

SERVICE MANUAL

SM-430(REV. C)



SPECIFICATIONS

Power source	AC 97—264V, 50—60Hz
Power consumption	50 Watts Max.
Input connector	9 Pin D-subminiature connector
Video signal input	3.4V±1.0V positive
Dual intensity	3.4V±1.0V(high intensity), positive
Horizontal sync	TTL level positive
Vertical sync	TTL level negative
Picture tube	14" diagonal, 90° deflection 14HBY X-X-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)×167(V)mm
Display character	80 characters with 25 line (7×9 dots)
Dimensions	318(W)×343(H)×315(D)mm
Weight	8.4kg Approx.

※ **NOTE** : Specification are subject to change without notice

CONTENTS

SPECIFICATIONS

CONTENTS

SAFETY PRECAUTION	3
GENERAL INFORMATION	4
CONTROLS AND TERMINAL IDENTIFICATIONS	5
IMPORTANT NOTICE FOR SERVICE PERSONNEL BEFORE SERVICING	5
SERVICE INFORMATION	6
BLOCK DIAGRAM	7
THEORY OF OPERATION(CIRCUIT DESCRIPTION)	8
VIDEO INPUT SIGNAL(TIMING CHART)	10
WHEN SIGNALS OTHERS THAN THE RECOMMENDED SIGNAL ARE RECEIVED	11
TROUBLE SHOOTING INFORMATION CHART	12
TROUBLE SHOOTING FOR RESPECTIVE SYMPTOMS	14
VOLTAGE CHART	16
ADJUSTOR & CONNECTORS FOR MAIN PC-BOARD	17
WIRING DIAGRAM(COMPONENT SIDE)	18
PC-BOARD ASSEMBLY(SOLDER SIDE)	19
SCHEMATIC DIAGRAM	20
PCB COMPONENT LOCATION	21
ASSEMBLY DRAWING	22
REPLACEMENT PARTS LIST	23

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.

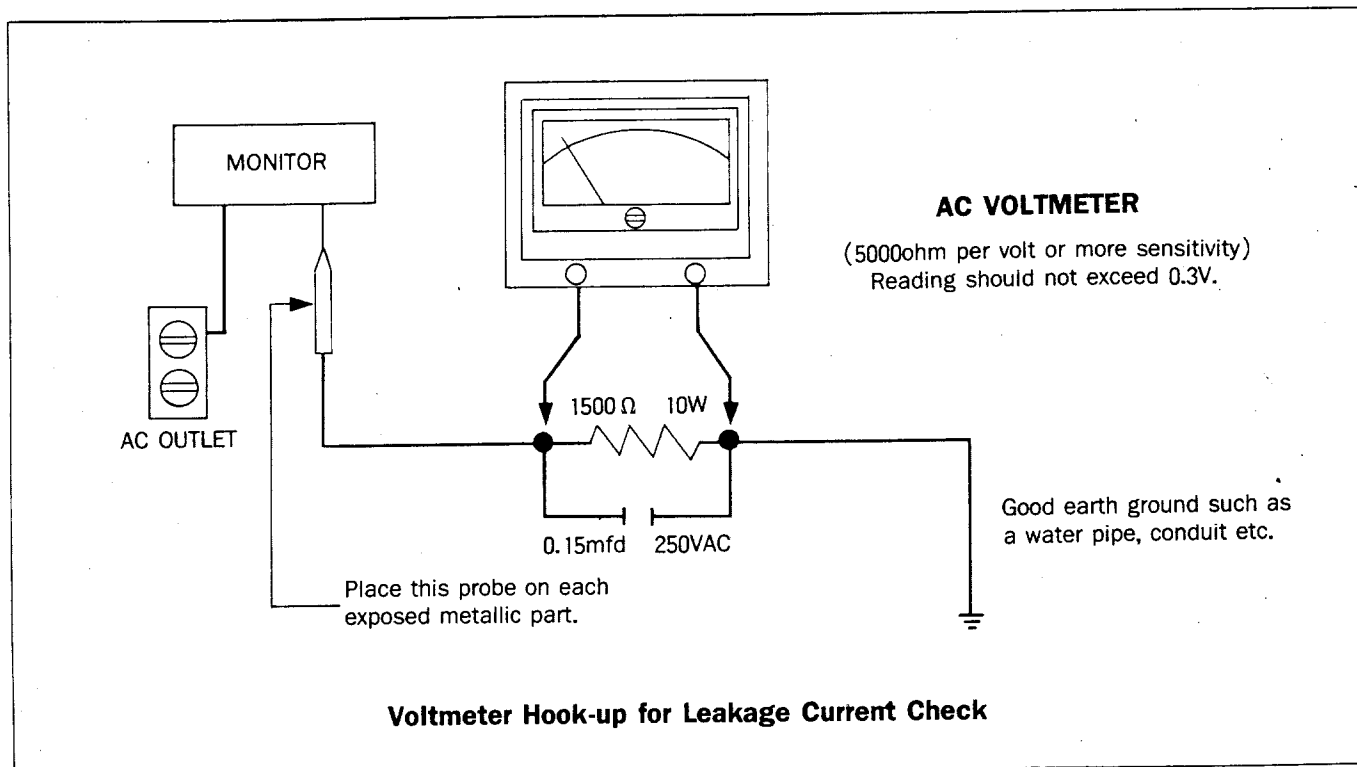
Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15mfd(uF), 250V AC capacitor between a known good earth ground (water pipe, conduit, etc.) and the exposed metallic parts, one at a time.

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. H-hold (H-shift)

2) Service controls(internal controls)

V-linearity, H-width, H-linearity, focus, sub-brightness, horiz. & vert. Centring magnet, operating D-C voltage adjustor.

• DISPLAY MONITOR ELECTRICAL CHARACTER

1) AC Power Input

: 97-264V

Power consumption is 35W under normal viewing condition and uses internal fuse protection.

2) video

-Input

: 3.4±1.0V TTL positive

-Band Width

: 20MHz

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(H)×167(V)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°

-Implosion Protection

: Shirinkage band with mounting lug.

-Phosphor

: P 39, PLA. PWD.

-Display size

: 253(H)×195(V)(mm)

-Face

: Direct Etched

-Anode Voltage

: 13.0±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±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°C to+40°C

-Storage

: -35°C +50°C

2) Humidity

: 5 to 90 percent (non condensing)

3) Altitude

-Operating

: Up to 10,000 FT

-Non Operating

: Up to 50,000 FT

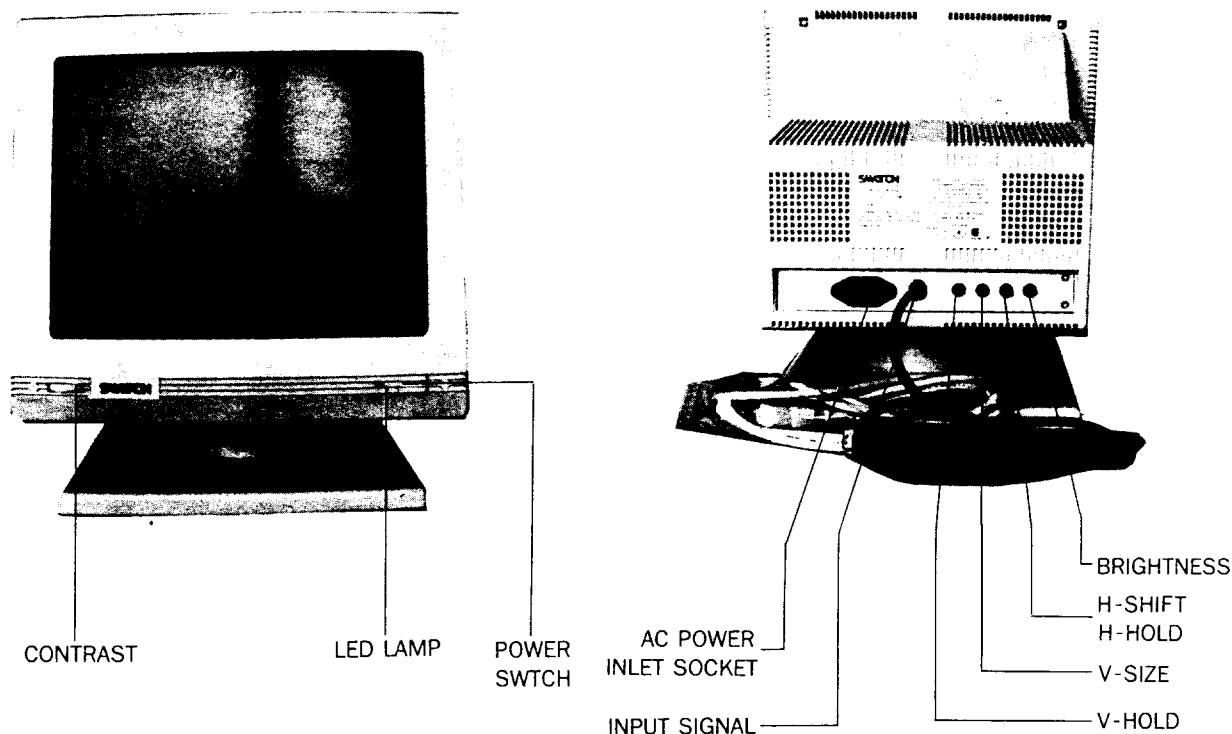
• X-RADIATION

The monitor shall meet the applicable requirement of D.H.H.S regulations (21CER. SUBCHAPTER J) for X-radiation emission.

• WEIGHT

: Approx 8.4kg

CONTROLS AND TERMINAL IDENTIFICATION



IMPORTANT NOTICE FOR SERVICE PERSONNEL BEFORE SERVICING

PLEASE READ BEFORE ATTEMPTING SERVICE

1. Line voltage must be kept within 97V–264V range.
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 VR 603 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 228mm.
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 SIZE 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 size control VR303 to obtain the optimum height for full information.
If the recommended input signal format is used, the height should be 167mm

SERVICE INFORMATION ADJUSTMENTS

• BRIGHTNESS

Normally, the monitor will be used to display alpha-numeric or other black and white information moreover, the video polarity is usually white characters on a black background.

The brightness control VR601 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

• HORIZONTAL ADJUSTMENTS

Raster width is affected by a combination of the DC

power supply, horizontal width coil.

1) Horizontal Frequency Hold

Measure the voltage wave frequency of IC 501 pin #14 by oscilloscope or frequency counter, and adjust the Horizontal hold control VR501 until the voltage frequency 18.4KHz at no signal.

2) Horizontal Width

Adjust horizontal width by turning the core of with a plastic hexdrive for the desired width.

• 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

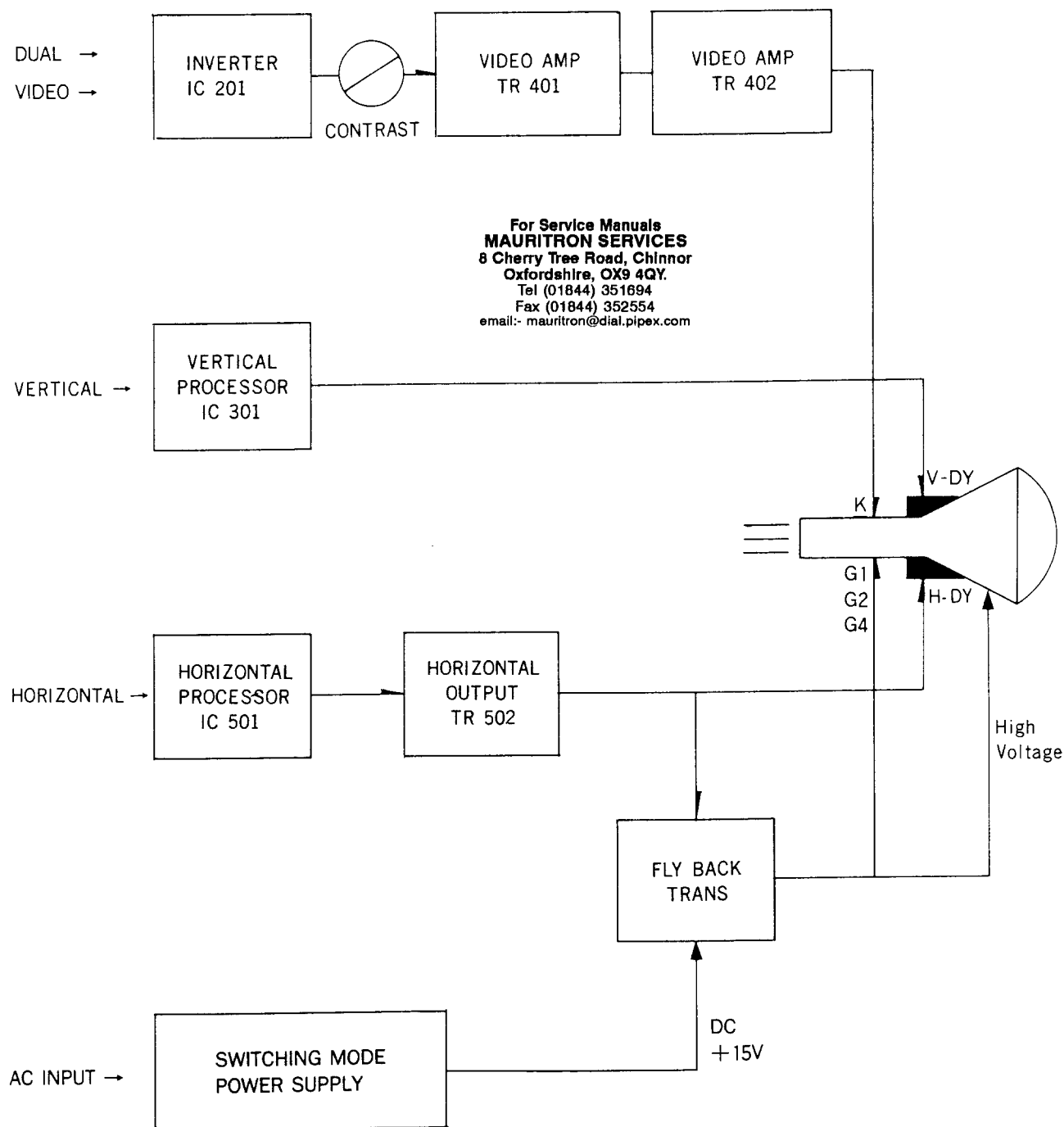
The magnets on the yoke assembly shall be polarized so as to provide adjustment of pin-cushion, barreling and other geometric deformities by simply rotating the magnets until the desired display is achieved readjust if necessary.

• FOCUS ADJUSTMENTS

Although the focus control, VR603 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)

1. D.C. POWER SUPPLY

L101 and ambient capacitor C101 from a line filter whose function is to protect the power supply from power line surges and noise, and to prevent the power supply from switching back noise.

Initially, when the receiver is turned "ON" and the resistance of the ntc thermistor is high. As the NTC thermistor heats, its resistance decreases.

The TDA4605 has been controlled DC output voltage and has been designed for driving, controlling, and protecting the switching transistor in bucking converter power supplies.

The serial circuit of power transistor and primary winding of the flyback transformer is connected to the input voltage.

During the switch on period of the transistor energy is stored in the transformer and during switch-on time of the power transistor the TDA 4605 controls each portion of energy transferred to the secondary side such that the output voltage remains nearly independent of load variations.

The required control information is taken from the input voltage during the switch on period a regulation winding during the switch off period.

This SMPS circuit is designed as a wide-range power supply for AC line voltages of 90V to 260V.

The AC input voltage is rectified by bridge rectifier D101 and smoothed by C102.

In the period before the switch-on threshold is reached the TDA 4605 is supplied via resistor R102, during the start-up phase it uses the energy stored in C110, under steady state conditions the IC101 receives its supply voltage from transformer winding pin 2 of T101 via diode D103.

The switching transistor TR101 is a BUZ 77. The R112-C103-D102 circuitry limits over shoot peaks, and R109 protect the gate of TR101 against static charges.

Regulation of the switched-mode power supply is via pin 1 of IC101. The control voltage of winding pin 5 and pin 6 of T101 during the off-period of TR101 is rectified by D104, smoothed by C106 and stepped down at an adjustable ratio by R104, R105 and VR101.

The R110-C109 network suppresses parasitic over shoots (transformer oscillation).

The peak voltage at pin 2 of IC101, and thus the primary peak current, are adjusted by the IC101 so that the voltage applied across the control winding, and hence the output voltage, are at the desired level.

The capacitor C108 connected to pin 7 of IC101 causes the power supply to be started with shorter pulses to keep the operating frequency outside the audible range during start-up on the secondary side, output voltage is provided across winding pin 10-pin 11 to

pin 13-pin 14 of T101, rectified by D109 and smoothed by C112 and C114.

L102 and ambient capacitor C113-C115 from a output filter whose function is to protect from switching surge and noise.

2. 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 controlled.

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 DTR401 operates in the common base configuration.

This minimizes "the miller effect" input capacitance and derating breakdown parameter for TR402 becomes BV_{cbo} as opposed to BV_{ceo} for the common emitter configuration.

3. VERTICAL PROCESS CIRCUIT

Vertical deflection circuit consist of one stage, IC301 which accomplishes all active vertical sync. functions. Vertical 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 oscillator 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 loading on the previous stages. Components R311, R309, VR301, C307, C308, reshape

the ramp voltage signal to make it extremely linear. The output signal from the buffer stage is applied to a per-amp stage. for amplification and then to a power ramp stage which deived the vertical deflection solus display via coupling capacitor C306, C309, R313, R308, R312, R315, R307 and ac and dc feedback for the output stages to maintain proper gain and linearity.

4. HORIZONTAL PROCESS CIRCUIT

Horizontal deflection circuit consist of one stage. Horizontal input voltage of TTL signal is applied to pin 8 of IC501 via R501.

The free running frequency of the oscillator is determined by VR501, R506, R507, R508, C502, C503, and C504 connected to pin 14 and 15 of IC501 respectively. To generate the line frequency output pulses, two thresholds are fixed along the fall ramp of the triangular waveform of the oscillator.

The oscillator is synchronised by comparing the phase of its waveform with that of the sync pulses in the oscillator after it has been filtered properly with an external sow-pass circuit.

The outputs of IC501 are suitable for driving transistor output stages, they deliver positive pulse at pin 3 of IC501.

The rise and fall times of the output pulses are about 150 nS

So that interference due to radiation are avoided.

The outputs of IC501 is applied to base of TR501 via R509.

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

A sawtooth current through the derlection coll is required to sweep the beam lineary across the crt screen.

This happens wilen TR502 is turned on and its collector voltage dropes to near zero.

And then, C601 begoms discharging the derlection yoke coil which deflect the beam to the right edge of the crt.

At that time, TR502 cuts off and C601 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 C601.

During the first half cycle of this oscillation the induced voltage is felt across

The collector of now cut TR502, C601 and the primary of T601.(FBT)

This voltage is stepped up by T601 and rectified to produce high voltage that is applied to the 2nd anode at the CRT.

During the second half cycle of the derlection coil C601 oscillection, the voltage on the collector still cut off TR502 becomes negative.

At this time damper diode D601 becomes forward dias and begins conduction.

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

D606 and C607 rectify and filter the flyback pulse across TR502 to produce a G2 voltage.

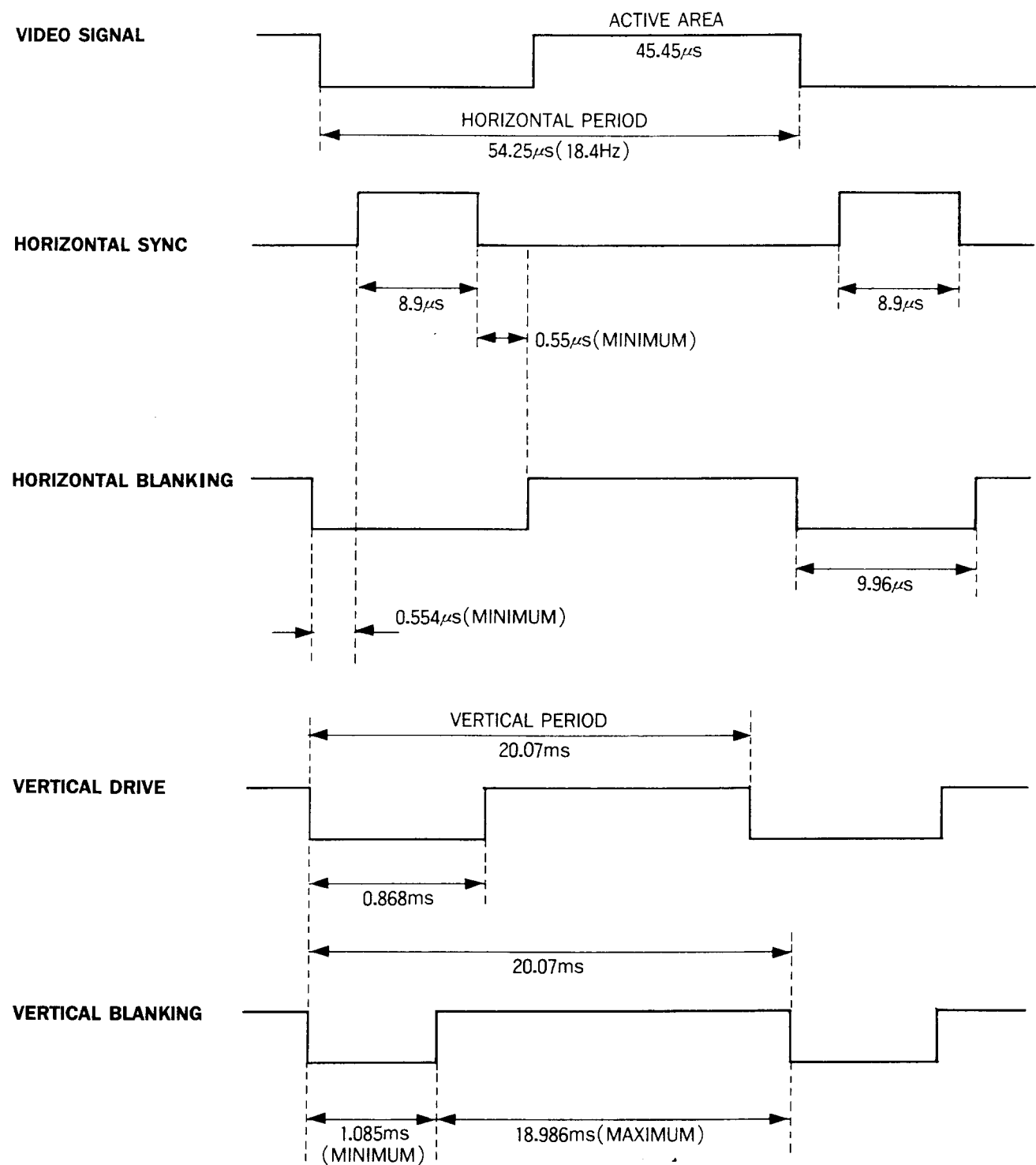
This voltage also feeds to the flyback pulues that rectified and filtered by D605 and C608 to produce voltage which is used as the source voltage for G1-control raster brightness.

Also, the CRT anode voltage is developed by T601.

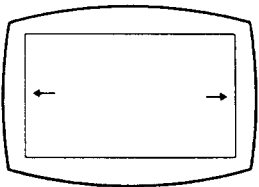
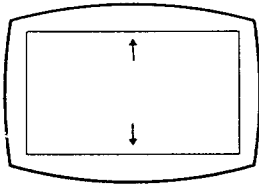
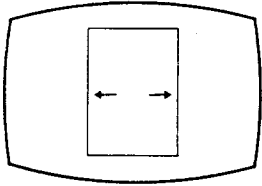
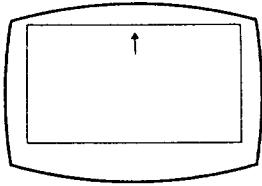
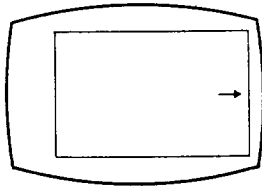
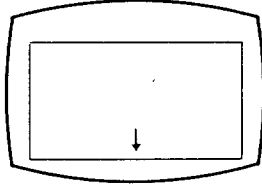
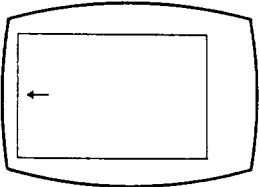
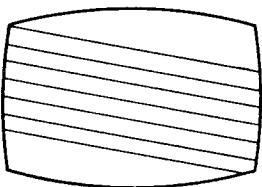
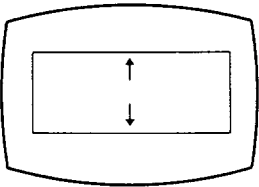
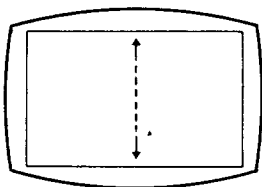
This voltage is typically 13.00KV for 14" normal size.

FIGURES

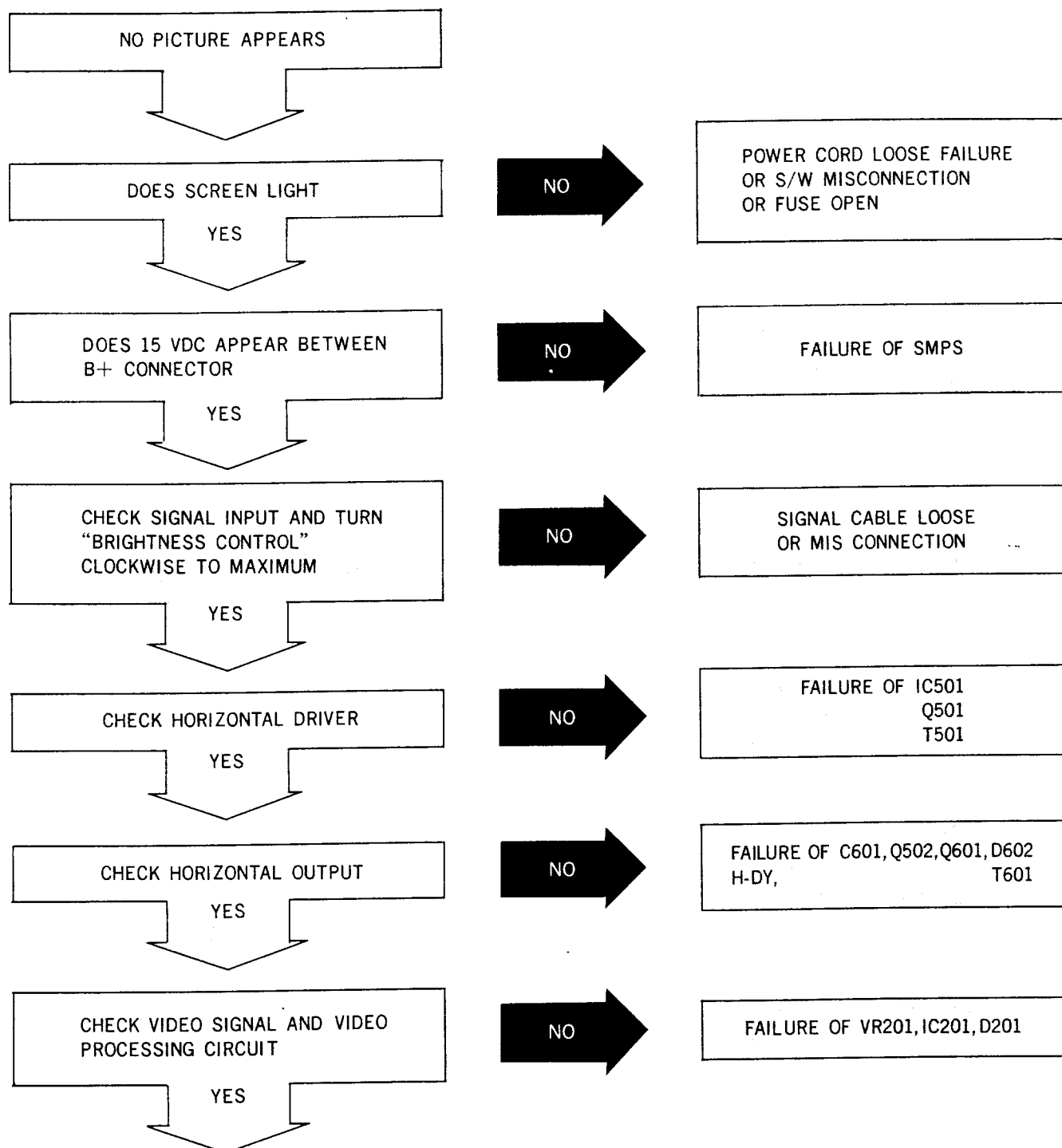
1. SIGNAL TIMING CHART

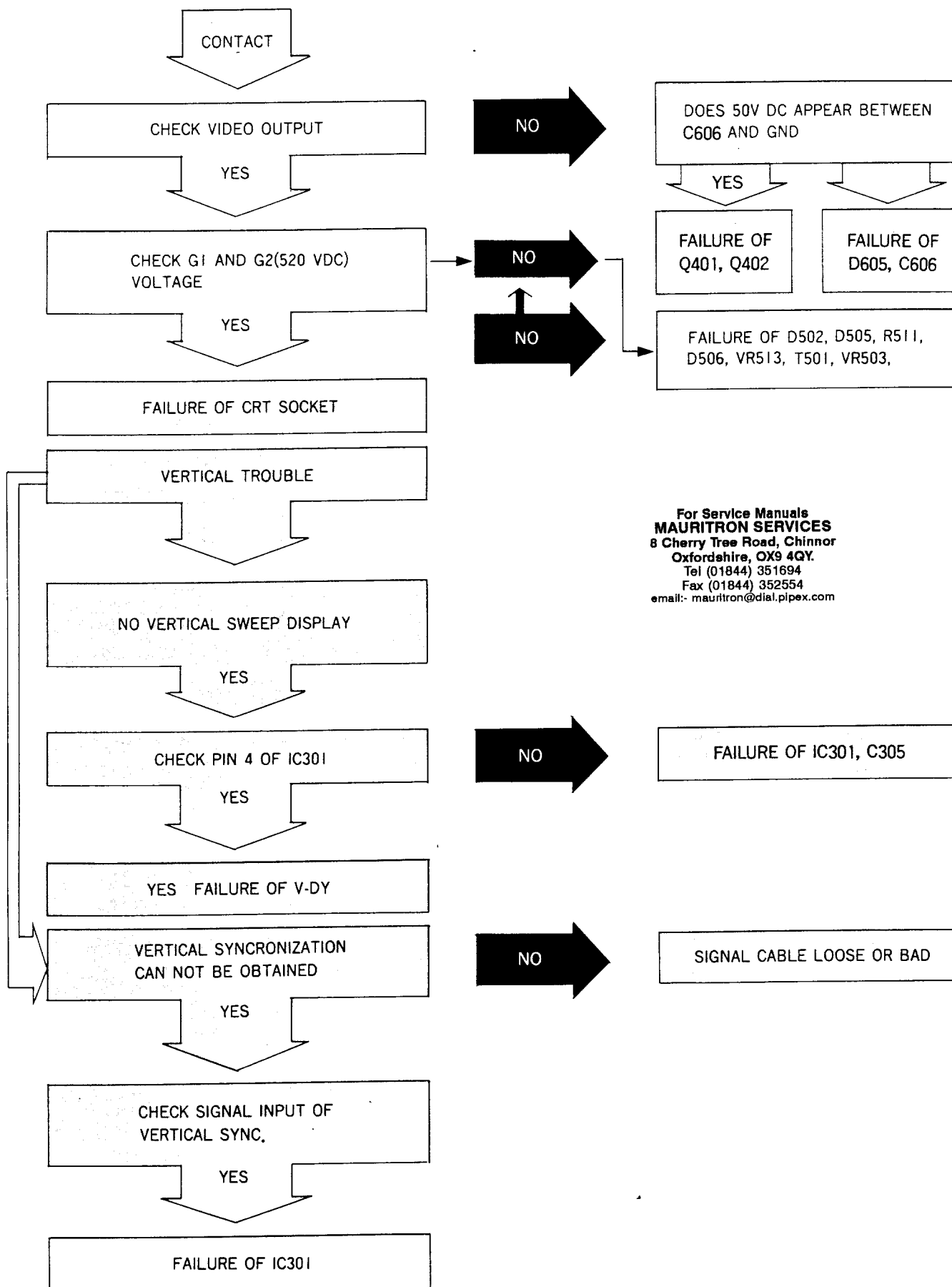


WHEN SIGNALS OTHERS THEN THE RECOMMENDED SIGNAL ARE RECEIVED

PHENOMENON	CAUSE	PHENOMENON	CAUSE
Picture width too wide. 	Data display period is more than $45\mu\text{s}$	Height of picture too much extended. 	Vertical flyback period is less than 1.058ms
Picture width too narrow. 	Data display period is less than $45\mu\text{s}$	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 $0.55\mu\text{s}$. or value of back porch is less than $0.55\mu\text{s}$.	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 $0.55\mu\text{s}$. or value of back porch is more than $0.55\mu\text{s}$.	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 POWER

Check the B+ Voltage of SMPS

- 1) If B+ voltage not obtained :

Check open or short of F101, D101, D102, D103, TR101, IC101

- 2) If B+ voltage obtained :

Proceed to next check item.

• 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 T601 check the collector pulse of TR502, base pulse pulse of TR502.

High voltage is obtained : to next check item.

- 4) Check respective CRT electrode voltage for normality with a multi-tester.

-G1 : -100V-10V

-G2 : 500V-600V

-G4 : 0V -400V

-K : 40V -55V

-When voltage of G2 and G4 are not obtained :

Check of D606, D604, D603, and T601, wire breakdown.

-Voltage of G1 is not obtained : Check of R603, R607, R507, D604, C605, C605, C606, C608, VR602, VR601, E404

-Voltage of K is not obtained :

Check of D506, D605, C606, C404, R402, E403, 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, C606 and CRT for deterioration.

- Brightness range is abnormal :

Deterioration of C608, or CRT, check of G2 voltage, check of heater voltage.

Check of RT401, TR402 and E403 and C606

- Raster size is small and picture is abnormally bright (high voltage is abnormally high) check of C601 or T601

- 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.

-Check of VR201, and D201

- 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 C610, TR502, Linearity Coil and deflection yoke horizontal coil.

- Not holding of horizontal sync.

Check the sync. signal of IC501 pin #8

- 1) If sync. signal not obtained : Fail of signal cable.
- 2) If sync. signal obtained : Check the VR501, C504, IC501

- Vertical linearity is not achieved :

-Check of IC301, VR301, C307, C308

- Not holding of vertical sync.

Check the sync. signal of IC301 pin #8

- 1) If sync. signal not obtained : Fail of signal cable or C301

- 2) If sync. signal obtained : Check IC301, C304, VR302, R306

- Focusing is not achievable :

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

-Check of high voltage.

-Check of D605

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

Measured with high impedance
V.T.V.M or circuit tester under
line voltage 120V (230V) reading
may vary $\pm 10\%$

VOLTAGE CHART

1. TRANSISTOR

TR LO / NO	TR TYPE	Function	Operating Condition	Base (Gate)	Emitter (Sourec)	Collector (Drain)	Note on Measurement
FET101	BUZ 77	Switching v Output	Non Signal Signal Input	3.7 (2.5)	0(0)	143 (302)	V.T.V.M
TR401	C2310	Video AMP Output	Non Signal Signal Input	6.97 6.89	6.56 6.54	52 50	"
TR402	C1815 or C945C	Video Drive	Non Signal Signal Input	0.3 0.55	0 0.1	6.4 6.4	"
TR501	C1008	Horizontal Drive	Non Signal Signal Input	0.3 0.3	0 0	7.5 7.3	"
TR502	BU460	Horizontal Output	Non Signal Signal Input	0.02 0.02	0 0	19.3 19.3	"

(Unit : V)

2. IC

PIN NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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IC 101(TDA4605)

Non Signal	0.4 (0.4)	1.32 (1.26)	1.58 (3.13)	0 (0)	4.0 (2.2)	13.3 (13.5)	3.1 (3.1)	0.37 (0.47)								
Signal Input	"	"	"	"	"	"	"	"								

IC 201(SN7406)

Non Signal	0.24	4.8	4.8	0.21	0	0	0	0.3	4.8	4.8	0.23	0	0	4.8		
Signal Input	0.26	4.7	4.7	0.25	0	0	0	0.5	3.4	3.4	0.9	0	0	4.7		

IC 301(TDA 1170N)

Non Signal	6.3	14.7	0.13	7.8	14.2	6.5	6.6	0	3.0	2.0	0.7	5.4				
Signal Input	5.2	14.9	0.19	8.3	14.4	6.5	6.6	0	2.7	2.0	0.7	4.3				

IC 501(TDA 1180P)

Non Signal	11.2	11.2	3.48	3.08	7.78	0.80	1.02	0	0	0.09	G	2.76	2.72	6.36	2.74	G
Signal Input	11.3	11.3	3.45	3.11	7.91	0.97	1.06	0.12	0	0.09	G	2.79	1.09	6.42	2.76	G

(Unit: V)

ADJUSTER AND CONNECTOR FOR MAIN PC BOARD



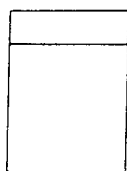
VIDEO INPUT



FOCUS



H-DY



V-DY



H.V INPUT



H-WIDTH



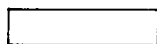
D.C 15V



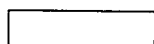
SUB-BRT



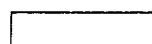
V-LINEARITY



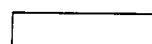
V-HOLD



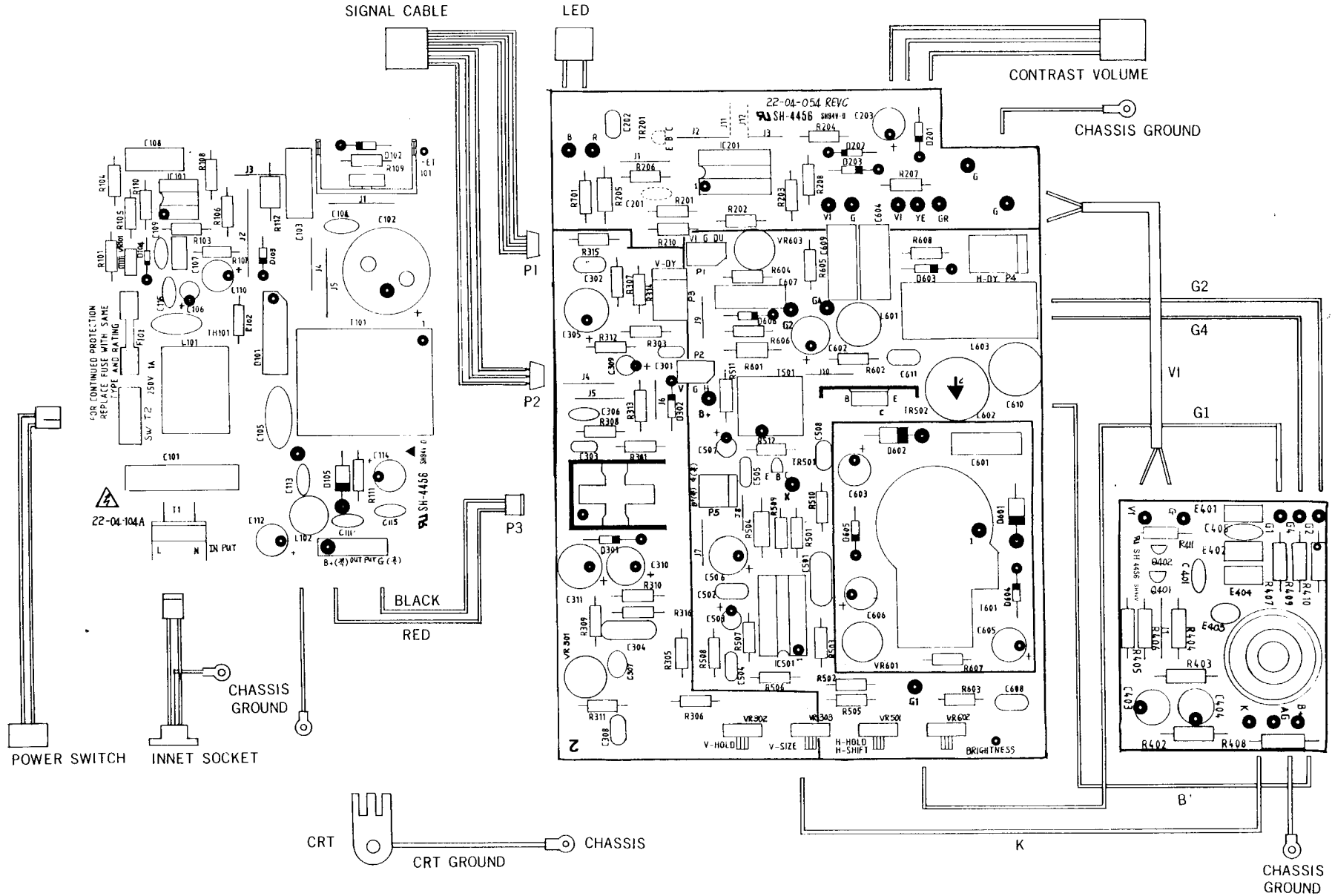
V-SIZE

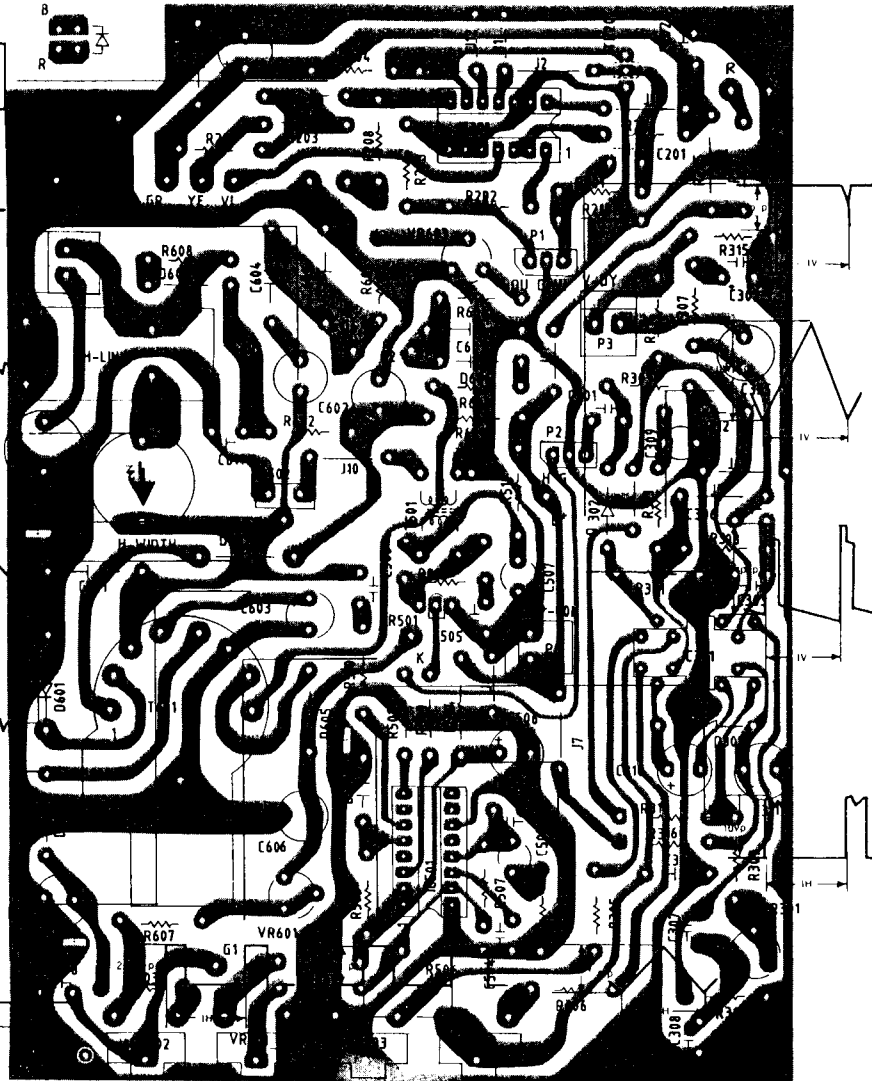
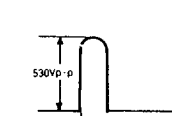
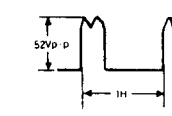
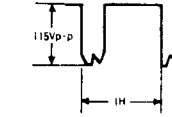
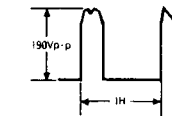
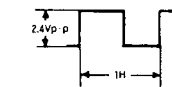
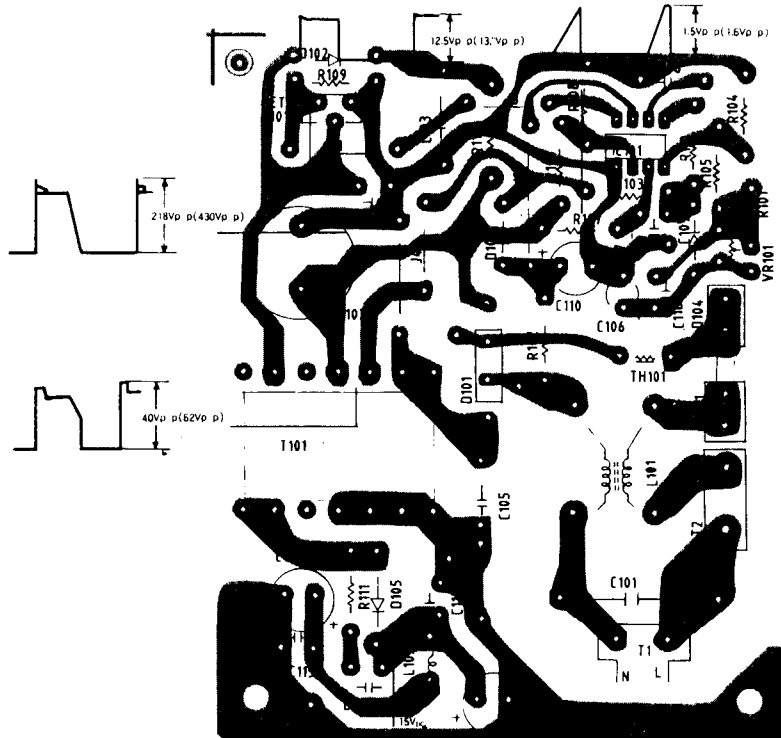
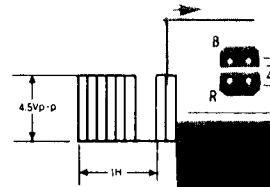
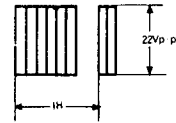


H-HOLD
H-SHIFT



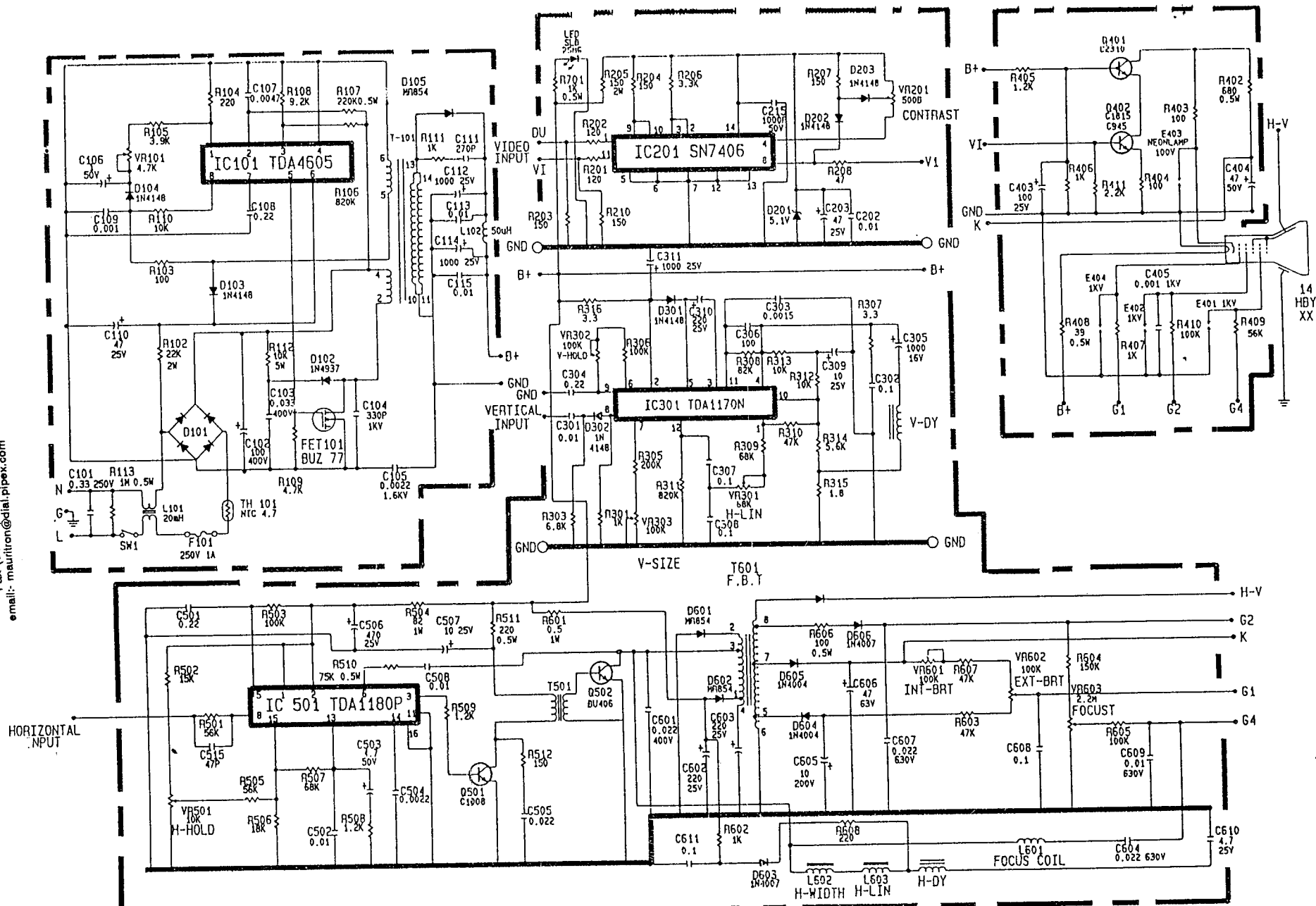
BRIGHTNESS





19

For Service Manuals
MAURITRON SERVICES
 8 Cherry Tree Road, Chinnor
 Oxfordshire, OX9 4QY
 Tel (01844) 351694
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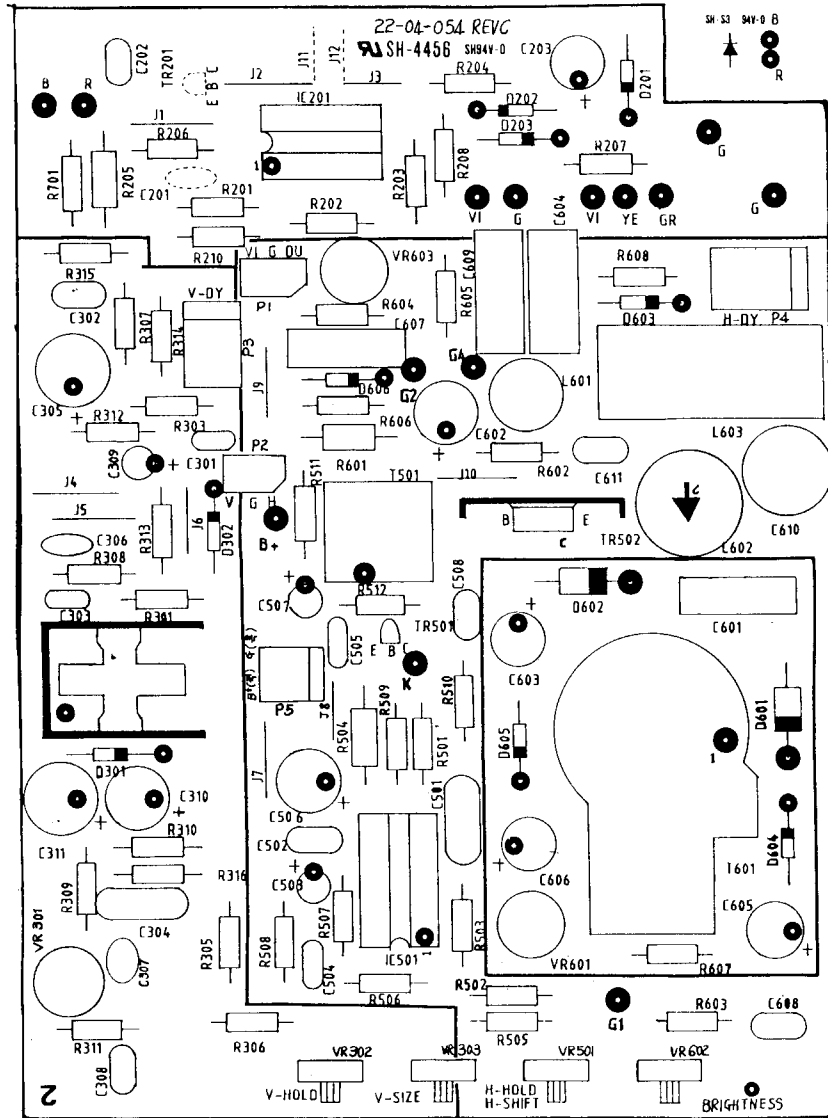


NOTES: UNLESS OTHERWISE SPECIFIED
 1. ALL RESISTORS ARE IN OHM. 0.25W
 2. ALL CAPACITORS ARE IN UF. 100V

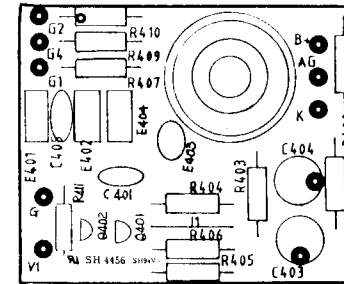
SCHEMATIC DIAGRAM

PCB COMPONENT LOCATION

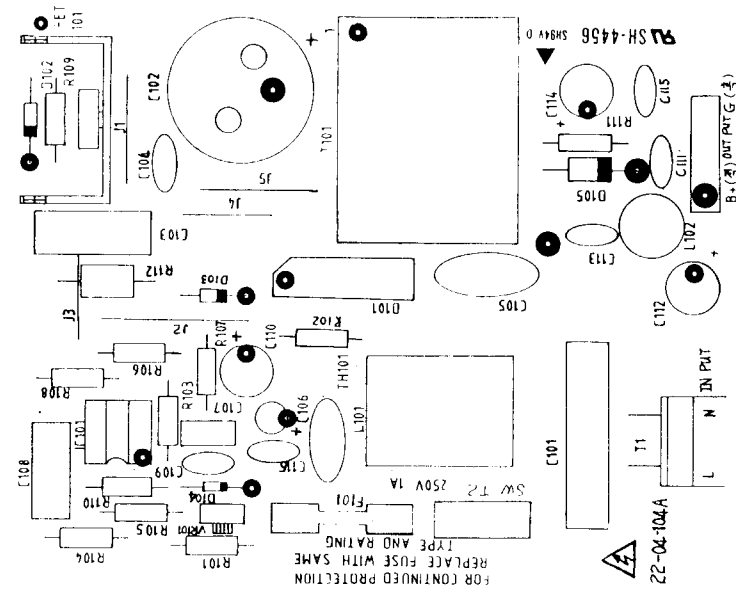
◁ MAIM ▷



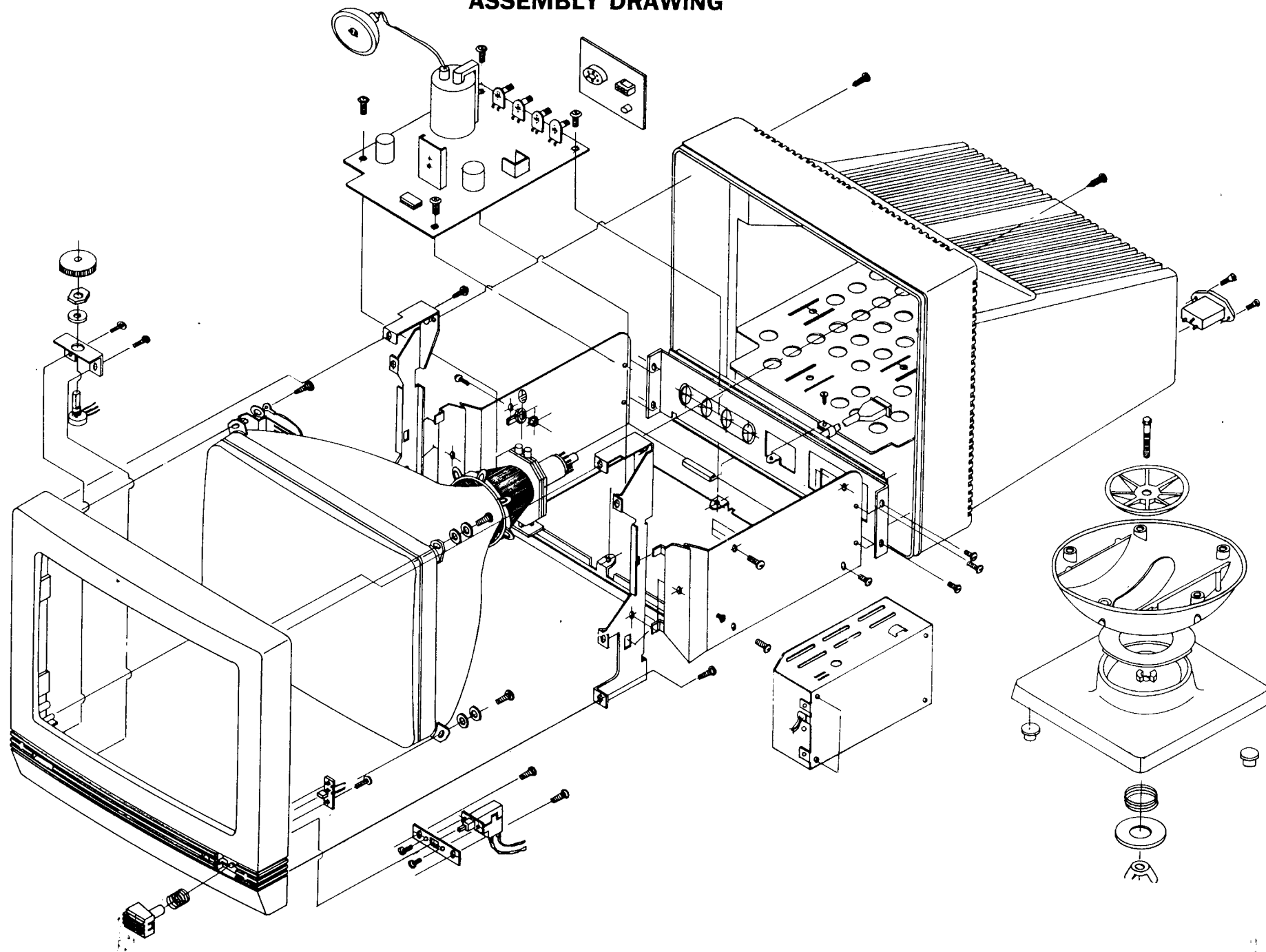
〈 SOCKET 〉



〈 SMPS 〉



ASSEMBLY DRAWING



REPLACEMENT PARTS LIST

LOCATON NO	PART NO	DESCRIPTION		REMARKS
		SMPS ASS'Y		
		INTEGRATED CIRCUITS		
IC101		IC	TDA 4605	
		TRANSISTOR		
TR101		FET	BUZ 77 NTP 2N90	
		DIODES		
D101	19-02-011	DIODE	WO4F	
D102	19-03-009	DIODE	1N4937	
D103	19-03-004	DIODE	1N4148	
D104	19-03-004	DIODE	1N4148	
D105	19-01-024	DIODE	MR 854	
		CAPACITORS		
C101	16-25-004	M-POLYSTYLENE	0.33uF AC250V	
C102	16-01-112	ELECTROLYTIC	100uF 400V	
C103	16-15-042	POLYSTYLENE	0.033uF 400V	
C104	16-10-043	CERAMIC	330pF 1KV	
C105	16-28-005	M-POLYSTYLENE	0.0022uF 1.6KV	
C106	16-01-044	ELECTROYTIC	1uF 25V	
C107	16-13-032	MYLAR	0.0047uF 50V	
C108	16-13-016	MYLAR	0.22uF 100V	
C109	16-10-019	CERAMIC	0.001uF 50V	
C110	16-01-019	ELECTROLYTIC	47uF 25V	
C111	16-10-061	CERAMIC	270uF 50V	
C112	16-01-050	ELECTROLYTIC	1000uF 25V	
C113	16-10-013	CERAMIC	0.01uF 50V	
C114	16-01-050	ELECTROLYTIC	1000uF 25V	
C115	16-10-013	CERAMIC	0.01uF 50V	
		RESISTORS		
R102	14-10-223	CARBON	22K ohm 2W, 5%	
R103	14-03-101	CARBON	100 ohm 1 / 4W, 5%	
R104	14-03-221	CARBON	220 ohm 1 / 4W, 5%	
R105	14-03-392	CARBON	3.9K ohm 1 / 4W, 5%	
R106	14-03-824	CARBON	820K ohm 1 / 4W, 5%	
R107	14-06-224	CARBON	220K ohm 1 / 2W, 5%	
R108	14-03-922	CARBON	9.2K ohm 1 / 4W, 5%	
R109	14-03-472	CARBON	4.7K ohm 1 / 4W, 5%	
R110	14-03-103	CARBON	10K ohm 1 / 4W, 5%	
R111	14-03-102	CARBON	1K ohm 1 / 4W, 5%	
R112	14-27-014	CEMENT	10K ohm 5W, 5%	
VR504	15-02-042	VAR, H-TRIM	4.7K ohm	
		THERMISTERS		
TH101	15-06-014		NTC 4.7	
		COILS & TRANSFORMERS		
L101	17-01-022	COIL LINE FILTER	20mH	

LOCATON NO	PART NO	DESCRIPTION		REMARKS
L102 T101	17-09-004 17-01-061	COIL CHOCK TRANSFORMER	50mH SWITCHING MODE	
		FUSE & FUSE CLIP		
F101	23-01-028 23-04-007	FUSE FUSE CLIP	FUSE & FUSE CLIP Ø 5.0, 20mm	
		PC.BOARD		
PC.BOARD	22-04-104	FR-1, 1.6T	SMPS BOARD	
		WIRES & TERM INARS & CONNECTORS		
J1-J5 OUT PUT	21-01-035 21-05-173	WIREW BUS SPA CONNECTOR HOUSING WIRE R, BK 170mm	AWM0.6 3.96, 2P AWM1015 #22 105°C	
S / W PIN AC INPUT	10-11-019 10-11-083	HDR BEAD PIN HDR LOCK	Ø 2.36 MOLEX 5274-03A	
		MECHANICAL PARTS		
	06-24-037 06-24-036 24-02-001	CHASSIS BOTTOM CHASSIS COVER M-SCREW, PAN HEAD, W / WASHER	M3X5	
		POWER SWITCH ASS'Y		
	23-02-010 21-05-030	SWITCH POWER CONNECTOR, HOUSING WIRE, RED, 280mm	SPL-1P BL102 VL1617 #22 105°C	
	06-21-017 24-02-001	CHASSIS M-SCREW, PAN HEAD, W / WASHER	PLATE SWITCH M3X5	
		MAIN PCB ASS'Y		
		INTEGRATED CIRCUITS		
IC201 IC301 IC401	20-10-014 20-06-002 20-06-006	IC TTL IC LINEAR IC LINEAR	7406 TDA1170N KA2136 TDA1180P KA2137	
		TRANSISTORS		
TR501	18-04-004	TR	KSC1008	
		DIODES		
D201 D202 D203 D301 D302 D601 D602 D603 D604 D605 D606 LED	19-05-018 19-03-004 19-03-004 19-03-004 19-03-004 19-01-014 19-01-014 19-01-006 19-04-004 19-04-004 19-01-006 19-06-008	DIODE ZENER DIODE SWITCHING DIODE SWITCHING DIODE SWITCHING DIODE SWITCHING DIODE RECTIFIER DIODE RECTIFIER DIODE RECTIFIER DIODE RECTIFIER DIODE RECTIFIER DIODE RECTIFIER LED	5.1V 1N4148 1N4148 1N4148 1N4148 MR854 MR854 1N4007 1N4004 1N4004 1N4007 SLB 25MG	
		CAPACITORS		
C202 C203	16-14-011 16-04-006	MYLAR ELECTROLYTIC	0.01uF 50V 47uF 25V	

LOCATON NO	PART NO	DESCRIPTION		REMARKS
C301	16-14-011	MYLAR	0.01uF 50V	
C302	16-14-008	MYLAR	0.01uF 100V	
C303	16-14-001	MYLAR	0.0015uF 50V	
C304	16-13-016	MYLAR	0.22uF 100V	
C305	16-01-014	ELECTROLYTIC	1000uF 16V	
C306	16-11-002	CERAMIC	100pF 50V	
C307	16-14-008	MYLAR	0.1uF 100V	
C308	16-14-008	MYLAR	0.1uF 100V	
C309	16-04-004	ELECTROLYTIC	10uF 25V	
C310	16-01-021	ELECTROLYTIC	220uF 25V	
C311	16-01-050	ELECTROLYTIC	1000uF 25V	
C501	16-13-016	MYLAR	0.22uF 100V	
C502	16-14-011	MYLAR	0.01uF 50V	
C503	16-04-003	ELECTROLYTIC	4.7uF 25V	
C504	16-14-002	MYLAR	0.0039uF 50V	
C505	16-14-018	MYLAR	0.022uF 50V	
C506	16-01-022	ELECTROLYTIC	470uF 25V	
C507	16-04-004	ELECTROLYTIC	10uF 25V	
C508	16-14-011	MYLAR	0.01uF 50V	
C601	16-15-006	PDLYPLOPYLENE	0.022uF 400V	
C602	16-01-021	ELECTROLYTIC	220uF 25V	
C603	16-01-021	ELECTROLYTIC	220uF 25V	
C604	16-15-009	PDLYPLOPYLENE	0.022uF 630V	
C605	16-01-073	ELECTROLYTIC	10uF 200V	
C606	16-01-085	ELECTROLYTIC	47uF 63V	
C607	16-15-009	PDLYPLOPYLENE	0.022uF 630V	
C608	16-14-008	MYLAR	0.1uF 100V	
C609	16-15-008	PDLYPLOPYLENE	0.01uF 630V	
C610	16-09-006	ELECTROLYTIC	4.7uF 25V	
C611	16-14-008	MYLAR	0.1uF 100V	
RESISTORS				
R201	14-04-121	CARBON	120 ohm 1 / 4W 5%	
R202	14-01-121	CARBON	120 ohm 1 / 4W 5%	
R203	14-04-151	CARBON	150 ohm 1 / 4W 5%	
R204	14-04-151	CARBON	150 ohm 1 / 4W 5%	
R205	14-10-151	METEL OXIDE	150 ohm 2W 5%	
R206	14-04-332	CARBON	3.3K ohm 1 / 4W 5%	
R207	14-04-151	CARBON	150 ohm 1 / 4W 5%	
R208	14-04-470	CARBON	47 ohm 1 / 4W 5%	
R301	14-04-102	CARBON	1K ohm 1 / 4W 5%	
R303	14-04-682	CARBON	6.8K ohm 1 / 4W 5%	
R304		CARBON	ohm 1 / 4W, 5%	
R305	14-04-204	CARBON	200K ohm 1 / 4W 5%	
R306	14-04-104	CARBON	100K ohm 1 / 4W 5%	
R307	14-04-033	CARBON	3.3 ohm 1 / 4W 5%	
R308	14-04-823	CARBON	82K ohm 1 / 4W 5%	
R309	14-04-683	CARBON	68K ohm 1 / 4W 5%	
R310	14-04-473	CARBON	47K ohm 1 / 4W 5%	
R311	14-04-824	CARBON	820K ohm 1 / 4W 5%	
R312	14-04-103	CARBON	10K ohm 1 / 4W 5%	
R313	14-04-103	CARBON	10K ohm 1 / 4W 5%	
R314	14-04-562	CARBON	5.6K ohm 1 / 4W 5%	
R315	14-04-018	CARBON	1.8 ohm 1 / 4W 5%	

LOCATON NO	PART NO	DESCRIPTION		REMARKS
R316	14-04-033	CARBON	3.3 ohm 1 / 4W 5%	
R501	14-04-563	CARBON	56K ohm 1 / 4W 5%	
R502	14-04-183	CARBON	18K ohm 1 / 4W 5%	
R503	14-04-104	CARBON	100K ohm 1 / 4W 5%	
R504	14-09-820	METEL OXIDE	82K ohm 1W 5%	
R505	14-04-563	CARBON	56K ohm 1 / 4W 5%	
R506	14-04-103	CARBON	10K ohm 1 / 4W 5%	
R507	14-04-683	CARBON	68K ohm 1 / 4W 5%	
R508	14-04-122	CARBON	1.2K ohm 1 / 4W 5%	
R509	14-04-122	CARBON	1.2K ohm 1 / 4W 5%	
R510	14-06-753	CARBON	75K ohm 1 / 2W 5%	
R511	14-06-220	CARBON	220 ohm 1 / 2W 5%	
R512	14-04-332	CARBON	150 ohm 1 / 4W 5%	
R601	14-09-005	METAL OXIDE		
R602	14-04-102	CARBON	0.5 ohm 1W 5%	
R603	14-04-473	CARBON	47K ohm 1 / 4W 5%	
R604	14-04-154	CARBON	150K ohm 1 / 4W 5%	
R605	14-04-104	METEL OXIDE	100K ohm 2W 5%	
R606	14-06-101	CARBON	100 ohm 1 / 2W 5%	
R607	14-04-473	CARBON	47K ohm 1 / 4W 5%	
R608	14-04-220	CARBON	220 ohm 1 / 4W 5%	
R701	14-06-102	CARBON	1K ohm 1 / 2W 5%	
CONTROLS				
VR301	15-05-013	V-TRIMER W / SHAFT	68Kohm,B,0.15W,25%	
VR302	15-03-003	H-TRIMER W / SHAFT	100Kohm,B,0.15W,25%	
VR303	15-03-003	H-TRIMER W / SHAFT	100Kohm,B,0.15W,25%	
VR501	15-03-030	H-TRIMER W / SHAFT	10Kohm,B,0.15W,25%	
VR601	15-05-007	V-TRIMER W / SHAFT	100Kohm,B,0.15W,25%	
VR602	15-03-033	H-TRIMER W / SHAFT	100Kohm,B,0.15W,25%	
VR603	15-05-010	V-TRIMER W / SHAFT	2.2Mohm,B,0.15W,25%	
COILS & TRANSFORMER				
T501	17-07-020	DRIVE TRANS	56.8mH	
T601	17-02-040	BLYBACK TRANS	FMH-1245BL	
L601	17-09-027	COIL CHOCK	7mH	
L602	17-04-006	COIL H-WIDTH	11-35mH	
L603	17-05-027	COIL H-LIN	9.5uH FIXED	
PC.BOARD				
	22-04-054C	FR-1 1.6T	MAIN PCB	
WIRES & TERMINALS & CONNECTORS				
J1-J10	21-01-035	WIRE BUS SPA	AWM 0.6	
	10-11-028	HDR,SHROUDED,2.5,3P	MOLEX 5267-03A	
	10-11-011	HDR,LOCK,3.96,2P,BL	MOLEX 5273-02A	
	10-11-002	HDR,LOCK,3.96,2P,N	MOLEX 5273-02A	
	21-06-036	WIRE,RING TER,5Ø,BL	118mm	
	21-02-027	WIRE,MANUT STRANDED	AWM1007 #22,R	
	21-02-028	WIRE,MANUT STRANDED	AWM1007 #22,BL	
TR502 ASS'Y				
TR502	16-25-010	HEAT SINK	32×8.8×54.8	
	18-07-006	TR	BU806	

LOCATON NO	PART NO	DESCRIPTION		REMARKS
	24-01-002	M-SCR RAN HEAD	M3×8	
	23-31-001	NUT, HEX	M3×0.5P	
	24-46-002	WASHER SPRING	M3×6×0.8	
		CRT SOCKET ASS'Y		
	22-04-055B	PC.BOARD	CRT SOCKET	
	10-08-017	CRT SOCKET	7 PIN	
R402	14-06-681	RESISTER CARBON	680 Ω 1 / 2W 5%	
R403	14-04-101	RESISTER CARBON	100 Ω 1 / 4W 5%	
R404	14-04-101	RESISTER CARBON	100 Ω 1 / 4W 5%	
R405	14-04-112	RESISTER CARBON	1.2K Ω 1 / 4W 5%	
R406	14-04-102	RESISTER CARBON	1K Ω 1 / 4W 5%	
R407	14-04-102	RESISTER CARBON	1K Ω 1 / 4W 5%	
R408	14-06-390	RESISTER CARBON	390 Ω 1 / 2W 5%	
R409	14-04-563	RESISTER CARBON	56K Ω 1 / 4W 5%	
R410	14-04-104	RESISTER CARBON	100K Ω 1 / 4W 5%	
R411	14-04-222	RESISTER CARBON	2.2K Ω 1 / 4W 5%	
C403	16-04-007	CAPACITOR ELECTROLYTIC	100uF 25V	
C404	16-01-032	CAPACITOR ELECTROLYTIC	47uF 50V	
C405	16-10-042	CAPACITOR CERAMIC	0.01uF 1KV	
E401	14-24-003	SPARK GAP	1KV, -15%, +50%	
E402	14-24-003	SPARK GAP	1KV, -15%, +50%	
E403	14-24-004	NEON LAMP	100V	
E404	14-24-003	SPARK GAP	1KV, -15%, +50%	
TR401	18-04-015	TRANSISTER	KSC-2310	
TR402	18-04-006	TRANSISTER	C1815	
J1	21-01-035	WIRE BUS SPA	AWM 0.6	
VIDEO	21-01-037	WIRE STRANDED	AWM 1365 / #30,BL	
G1	21-01-002	WIRE STRANDED	AWM 1007 / #22,BW	
K	21-01-003	WIRE STRANDED	AWM 1007 / #22,R	
B+	21-01-005	WIRE STRANDED	AWM 1007 / #22,V	
G2	21-01-020	WIRE STRANDED	AWM 1015 / #22,B	
G4	21-01-021	WIRE STRANDED	AWM 1015 / #22,V	
CHD	21-06-043	WIRE RING TER,5 Ø BL 180mm	AWM 1015 #22, BK	
		HEAT SINK		
	06-25-011	HEAT SINK TDA1170	21.3×23.0×0.3	
		PRODUCT ASS'Y		
1-1)	26-05-006	CRT	14HBY39N	
1-2)	26-05-007	CRT	14HBYLAN	
1-3)	26-05-011	CRT	14HBYWDN	
		DY ASS'Y		
1	17-03-011	DEFLECTION YOKE	DMK-1294DL,1493DL(1)	
2	21-05-091	CONNECTOR, HOUSING	WIRE AWM1007 #22	
		2P,3.96,BL	GREEN, WH 180mm	
3	21-05-092	CONNECTOR,HOUSING	WIRE AWM1007 #22	
		2P,3.96 WH	GRAY, BR 200mm	
		BACKET PLATE ASS'Y		
1	06-20-062	CHASSIS BACK	51×228×1.0	
2		BACK PLATE	1738	
3	10-05-017	STREIN RELIFE	5P-4	
4	06-21-003	SIGNAL, GND, CLIP	SN, 0.3P	
5	24-05-037	M-SCR PAN HEAD W / WASHER	M3×8	
6	24-26-001	M-SCR C / S HEAD W	M3×8	

LOCATON NO	PART NO	DESCRIPTION		REMARKS
7	00-07-018	ASS'Y SIGNAL CABLE 9P	GND 1400mm	
8	10-08-003	SDCKET,AC,RECEP TABLE	3505,3516	
AC GND	12-21-003	TUBE SHIRINCANLE	5Ø, AWM1015 #18 GN / YE	120mm
IC PUT	21-05-172	CONNECTOR HOUSING	3.96,3P N	
WIRE		WIRE W,BK 120mm	AWM1015 #22 105°C	
		MECHANICAL PARTS		
1	06-20-061	CHASSIS MAIN	226×209.7×93	
2	06-21-043	PLATE SUPPERT LH	38×88.8×263	
3	06-21-044	PLATE SUPPERT RH	38×88.8×263	
4	06-20-028	CHASSIS BOTTOM		
5	06-23-003	LUG GND	66.0×18.1×0.35	
		MACHANICAL PARTS		
6	10-05-031	BEZEL FRONT	319×286×35.5	
7	10-05-132	S / W CAP	19.6×13.6×17	
8	10-05-133	KNOB COVER	32×01	
9	10-05-098	REAL COVER	1738(20002)	
10	10-05-052	STAND	1738(20002)	
11	10-05-049	STAND PART	ACETAL	
12	10-05-054	NECK	1738(20002)	
13		M-SCR,PAN HERAD W / WASHER	M3×5	
14	24-04-016	P-SCR,PAN HEAD W	#8×18	
15	24-04-012	P-SCR,PAN HEAD W	#8×10	
16	24-04-005	P-SCR,PAN HEAD W	#6×10	
17	24-24-003	M-SCR,PAN HEAD, W / WSHER	M4×8	
18	21-06-016	WIRE, PING TER., OUTSIDE,D	BL 100mm	
19	24-41-009	WASHER, FLAT,W	5.3×16×1.0	
20	10-09-007	RUBBER, WASHER, BL	14×15×2	
21	24-31-005	HEX, NUT, W	M4×0.7P	
22	24-45-001	SPRING, COMPRESSION	9×21×0.5	
23	24-04-006	M-SCR,HEX HEAD, W	M5×40	
24	24-33-002	NUT, BUTTERFLY, W	M5×0.8P	
25	24-41-013	WASHER, FLAT, W	5.3×24×1.0	
26	24-45-002	SPRING, COMPRESSION, Y	23×17×25	
		POWER CORD		
	21-07-004	POWER CORD	SVT, 3 / 18AWG, 6FT	
		MISCELLANEOUS		
1	06-26-003	LOGO	SAMSUNG	
2	13-16-000	MANUAL, USER'S	SM-430	
3	13-15-238	PRODUCT LABEL	SM-430	
4	13-13-029	S / FORM SET, L		
5	13-13-030	S / FORM SET, R		
6	13-11-071	BOX, C / T	Y409	
7	13-17-024	VINYL BACK	PE, 740×820×0.05T	
8	07-21-007	MAGNET SQUARE FERRITE	10GAUSE etc	