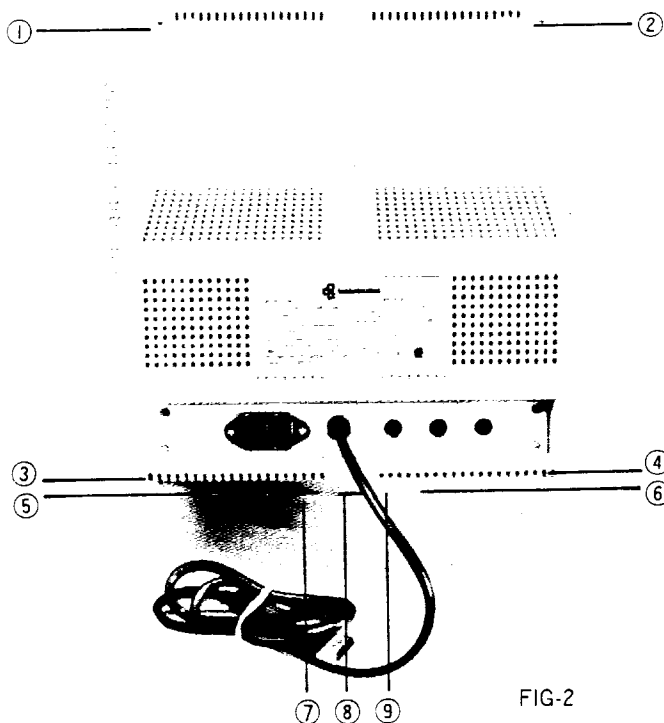
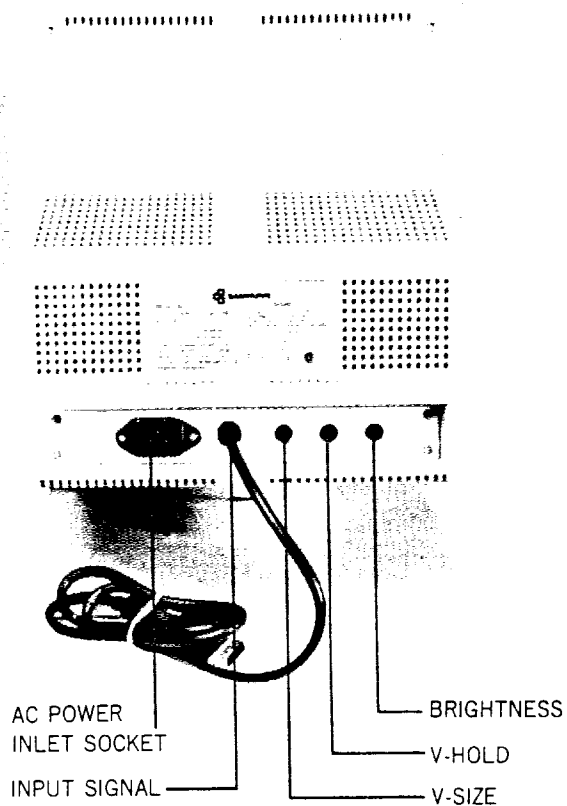


MECHANICAL DISASSEMBLIES CABINET BACK REMOVAL

1. Carefully lay cabinet face down on soft mat.
2. Remove FOUR(1-4) screws securing the cabinet back.
3. Remove Five(5-9) screws securing the Cabinet Bottom

CHASSIS REMOVAL

1. First remove cabinet back.
2. Disconnect anode cap. Picture tube socket and wire bands.
Then slightly loosen the screw securing the deflection yoke.



IMPORTANT NOTICE FOR SERVICE PERSONNEL BEFORE SERVICING

PLEASE READ BEFORE ATTEMPTING SERVICE

1. Line voltage must be kept within $\pm 15\%$ of the rated voltage.
2. Do not discharge, arc, or measure high voltage when high voltage lead is connected to CRT. Discharge 2nd anode of CRT only after high voltage lead has been disconnected. Do not discharge high voltage lead at any time, damage to transistors may result.
3. While the monitor is in operation, do not attempt to connect or disconnect any wires.
4. Disconnect all power before attempting any repairs.
5. When the power is on, do not attempt to short any portion of the circuit.
This shorting may cause damage to the transistors in the monitor.

ADJUSTMENT

Apply power and TTL input signal(alphanumeric information) to the data display

CENTERING

1. Loosen the deflection yoke clamp and carefully move the yoke on the neck of the picture tube as far forward as

possible.

Rotate the yoke until the top bottom edges of the raster are straight. Tighten the clamp.

2. Center the raster by rotating the centering rings.

FOCUS

Adjust focus control VR502 for providing the best focus.

HORIZONTAL WIDTH

1. Horizontal width coil to obtain the optimum width for full information.
If the recommended input signal format is used, the width should be (245mm).
2. When character width variation is observed in character of one row, turn the core of the horizontal linearity control until the character width is uniform.

VERTICAL HEIGHT AND LINEARITY

1. Synchronize the vertical frequency to the information signal by adjusting the vertical hold control VR302.
2. Adjust vertical linearity control VR301 for the best linearity and height control VR303 to obtain the optimum height for full information.
(If the recommended input signal format used, the height should be (196mm)).

SERVICE INFORMATION

ADJUSTMENTS

● BRIGHTNESS

Normally, the monitor will be used to display alphanumeric or other black and white information moreover, the video polarity is usually white characters on a black background. The brightness control should be adjusted at a point where the white raster is just extinguished. The CRT will then be at its cutoff point, and a maximum contrast ratio can be obtained when a video signal is applied fully.

● VERTICAL ADJUSTMENTS

There is a slight interaction among the vertical frequency height and linearity controls. A change in the height of the picture may affect linearity.

- 1) Set the vertical-hold control VR302, near the mechanical center of its rotation.
- 2) Adjust the vertical linearity control VR301 for best vertical linearity.
- 3) Adjust the vertical height control VR303 for desired height.
- 4) Readjust the vertical hold control VR302 until the picture "locks" on vertical sync.
- 5) Recheck height and linearity, and readjust, if necessary.
- 6) Slight readjustment of vertical hold control, VR302 may be required if the picture "Rolls" up or down after a power off/on sequence.

● HORIZONTAL ADJUSTMENTS

Raster width is affected by a combination of the DC power supply, horizontal width coil and the horizontal linearity coil.

- 1) Horizontal Linearity
When character width variation is observed in characters of one row, turn the core of adjustor so that character width should become uniform.
- 2) Horizontal Width
Adjust horizontal width by turning the core of with a plastic hexdrive for the desired width.
- 3) Readjust horizontal linearity and width coil for proper width.
- 4) Observe final horizontal linearity and width, and touch up either adjustment if needed the raster should be properly locked and centered when the horizontal drive signal adjustment (described in steps 1-4 above) have been completed.

● DEFLECTION YOKE ASSEMBLY ADJUSTMENTS

1) RASTER CENTERING

If the raster is not properly centered, it may be repositioned by rotating the ring magnets behind the

deflection yoke.

The ring magnets should not be used to offset the raster from its nominal center position because it would degrade the resolution of the display if the picture is tilted, rotate the entire yoke.

2) GEOMETRIC CORRECTIONS

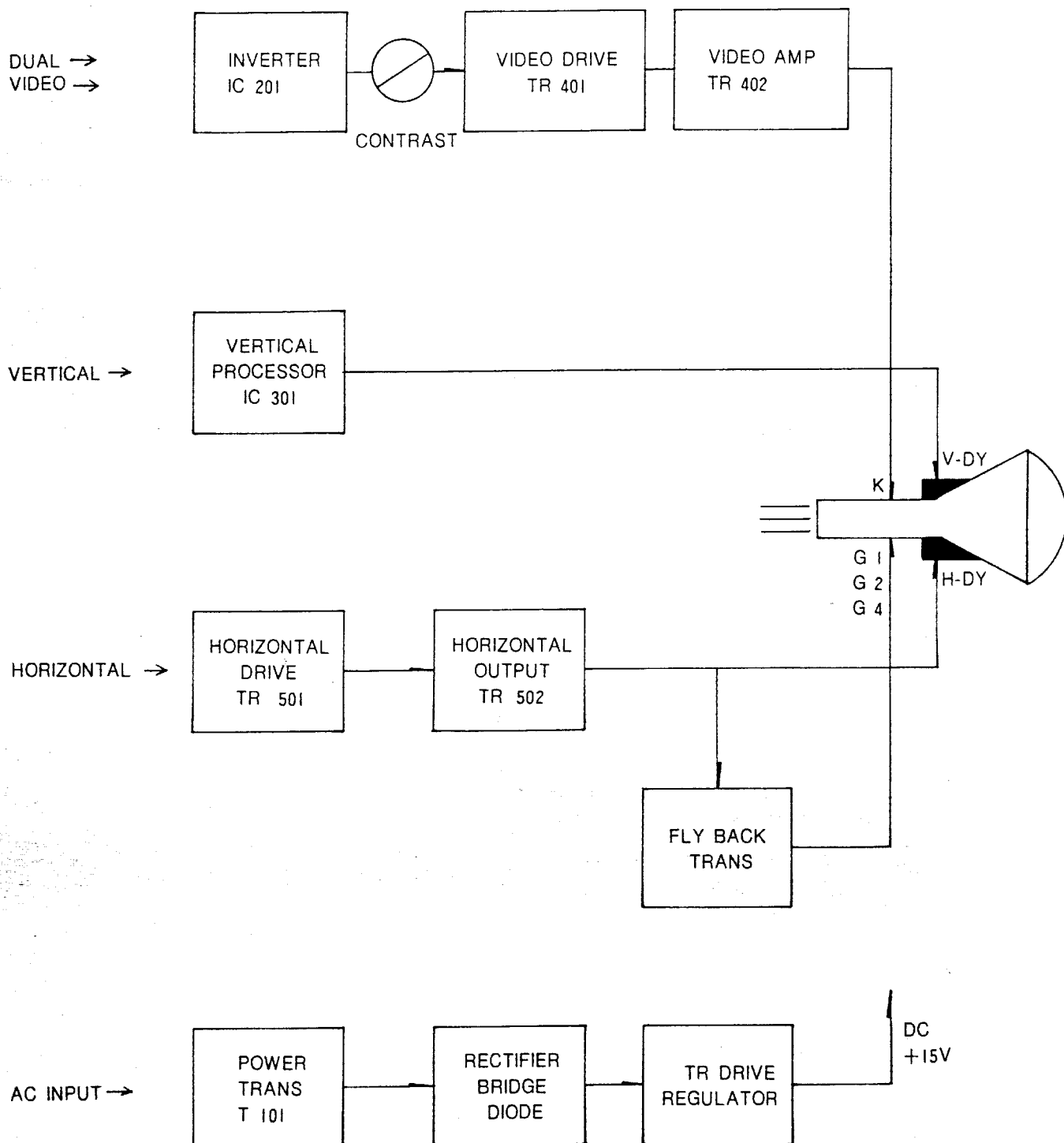
The magnets on the yoke assembly shall be polarized so as to provide adjustment of pin-cushion, barreling and other geometric deformities by simply rotating the magnets until the desired display is achieved readjust if necessary.

● FOCUS ADJUSTMENTS

Although the focus control, VR502 does not have a large effect on focus because of the CRT gun-assembly construction.

So there is a dynamic focus which does not control. It provides some adjustment for maintaining the best overall display focus.

BLOCK DIAGRAM



THEORY OF OPERATION (CIRCUIT DESCRIPTION)

4-1 VIDEO AMP. AND OUTPUT

This circuit consist of video amplifier and dual.

Video signal which applied to pin 11 of IC201 is developed by pin 9 and pin 10, it is common, and driven signal is applied to pin 8 of IC201.

This signal is driven via contrast volume, and connected TR401, TR402.

TR401 and TR402 are connected in cascode configuration. Finally driven signal is applied to CRT cathode through output amplifier.

Dual signal which applied to pin 1 of IC201 is developed by pin 2 and pin 3, it is common, so driven signal is applied to pin 4 of IC201.

When the level of digital signal is low(0), D203 is conducted, and controlled the voltage of contrast volume, variable resistor, is driven via D202 and applied pin 8 of IC201 then contrast volume is controled.

If the level is high(1), D203 is not conducted, so VCC is driven via D202 and applied pin 8 of IC201.

TR402 operates as common emitter configuration and TR401 operates in the common base configuration.

This minimizes "THE MILLER EFFECT" input capacitance and defining breakdown parameter for TR402 becomes BV_{CBO} as opposed to BV_{CEO} for the common emitter configuration.

4-2 VERTICAL PROCESS CIRCUIT

Vertical deflection circuit consist of one stage, IC301 which accomplishes all active vertical sync. functions.

Verical input pulses are differentiated by C301 and R303. The sync input performs several function. It strips away any random noise that may be present on the input line and conditions the vertical pulses for processing.

It also converts the input voltage pulses to current control the internal oscillator.

The osillator generates non-symmetrical square wave with a short duty cycle at approximately 50Hz. Components VR302, and R306, and C304, determine the frequency. This square wave signal is applied to a ramp generator whose slope and amplitude is determined by VR303, and R305.

The ramp voltage signal is applied to a buffer stages which isolates the ramp generator from the output stages and reduces any loding on the previous stages.

Components R311, R309, VR301, C307, C308, reshape the ramp voltage to make it extremely linear.

The output signal from the buffer stage is applied to a pre-amp stage. For amplification and then to a power ramp stage which driven the vertical deflection coils display via coupling capacitor C306, C309, R313. R308, R312, R315, R307 and C302 AC and DC feedback for the

output stage to maintain proper gain and linearity.

4-3 HORIZONTAL OUTPUT AND FLYBACK TRANSFORMER

The horizontal output transistor TR502 is simply a switch is turned on and off at the horizontal scan rate by the driving signal applied to its base.

A sawtooth current through the deflection coil is required to sweep the beam lineary across the CRT screen. This happens when TR502 is turned on and its collector voltage dropes to near zero.

And then, C506 begins discharging the deflection yoke coil which deflect the beam to the right edge of the CRT.

At that time, TR502 cuts off and C506 causes to supply current to the deflection coil.

However, an induced voltage appear across the deflection yoke coil as the magnetic field collapses and an oscillation then occurs the deflection coils and C506.

During the first half cycle of this oscillation the induced voltage is felt across the collector of now cut TR502, C506 and the primary of T501. (F.B.T.)

This voltage is stepped up by T501 and rectified to produce high voltage that is applied to the 2nd anode at the CRT.

During the second half cycle of the deflection coil C506 oscillation, the voltage on the collector still cut off TR502 becomes negative.

At this time damper diode D504 becomes forward bias and begins conduction.

The DC operating voltage for the CRT with the exception of the heater voltage are all obtained by rectifying and filtering of the horizontal flyback pulse.

D502 and C509 rectify and filter the flyback pulse across TR502 to produce a G2 voltage.

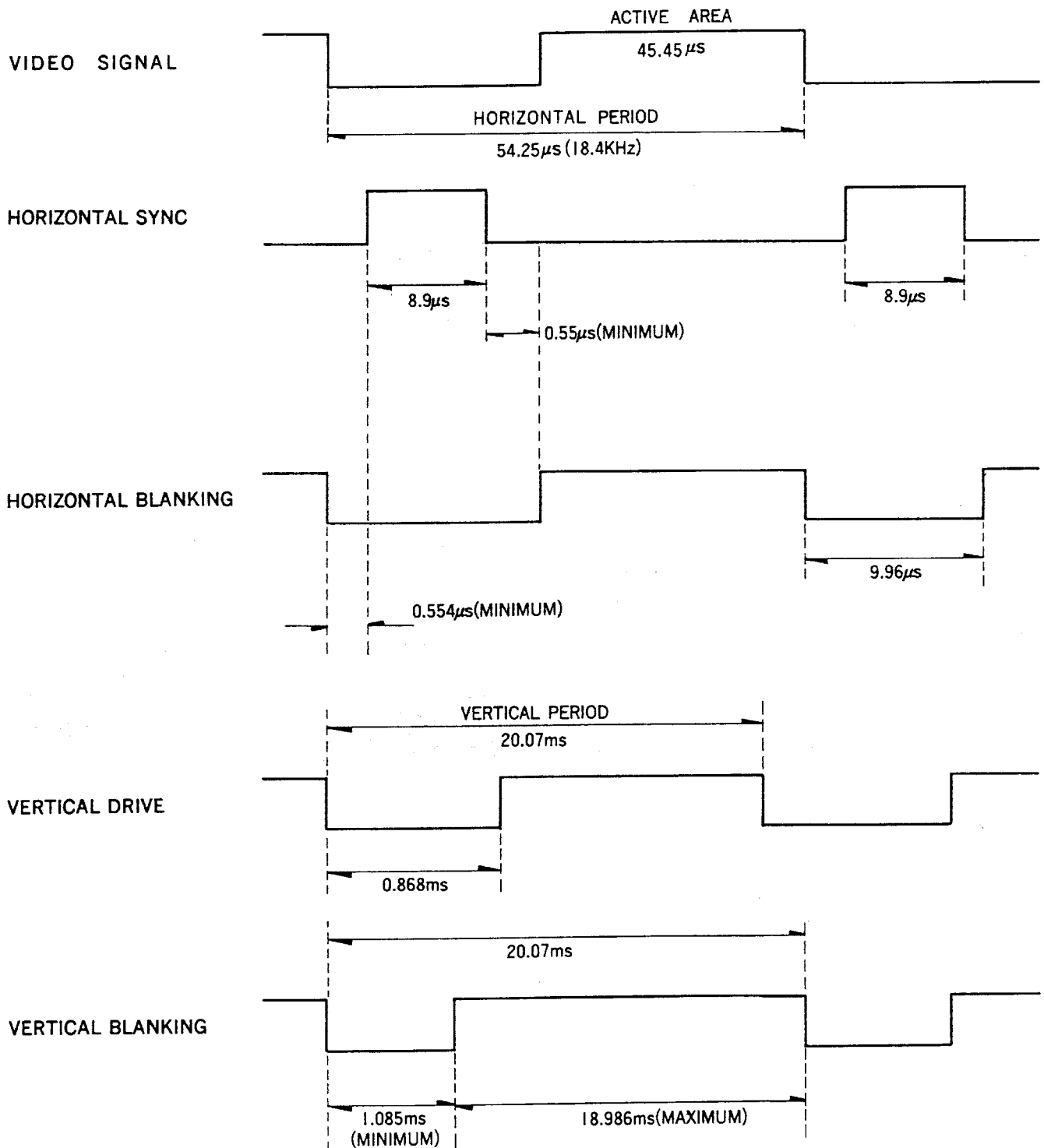
This voltage also feeds to the flyback pulues that rectified and filtered by D506 and C514 to produce voltage which is used as the source voltage for G1 control raster brightness.

Also, the CRT anode voltage is developed by T501.

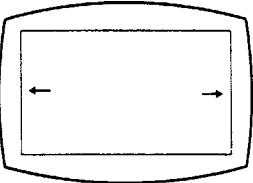
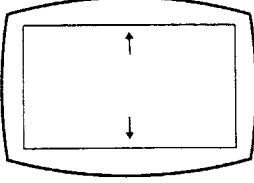
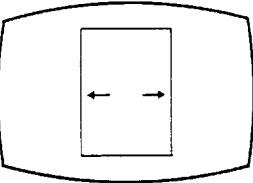
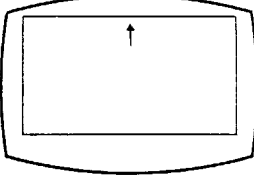
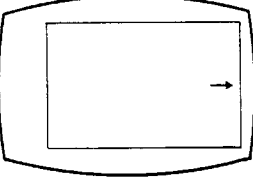
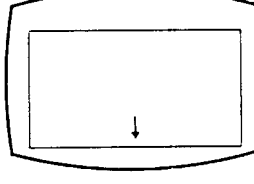
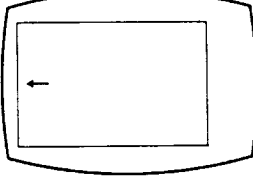
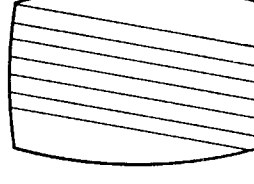
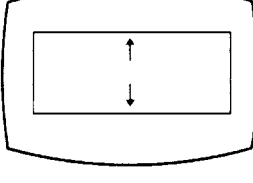
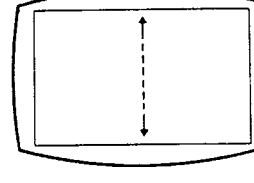
This voltage is typically 13.00KV for 14" normal size.

FIGURES

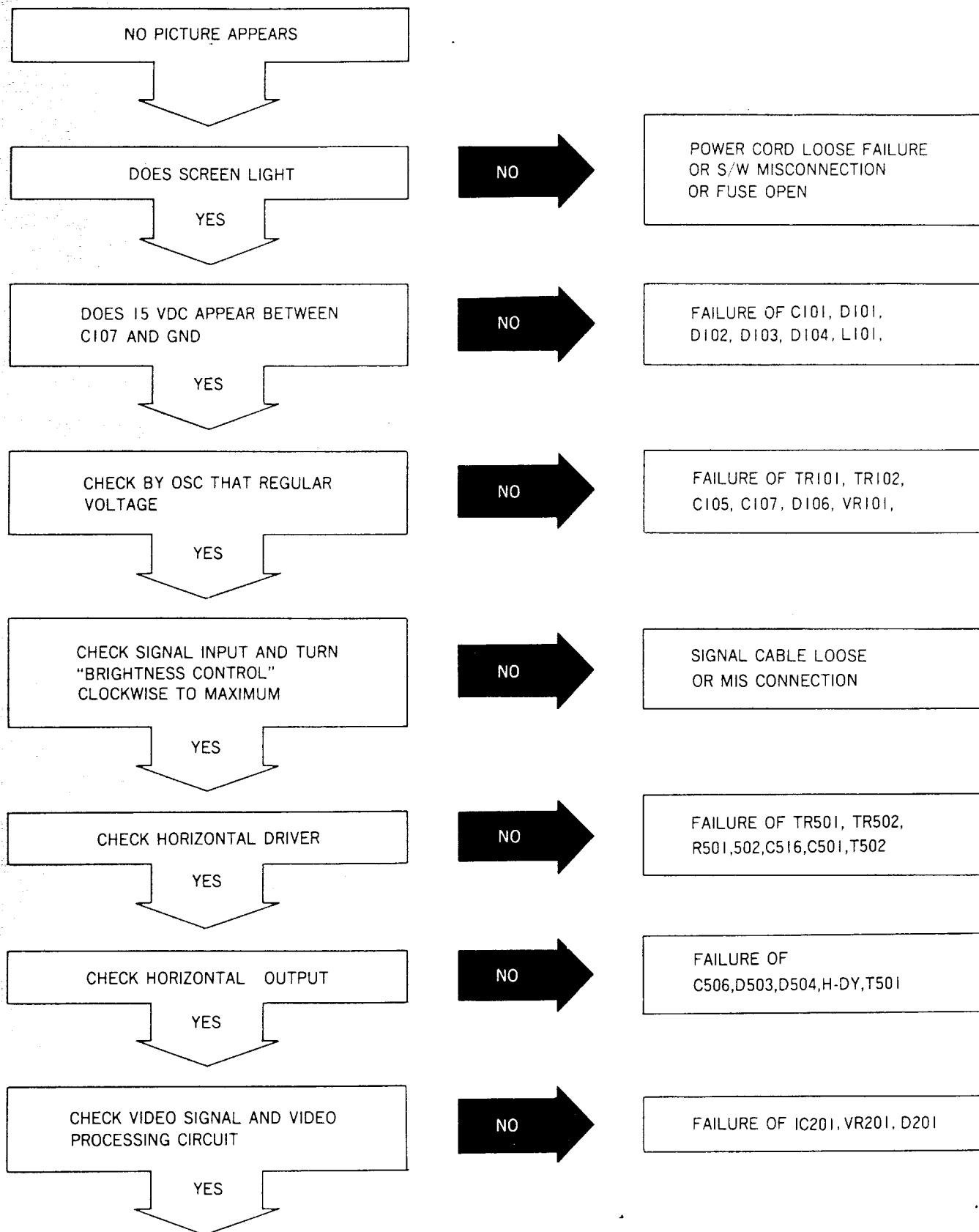
I. SIGNAL TIMING CHART

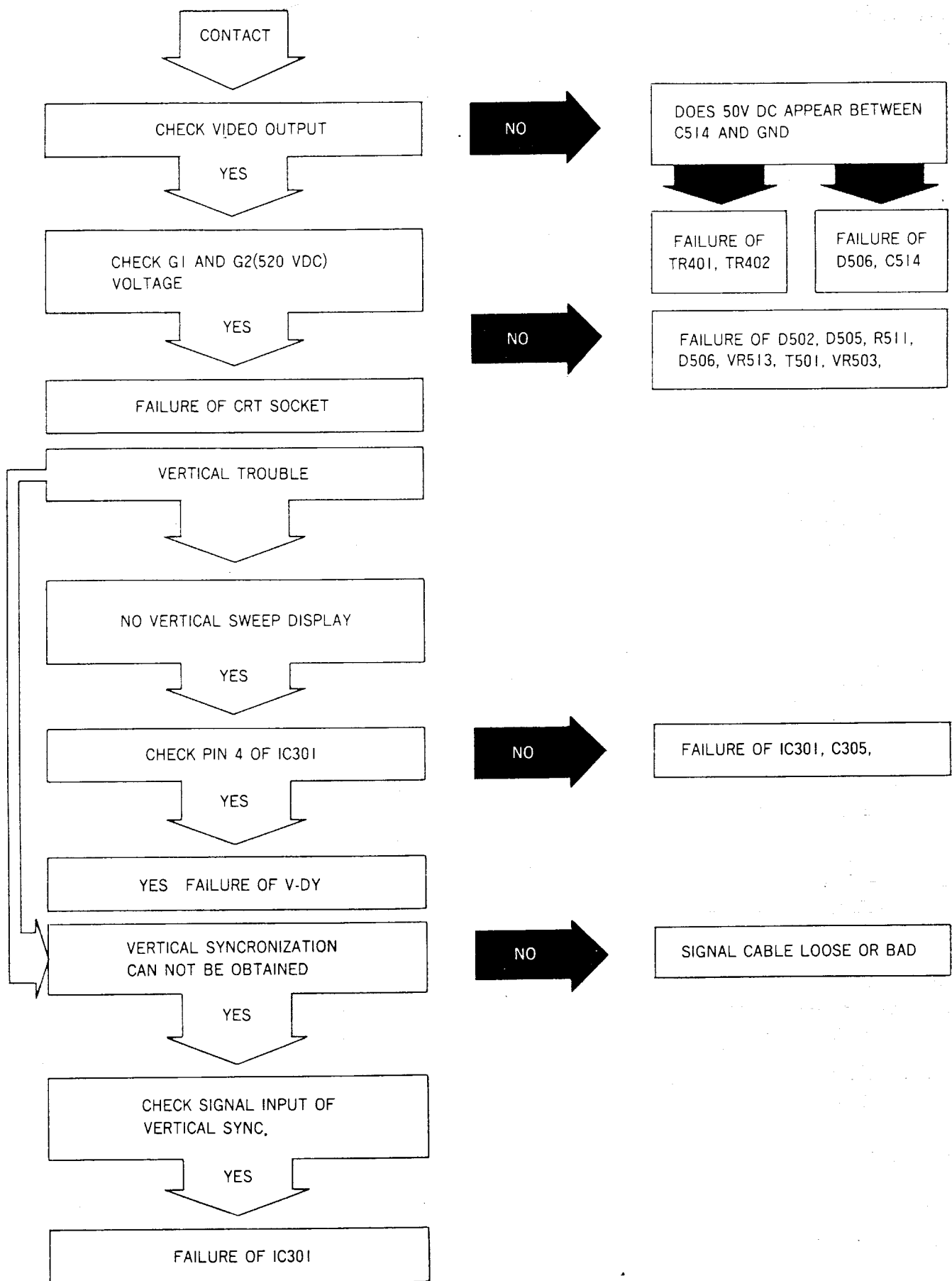


WHEN SIGNALS OTHERS THEN THE RECOMMENDED SIGNAL ARE RECEIVED

PHENOMENON	CAUSE	PHENOMENON	CAUSE
Picture width too wide. 	Data display period is more than $45\mu s$.	Height of picture too much extended. 	Vertical flyback period is less than 1.058ms
Picture width too narrow. 	Data display period is less than $45\mu s$.	picture deviates up ward. 	Picture until that vertical sync signal period or more.
Picture deviates to the right 	Value of front porch is more than $0.55\mu s$. or value of back porch is less than $0.55\mu s$.	Picture deviates down ward. 	Picture until that vertical sync signal period or less.
Picture deviates to the left. 	Value of front porch is less than $0.55\mu s$, or value of back porch is more than $0.55\mu s$.	Picture becomes lateral stripes. 	Horizontal sync. frequency is not set to 18.432KHz.
Height of picture too shortened. 	Vertical flyback period is more than 1.058ms	Picture flows vertically (upward and down ward) 	Vertical sync. frequency is not set to 50Hz.

TROUBLE SHOOTING INFORMATION CHART





(TROUBLE SHOOTING FOR RESPECTIVE SYMPTOMS)

● NO RASTER

- 1) Turn the internal brightness control clockwise fully :
If raster appears : Good
If raster does not appear : No good to next check item.
 - 2) Is CRT heater on?
It is not on : Check CRT-heater voltage, power supply circuit and CRT socket for normality.
It is on : proceed to next check item.
 - 3) Check high voltage by high-voltage voltmeter.
High voltage is not obtained :
Check of flyback transformer T501 check the collector pulse of TR502, base pulse of TR502.
High voltage is obtained : to next check item.
- Check respective CRT electrode voltage for normality with a multi-tester.
-G1 : -100V-100V
-G2 : 500V-600V
-G4 : 0V -400V
-K : 40V -55V

-When voltage of G2 and G4 are not obtained :
Check of D502, D503, D504, D505, and T501, wire breakdown.
-Voltage of G1 is not obtained : Check of R503, R512, R514, D506, D505, C511, C514, C515, VR513, VR503
-Voltage of K is not obtained :
Check of D506, C514, C515, VR503 (EXT-BRT), wire breakdown.
-Voltage of G2, G4 and K are normal :
CRT is faulty, replace CRT.
 - Only one raster line appears in horizontal direction : Check of deflection yoke vertical coil when deflection yoke vertical coil is shorted or opened. Deflection yoke is faulty and should be replaced.
 - Only one raster line appears in vertical direction : Check for wire broken in deflection yoke horizontal coil, H-DY, width, lin open, TR502 is short or open.
 - Raster is deformed abnormally : Rare shorting of deflection yoke coil, replace deflection yoke.
 - Excessive noise in raster :
Check by measurement that ripples of power supply is less than 50mV p-p when ripples are normal, check to determine whether is any such source that causes alternating magnetic field near the unit.
 - When power is turned off spot remains : Check C404, C514 and CRT for deterioration.
 - Brightness range is abnormal :
Deterioration of C515, or CRT, check of G2 voltage, check of heater voltage.
Check of TR401, TR402 and E403 and C514
 - Raster size is small and picture is abnormally bright (high voltage is abnormally high) check of C506 or FBT.
 - Vertical sync. Is not achieved :
Check of IC301, VR302.
 - Raster position is deviated relative to CRT face :
Turn deflection yoke centering magnet so that raster should be positioned at center.
 - Picture or characters do not appear, contrast is unachievable :
-Check of pin 8 of IC201 and associated components.
-Check of input signal.
-Check of CRT.
 - Picture or characters are displayed but inclined :
-Loosen clamp screw on deflection yoke. Rectify the inclination by turning the entire deflection yoke.
 - Fine lines(noise) appear in the picture and characters shiver :
-Check high-voltage portion for leakage.
-Check connectors for complete contact.
-Check FBT for wire breakdown.
 - It takes long for picture to appear (more than 15 seconds) service life of CRT has reached replace CRT.
 - Sync noise not related with input data appears in picture :
-Check grounding wire for poor contact video grounding for incompleteness input signal for normality and power supply return for incompleteness.
 - Picture appear and disappear alternately :
-Check of input signal.
-Check of video circuit for poor soldering.
-Check of CRT socket.
 - Horizontal linearity is not achieved :
-Check of C507, TR502. Linearity Coil.

- Vertical linearity is not achieved :

- Check of IC301, VR301.

- Check of high voltage.

- Check of D502.

- Focusing is not achievable :

- Check of voltage G2 and G4. Readjustment of VR502.

When all above items are normal, CRT is faulty and should be replaced.

VOLTAGE CHART

1. TRANSISTOR

Measured with high impedance
V.T.V.M or circuit tester under
line voltage 120V voltage
reading may vary $\pm 10\%$

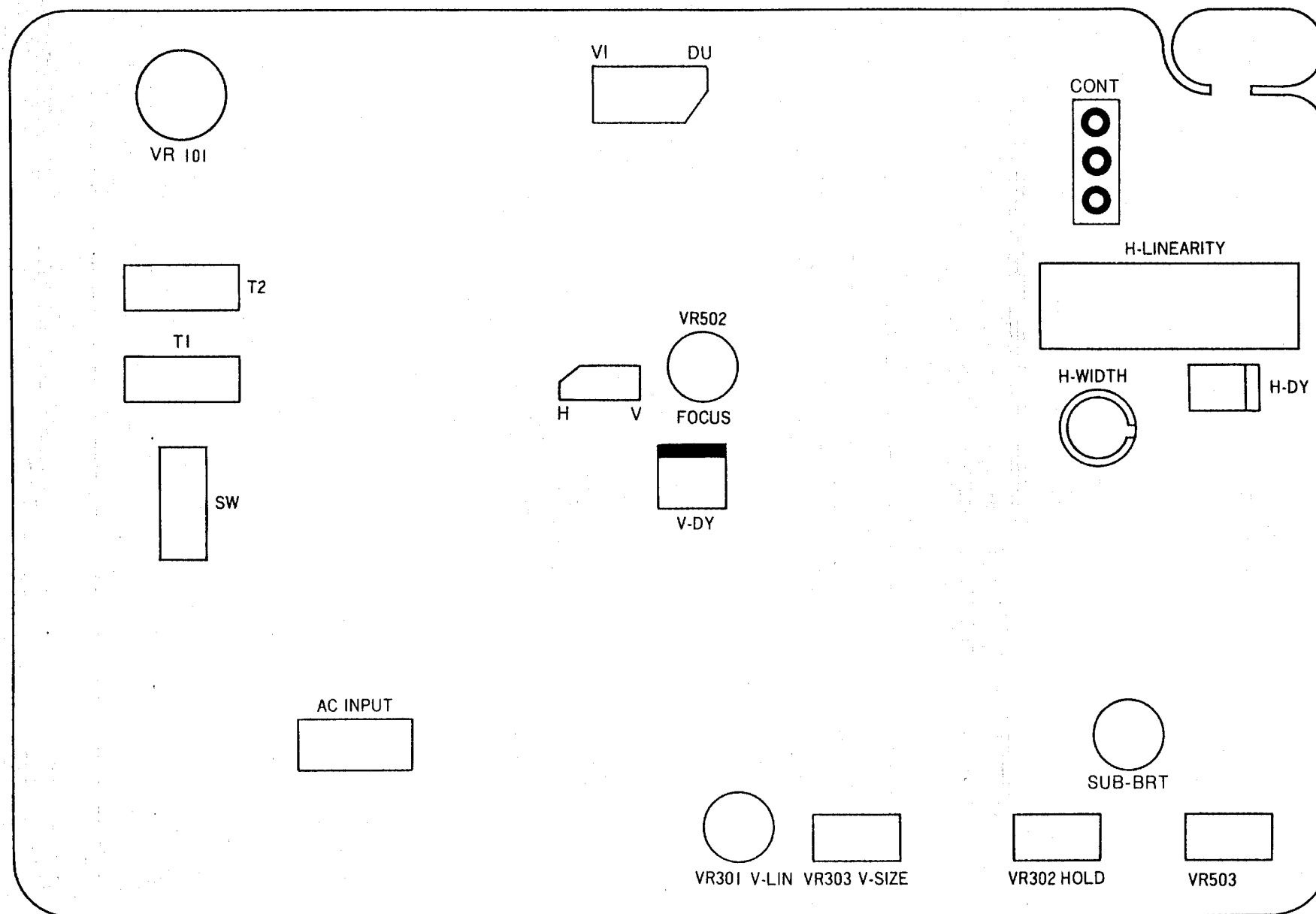
TR Lo/No	TR Type	Function	Operating Condition	Base	Emitter	Collector	Note on Measurement
TR101	MJE-3055	Voltage Regulator	Non signal 4.5V p-p Signal	-4.5V	-5.1V	-73V	V.T.V.M
TR102	A1015 A733Y	Voltage Regulator	Non signal 4.5V p-p Signal	7.01V	6.8V	-7.06V	"
TR401	C2310	Video AMP Output	Non signal 4.5V p-p Signal	6.97V 6.89V	6.56V 6.55V	14.7V 44.2V	"
TR402	C1815	Video Drive	Non signal 4.5V p-p Signal	0.24V 1 V	0V 0.6 V	6.56V 6.6 V	"
TR501	C1008	Horizontal Drive	Non signal 4.5V p-p Signal	0V 0.15V	0V 0V	15.36V 13.3V	"
TR502	BU406	Horizontal Output	Non signal 4.5V p-p Signal	0V 26mV	0V 12mV	15V 18.3V	"

2. IC

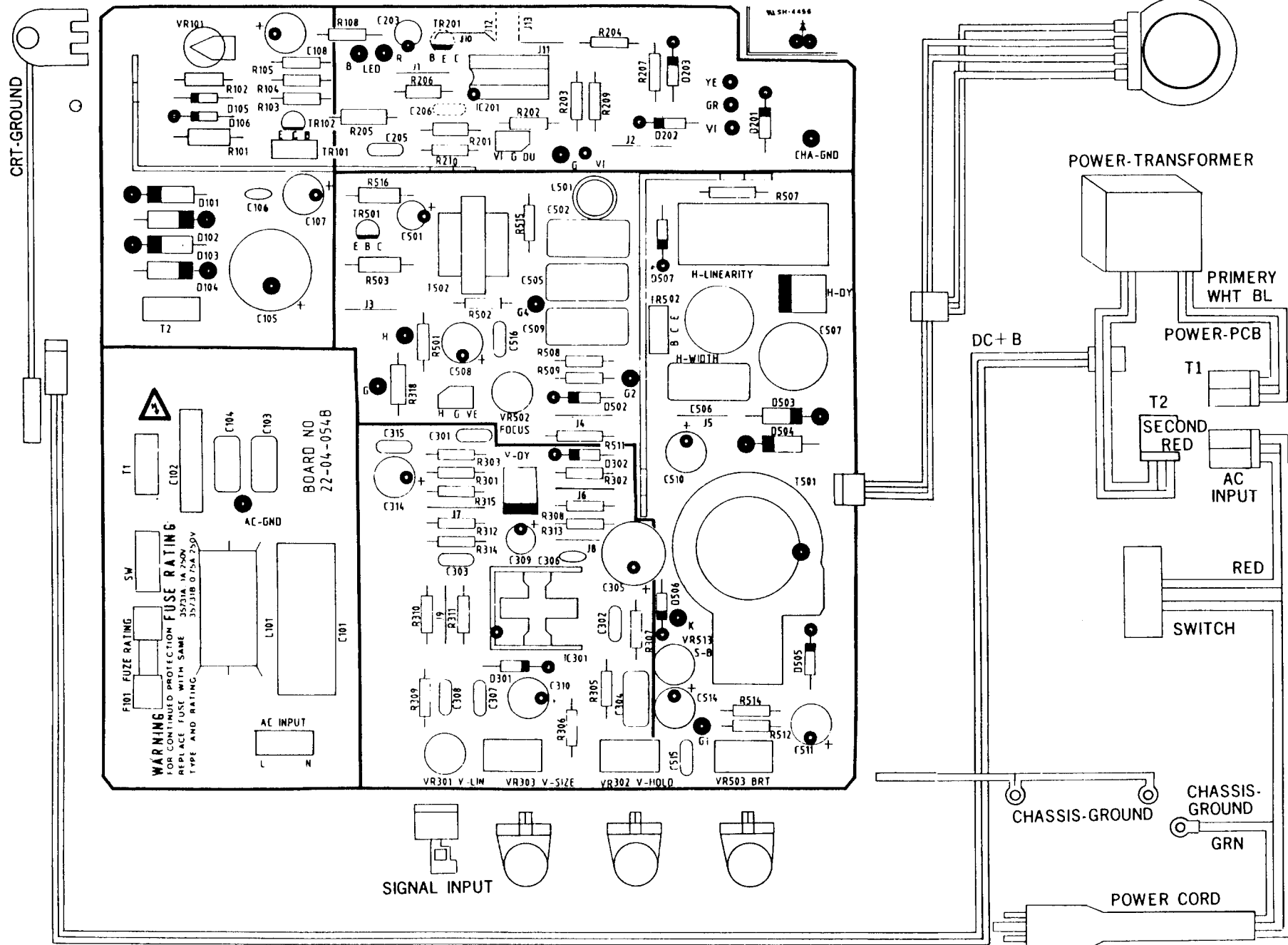
Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC201 74LS06 VIDEO DRIVE														
No. Signal	189 mV	5 V	5 V	187 mV	0 V	0 V	0 V	0.32 V	5.04 V	5.04 V	190 mV	0 V	0 V	5 V
4.5Vp-p Signal	0.2 V	5 V	5 V	191 mV	0 V	0 V	0 V	1.02 V	3.7 V	3.7 V	0.78 V	0 V	0 V	5 V
IC301 TDA 1170N VERTICAL OSC/DRIVER OUTPUT														
No Signal	5.2 V	15.36 V	0.2 V	8.2 V	14.85 V	6.64 V	6.74 V	0 V	3.12 V	2.1 V	0.695 V	4.6 V		
4.5Vp-p Signal	4.8 V	15.2 V	102 mV	8.4 V	14.7 V	6.65 V	6.75 V	0 V	2.9 V	2 V	0.7 V	4.2 V		

ADJUSTER AND CONNECTOR FOR MAIN PC BOARD.

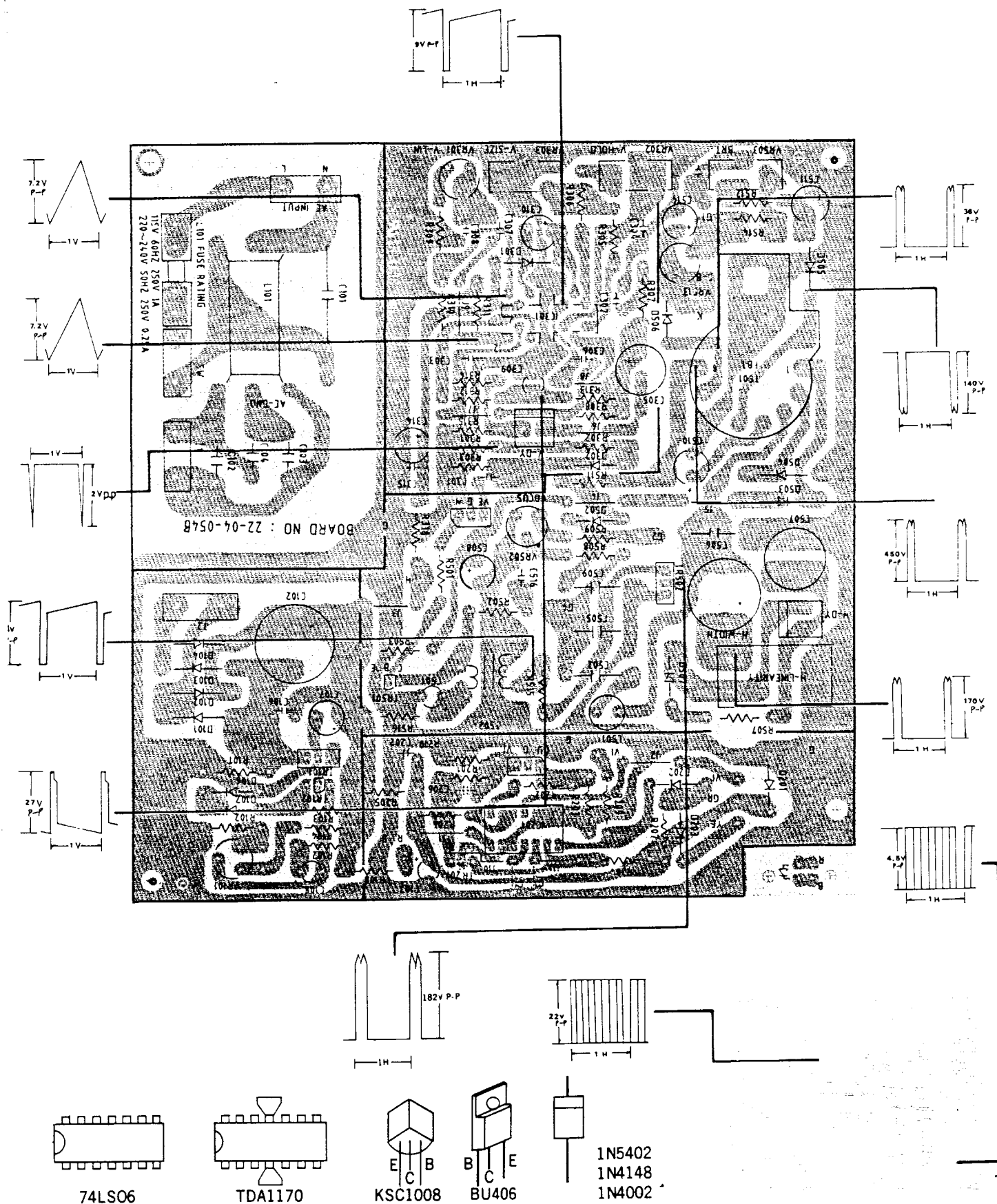
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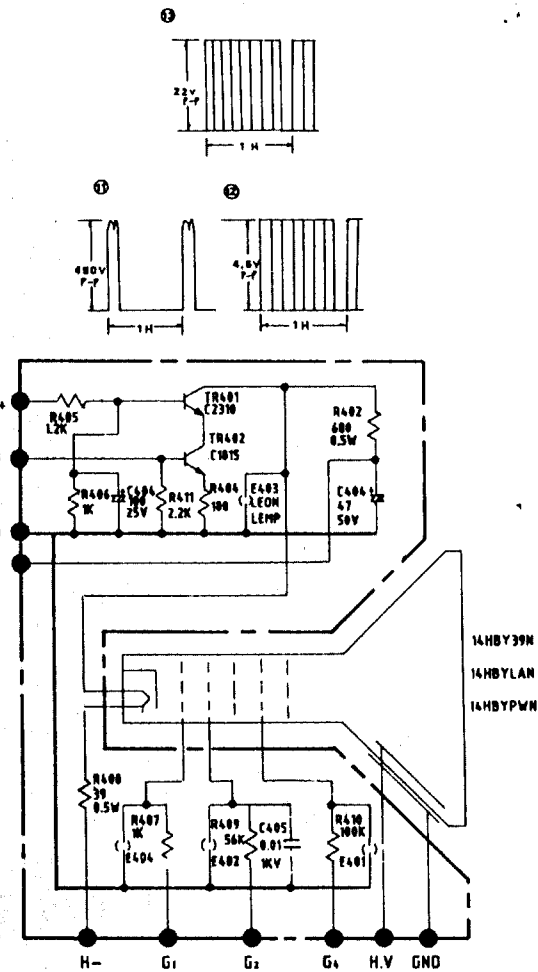
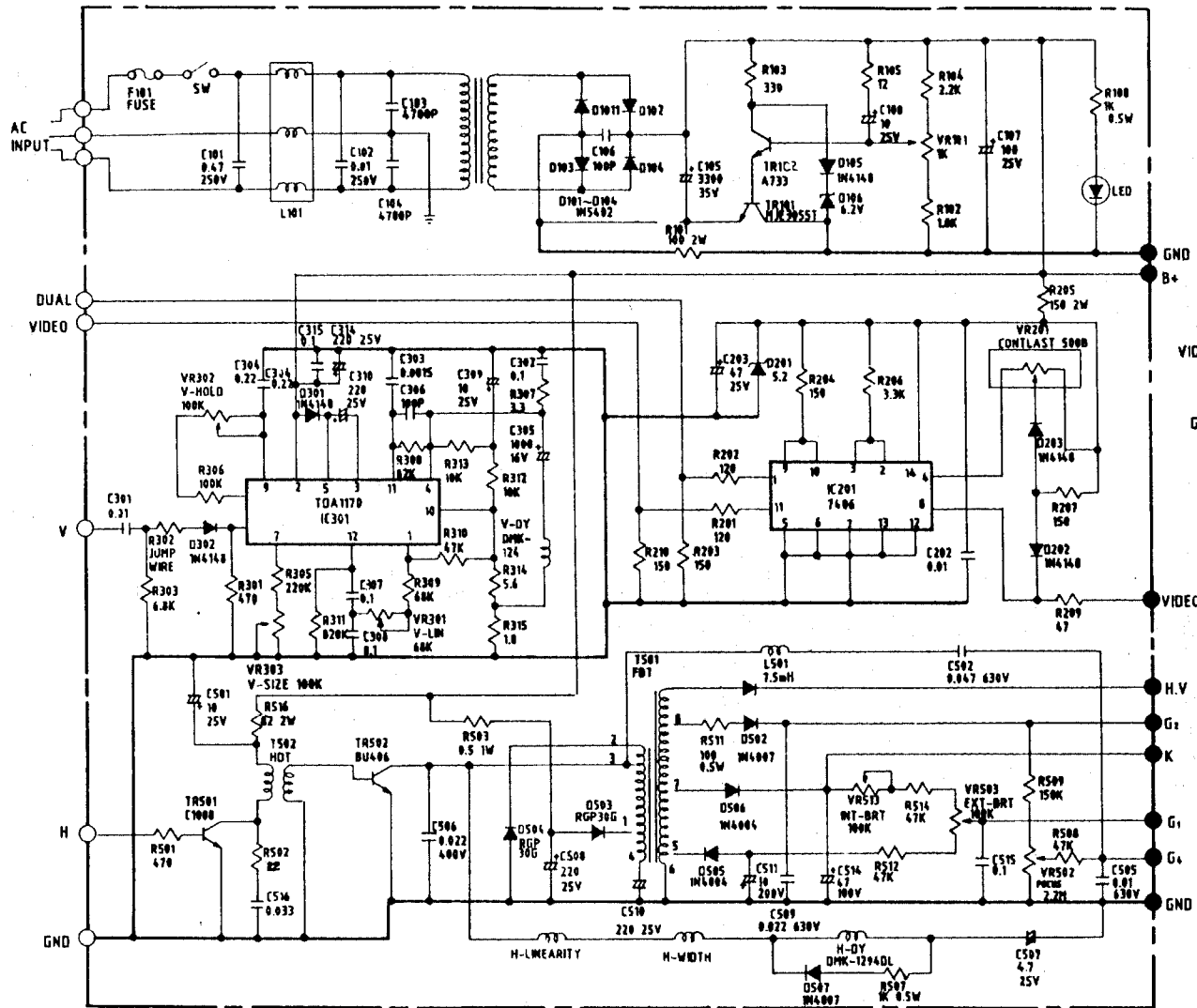
WIRING DIAGRAM (COMPONENT SIDE)



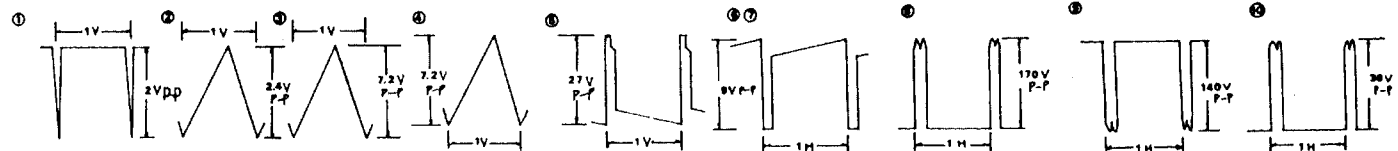
PC BOARD ASSEMBLY (SOLDER SIDE)



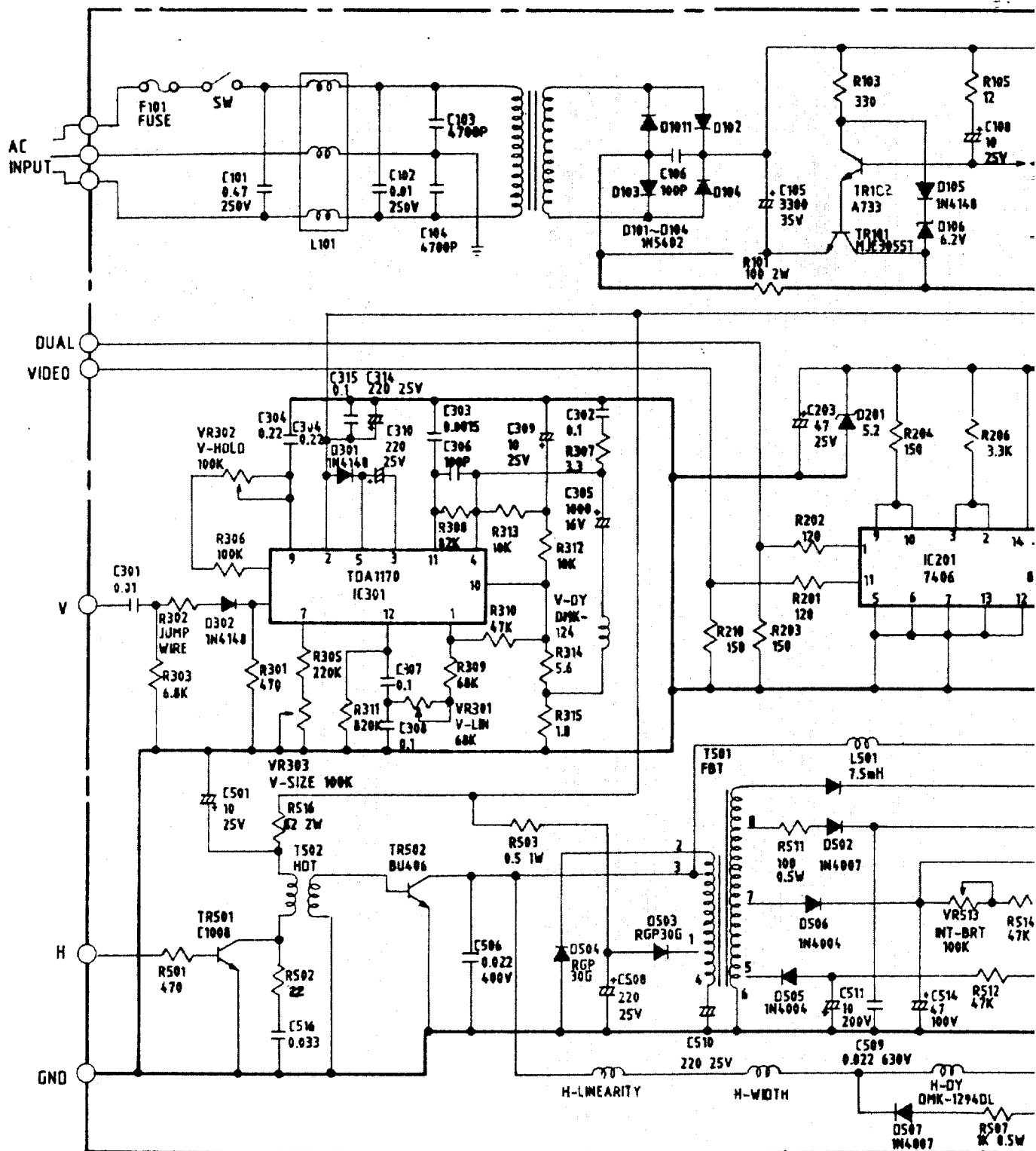
SCHEMATIC DIAGRAM



NOTES. UNLESS OTHERWISE SPECIFIED.
1. ALL RESISTORS ARE IN OHM 0.25W.
2. ALL CAPACITORS ARE IN UF 100V.
3. ○ DENOTES HOUSING CONNECTOR.
4. ● DIRECT.

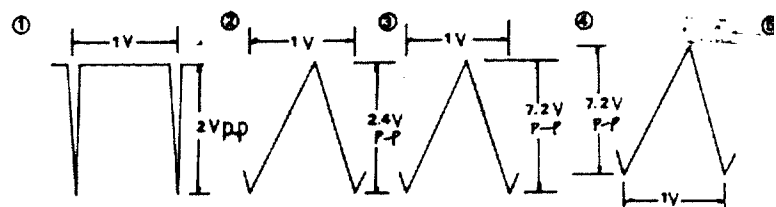


SCHEMATIC DIA

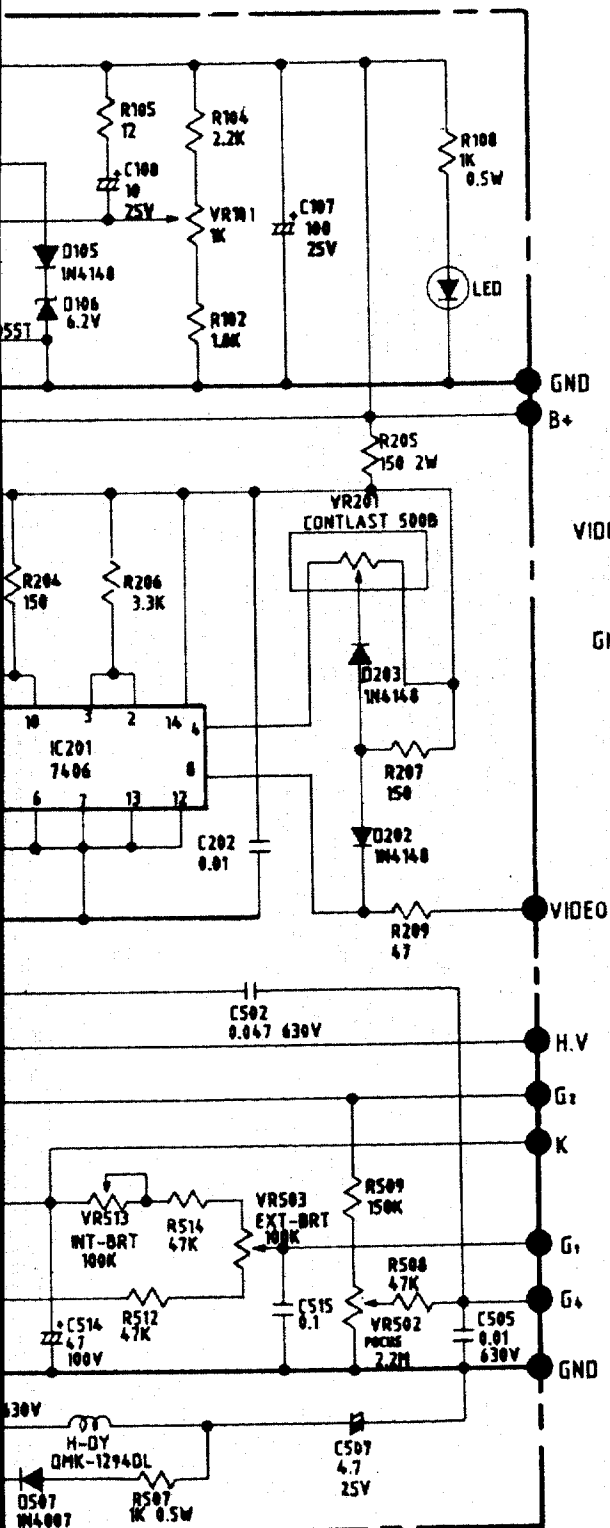


NOTES. UNLESS OTHERWISE SPECIFIED.

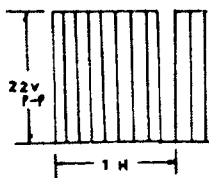
1. ALL RESISTORS ARE IN OHM 0.25W.
2. ALL CAPACITORS ARE IN μ F 100V.
3. ○ DENOTES HOUSING CONNECTOR.
4. ● DIRECT.



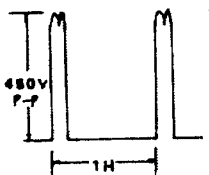
ATIC DIAGRAM



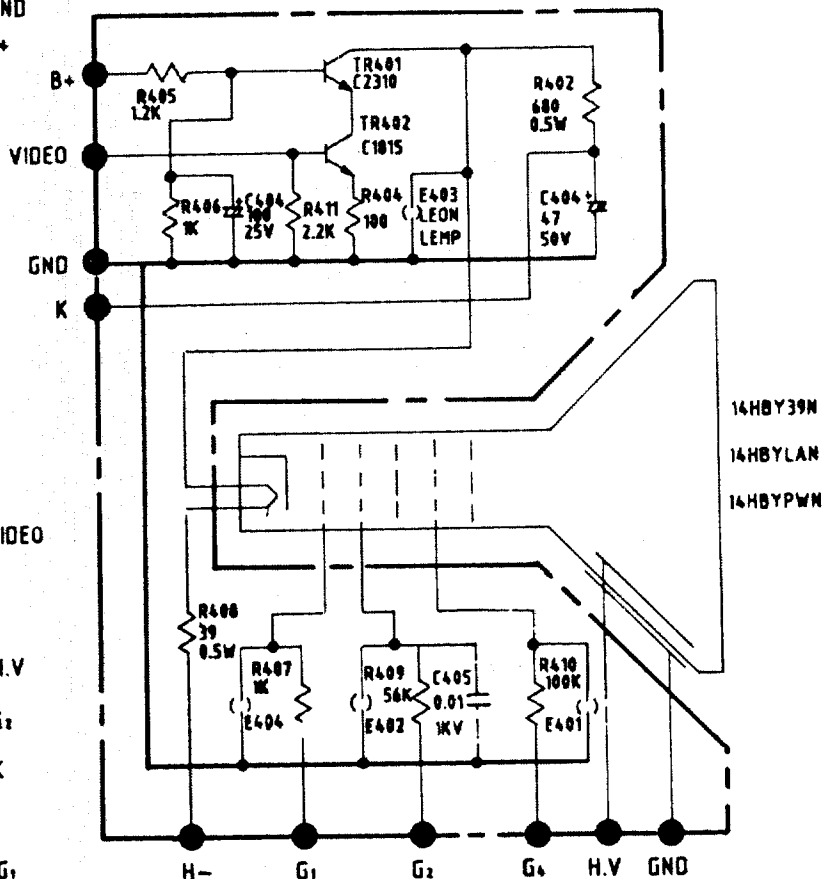
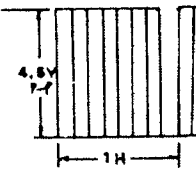
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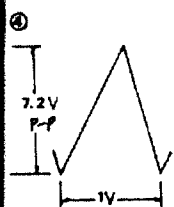
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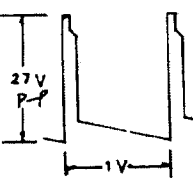
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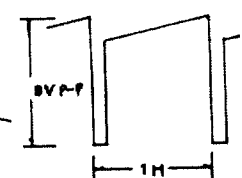
14HY39N
14HYLAN
14HYPPWN



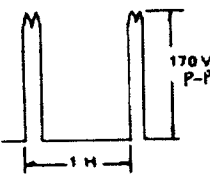
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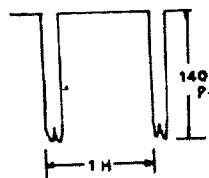
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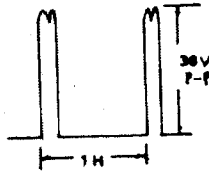
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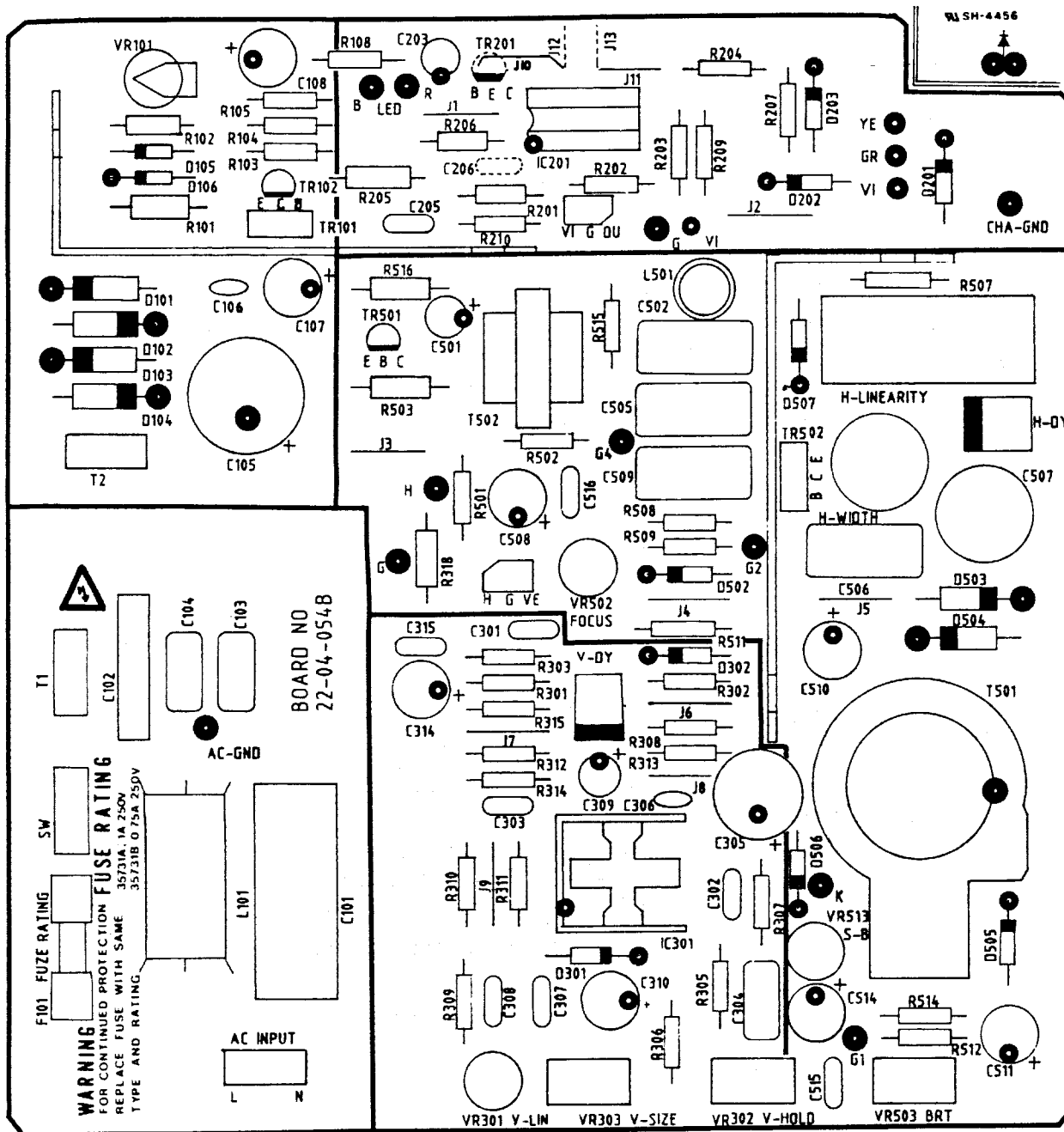
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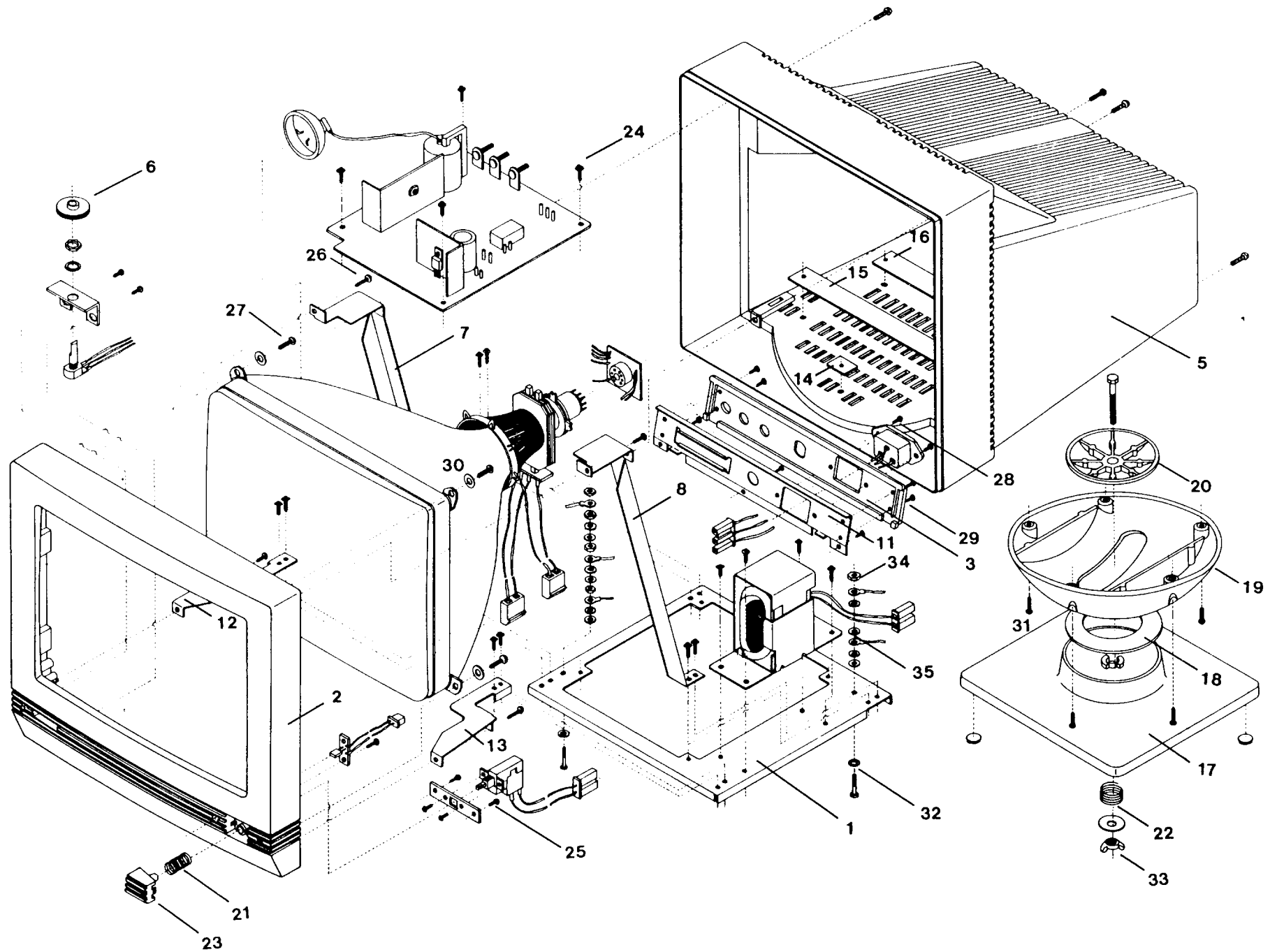
⑩



PCB COMPONENT LOCATION



EXPLODED VIEW



REPLACEMENT PARTS LIST

Location No	Part No.	Description
PICTURE TUBE		
ALTERNATE	26-05-006	PICTURE TUBE(TYPE : 14HBY39N)
ALTERNATE	26-05-007	PICTURE TUBE(TYPE : 14HBYLAN)
	26-05-011	PICTURE TUBE(TYPE : 14HBYWDN)
INTEGRATED CIRCUITS		
IC201	20-10-014	SX7406, 74LS06
IC301	20-06-002	TDA 1170N
TRANSISTORS		
TR102	18-05-002	A1015, A733Y
TR501	18-04-004	KSC 1008
DIODES		
D101	19-01-007	DIODE, 1N5402
D102	19-01-007	DIODE, 1N5402
D103	19-01-007	DIODE, 1N5402
S104	19-01-007	DIODE, 1N5402
D105	19-03-004	DIODE, 1N4148
D106	19-05-024	ZENER, BZX 83C 6V2
D201	19-05-015	ZENER, ZBX 83C 5V1
D202	19-03-004	DIODE, 1N4148
D203	19-03-004	DIODE, 1N4148
D301	19-03-004	DIODE, 1N4148
D302	19-04-004	DIODE, 1N4148
D501	19-04-004	DIODE, 1N4148
D502	19-01-006	DIODE, 1N4007
D503	19-01-023	DIODE, RGP 30G
D504	19-01-023	DIODE, RGP 30G
D505	19-01-004	DIODE, 1N4004
D506	19-01-004	DIODE, 1N4004
D507	19-01-006	DIODE, 1N4007
CAPACITORS		
C101	16-18-004	Capacitor-Fxd. Metalized film 0.47uF 250V
C102	16-25-006	Capacitor-Fxd. Metalized film 0.01uF 300V
C103	16-25-010	Capacitor-Fxd. Poly-propylene 4700pF 300V
C104	16-25-010	Capacitor-Fxd. Poly-propylene 4700pF 300V
C105	16-01-028	Capacitor-Fxd. Electrolytic 3300uF 35V
C106	16-11-017	Capacitor-Fxd. Ceramic 0.01uF 50V
C107	16-04-007	Capacitor-Fxd. Electrolytic 100uF 25V
C108	16-04-004	Capacitor-Fxd. Electrolytic 10uF 25V
C202	16-14-011	Capacitor-Fxd. Mylar 0.01uF 100V
C203	16-04-006	Capacitor-Fxd. Electrolytic 47uF 25V
C301	16-14-011	Capacitor-Fxd. Mylar 0.01uF 50V
C302	16-14-008	Capacitor-Fxd. Mylar 0.1uF 100V
C303	16-14-001	Capacitor-Fxd. Mylar 0.0015uF 50V
C304	16-13-016	Capacitor-Fxd. Mylar 0.22uF 100V
C305	16-01-014	Capacitor-Fxd. Electrolytic 1000uF 16V
C306	16-11-002	Capacitor-Fxd. Ceramic 100pF 50V
C307	16-14-008	Capacitor-Fxd. Mylar 0.1uF 100V
C308	16-14-008	Capacitor-Fxd. Mylar 0.1uF 100V
C309	16-04-004	Capacitor-Fxd. Electrolytic 10uF 25V
C310	16-01-021	Capacitor-Fxd. Electrolytic 220uF 25V
C314	16-01-021	Capacitor-Fxd. Electrolytic 220uF 25V
C315	16-14-008	Capacitor-Fxd. Mylar 0.1uF 100V
C501	16-04-004	Capacitor-Fxd. Electrolytic 10uF 25V
C502	16-15-010	Capacitor-Fxd. Poly-propylene 0.047uF 630V
C505	16-15-008	Capacitor-Fxd. Poly-propylene 0.01uF 630V
C506	16-15-006	Capacitor-Fxd. Poly-propylene 0.022uF 400V
C507	16-09-006	Capacitor-Fxd. Bi-Polar 4.7uF 25V
C508	16-01-021	Capacitor-Fxd. Electrolytic 220uF 25V
C509	16-15-009	Capacitor-Fxd. Poly-propylene 0.022uF 630V
C510	16-01-021	Capacitor-Fxd. Electrolytic 220uF 25V
C511	16-01-073	Capacitor-Fxd. Electrolytic 10uF 200V

C514	16-01-085	Capacitor-Fxd. Electrolytic 47uF 63V
C515	16-14-008	Capacitor-Fxd. Mylar 0.1uF 100V
C516	16-15-002	Capacitor-Fxd. Poly-propylene 0.033uF 50V

RESISTORS

R101	14-10-101	Resistor-Fxd. Metal oxide 100ohms 2W 5%
R102	14-04-182	Resistor-Fxd. Carbon 1.8k ohms 0.25W 5%
R103	14-04-331	Resistor-Fxd. Carbon 330 ohms 0.25W 5%
R104	14-04-222	Resistor-Fxd. Carbon 2.2k ohms 0.25W 5%
R105	14-04-120	Resistor-Fxd. Carbon 12 ohms 0.25W 5%
R108	14-06-102	Resistor-Fxd. Carbon 1k ohms 0.5W 5%
R201	14-04-121	Resistor-Fxd. Carbon 120 ohms 0.25W 5%
R202	14-04-121	Resistor-Fxd. Carbon 120 ohms 0.25W 5%
R203	14-04-151	Resistor-Fxd. Carbon 150 ohms 0.25W 5%
R204	14-04-151	Resistor-Fxd. Carbon 150 ohms 0.25W 5%
R205	14-10-151	Resistor-Fxd. Metal oxide 150 ohms 2W 5%
R206	14-04-332	Resistor-Fxd. Carbon 3.3k ohms 0.25W 5%
R207	14-04-151	Resistor-Fxd. Carbon 150 ohms 0.25W 5%
R209	14-04-470	Resistor-Fxd. Carbon 47 ohms 0.25W 5%
R210	14-04-151	Resistor-Fxd. Carbon 150 ohms 0.25W 5%
R301	14-04-471	Resistor-Fxd. Carbon 470 ohms 0.25W 5%
R302	21-01-035	Wire. bus spa jump
R303	14-04-682	Resistor-Fxd. Carbon 6.8k ohms 0.25W 5%
R305	14-04-224	Resistor-Fxd. Carbon 220k ohms 0.25W 5%
R306	14-04-104	Resistor-Fxd. Carbon 100k ohms 0.25W 5%
R307	14-04-033	Resistor-Fxd. Carbon 3.3 ohms 0.25W 5%
R308	14-04-823	Resistor-Fxd. Carbon 82k ohms 0.25W 5%
R309	14-04-683	Resistor-Fxd. Carbon 68k ohms 0.25W 5%
R310	14-04-473	Resistor-Fxd. Carbon 47k ohms 0.25W 5%
R311	14-04-824	Resistor-Fxd. Carbon 820k ohms 0.25W 5%
R312	14-04-103	Resistor-Fxd. Carbon 10k ohms 0.25W 5%
R313	14-04-103	Resistor-Fxd. Carbon 10k ohms 0.25W 5%
R314	14-04-562	Resistor-Fxd. Carbon 5.6k ohms 0.25W 5%
R315	14-04-018	Resistor-Fxd. Carbon 1.8 ohms 0.25W 5%
R501	14-04-471	Resistor-Fxd. Carbon 470 ohms 0.25W 5%
R502	14-04-220	Resistor-Fxd. Carbon 22 ohms 0.25W 5%
R503	14-09-005	Resistor-Fxd. Metal oxide 0.5 ohms 1W 5%
R507	14-06-102	Resistor-Fxd. Carbon 1k ohms 0.5W 5%
R508	14-04-104	Resistor-Fxd. Carbon 100k ohms 0.25W 5%
R509	14-04-154	Resistor-Fxd. Carbon 150k ohms 0.25W 5%
R511	14-06-101	Resistor-Fxd. Carbon 100 ohms 0.5W 5%
R512	14-04-473	Resistor-Fxd. Carbon 47k ohms 0.25W 5%
R514	14-04-473	Resistor-Fxd. Carbon 47k ohms 0.25W 5%
R516	14-10-820	Resistor-Fxd. Metal oxide 82 ohms 2W 5%

CONTROLS

VR101	15-05-011	V-TRIMER 1K ohms B0.15W
VR301	15-05-013	V-TRIMER 68K ohms B 0.15W
VR302	15-03-003	H-TRIMER W/SHAFT 100K ohms B 0.2W
VR303	15-03-003	H-TRIMER W/SHAFT 100K ohms B 0.2W
VR502	15-05-010	V-TRIMER 2.2M ohms B 0.15W
VR503	15-03-003	H-TRIMER W/SHAFT 100K ohms B 0.2W
VR513	15-05-007	V-TRIMER 100K ohms B 0.15W

COILS

H-WIDTH	17-04-006	COIL HORIZONTAL WIDTH 11-35 uH 403-01-006
H-LIN	17-05-010	COIL HORIZONTAL LINEARITY 9-45 uH 404-01-010
L501	17-09-027	COIL CHOCK 7 mH
L101	17-08-004	LINE FILTER 15.5uH 457-01-004 230V ONLY

TRANSFORMER

T501	17-02-040	FLYBACK TRANSFORMER FMH-1245 BL
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TRANSFORMERS & FUSE CLIP

T502	17-07-020	HORIZ DRIVE TRANSFORMER 56.8 mH
	17-01-032	POWER TRANSFORMER 115V ONLY
	17-01-033	POWER TRANSFORMER 230V ONLY
	21-01-035	WIRE BUS SPA, AWM 06 J1-J12, R318,R302,R515
F101	23-01-028	FUSE 51S TYPE, 250V 1A
	23-04-007	FUSE CLIP, ϕ 5.0, 20mm

AC CORD & TERMINAR & WIRINGS

L101
AC-GND
CHA-GND

21-01-014	WIRE STRENDEN AWG 1015/#22, BK 45mm 115V ONLY
21-06-020	WIRE RING TERMINAL 5 ϕ INSULATE G/Y 120mm
21-06-039	WIRE RING TERMINAL 5 ϕ INSULATE G/Y 65mm
10-11-029	HDR, BEAD PIN ϕ 2.36 T1, T2, SW, AC INPUT
06-25-011	HEAT SINK, TDA 1170, 21.3*32*0.3
00-07-018	ASS'Y SIGLAL CABLE, 9 p, 1400mm
21-07-004	POWER CORD SVT 3/18 AWG 6FT BLACK 115V ONLY
21-07-005	POWER CORD SVT 3/18 AWG 6FT BLACK 230V ONLY
10-11-001	HDR, LOCK, 3.96, 2p, BK, MOLEX 5273-02A, V-DY BASE
10-11-002	HDR, LOCK, 3.96, 2p, WH, MOLEX 5273-02A, H-DY BASE
10-11-028	HDR, SHROUNDED, 2.5, 3p, YE, MOLEX 5267-03A SIGNAL INPUT BASE
19-06-008	DIODE LED SLB-25MG
21-02-027	WIRE MANUT, STRENDEN AWM1007/22# 195mm, RED
21-02-028	WIRE MANUT, STRENDEN AWM1007/22# 195mm, BLACK

SWITCH ASS'Y

00-04-016	ASS'Y OF POWER S/W
23-02-010	SWITCH POWER SDL-IP
21-05-015	2PIN CONNECTOR HOUSING FOR S/W, 2.36 ϕ , 288mm RED
06-21-017	PLATE FOR S/W
24-02-001	M-SCR, PAN HEAD, W/WASHER, W, M3*5

BU 406 ASS'Y

00-06-041	BU 406 ASS'Y
18-07-006	BU 406 TR NPN
06-25-044	HEAT SINK L-PLATE 75*50*1.25
24-01-003	PAN HEAD M-SCR M3*8 WHITE
24-31-001	NUT HEX M3*0.5P WHITE
24-42-001	WASHER CEAR OUT SIDE 3.2*6.5*0.45 WHITE

ASS'Y AC RECEPT

00-09-012	ASS'Y, AC RECEPT
06-21-025	PLATE, BACK CHASSIS
10-08-008	SOCKET, AC RECEPTABLE
07-22-012	CORE, RING
21-01-***	WIRE STRENDEN AWM 1007/# 18 BLACK
	WIRE STRENDEN AWM 1007/# 18 WHITE
	WIRE STRENDEN AWM 1007/# 18 GREEN
10-07-004	FASTENER 93mm
10-12-013	CONN HOUSING 2.36, 2p
24-44-002	RING TERMINAL 5 ϕ
26-05-006	CRT 14HBY39N
26-05-007	CRT 14HBYLAN
13-11-071	BOX, C/T, Y, 409
13-13-029	S/FORM, SET, L
13-13-030	S/FORM, SET, R
13-16-043	MANUAL
06-26-003	LOGO
13-15-238	LABEL, PRODUCT 115V
13-15-239	LABEL, PRODUCT 230V
13-17-024	VINYL BAG, PE, 740*820*0.05T
	VINYL BAG, PE, 680*910*0.1T
12-20-002	TAPE, OPP
13-14-002	BAND, RUBBER
13-14-001	BEND, TWIST WIRE
07-21-002	MAGNET SQUARE FERRITE, 10GAUSS-70GAUSS
-008	

MJE 3055T ASS'Y

00-06-042	ASS'Y HEAT SINK, 032, MJE 3055T
18-07-019	TR, NPN, MJE 3055T
06-25-044	HEAT SINK, L PLATE 75*50*1.25
24-01-003	M-SCR, PAN HEAD, W, M3*8
24-31-001	NUT HEX M3*0.5P WHITE
24-42-001	WASHER GEAR OUT SIDE 3.2*6.5*0.45

CONT V/R ASS'Y

00-05-016	CONT V/R ASS'Y
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15-04-011	CONT V/R 500 OHM 0.15W B
21-01-008	WIRE FOR CONT V/R VIOLET AWM1007 168mm
21-01-005	WIRE FOR CONT V/R YELLOW AWM1007 168mm
21-01-009	WIRE FOR CONT V/R GARY AWM1007 168mm

DEFLECTION YOKE ASS'Y

00-01-005	DEFLECTION YOKE ASS'Y
21-05-007	WIRE CONN HOUSING 2PIN GRAY/BROWN 200mm
21-05-008	WIRE CONN HOUSING 2PIN GREEN/WHITE 190mm
17-03-011	DEFLECTION YOKE DMK-1294 DL
12-21-002	TUBE SHIRINKABLE 4 ϕ , 0.5

AC RECEPT SOCKET ASS'Y

00-09-009	ASS'Y AC RECEPT SOCKET
10-08-003	INLET SOCKET, 3505, 3516
21-05-082	WIRE CONN HOUSING 3P, 70mm BK,WH
12-21-003	TUBE, SHIRLINKABLE 5 ϕ ,

MECHANICAL PARTS

1	06-20-028	CHASSIS BOTTOM
2	10-05-084	FRONT BEZEL
3	10-05-099	BACK PLATE
4	10-05-017	STREIN RELIEF
5	10-05-098	REAR HOUSING
6	10-05-087	KNOB CONTRAST
7	06-20-029	CHASHIS BRACE LEFT
8	06-20-030	CHASHIS BRACE REGHT
9	06-21-004	PLATE SIDE LEFT
10	06-21-005	PLATE SIDE RIGHT
11	06-21-025	PLATE BACK CHASSIS
12	06-22-023	BRKT FRONT LEFT
13	06-22-024	BRKT FRONT RIGHT
14	06-22-025	BRKT STAND FIX-A
15	06-22-026	BRKT STAND FIX-B
16	06-22-027	BRKT STAND FIX-C
17	10-05-079	STAND W/RUBBER FOOT 1380C
18	10-05-049	STAND/PART ACETAL
19	10-05-054	NECK 1380C
20	10-05-048	NECK/PART ACETAL
21	24-45-002	COMPRESSION SPRING 17 \times 11 \times 0.6
22	24-45-002	COMPRESSION SPRING 23 \times 17 \times 25Y
23	10-05-086	SWITCH CAP
24	24-26-037	M-SCR PAN HEAD W/WASHER C M3 \times 8W
25	24-04-005	P-SCR PAN HEAD #6 \times 10W
26	24-04-012	P-SCR PAN HEAD #8 \times 10W
27	24-24-014	P-SCR PAN HEAD #8 \times 15W
28	24-26-013	T-SCR C/S HEAD M3 \times 8W
29	24-26-001	M-SCR C/S HEAD M3 \times 8W
30	24-41-011	WASHER FLATE 5.3 \times 16 \times 1.0 WHITE
31	24-01-009	M-SCREW PAN HEAD M4 \times 10 WHITE
32	10-09-003	RUBBER FOOT GR, BL 13.8 \times 11.5 \times 3.5
33	24-33-001	NUT BUTTEFLY 23 \times 17 \times 2Y
34	24-31-005	NUT HEX M4 \times 0.7P WHITE
35	24-42-007	WASHER GEAR OUT SIDE 4.8 \times 9.5 \times 0.5

TRANSISTORS

Q401	18-04-015	KSC 2310 Y
Q402	18-04-006	CI815

WIRINGS

VI. EI	21-01-037	WIRE COAXAL CABLE AWM1365 240mm BLACK
GI	21-01-002	WIRE STRENDED AWM1007 210mm BROWN
H	21-01-005	WIRE STRENDED AWM1007 210mm YELLOW
K	21-01-016	WIRE STRENDED AWM1007 180mm RED
GND	21-01-014	WIRE STRENDED AWM1015 280mm BLACK
G2	21-01-020	WIRE STRENDED AWM1015 240mm BLUE
G4	21-01-021	WIRE STRENDED AWM1015 250mm VIOLET

CAPACITORS

C403	16-04-007	CAPACITOR-FXD. ELECTROLYTIC 100uF 25V
C404	16-04-007	CAPACITOR-FXD. ELECTROLYTIC 100uF 25V

RESISTORS

R402	14-06-681	RESISTOR-FXD. CARBON 680Ω 1/2W 5%
R403	14-04-101	RESISTOR-FXD. CARBON 100Ω 1/4W 5%
R404	14-04-101	RESISTOR-FXD. CARBON 100Ω 1/4W 5%
R405	14-04-122	RESISTOR-FXD. CARBON 1.2KΩ 1/4W 5%
R406	14-04-102	RESISTOR-FXD. CARBON 1KΩ 1/4W 5%
R407	14-04-102	RESISTOR-FXD. CARBON 1KΩ 1/4W 5%
R408	14-06-390	RESISTOR-FXD. CARBON 39Ω 1/2W 5%
R409	14-04-563	RESISTOR-FXD. CARBON 56KΩ 1/4W 5%
R410	14-04-104	RESISTOR-FXD. CARBON 100KΩ 1/4W 5%
R411	14-04-222	RESISTOR-FXD. CARBON 2.2Ω 1/4W 5%

LAMP & SPARK-GAPS

E401	16-24-003	SPARK-GAP 1KV-15%/ +30%
E402	16-24-003	SPARK-GAP 1KV-15%/ +30%
E403	16-24-004	NEON LAMP 100V
E404	16-24-003	SPARK-GAP 1KV-15%/ +50%