

14277

SERVICE INFORMATION

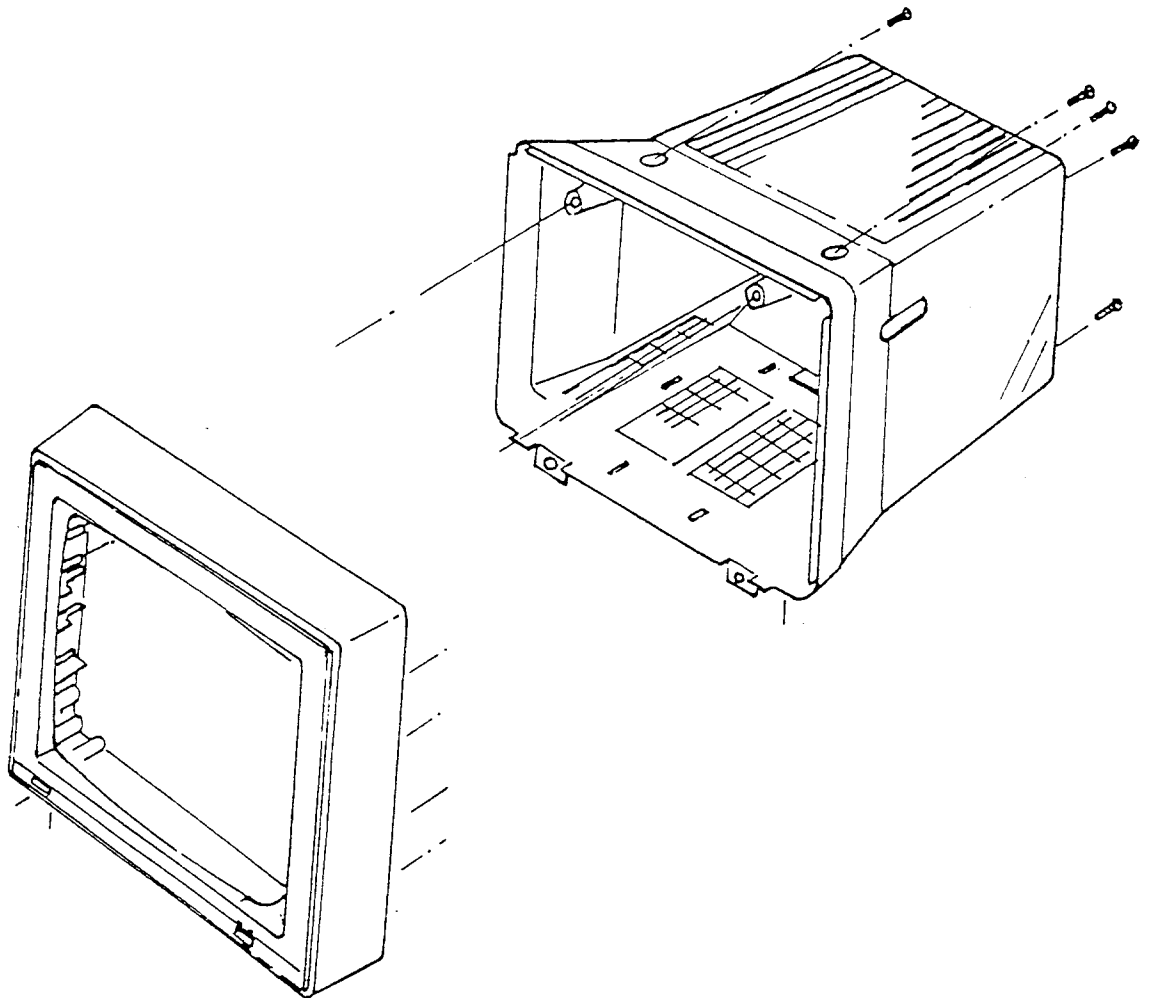
MODEL: CM-1496X CM-1498X
COLOR DISPLAY MONITOR

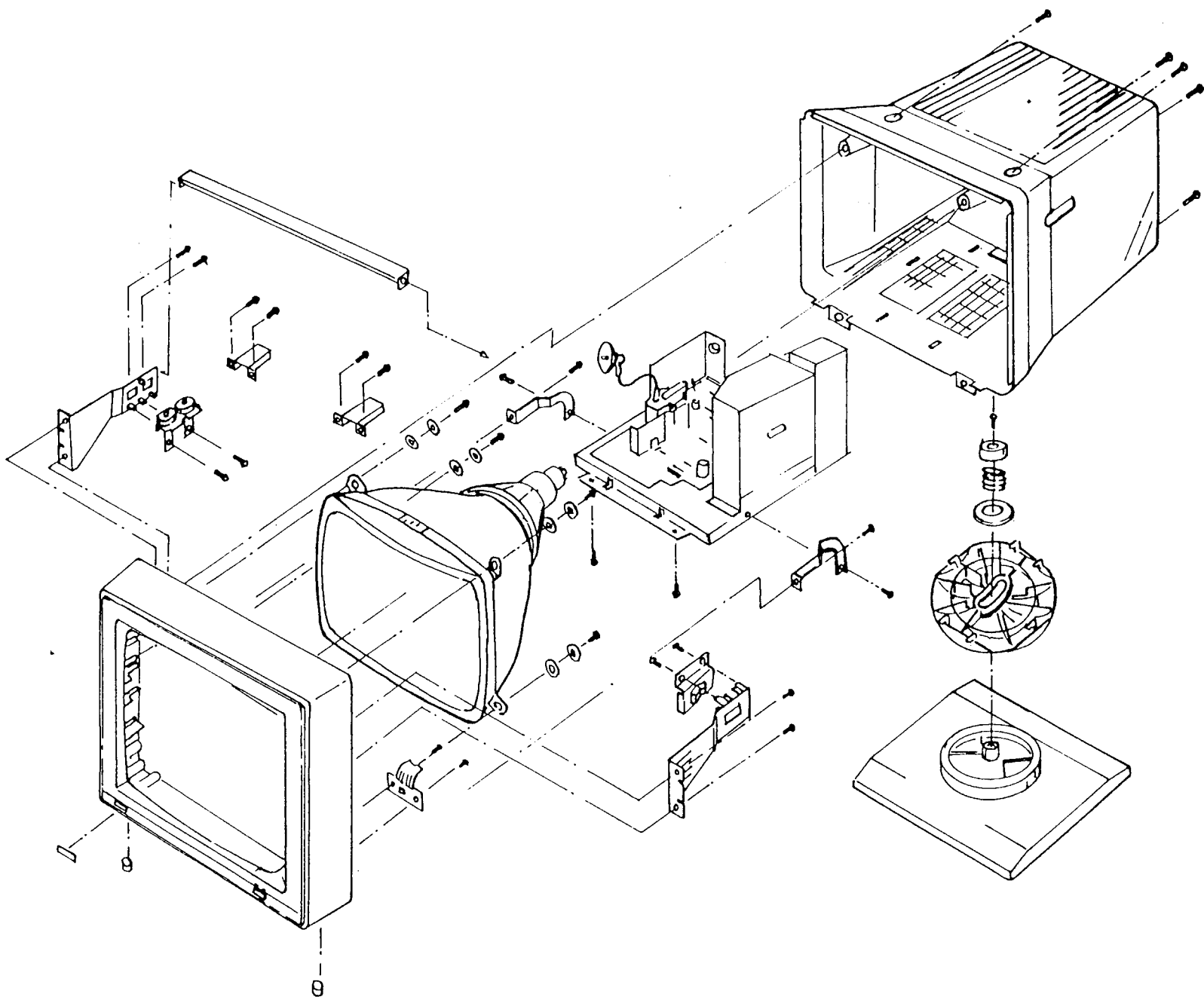


COLOR DISPLAY CM-1496X/CM-1498X SERVICE MANUAL

CONTENTS	PAGE
1.REMOVAL OF REAR COVER	1
2.MECHANICAL DISASSEMBLY	2
3.TECHNICAL INFORMATION	3
4.GENERAL	4
5.DESCRPTION OF OPERATION	5
5-1 SWITCHING MODE POWER SUPPLY CIRCUIT	5
5-2 AUTOMATIC DEGAUSSING CIRCUIT	6
5-3 VERTICAL DEFLECTION CIRCUIT	6
5-4 HORIZONTAL DEFLECTION CIRCUIT	6
5-5 DYNAMIC PINCUSHION CORRECTION CIRCUIT	7
5-6 VIDEO CIRCUIT	7
5-7 MODE CONTROL CIRCUIT	8
5-8 SELF-TEST	9
5-9 SIGNAL CABLE PIN CONNECTIONS	9
6.ALIGNMENT PROCEDURE	10
7.TROUBLE SHOOTING	14
8.REPLACEMENT PARTS LIST	25
ASSEMBLY PCB-MAIN	25
ASSEMBLY PCB-CRT	29
ASSEMBLY PCB-POWER	30
ASSEMBLY PCB-LINE FILTER	32
ASSEMBLY PCB-LED	32
ASSEMBLY CRT	33
9.CIRCUIT BOARD LAYOUTS	34
10.CIRCUIT DIAGRAM	36

* 1.REMOVAL OF REAR COVER *





 * 2. MECHANICAL DISASSEMBLY *

 * 3. TECHNICAL INFORMATION *

APPLICATIONS: Analog R.G.B. input color display for graphics and alphanumeric use

POWER INPUT: Mains voltage :
 100 - 125/200 - 240VAC SWITCHABLE
 50/60 Hz
 1.0A(100 - 125VAC)/0.6A(200-240VAC)

VIDEO SIGNALS: Red, green, blue, analog video signals
 input levels: 0 - 0.7Vp-p

SYNC. SIGNALS: Vertical frequency : 53 - 90 Hz
 Horizontal frequency: 31.5 KHz/35.5 KHz

SIGNAL CONNECTOR: Miniature D- shell male 15 Pin connector

DISPLAY TUBE: 14"(13V), 90 degree deflection, 0.31 mm dot pitch,
 (CM-1496X) ,0.28mm dot pitch. (CM-1498X)
 P22 phosphor, light transmission rate 46%
 reflectivity 45% - 65%

DATA AREA: 180 x 240 mm

LINEARITY: 6% Max.

MISCONVERGENCE: Center: 0.3 mm Max.
 Corner: 0.5 mm Max. (CM-1496X) 0.4 mm Max. (CM-1498X)

WHITE COLOR: X: 0.313
 COORDINATES Y: 0.329

USER CONTROLS: Power ON - OFF switch, Brightness control (with center detent), contrast control H.PHASE 1,2,3 H.PHASE 4
 H.SIZE 4,5 V.CENTER, V.SIZE 4,5 CONTROL

OPERATING AMBIENT: Temperature: 0 - 35 C
 Relative humidity: 10 - 80%

WEIGHT: 12.5 kg (net)

* 4. GENERAL *

CM-1496X/CM-1498X is a high resolution color display using a 0.31/0.28 mm dot pitch CRT with etched faceplate. Analog 16-levels R.G.B. video signals and TTL-level seperte sync. signals are adopted for graphic and text display.

It is designed to provided you with a wide range of compatibility with various industry graphic standards such as, the IBM VGA PS/2, super VGA 800X600, IBM 8514A 1024X768 and incorporates the automatic vertical sizing circuitry that provides automatic sizing resolution of 640X350 up to 1024X768.

A self-test pattern shall be available when the signal cable is disconnected from the driver source. The self-test pattern will consist of a full white raster extending beyond the display bezel at the top and bottom, with a vertical black bar on the left and/or right edges.

 * 5.DESRIPTION OF OPERATION *

5-1 SWITCHING MODE POWER SUPPLY CIRCUIT

The TDA4601 is designed for driving controlling and protecting the switching transistor in flyback converter power supplies during start-up normal and overload operation as well as during disturbed operation. In case of disturbance the drive of the switching transistor is inhibited and a secondary voltage rise is prevented.

A. The start-up procedures include three consecutive operating phase as follows:

1. Build-up internal reference voltage

The internal reference voltage supplies the voltage regulator and effects charging of the coupling electrolytic capacitor connected to the switching transistor.

2. Enabling of internal voltage reference voltage $V_1=4V$

Simultaneously with V_1 reaching approx 12V, an internal voltage becomes available providing all component elements, with the exception of the control logic with a thermally stable and overload resistant current supply.

3. Enabling of control logic

In conjunction with the generation of the reference voltage. The current supply for the control logic is activated by means of an additional stabilization circuit. The integrated circuit is then ready for operation.

B. Normal operation mode/control operation mode

At the input of Pin 2 the zero passage of the frequency provided by the feedback coil are registered and forwarded to the control logic Pin 3 (control input overload and standing identification) receives the rectified amplitude fluctuations of the feedback coil the control amplifier operates with an input voltage of approx 2V and a current of approx 1.4mA depending on the internal voltage reference.

The overload identification limits in conjunction with collector current simulator Pin 4 the operating range of the control amplifier. The collector current is simulated by an external RC combination present at Pin 4 and internally set threshold voltage. The largest possible collector current applicable with the switching transistor increase in proportion to the increased capacitance C808 thus the required operating range of the control amplifier is established the range of control lies between a DC voltage clamped at 2V and a sawtooth-shaped rising AC voltage which can vary up to a max amplitude of 4V (reference voltage) during secondary load reduction the switching frequency is increased and. Pin 5 it is possible to externally inhibit the operation of the IC, the output at Pin 8 will be inhibited when voltage of $\leq V_{ref} - 0.1V$ are present at Pin 5.

And the base current amplifier forwards the sawtooth-shaped V_4 voltage to the output of Pin 8. A current feedback with an external resistor R804 is present between Pin 8 and Pin 7, the applied value of the resistor determines the max amplitude of the base driving current for the switching transistor.

C. Protective operation mode

The base current shut-down activated by the control logic clamps the output of Pin 7 to 1.6V. As a result the drive of the switching transistor is inhibited. This protective measure is enabled if the supply voltage at Pin 9 reaches a value $\leq 6.7V$ or if voltage of $\leq \frac{V_{ref}}{2}$

-0.1V are present at Pin 5.

5-2 AUTOMATIC DEGAUSSING CIRCUIT

Posistor R803 and degaussing coil L991 compose an Automatic Degaussing (ADG) circuit to demagnetize the shadow mask and internal shield in the CRT.

Posistor shows low resistance value in normal temperature. When AC line voltage, current of about 20 Ap-p flows into degaussing coil, after seconds, resistance of posistor increases rapidly due to rising in heat, degaussing current thus decreases to less than 120 mA Ap-p. degaussing function is completed.

5-3 VERTICAL DEFLECTION CIRCUIT

The vertical sync. signal is applied to Pin 5 & Pin 4 of Q301. R342, R343, C310 connected to Pin 3. Pin 4 and Pin 6 determine the free-running frequency of the oscillator inside Q301.

The resistance between Pin 7 of Q301 and ground defines the current mirror and then the height of the scanning.

Pin 9 of Q301 is output of the current mirror that changes the series of C305 and C306. This Pin is also the input of buffer stage.

Pin 10 of Q301 is the output of the buffer stage.

Pin 12 of Q301 is the inverting input of the amplifier.

R307 and R310 define the DC level across C309, so allowing a correct centering of the output voltage. R308 and C308 in conjunction with R307 and R310, applied at the feedback input Pin 12 of Q301, a small part of the parabola, available across C309, and the AC feedback voltage, taken across R312. R305, R308 and R310 produce the linearity correction on the output scanning current.

The output of power amplifier from the Pin 1 of Q301 drives the vertical deflection yoke by a negative slope current ramp. R309 and C307 are used to stabilize the power amplifier.

The supply voltage of the power output stage is forced at Pin 2. During the trace time the supply voltage is obtained from the main supply voltage by D301. While during the retrace time this Pin is supplied from the internal flyback generator.

Pin 15 is the output of the flyback generator that, when driven, jumps from low to high condition. An external capacitor C304 transfers the jump to Pin 2.

Pin 14 of Q301 is the main supply voltage input.

5-4 HORIZONTAL DEFLECTION CIRCUIT

The positive horizontal sync. pulse from Pin 6 of Q201 is converted and amplified by Q406. Then be applied through the differential circuit C407 / R408 to Pin 3 of the horizontal IC Q402.

The positive horizontal flyback pulse derived from Pin 5 of FBT T403 is integrated by the comparable sawtooth-waveform generator which is com-

posed of R410, R411, R423, C408, and C410, then be applied via C405 to Pin 4 of Q402.

The discriminator inside the IC Q402 detects the phase difference between the sync. input from Pin 3 and the sawtooth-waveform from Pin 4. the superimposed pulse output from Pin 5 of Q402 is integrated by the low-pass-filter R407, C404 and C403, AFC voltage is obtained and applied via R406 to Pin 7 of Q402. thereby controlling the oscillator.

The oscillator inside IC Q402 is an RC type with Pin 7 used to control the timing. R404, R405, R422, C402 and C410 altogether determine the horizontal oscillating frequency.

The predriver output of Q402 is at Pin 1 of which duty cycle is controlled by R402 and R403 at Pin 8 of Q402.

Regulated voltage applied at Pin 6 of Q402 is about 8 - 9 volts.

The output signal from Pin 1 of Q402 is then amplified by Q401 and coupled by T401 to the horizontal output stage Q403 for ON-OFF control, thus sawtooth-waveform current through the horizontal deflection coil is obtained.

Also during the retrace time of the horizontal deflection, a horizontal flyback pulse of about 1100 volts is produced at the collector of Q403, this pulse is transferred and rectified by the FBT T403 to obtain high voltage of about 22.0KV for anode of CRT.

5-5 DPC CIRCUIT

The Side Dynamic Pincushion Correction circuit (Side DPC) modulates the raster width as a function of vertical deflection.

The vertical castle-waveform from Pin 1 of Q301 is integrated by C314, R326, R327, R328, C316 etc. to produce a parabolic waveform necessary for side pincushion correction, this parabolic voltage is amplified by Q302 and Q303 stages and then drives the control winding of the saturable reactor T402.

The inductance of the T402 output winding is modulated by the vertical parabolic current. this output winding is inserted in series with the horizontal deflection yoke.

The horizontal yoke current is then modulated by the correction voltage to correct side pincushion distortion.

5-6 VIDEO CIRCUIT

The color display contains three video amplifiers, one for each primary color. these three amplifiers for the red, green and blue CRT guns are identical.

Video amplifier consists of preamplifier Q501 (M51387P), output stage and cut off adjustment circuit.

The operation of only one channel (blue) is described here.

Analog video signals is preadjusted by R502 and coupling VIA C501, C502 to input of Q501.

Contrast is DC controlled from Pin 14 of Q501, clamp pulse provided from Pin 7 of FBT (T403) to P15 of Q501. The output of Q501 is at Pin 21.

C504 is used for clamp pulse to charge.

The B+ of preamp. (12V) and output stage is provided from S.M.P.S.

The composite blanking pulse is provided from vert. circuit to Q407.G1 clamp the Blanking level to A suitable position.

5-7 MODE CONTROL CIRCUIT

(1) HORIZONTAL FREQUENCY DETECT

H.Sync. pulse with different frequency was sent to Pin 6 of Q211 (F/V CONVERTER) Then there are different voltage at the output Pin 1. So we get a "HIGH" at Pin 1 of Q212 when Hor. freq. is 31.5KHz and "LOW" when Hor. freq. is 35.5KHz. This signal can be used to control Hor. width, Hor. osc. freq., Hor. phase.

(2) HOR. WIDTH CONTROL

When $f_H=31\text{KHz}$, Q212#1 is "H", Q209#C is "L", Q214#C is "H". QE802#C is "L", QE801#B is "L", QE801 cutoff, then DE801 is conducted and 90VDC was sent to FBT #9. When $f_H=35\text{KHz}$, QE801 is conducted and 105VDC is sent to FBT#9 and DE801 is cutoff. Adjusting RE810 can change the base current of QE801, then change the output of QE801 so as Hor. width when $f_H=35\text{KHz}$.

(3) HOR. OSC. FREQ. CONTROL

When $f_H=31\text{KHz}$, Q212#1 is "H", Q209#C is "L", Q203#9#10#11 is "L", then #12#14# are connected. When $f_H=35\text{KHz}$ Q203#13#14 are connected, the time constant of Hor. osc. circuit will be changed.

(4) HOR. PHASE CONTROL

When $f_H=31\text{KHz}$, Q203#15#2 are connected. When $f_H=35\text{KHz}$, Q203#15#1 are connected.

(5) VOLTAGE AT POSITIVE END OF C204(POINT "D") and C203(POINT "E")

Q201 74LS86 is an XOR LOGIC IC. If the input pulse of #2 is positive, #3 also positive. This pulse will be filtered by C204 to get a "L" at point "D". However a negative pulse will be filtered as a "H". It's the same condition at point "E". (See table 1 for reference). The output at #8 and #6 are always positive for easy sync.

	H.SYNC.	V.SYNC.	POINT "D"	POINT "E"
MODE 1	+	-	L	H
MODE 2	-	+	H	L
MODE 3	-	-	H	H

TABLE 1

(6) SIZE CONTROL OF MODE 3

Q208 74LS138 is a 3-to-8 decoder (Multiplexer). When $f_H=31\text{KHz}$, Q209#C is "L", D205 is conducted. Adjusting R315 can vary the picture size of mode 3. From table 1 we can know that Q208#1#2 are "H", so that Q208#13#14 are "H", D202/D204 are cutoff R208/R211 are disabled. Since Q214#C is also "H" R241/R207 are also disabled too.

(7) SIZE CONTROL OF MODE 2

From table 1, D/E are H/L, Q208#14 is "L", D202 are conducted. Adjusting R208 can vary picture size R315 has to be preseted before adjusting R208 since R208 is parallel to R315 now.

(8) SIZE CONTROL OF MODE 1

Q208#13 is "L", R211 is available and parallel to R315

(9) SIZE CONTROL OF MODE 4

Q304(PWB-1627) 74LS123 is a monostable multivibrator. We use it to delay the sync. pulse. In mode 4, the period of vertical sync. is around 11.6mS. When we delay that pulse for 11.6mS, it becomes a DC voltage. The DC voltage from Pin 5 will make Q305 saturated. When Q305#C is "L", Q210#C is "H", then Q213#14#13 are connected. R207 is available and parallel to R340, (R241 is always available when fH=35KHz) and in series to R241.

(10) SIZE CONTROL OF MODE 5

When the period of sync. pulse is much longer than 11.6mS (e.g 18mS) There is a negative pulse at Q304#5. Once the pulse in "L" condition, C322 will discharge by the way of D312. So, C322 cannot have enough voltage to saturate Q305. Then, Q213#14#13 will be disconnected and R207 is disabled. Only R241 is available for adjusting.

5-8 SELF TEST

Self test signal supplied from heater buffered by Q205, Q206, Q207 and via R214, R215, R216 to the video input to generate full white screen with black vertical bar on the left and/or right edges. When the display is connected to a system unit the collector of Q204 is grounded to make a dark screen.

5-9 SIGNAL CABLE PIN CONNECTIONS:

Pin	Signal	Pin	Signal
---	-----	---	-----
1	Red Signal	9	No Pin
2	Green Signal	10	Digital Ground
3	Blue Signal	11	Jumper to Pin 10
4	Jumper to Pin 10	12	No Pin
5	Self-test	13	Horizontal Sync.
6	Red Return	14	Vertical Sync.
7	Green Return	15	No Pin
8	Blue Return		

* 6.ALIGNMENT PROCEDURE *

6-1 EQUIPMENTS

1. Manual degaussing coil
2. Oscilloscope + probe
3. Digital voltmeter
4. Color analyzer
5. Ruler
6. EHT meter with high voltage probe

6-2 POWER SUPPLY OUTPUT VOLTAGE

Connect a DVM to S.M.P.S. output red wire adjust the voltage to 90V by means of R813.

6-3 VERTICAL FREQUENCY

Connect a frequency counter across the vertical deflection coil. adjust the frequency. To 49Hz by means of R314, the signal cable must be disconnected from the PC.

6-4 HORIZONTAL FREQUENCY

Use a test pattern. Without horizontal sync. input, adjust R422(31.5KHz) and R405(35.5KHz) to get the color bar in an upright position.

6-5 PINCUSHION

Straighten the side lines with R327 and R328.

6-6 WIDTH

Adjust the data area width to 240 +/- 5 mm using L402. (fH=31.5KHz)

6-7 VERTICAL CENTERING

Center the data area with R338.

6-8 VERTICAL LINEARITY

Adjust the squares equal in height with R316.

6-9 HEIGHT 3 (480 lines)

Adjust data area height to 180 +/- 5 mm with R315.

6-10 HEIGHT 2 (400 lines)

Switch to 400 lines mode. Adjust data area height to 180 +/- 5 mm with R208. (Be sure that height 3 has been adjusted)

6-11 HEIGHT 1 (350 lines)

Switch to 350 lines mode. Adjust data area height to 180 +/- 5 mm with R211. (Be sure that height 3 has been adjusted)

6-12 HEIGHT 5 (600 lines)

Switching to 600 lines mode . Adjust data area height to 180 +/- 5 mm with R241.

6-13 HEIGHT 4 (768 lines)

Switching to 768 lines mode . Adjust data area height to 180 +/- 5 mm with R207. (Be sure that height 5 has been adjusted)

6-14 FOCUS ADJUST

Adjust FBT focus VR to get best overall focus screen.

6-15 WHITE X/Y

Turn the brightness VR to center detent position, contrast VR to minimum. Set cut-off drive VR R910/R940/R970 to center.

Turn the sub-brit. VR R443 to a position where to get the G1 voltage is -25V.

Turn the G2 control to a position where to get the brightness just disappears.

Turn the brightness VR to max. and adjust the R910, R940 and R970 to achieve the color coordinates $X=0.313$ $Y=0.329$ roughly and brightness 0-5 F.L.

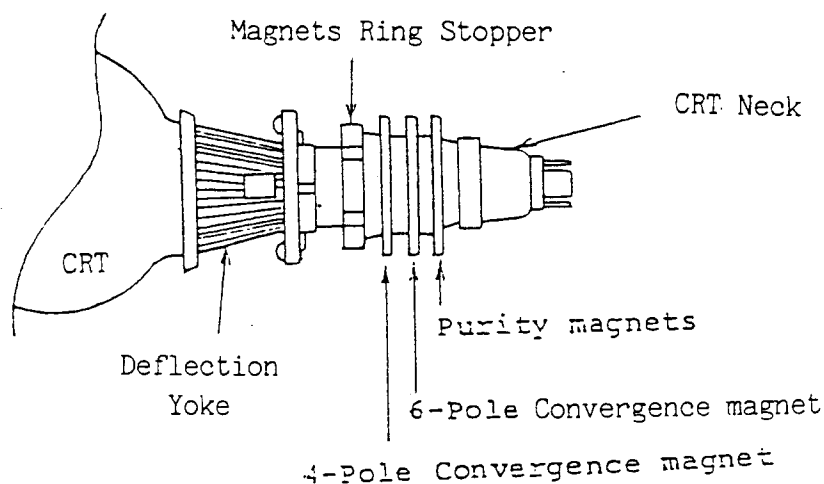
Use full field white pattern, turn the contrast to maximum, brightness at detent, adjust R502, R532 and R562 to achieve the correct X,Y coordinates. Then turn contrast VR to get 3 F.L. Adjust R910/R940/R970 to achieve correct X,Y coordinates.

6-16 F/V CONVERTER ADJUSTMENT: (MODE 3, FULL WHITE SIGNAL)

Adjust R235 VR to get 0.7V +/- 0.1 between #P2 (+) and #P1 (-) or between Q212#3(+) and Q212#2(-) after warm up the set for 20 minutes.

6-17 INTERLACE ADJUSTMENT:

Receiving 1024x768(interlaced) signal, display small "s" character. Adjust R218 so that small "s" is not distorted.



6-18 STATIC CONVERGENCE ADJUSTMENT:

NOTE: Before attempting any convergence adjustment, the display should be operate for at least thirty minutes.

- (1) Apply the crosshatch pattern to the display.
- (2) Adjust the BRIGHTNESS and CONTRAST controls for well defined pattern.
- (3) Refer to the structure of picture tube (See Fig 6-1) to make sure the relative position of the convergence magnet.

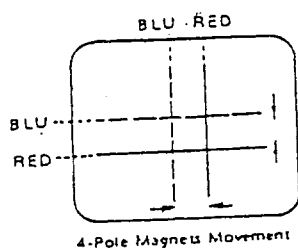


Fig 6-2

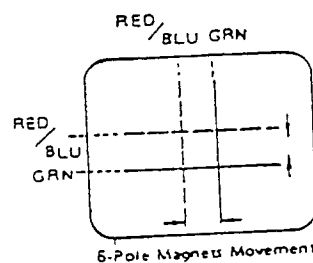
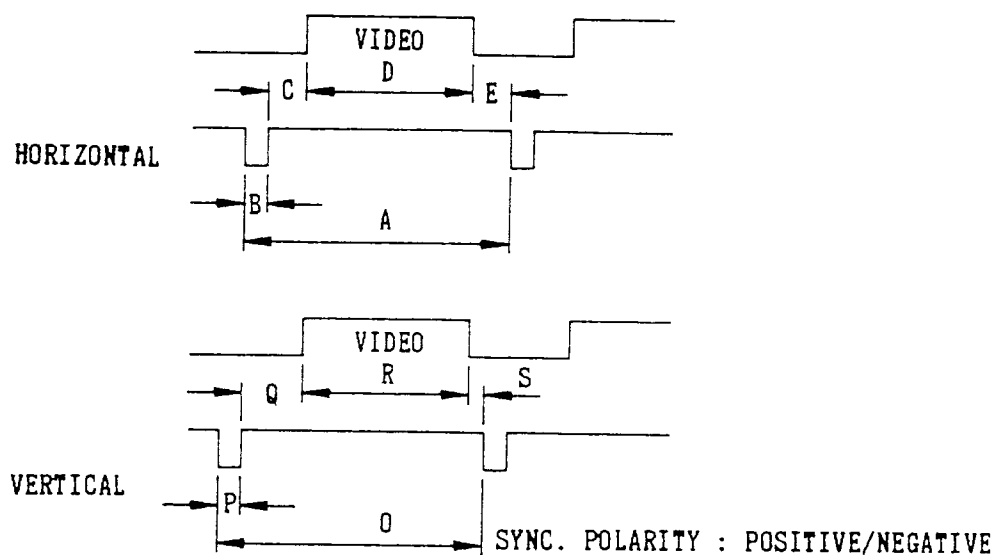


Fig 6-3

- (4) Adjust two tabs of the 4-pole Magnets to change the angle between them and superimpose red and blue vertical lines in the center area of the picture (See Fig 6-2).
- (5) Turn both tabs at the same time keeping their angles constant to superimpose red and blue horizontal lines at the center of the screen (See Fig 6-2)
- (6) Adjust two tabs of 6-pole Magnets to superimpose red/blue line with green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines. (See Fig 6-3)
- (7) Repeat adjustments (4). (5). (6). until best convergence is obtained.

6-17 TIMING CHARTS

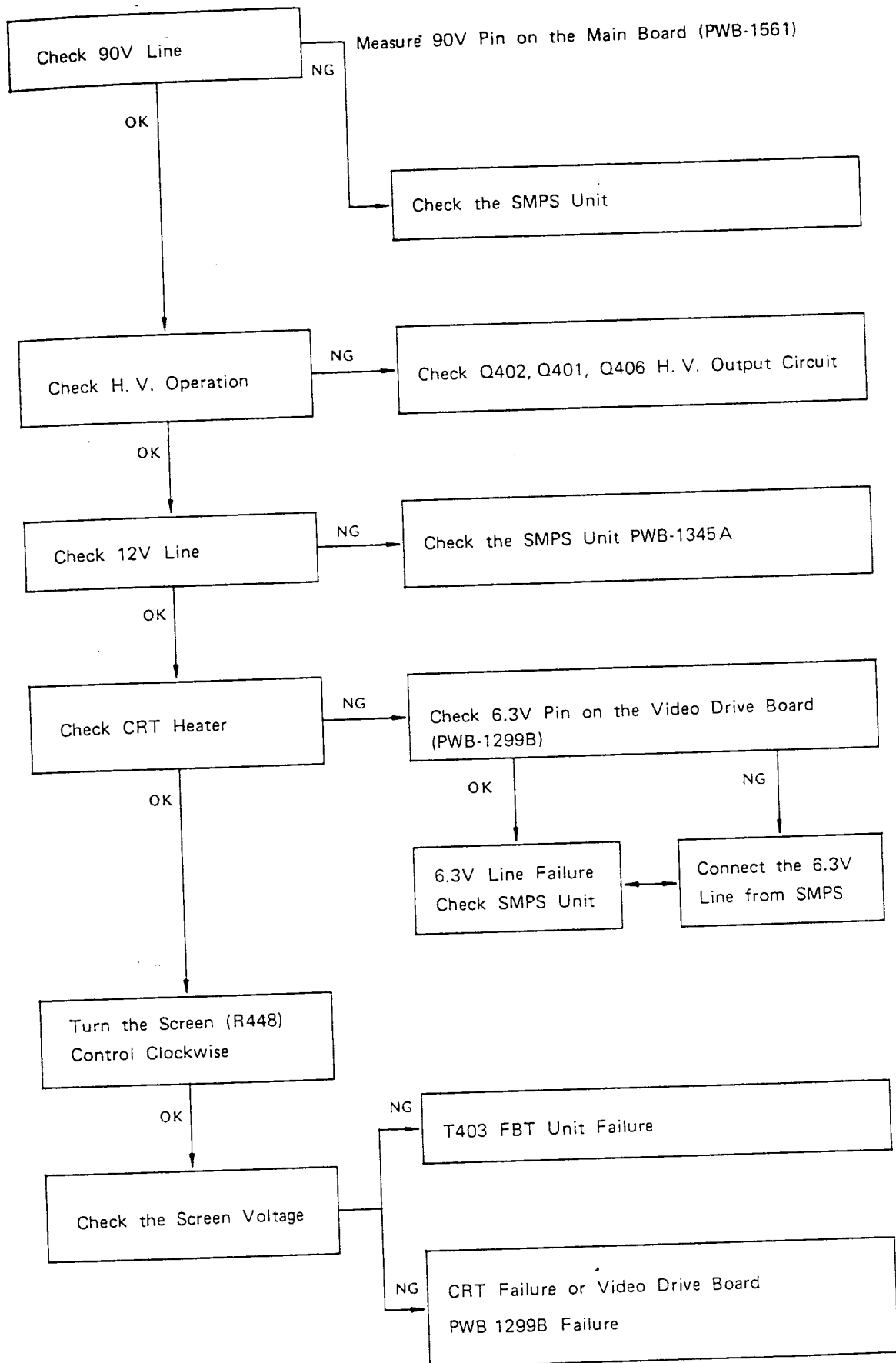


PRE-SET TIMING

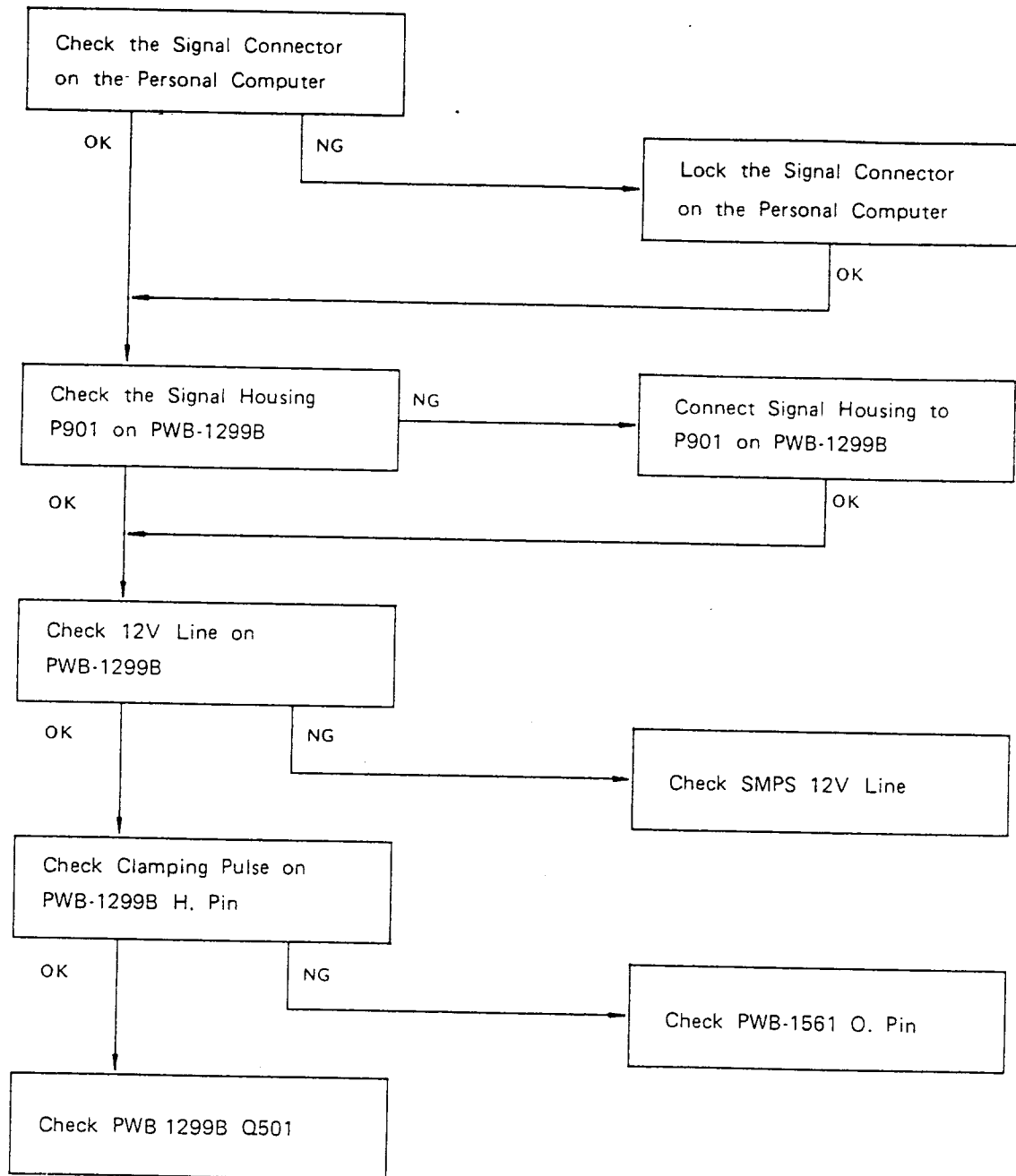
	VGA/PS2 COMPATIBLE		8514/A COMPATIBLE		800X600
fH		31.5 KHz		35.52KHz	35.16KHz
Aus		31.77		28.15	28.44
Bus		3.77		3.92	2
Cus		1.89		1.25	3.56
Dus		25.17		22.8	22.22
Eus		0.94		0.18	0.67
Fr	70Hz		60Hz	87 Hz	56 Hz
Oms	14.27	14.27	16.68	11.5	17.78
Pms	0.064	0.064	0.064	0.113	0.06
Qms	1.88	1.08	1.02	0.563	0.6
Rms	11.126	12.716	15.246	10.81	17.07
Sms	1.2	0.41	0.35	0.014	0.03
REMARKS	SEPARATE SYNC.	SEPARATE SYNC.	SEPARATE SYNC.	INTERLACED SEPARATE SYNC.	SEPARATE SYNC.
	H.SYNC.	H.SYNC.	H.SYNC.	H.SYNC.	H.SYNC.
	POSITIV	NEGATIVE	NEGATIVE	POSITIV	POSITIV
	V.SYNC.	V.SYNC.	V.SYNC.	V.SYNC.	V.SYNC.
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	POSITIVE

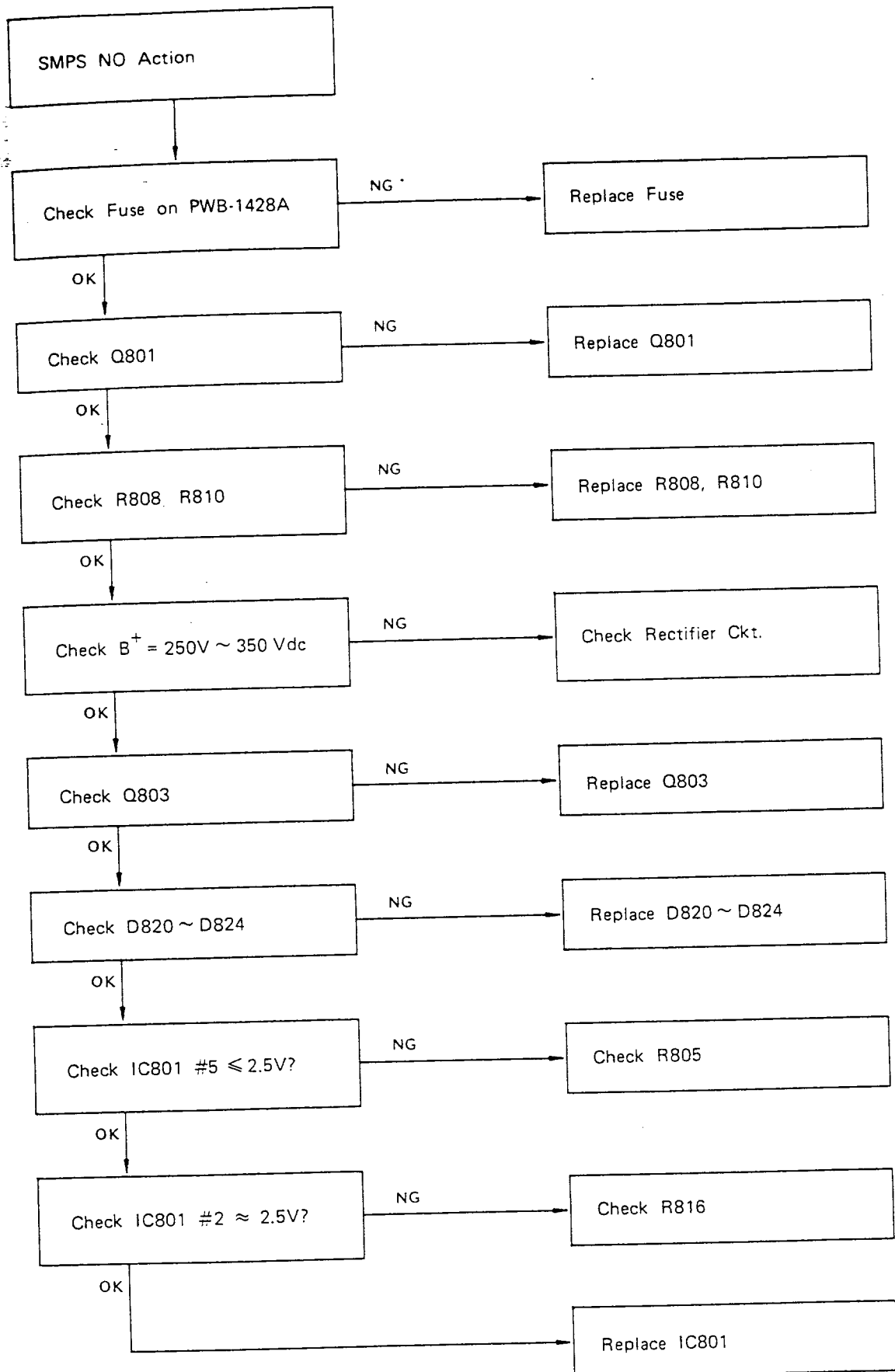
 * 7.TROUBLE SHOOTING *

No Raster

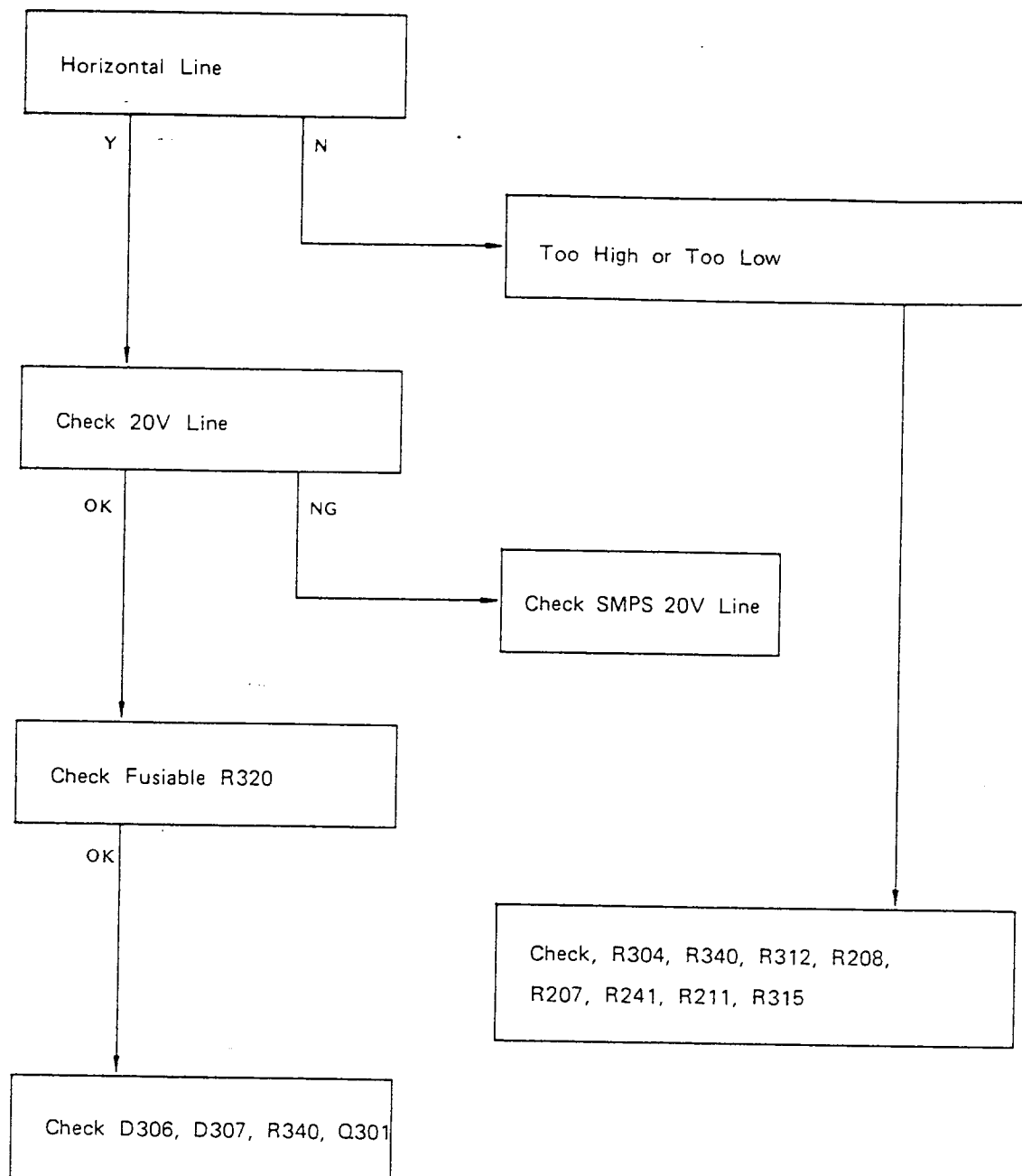


No Picture on the CRT

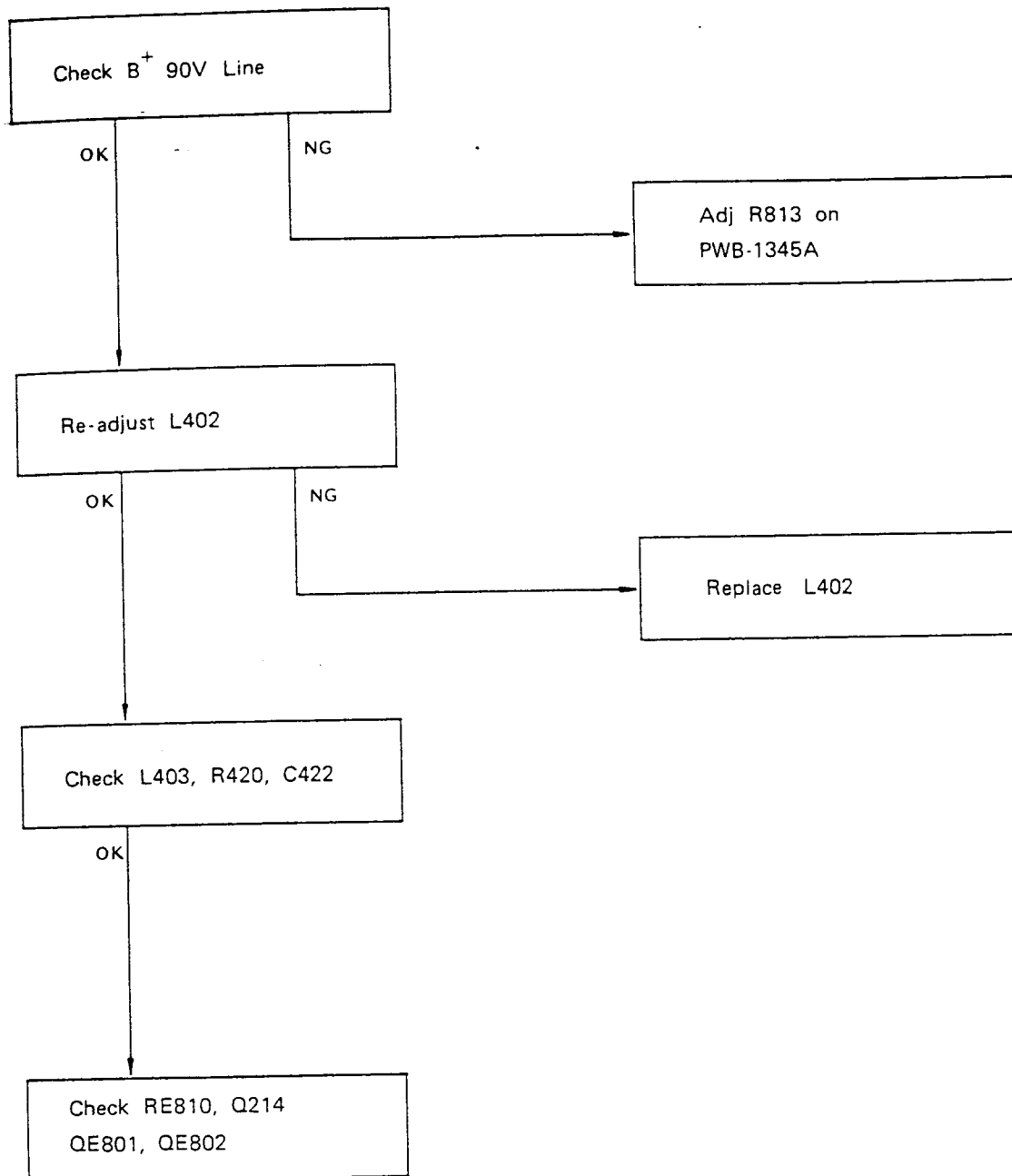




Abnormal Vertical Height

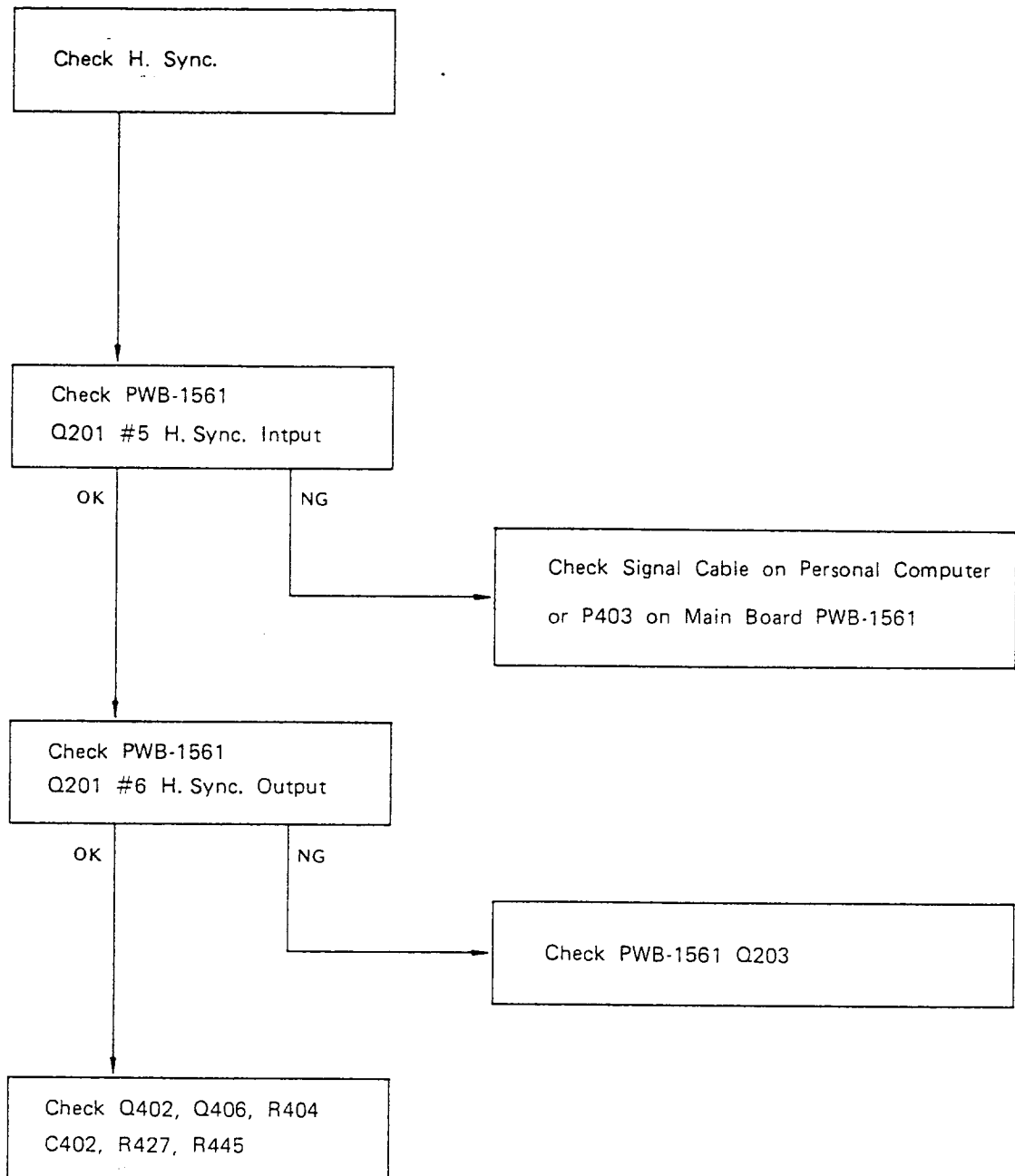


Abnormal Hor Width

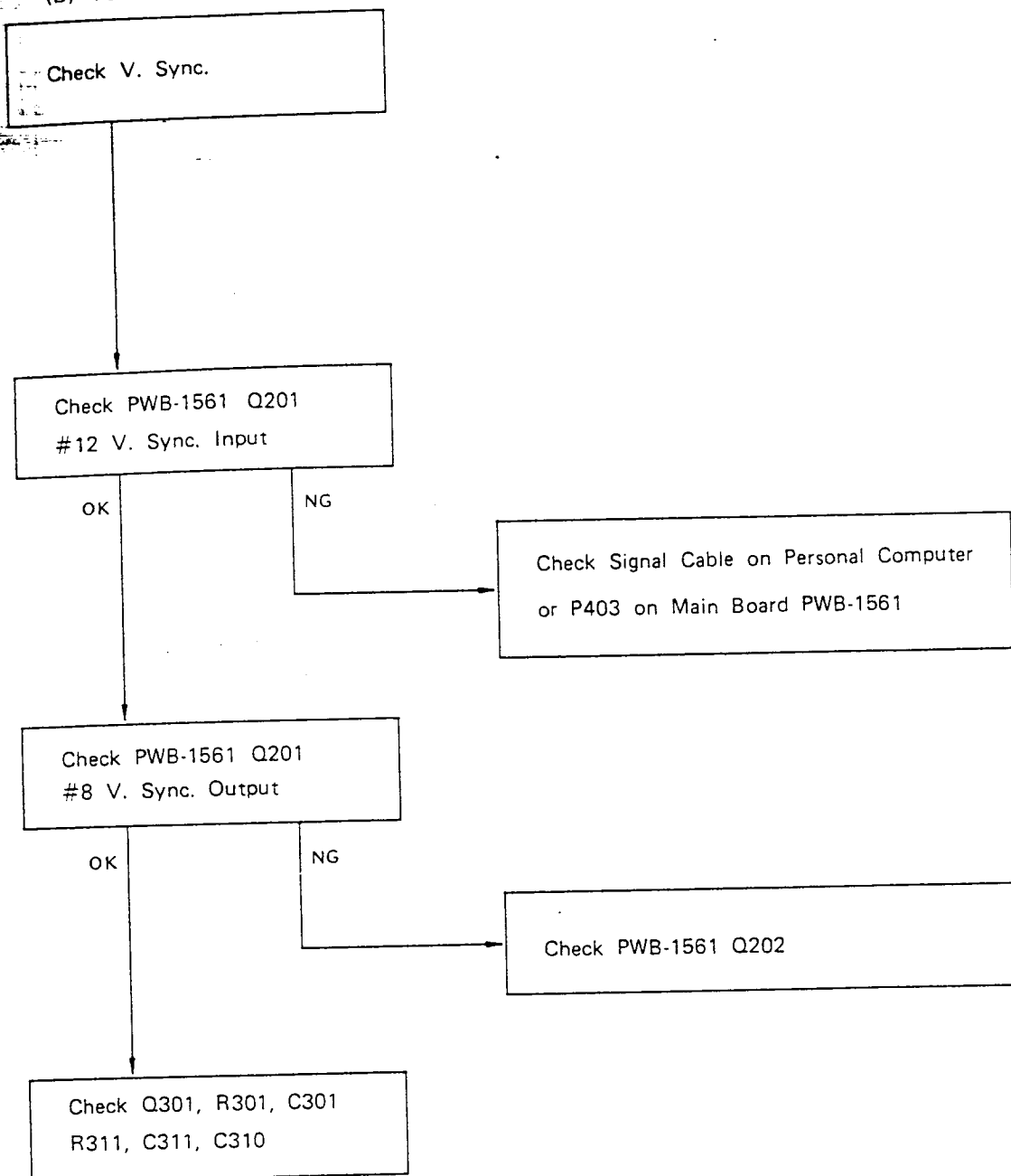


Unstable Synchronization

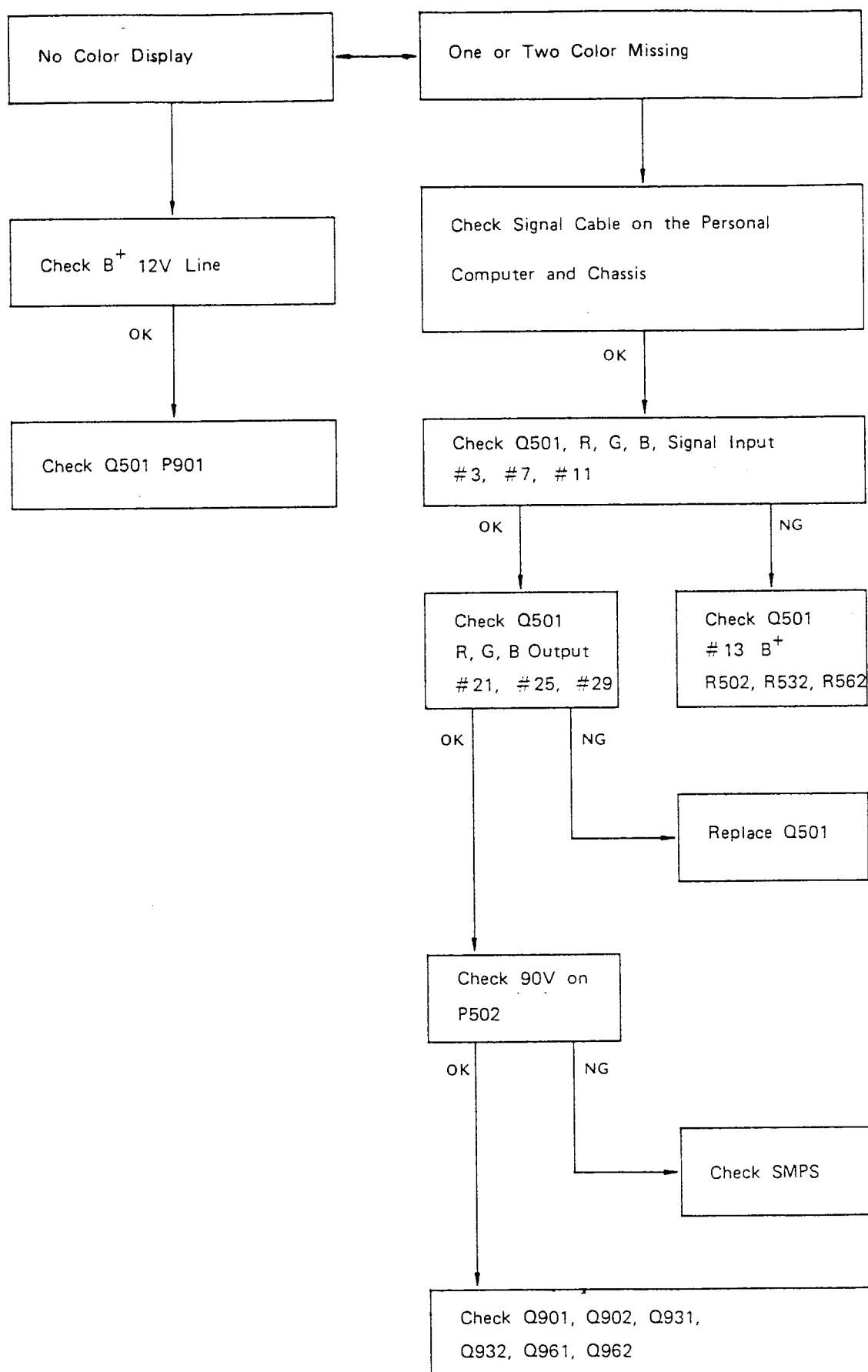
(A) Horizontal sync.



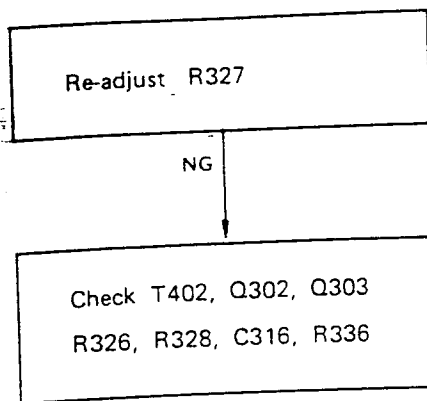
(B) Vertical sync.



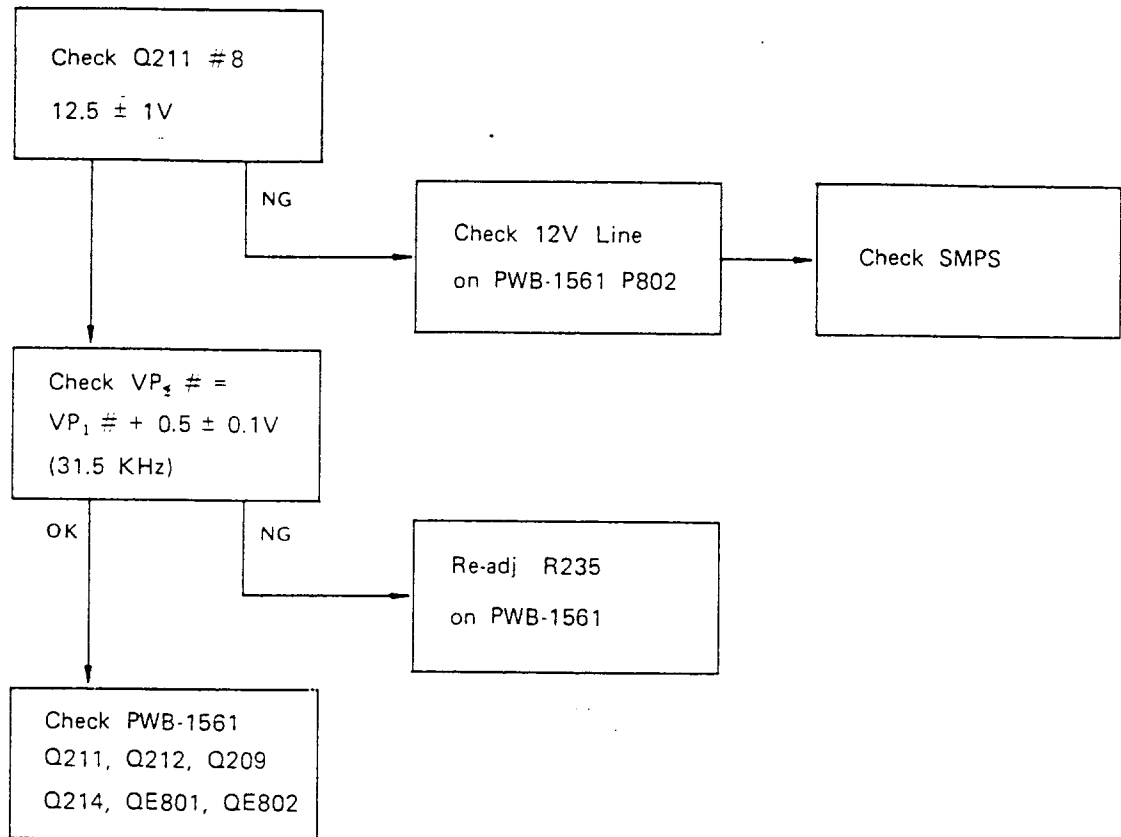
Abnormal Color Display



Abnormal Side Pincushion Distortion

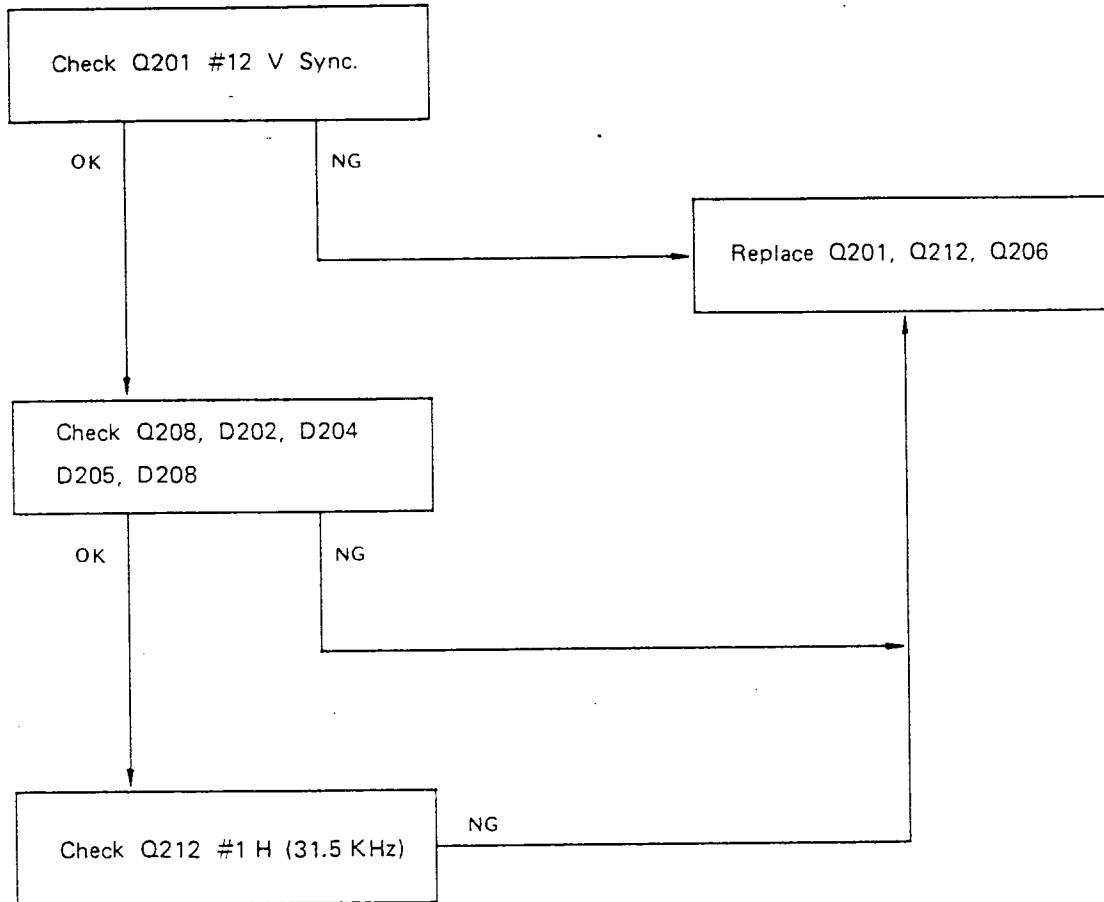


Abnormal 31.5 KHz/35.5 KHz Chage

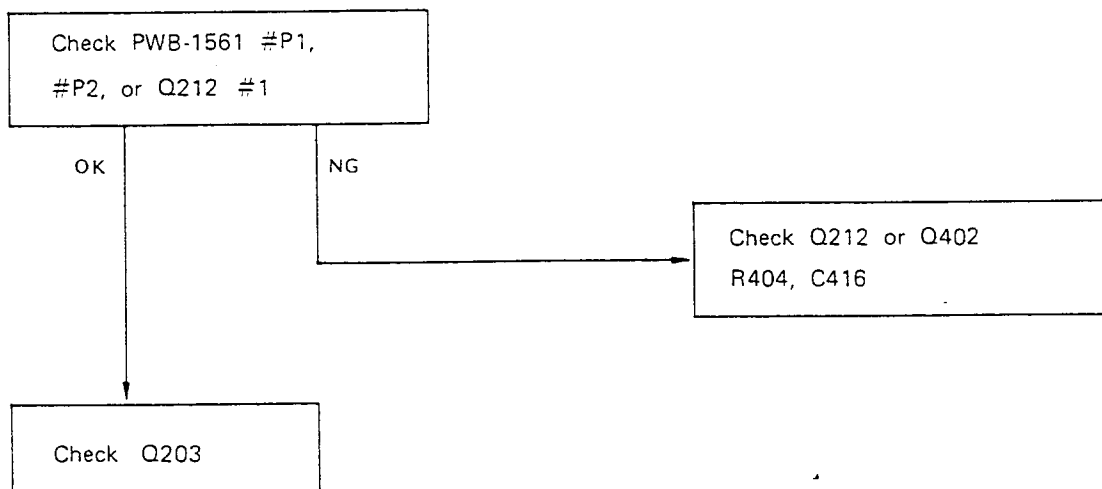


Abnormal Control Board (PWB-101)

(A) Abnormal MODE 1 ~ MODE 5 Vertical Height



(B) Abnormal 31.5 KHz/35.5 KHz Hor Hold & Hor Phase Change



 * 8.REPLACEMENT PARTS LIST *

WARNING: Replacement parts which have special characteristics important to safety should be replaced only with types identical to those in the original circuit or specified in the parts list. Before replacing any of these components, read carefully the product safety precaution, do not degrade the safety of the display through improper servicing.

CKT NO.	PART NO.	DESCRIPTION	SPEC
ASSEMBLY,PCB-MAIN, PWB-1561-03			
CAPACITOR			
C201	5222110391	CAPACITOR,POLYESTER	CQ92M 50V10000.00PFJ
C202	5213410191	CAPACITOR,ELECTROLYTIC	CE04W 25V 100.00UFM
C203,C204	5213247091	CAPACITOR,ELECTROLYTIC	CE04W 10V 47.00MFM
C206	5222110491	CAPACITOR,POLYESTER	CQ92M 50V 0.10MFJ
C207	5222115391	CAPACITOR,POLYESTER	CQ92M 50V15000.00PFJ
C210	5213622891	CAPACITOR,ELECTROLYTIC	CE04W 50V 0.22UFM
C211	5221115291	CAPACITOR,POLYESTER	CQ93M 50V 1500.00PFJ
C212	5242210191	CAPACITOR,CERAMIC CC45	CH DC 50V 100.00PFJ
C213,C305	5222110491	CAPACITOR,POLYESTER	CQ92M 50V 0.10MFJ
C306			
C302	5213510213	CAPACITOR,ELECTROLYTIC	CE04W 35V 1000.00UFM
C303	5236310401	CAPACITOR,BARRIER,LAYER,CG45X	F DC 50V 0.10UFZ
C304	5213622112	CAPACITOR,ELECTROLYTIC	CE04W 50V 220.00UMM
C307	5222410401	CAPACITOR,POLYESTER P=7.5MM	CQ92M 100V 0.10UFJ
C308	5213247091	CAPACITOR,ELECTROLYTIC	CE04W 10V 47.00MFM
C309	5213410213	CAPACITOR,ELECTROLYTIC	CE04W 25V 1000.00UFM
C310	5275133401	CAPACITOR,METALLIZED P.E P=5MM	CF93M 63V 0.33MFJ
C311	5222110491	CAPACITOR,POLYESTER	CQ92M 50V 0.10MFJ
C312	5214410012	CAPACITOR,ELECTROLYTIC	CE04W 250V 10.00UFM
C313	5214247991	CAPACITOR,ELECTROLYTIC	CE04W 160V 4.70UFM
C314	5213510091	CAPACITOR,ELECTROLYTIC	CE04W 35V 10.00UFM
C315	5232710301	CAPACITOR,CERAMIC CK45	E DC 500V10000.00PFP
C316	5213522091	CAPACITOR,ELECTROLYTIC	CE04W 35V 22.00UFM
C317	5213410091	CAPACITOR,ELECTROLYTIC	CE04W 25V 10.00UFM
C318	5213233112	CAPACITOR,ELECTROLYTIC	CE04W 10V 330.00UFM
C319	5247068191	CAPACITOR,CERAMIC CC45	SL DC 50V 680.00PFJ
C320	5213447091	CAPACITOR,ELECTROLYTIC	CE04W 25V 47.00UFM
C323	5213410091	CAPACITOR,ELECTROLYTIC	CE04W 25V 10.00UFM
C401	5213447112	CAPACITOR,ELECTROLYTIC	CE04W 25V 470.00UFM
C402	5227330291	CAPACITOR,POLYPROPYLENE	CQ93T 100V 3000.00PFJ
C403	5221156291	CAPACITOR,POLYESTER	CQ93M 50V 5600.00PFJ
C404	5213601091	CAPACITOR,ELECTROLYTIC	CE04W 50V 1.00UFM
C405,C431	5221110401	CAPACITOR,POLYESTER P=7.5MM	CQ93M 50V 0.10MFJ
C406	5221110391	CAPACITOR,POLYESTER	CQ93M 50V10000.00PFJ
C407	5231310291	CAPACITOR,CERAMIC CK45	B DC 50V 1000.00PFK
C408	5221147291	CAPACITOR,POLYESTER	CQ93M 50V 4700.00PFJ
C409	5247015191	CAPACITOR,CERAMIC CC45	SL DC 50V 150.00PFJ
C410	5221147291	CAPACITOR,POLYESTER	CQ93M 50V 4700.00PFJ
C411	5213322191	CAPACITOR,ELECTROLYTIC	CE04W 16V 220.00UFM

CKT NO.	PART NO.	DESCRIPTION	SPEC
C412	5224422301	CAPACITOR,POLYPROPYLENE P=10MM	CQ93T 250V22000.00PFK
C413	5232310291	CAPACITOR,CERAMIC CK45	B DC 500V 1000.00PFK
C415	5248418100	CAPACITOR,CERAMIC CC45	SL DC 2KV 180.00PFJ
C416	5210502900	CAPACITOR,ELECTROLYTIC NP	CE02W 50V 0.47UFM
C417	5231810391	CAPACITOR,CERAMIC CK45	F DC 50V10000.00PFZ
C418, C419	5223002701	CAPACITOR,POLYPROPYLENE P=15MM	CQ93T 800V15000.00PFJ
C420			
C422	5232310291	CAPACITOR,CERAMIC CK45	B DC 500V 1000.00PFK
C423	5214210012	CAPACITOR,ELECTROLYTIC	CE04W 160V 10.00UFM
C424	5234547201	CAPACITOR,CERAMIC CK45	E DC 2KV 4700.00PFM
C425	5270302501	CAPACITOR,METALLIZED P.P P=15	CF93T 250V 0.22MFJ
C426	5270304501	CAPACITOR,METELLIZED P.P P=15	CF93T 250V 0.33MFJ
C427	5231333291	CAPACITOR,CERAMIC CK45	B DC 50V 3300.00PFK
C431	5236310401	CAPACITOR,BARRIER,LAYER,CG45X	F DC 50V 0.10UFZ
C433	5215347001	CAPACITOR,ELECTROLYTIC (105C)	CE04W 200V 47.00UFM
C437, C441	5222410401	CAPACITOR,POLYESTER P=7.5MM	CQ92M 100V 0.10UFJ
C506	5231847391	CAPACITOR,CERAMIC	50 47n F
C531, C561	5213210191	CAPACITOR,ELECTROLYTIC	10V 10u
C565	5213333112	CAPACITOR,ELECTROLYTIC	16V 330u
C593	5213347091	CAPACITOR,ELECTROLYTIC	16V 47u
C594	5275122401	CAPACITOR,POLYESTER	63V 0.22u 5%
C595	5213347991	CAPACITOR,ELECTROLYTIC	16V 4.7u

RESISTOR

R201	5142412190	RESISTOR,CARBON FILM	RD S B 1/2W 120.00 J
R202, R205	5142818395	RESISTOR,CARBON FILM	RD S B 1/4W 18.00KJ
R203, R204	5142833195	RESISTOR,CARBON FILM	RD S B 1/4W 330.00 J
R206	5142824295	RESISTOR,CARBON FILM	RD S B 1/4W 2.40KJ
R207, R208	5162163720	RESISTOR,VR PNO6FB105AR	F5X5 B 1.00MOHM
R211	5162172810	RESISTOR,VR PNO8TB104AR	TM5X5 B 100.00KOHM
R219, R220	5142810295	RESISTOR,CARBON FILM	RD S B 1/4W 1.00KJ
R239, R243			
R221, R228	5142810395	RESISTOR,CARBON FILM	RD S B 1/4W 10.00KJ
R230, R231, R303			
R225	5142882395	RESISTOR,CARBON FILM	RD S B 1/4W 82.00KJ
R226, R232	5142847295	RESISTOR,CARBON FILM	RD S B 1/4W 4.70KJ
R234, R301			
R227	5142839295	RESISTOR,CARBON FILM	1/4W 3.9KOHM
R229	5142812495	RESISTOR,CARBON FILM	RD S B 1/4W 120.00KJ
R233	5142847495	RESISTOR,CARBON FILM	RD S B 1/4W 470.00KJ
R235	5162161720	RESISTOR,VR PNO6FB502AR	F5X5 B 5.00KOHM
R236	5142839195	RESISTOR,CARBON FILM	RD S B 1/4W 390.00 J
R237	5142822295	RESISTOR,CARBON FILM	RD S B 1/4W 2.20KJ
R238	5142833195	RESISTOR,CARBON FILM	RD S B 1/4W 330.00 J
R240	5142875395	RESISTOR,CARBON FILM	RD S B 1/4W 75.00KJ
R241	5160806137	RESISTOR,VR RV12TB105HKFR	V012LPHJ-36U-B105
R241A	5142843495	RESISTOR,CARBON FILM	RD S B 1/4W 430.00KJ
R304	5142833495	RESISTOR,CARBON FILM	RD S B 1/4W 330.00KJ
R305, RE804	5142868495	RESISTOR,CARBON FILM	RD S B 1/4W 680.00KJ
R307	5142820295	RESISTOR,CARBON FILM	RD S B 1/4W 2.00KJ
R308	5142812195	RESISTOR,CARBON FILM	RD S B 1/4W 120.00 J
R309	5142822995	RESISTOR,CARBON FILM	RD S B 1/4W 2.20 J
R310	5142851295	RESISTOR,CARBON FILM	RD S B 1/4W 5.10KJ
R312	5142401090	RESISTOR,CARBON FILM	RD S B 1/2W 1.00 J
R315	5162173710	RESISTOR,VR PNO8TB105AR	TM5X5 B 1.00MOHM
R316	5162172810	RESISTOR,VR PNO8TB104AR	TM5X5 B 100.00KOHM

CKT NO.	PART NO.	DESCRIPTION	SPEC
R317	5130315104	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 1W 150.00 J
R318	5130310204	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 1W 1.00KJ
R320	5133222907	RESISTOR, FUSIBLE	RNF 14A 1W 2.20 J
R326	5142430290	RESISTOR, CARBON FILM	RD S B 1/2W 3.00KJ
R327	5162171710	RESISTOR, VR PNO8TB502AR	TM5X5 B 5.00KOHM
R328	5162171910	RESISTOR, VR PNO8TB103AR	TM5X5 B 10.00KOHM
R329	5142810295	RESISTOR, CARBON FILM	RD S B 1/4W 1.00KJ
R330, R331	5142833395	RESISTOR, CARBON FILM	RD S B 1/4W 33.00KJ
R450			
R332	5142847095	RESISTOR, CARBON FILM	RD S B 1/4W 47.00 J
R333, R334	5142847295	RESISTOR, CARBON FILM	RD S B 1/4W 4.70KJ
RE806			
R335	5142843295	RESISTOR, CARBON FILM	RD S B 1/4W 4.30KJ
R336	5142412190	RESISTOR, CARBON FILM	RD S B 1/2W 120.00 J
R337	5142415190	RESISTOR, CARBON FILM	RD S B 1/2W 150.00 J
R338	5160806117	VR, RV12TB502HKFR	0.15W B 5.00KOHM
R338A	5130330104	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 1W 300.00 J
R339, R408	5142810295	RESISTOR, CARBON FILM	RD S B 1/4W 1.00KJ
R340	5142811495	RESISTOR, CARBON FILM	RD S B 1/4W 110.00KJ
R342	5142868295	RESISTOR, CARBON FILM	RD S B 1/4W 6.80KJ
R343	5162162220	RESISTOR, VR PNO6FB223AR	F5X5 B 22.00KOHM
R401, R461	5142482190	RESISTOR, CARBON FILM	RD S B 1/2W 820.00 J
R402	5142830295	RESISTOR, CARBON FILM	RD S B 1/4W 3.00KJ
R403	5142824295	RESISTOR, CARBON FILM	RD S B 1/4W 2.40KJ
R404	5142812395	RESISTOR, CARBON FILM	RD S B 1/4W 12.00KJ
R405	5162161720	RESISTOR, VR PNO6FB502AR	F5X5 B 5.00KOHM
R406	5142868395	RESISTOR, CARBON FILM	RD S B 1/4W 68.00KJ
R407	5142810395	RESISTOR, CARBON FILM	RD S B 1/4W 10.00KJ
R409, R410	5142422290	RESISTOR, CARBON FILM	RD S B 1/2W 2.20K
RE803			
R411	5160807717	RESISTOR, VR RV09FB502EKER	RK09K1130345-TT B5K M
R412	5142810195	RESISTOR, CARBON FILM	RD S B 1/4W 100.00 J
R413, R414	5142412190	RESISTOR, CARBON FILM	RD S B 1/2W 120.00 J
R416	5130468204	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 2W 6.80KJ
R417	5142433290	RESISTOR, CARBON FILM	RD S B 1/2W 3.30KJ
R420	5130382104	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 1W 820.00 J
R422	5162161720	RESISTOR, VR PNO6FB502AR	F5X5 B 5.00KOHM
R423	5160807717	RESISTOR, VR RV09FB502EKER	RK09K1130345-TT B5K
R427	5142843395	RESISTOR, CARBON FILM	RD S B 1/4W 43.00KJ
R435	5142447090	RESISTOR, CARBON FILM	RD S B 1/2W 47.00 J
R439, R440	5142820295	RESISTOR, CARBON FILM	RD S B 1/4W 2.00KJ
R441	5142816495	RESISTOR, CARBON FILM	RD S B 1/4W 160.00KJ
R442	5142856395	RESISTOR, CARBON FILM	RD S B 1/4W 56.00KJ
R443	5162172810	RESISTOR, VR PNO8TB104AR	TM5X5 B 100.00KOHM
R445	5142811395	RESISTOR, CARBON FILM	RD S B 1/4W 11.00KJ
R448	5162907544	RESISTOR, VR PNO9FB475DR	0.5W 1000V B 4.70M OHM
R449, R451	5136022595	RESISTOR METAL GLAZE FILM	RS 08 B 1/4W 2.20MJ
R460	5142820395	RESISTOR, CARBON FILM	RD S B 1/4W 20.00KJ
R462	5142851195	RESISTOR, CARBON FILM	RD S B 1/4W 510.00 J
RE805	5130313307	RESISTOR, METAL OXIDE FLIM, MINI	RS 08 B 1W 13.00KJ
RE807	5142818295	RESISTOR, CARBON FILM	RD S B 1/4W 1.80KJ
RE808	5142816295	RESISTOR, CARBON FILM	RD S B 1/4W 1.60KJ
RE810	5160807717	RESISTOR, VR RV09FB502EKER	RK09K1130345-TT B5K M

CKT NO.	PART NO.	DESCRIPTION	SPEC
SEMICONDUCTORS			
D201, D202	6613001730	DIODE SWITCHING	HIT IS2076 30V 150MA T=26MM .1
D204, D205			
D208, D308	6613001730	DIODE SWITCHING	HIT IS2076 30V 150MA T=26MM .1
RA			
D201, D202	6612006030	DIODE DETECTOR	TSB 1S1555-TP3 35V 0.1A T=26MM
D204, D205, D208, D308	RB		
D210	6615012234	DIODE ZENER	TSB 05AZ5.1Y 4.81V-5.17V T=26MM
D235 RA	6615010633	DIODE ZENER	TSB 05AZ12X 11.08V-11.67V T=26MM
D235 RB	6615010635	DIODE ZENER	05A12Z
D301	6611013242	DIODE RECTIFIER	GIT GP15D 200V 1.5A T=52MM
D303 RA	6613002245	DIODE SWITCHING	GIT RGP10G 400V 1A F T=52MM .1
D303 RB	6613002242	DIODE SWITCHING	HIT V09E 400V 1A F T=52MM
D305	6615007930	DIODE ZENER	HIT HZ11A2 9.7-10.1V T=26MM
D306, D307	6613003032	DIODE SWITCHING	HIT 1N4148 75V 150MA T=26MM
D401 RA	6615014130	DIODE ZENER	SYO GZA9.1X 8.6-9V T=52MM
D405 RA	6613002244	DIODE SWITCHING	GIT RGP10D 200V 1A T=52MM
D405 RB	6613002243	DIODE SWITCHING	HIT V09C 200V 1A F T=52MM
DE801	6611013242	DIODE RECTIFIER	GIT GP15D 200V 1.5A T=52MM
Q201 RA	6646009922	IC, DIGITAL	HIT HD74LS86
Q201 RB	6646009923	IC DIGITAL	GS GD74LS86 QUAD EOR GATE
Q203	6645009002	IC, DIGITAL MOS	HIT HD14053BP
Q208 RA	6646010300	IC DIGITAL	NS DM74LS138 3T08 DECODER/DEMUL
Q208 RB	6646010310	IC, DIGITAL	MOT SN74LS138 3T08 DECODER
Q209, Q210	6621015332	TR NPN HF	TSB 2SC1815Y TPE2 TAPING
Q214, Q207			
Q211	6644060100	IC LINEAR	SHP IR9331
Q212	6644060000	IC LINEAR	NEC UPC4557C
Q213, Q206	6645009002	IC, DIGITAL MOS	HIT HD14053BP
Q207			
Q301	6644045200	IC, LINEAR	SGS TDA1670A(GL1211)
Q303 RA	6623006330	TR PNP HF	TSB 2SA966-Y-TPE6
Q303 RB	6624007530	TR PNP LF	HIT 2SB739-C TAPING
Q401 RA	6622013330	TR NPN	2SD667C
Q401 RB	6622014030	TR NPN LF	HIT 2SD669AC TAPING
Q402 RA	6644032900	IC, LINEAR	MOT MC1391P HOR. PROCESSOR
Q402 RB	6644011303	IC LINEAR	NS LM1391N
Q402 RC	6644011302	IC LINEAR	RCA CA1391E
Q403	6621028400	TR NPN HF	HIT 2SC3883

COILS AND TRANSFORMERS

L401	5062104700	COIL, CHOKE (LINE)	CHK-117 18UHJ
L402	5062205300	COIL, WIDTH TWH-137	CENTER=80UH
L403	5062221400	COIL, HOR LINEARITY	TLH-214
L404	5062110300	COIL CHOKE	CHK-311
T401	5062412901	TRANS HOR DRIVE TLN-129A	100MH/200UH 22.5/1
T402	5062802200	TRANS, SIDE PIN CUSHION	TPC-0022 LH=48.5UH
T403 RA	5062621802	TRANS, FLYBACK COLOR	TFB-218B HV=22.5KV B+=110V
T403 RE	5062621803	TRANS, FLYBACK, COLOR	TFB-218C (HITACHI)

CKT NO.	PART NO.	DESCRIPTION	SPEC
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ASSEMBLY,PCB-CRT, PWB-1299B-04

CAPACITOR

C501,C531 C561	5213210191	CAPACITOR,ELECTROLYTIC	CE04W 10V 100.00UFM
C502,C532 C562	5231810391	CAPACITOR,CERAMIC CK45	F DC 50V10000.00PFZ
C503,C533 C563	5231810391	CAPACITOR,CERAMIC CK45	F DC 50V10000.00PFZ
C504,C534 C564	5213622991	CAPACTIOR,ELECTROLYTIC	CE04W 50V 2.20UFM
C505,C535 C565,C593	5213447091	CAPACITOR,ELECTROLYTIC	CE04W 25V 47.00UFM
C506,C536 C566,C591	5231810391	CAPACITOR,CERAMIC CK45	F DC 50V10000.00PFZ
C593	5213347091	CAPACITOR,ELECTROLYTIC	CE04W 16V 47.00UFM
C594	5275122401	CAPACITOR,METALLIZED,P.E P=5MM	CF93M 63V 0.22MFJ
C595	5213347991	CAPACITOR,ELECTROLYTIC	CE04W 16V 4.70UFM
C596	5213433112	CAPACITOR,ELECTROLYTIC	CE04W 25V 330.00UFM
C901	5247022191	CAPACITOR,CERAMIC CC45	SL DC 50V 220.00PFJ
C902,C932 C962	5214247991	CAPACITOR,ELECTROLYTIC	CE04W 160V 4.70UFM
C903,C933 C963	5270302501	CAPACITOR,METALLIZED P.P P=15	CF93T 250V 0.22MFJ
C931,C961	5247015191	CAPACITOR,CERAMIC CC45	SL DC 50V 150.00PFJ
C991	5233310201	CAPACITOR,CERAMIC CK45	B DC 1KV 1000.00PFK
C992	5234333101	CAPACITOR,CERAMIC CK45	B DC 2KV 330.00PFK
C993	5214410012	CAPACITOR,ELECTROLYTIC	CE04W 250V 10.00UFM

RESISTOR

R210,R212 R213	5142810295	RESISTOR,CARBON FILM	RD S B 1/4W 1.00KJ
R211	5142820395	RESISTOR,CARBON FILM	RD S B 1/4W 20.00KJ
R214,R215 R216	5142111295	RESISTOR,CARBON FILM	RD S B 1/6W 1.10KJ
R501,R531 R561	5142875095	RESISTOR,CARBON FILM	RD S B 1/4W 75.00 J
R502,R532 R562	5162172210	RESISTOR,VR PN08TB223AR	TM5X5 B 22.00KOHM
R503,R533 R563	5142862295	RESISTOR,CARBON FILM	RD S B 1/4W 6.20KJ
R505,R535 R565	5142882395	RESISTOR,CARBON FILM	RD S B 1/4W 82.00KJ
R585	5142827295	RESISTOR,CARBON FILM	RD S B 1/4W 2.7K J
R586,R599	5142851295	RESISTOR,CARBON FILM	RD S B 1/4W 5.10KJ
R587	5142813395	RESISTOR,CARBON FILM	RD S B 1/4W 13.00KJ
R588	5142891195	RESISTOR,CARBON FILM	RD S B 1/4W 910.00 J
R589	5142813295	RESISTOR,CARBON FILM	RD S B 1/4W 1.30KJ
R594	5142822395	RESISTOR,CARBON FILM	RD S B 1/4W 22.00KJ
R595	5142810195	RESISTOR,CARBON FILM	RD S B 1/4W 100.00 J
R596	5142810395	RESISTOR,CARBON FILM	RD S B 1/4W 10.00KJ
R597	5142847395	RESISTOR,CARBON FILM	RD S B 1/4W 47.00KJ
R598	5142830295	RESISTOR,CARBON FILM	RD S B 1/4W 3.00KJ
R901,R931	5142882095	RESISTOR,CARBON FILM	RD S B 1/4W 82.00 J

CKT NO.	PART NO.	DESCRIPTION	SPEC
R961			
R902, R932	5142833095	RESISTOR, CARBON FILM	RD S B 1/4W 33.00 J
R962			
R903, R933	5142868195	RESISTOR, CARBON FILM	RD S B 1/4W 680.00 J
R963			
R904, R934	5142847195	RESISTOR, CARBON FILM	RD S B 1/4W 470.00 J
R964			
R905, R935	5111210190	RESISTOR, CARBON COMPOSITION	RC GE 1/2W 100.00 J
R965			
R906, R936	5130715200	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 5W 1.50KJ
R966			
R907, R937	5142822195	RESISTOR, CARBON FILM	RD S B 1/4W 220.00 J
R967			
R908, R938	5130310307	RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 1W 10.00KJ
R968			
R909, R939	5142810195	RESISTOR, CARBON FILM	RD S B 1/4W 100.00 J
R969			
R910, R940	5162171910	RESISTOR, VR PN08TB103AR	TM5X5 B 10.00KOHM M
R970			
R911, R941	5142843195	RESISTOR, CARBON FILM	RD S B 1/4W 430.00 J
R971			
R912, R942	5142843095	RESISTOR, CARBON FILM	RD S B 1/4W 43.00 J
R972			
R991	511123490	RESISTOR, CARBON FILM	1/2W 3300HM
R992	5111233490	RESISTOR, CARBON COMPOSITION	RC GE 1/2W 330.00KJ

MISCELLANEOUS

S901, S931 5202201991 SPARK GAP MITSUBISHI DC200V 1PF DSP-201M-C04F
S961, S991

ASSEMBLY, PCB-POWER, PWB-1345A

CAPACITOR

C803	5215310101	CAPACITOR, ELECTROLYTIC (105C)	CE04W	16V	100.00MFM
C804	5215347101	CAPACITOR, ELECTROLYTIC (105C)	CE04W	16V	470.00MFM
C805, C820	5215310101	CAPACITOR, ELECTROLYTIC (105C)	CE04W	16V	100.00MFM
C806	5247047191	CAPACITOR, CERAMIC CK45	SL DC	50V	470.00PFJ
C807	5231322291	CAPACITOR, CERAMIC CK45	B DC	50V	2200.00PFK
C808	5221182291	CAPACITOR, POLYESTER	CQ93M	50V	8200.00PFJ
C810	5271115401	CAPACITOR, METALLIZED P.E P=10	CF93M	100V	0.15MFJ
C811	5272110401	CAPACITOR, METALLIZED P.E P=10	CF93M	250V	0.10MFJ
C813	5221110391	CAPACITOR, POLYESTER	CQ93M	50V	10000.00PFJ
C814	5223647301	CAPACITOR, POLYPROPYLENE P=15MM	CQ93T	630V	47000.00PFJ
C815	5234310201	CAPACITOR, CERAMIC CK45	B DC	2KV	1000.00PFK
C817, C818	5210308000	CAPACITOR, ELECTROLYTIC (105C)	CEL1W	250V	220.00UFM
C821, C840	5232310291	CAPACITOR, CERAMIC CK45	B DC	500V	1000.00PFK
C845					
C824, C825	5232347201	CAPACITOR, CERAMIC CK45	B DC	500V	4700.00PFK
C831, C835	5232333191	CAPACITOR, CERAMIC CK45	B DC	500V	330.00PFK
C850					
C832	5210403501	CAPACITOR, ELECTROLYTIC	CE04C	35V	1000.00UFM
C836	5215410212	CAPACITOR, ELECTROLYTIC (105C)	CE04W	25V	1000.00MFM
C841	5216210101	CAPACITOR, ELECTROLYTIC (105C)	CE04W	160V	100.00UFM
C843	5214410012	CAPACITOR, ELECTROLYTIC	CE04W	250V	10.00UFM
C846	5216347001	CAPACITOR, ELECTROLYTIC (105C)	CE04W	200V	47.00UFM
C851	5215347101	CAPACITOR, ELECTROLYTIC (105C)	CE04W	16V	470.00MFM

CKT NO.	PART NO.	DESCRIPTION	SPEC
RESISTOR			
R801	RA	5101106800 POWER THERMISTOR	SEMITEC 5D-11 50HM B=3250
R801	RB	5101106201 SURGE-GARD	SG-220
R802		5150107301 RESISTOR, CEMENT (H<40MM)	RW 98 10W 5.00KJST
R803		5101106900 POSISTOR, PTH451C02BG200N270	C 20.00 N 200V MURATA
R804		5142812995 RESISTOR, CARBOW FILM	RD S B 1/4W 1.20 J
R805		5140039490 RESISTOR, CARBON FILM	RD S B 1W 390.00KJ
R806		5142810195 RESISTOR, CARBON FILM	RD S B 1/4W 100.00 J
R807		5142812295 RESISTOR, CARBON FILM	RD S B 1/4W 1.20KJ
R808		5140012490 RESISTOR, CARBON FILM	RD S B 1W 120.00KJ
R810		5140015490 RESISTOR, CARBON FILM	RD S B 1W 150.00KJ
R811		5142827095 RESISTOR, CARBON FILM	RD S B 1/4W 27.00 J
R812, R814		5142882295 RESISTOR, CARBON FILM	RD S B 1/4W 8.20KJ
R820			
R813		5162101920 RESISTOR, VR RV08FB103AR	1/4 W B 10 KOHM
R815		5150107302 RESISTOR, CEMENT (H<40MM)	RW 98 10W 45.00KJST
R816		5130410107 RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 2W 100.00 J
R817	RA	5130315404 RESISTOR, METAL OXIDE FILM, MINI	RS 08 B 1W 150.00KJ
R817	RB	5142515401 RESISTOR, CARBON FILM	RD S B 1W 150.00KJ
R818		5142818295 RESISTOR, CARBON FILM	RD S B 1/4W 1.80KJ
R819		5142824195 RESISTOR, CARBON FILM	RD S B 1/4W 240.00 J
R821, R822		5142822495 RESISTOR, CARBON FILM	RD S B 1/4W 220.00KJ
R823		5142801095 RESISTOR, CARBON FILM	RD S B 1/4W 1.00 J

SEMICONDUCTORS

D801	RA	6611024700 DIODE RECTIFIER BRIDGE	GIT KBL06 400V 4A
D801	RB	6611024701 DIODE RECTIFIER	REC RS405L 600V 4A
D805	RA	6611012741 DIODE RECTIFIER	HIT V19G 600V 0.2A T=52MM
D805	RB	6613002246 DIODE SWITCHING	GIT RGP10J 600V 1A F T=52MM
D806, D807		6613002242 DIODE SWITCHING	HIT V09E 400V 1A F T=52MM
D808, D811	RA		
D806, D807		6613002245 DIODE SWITCHING	GIT RGP10G 400V 1A F T=52MM
D808, D811	RB		
D810		6611012844 DIODE RECTIFIER	FAG BA159 1000V 1A TAPING 52MM
D812	RA	6611012741 DIODE RECTIFIER	HIT V19G 600V 0.2A T=52MM
D812	RB	6613002246 DIODE SWITCHING	GIT RGP10J 600V 1A F T=52MM
D820, D821		6611013006 DIODE RECTIFIER	GIT RGP15G 400V 1.5A
D824, D826			
D822, D823		6611013043 DIODE RECTIFIER	GIT RGP15J 600V 1.5A T=52MM
D827		6611013006 DIODE RECTIFIER	GIT RGP15G 400V 1.5A
IC801	RA	6644058800 IC LINEAR	SIE TDA4601
IC801	RB	6644058801 IC LINEAR	SGS TDA-4601
Q801		6621030800 TR NPN HF	SYO 2SC3461-L
Q802		6621019101 TR NPN HF	TSB 2SC2482
Q803	RA	6631001800 SCR	CW-12B 100V 0.3A
Q803	RE	6631001731 THYRISTOR SCR	TSE SF0R1B42 (IG1) TAPING

COILS AND TRANSFORMERS

L801		5061106600 CORE, BEAD INDUCTOR	TOKIN B01-AT1F
L802		5062102400 COIL, CHOKE	TRF-9229
L833, L837		5062217000 COIL, LOSS TSH-170	L=140UH
L842, L847			
T801		5061346400 SWITCHING TRANSFORMER	TPW-464, UL/CSA/TUV

CKT NO.	PART NO.	DESCRIPTION	SPEC
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ASSEMBLY,PWB-LINE FILTER, PWB-1428

CAPACITOR

C827,C828	5270101501	CAPACITOR,METALLIZED P.EP=27.5	CF99MAC250V 0.47MFM
C829,C830	5230101800	CAPACITOR,CERAMIC CK45 (KC)	F AC 400V 2200.00PFM

RESISTOR

R826	5142830495	RESISTOR,CARBON FILM	RD S B 1/4W 300.00KJ
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COILS AND TRANSFORMERS

L804	5061102201	LINE FILTER	TLF-011 27MH
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MISCELLANEOUS

F801	5054410501	FUSE FUS-152 UL/CSA	250V 2.5 A TL
POWER CORD			
P807	5097605900	POWER CORD	

ASSEMBLY,PCB-LED, PWB-1338-002

RESISTOR

R756	5145810290	RESISTOR,CARBON FILM	RD U B 1/4W 1.00KJ
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MISCELLANEOUS

G701	6618014200	DIODE LED	SE6322AK/LT2022E-11 GREN 2X5MM
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ASSEMBLY,VERTICAL SIZE CTL, PWB-1627

CAPACITOR

C321	5275122491	CAPACITOR,METALLIZED P.E	CF93M 63V 0.22MFM
C322	5213347991	CAPACITOR,ELECTROLYTIC	CE04W 16V 4.70UFM

RESISTOR

R344	5130315104	RESISTOR,METAL OXIDE FILM,MINI	RS 08 B 1W 150.00 J
R345	5142816495	RESISTOR,CARBON FILM	RD S B 1/4W 160.00KJ
R346	5142856395	RESISTOR,CARBON FILM	RD S B 1/4W 56.00KJ
R347	5142830395	RESISTOR,CARBON FILM	RD S B 1/4W 30.00KJ
R348	5142822195	RESISTOR,CARBON FILM	RD S B 1/4W 220.00 J
R349	5142815495	RESISTOR,CARBON FILM	RD S B 1/4W 150.00KJ
R350	5142810295	RESISTOR,CARBON FILM	RD S B 1/4W 1.00KJ
R351	5142820295	RESISTOR,CARBON FILM	RD S B 1/4W 2.00KJ

SEMICONDUCTORS

D311	6615012234	DIODE ZENER	TSB 05AZ5.1Y 4.81V-5.17V T=26MM
D312	6613001730	DIODE SWITCHING	HIT IS2076 30V 150MA T=26MM
Q304	6646007018	IC,DIGITAL	HIT 74LS123P
Q305	6621003230	TR NPN HF	HIT 2SC458-C TAPING

CKT NO.	PART NO.	DESCRIPTION	SPEC
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ASSEMBLY, CONTROL (VR), CM1498X-U01

RESISTOR

R444	5160806226	VR, RV16NB503EKER-CC	1/10W B 50.00KOHM
R590	5161161714	RESISTOR, VARIABLE RV16NB502EK	1/5 W B 5 KOHM

MISCELLANEOUS

S801	5054519600	SWITCH SEE-SAW AC250V TV5	FD SDDTA3007U-TT/ALPS SDDTA3
		ASSEMBLY, SIGNAL CABLE	

P505	5057404226	ASSEM. CABLE	
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ASSEMBLY, CRT, CM1498X-U02

COILS AND TRANSFORMERS

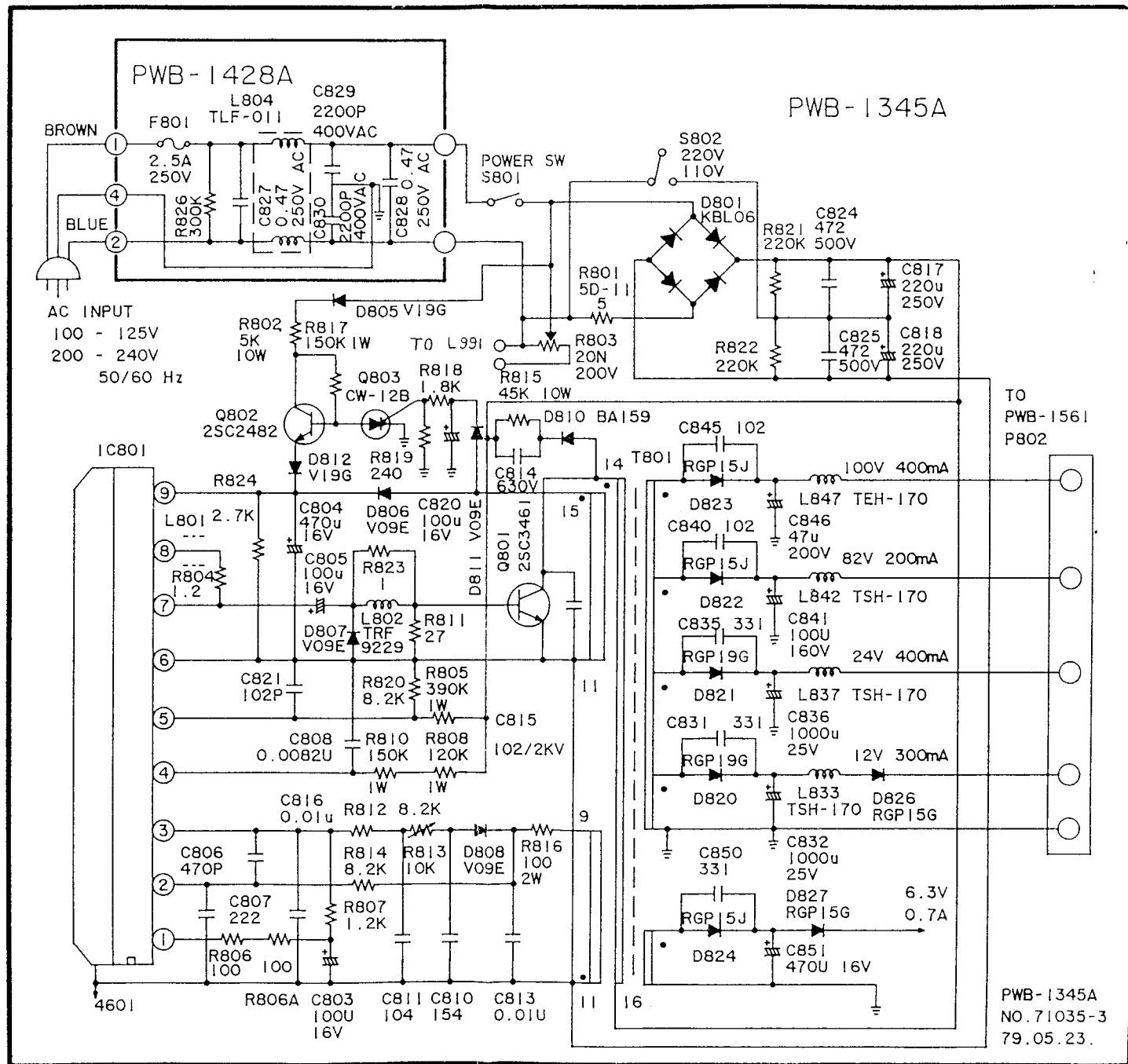
L991	5060117901	COIL, DEGAUSSING	
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TSB-179A R=25 OHM L=320MM

MISCELLANEOUS

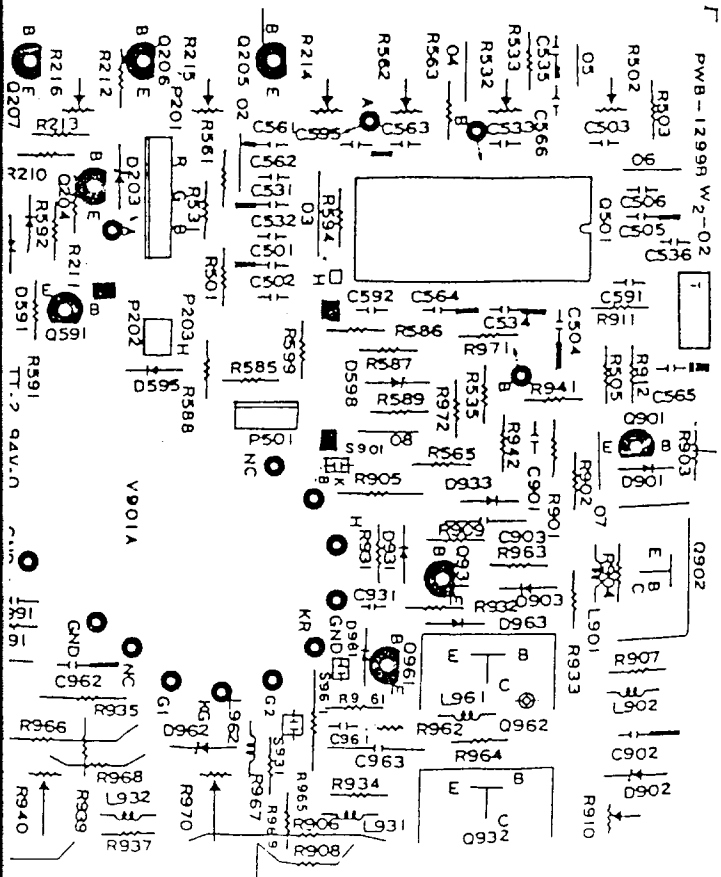
V901	RA	5051224306	CCRT/DY (CM-1496X)	M34JOU30X95
V901	RB	5051225900	CCRT/DY (CM-1496X)	E8034B22-TC13ETH
V901	RA	5051224304	CCRT/DY (CM-1498X)	M34KFT03XE14
V901	RB	5051224305	CCRT/DY (CM-1498X)	E8032B22-TC100THT

 * 10. CIRCUIT DIAGRAM *



[illegible][illegible]

IVE BOARD LAYOUT



CAUTION: F801T4A 250V
FOR CONTINUED PROTECTION

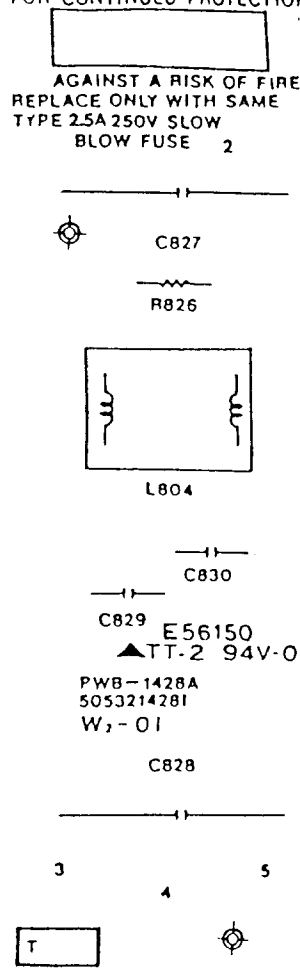


Fig 9-5 VERTICAL SIZE CTL CIRCUIT
BOARD LAYOUT

9.CIRCUIT BOARD LAYOUTS *

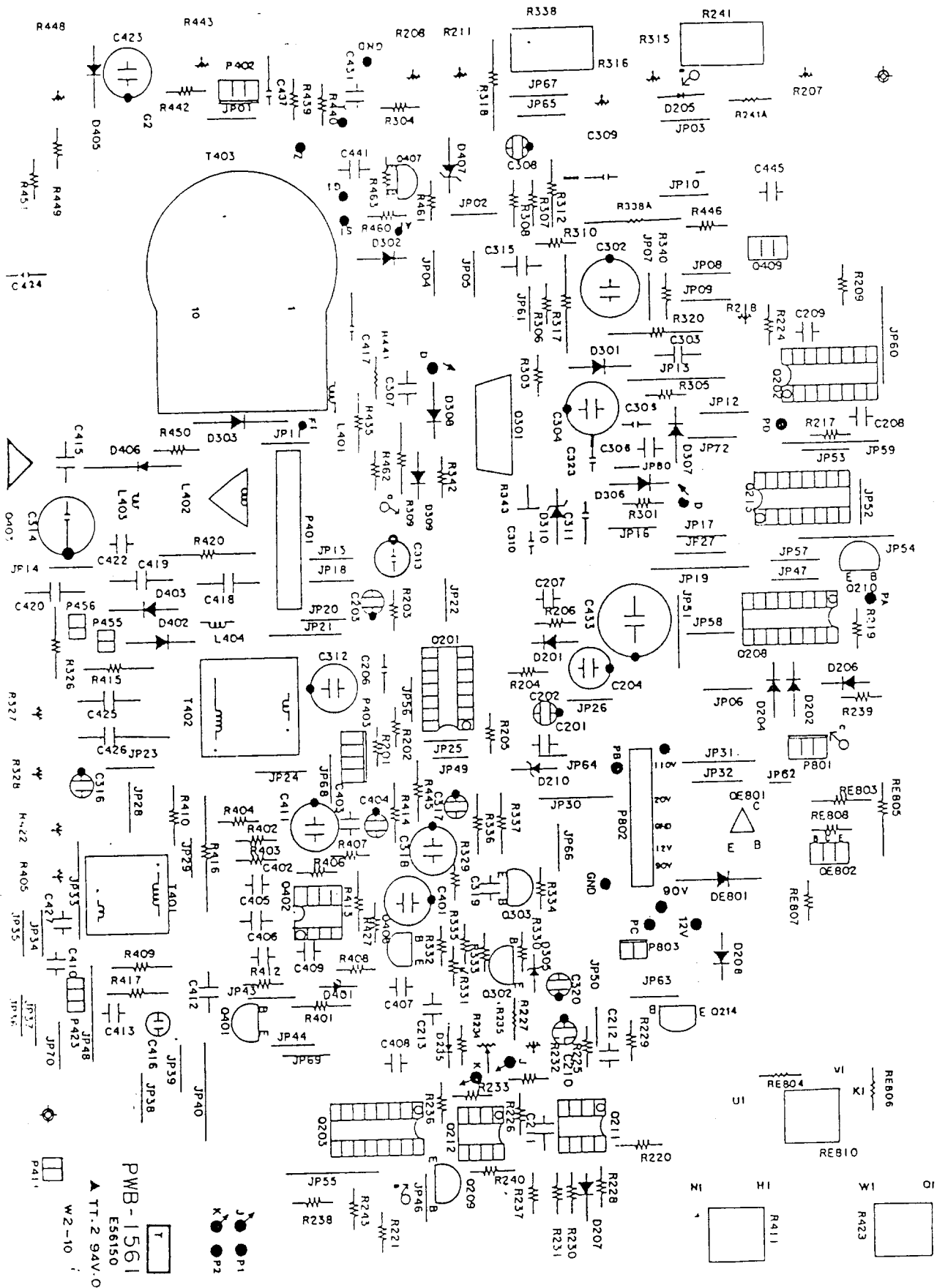
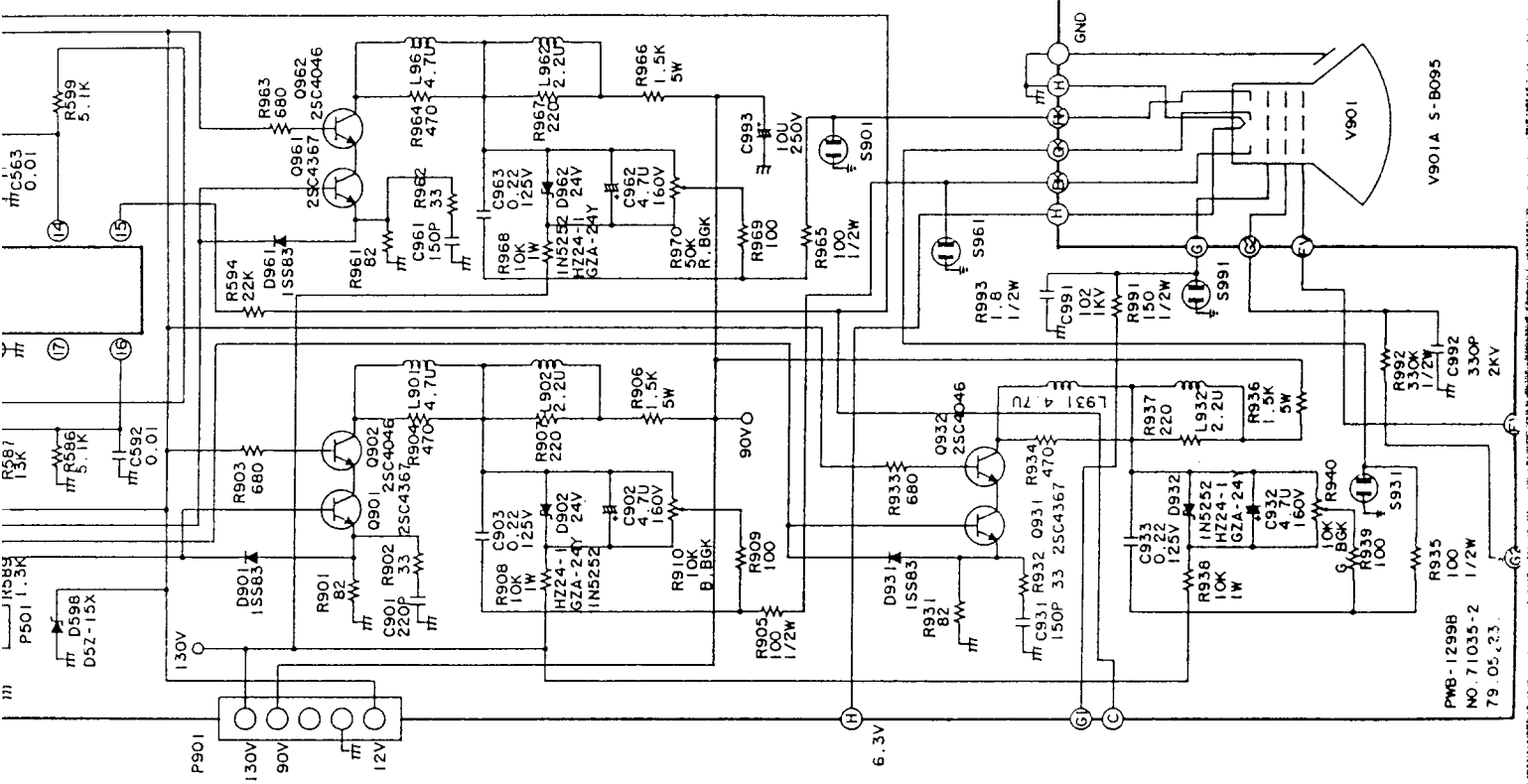


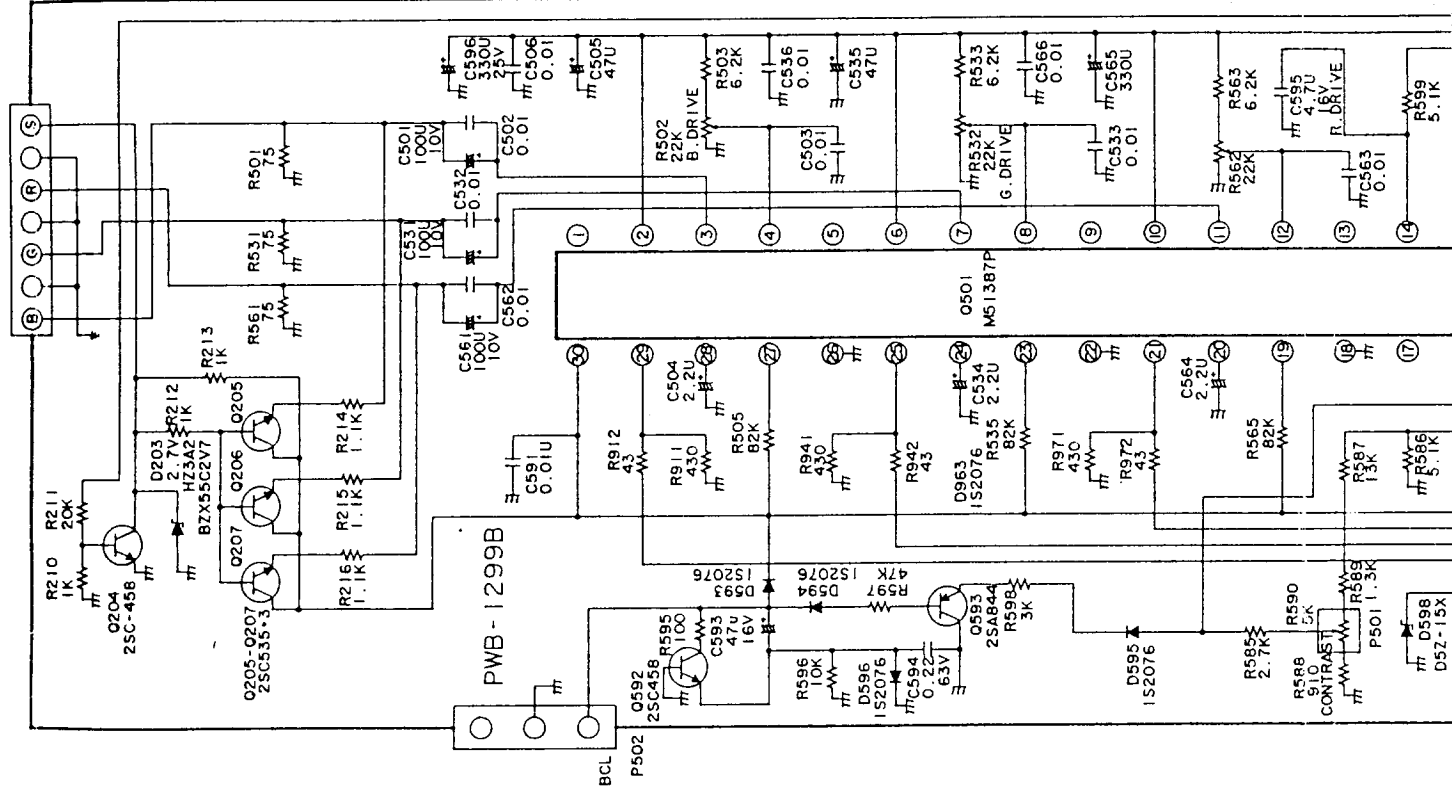
Fig 9-3

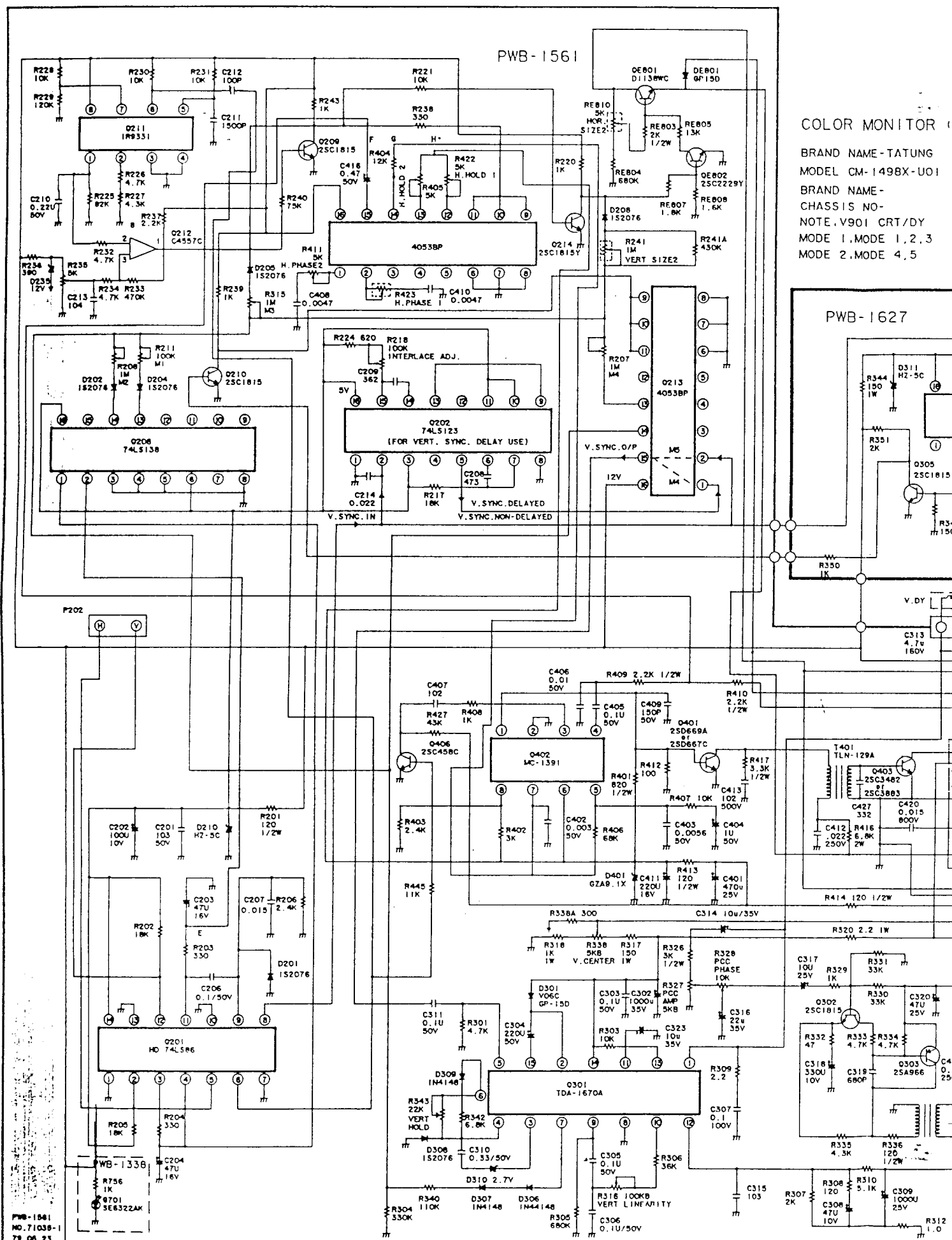
Fig 9-1 MAIN CIRCUIT BOARD LAYOUT



V901A S-B095

PWB-1299B
 NO. 71035-2
 79.05.23





COLOR MONITOR (

BRAND NAME-TATUNG

MODEL CM-1498X-UOI

BRAND NAME -

CHASSIS NO-

NOTE.V901 CRT/DY
MODE 1 MODE 1 0 3

MODE 1, MODE 1, 2, 3
MODE 3, MODE 4, 5

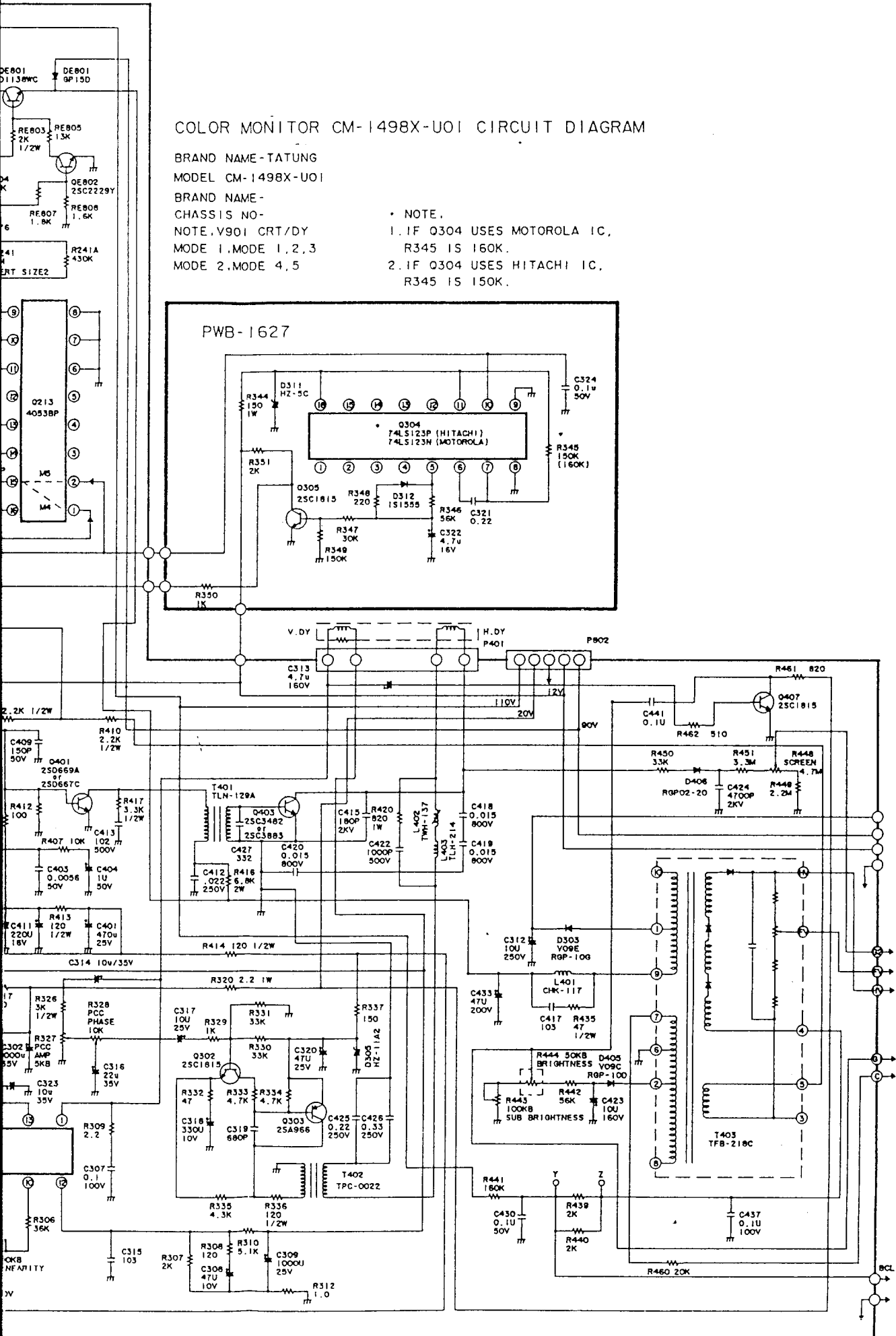
MODE 2:MODE 4.5

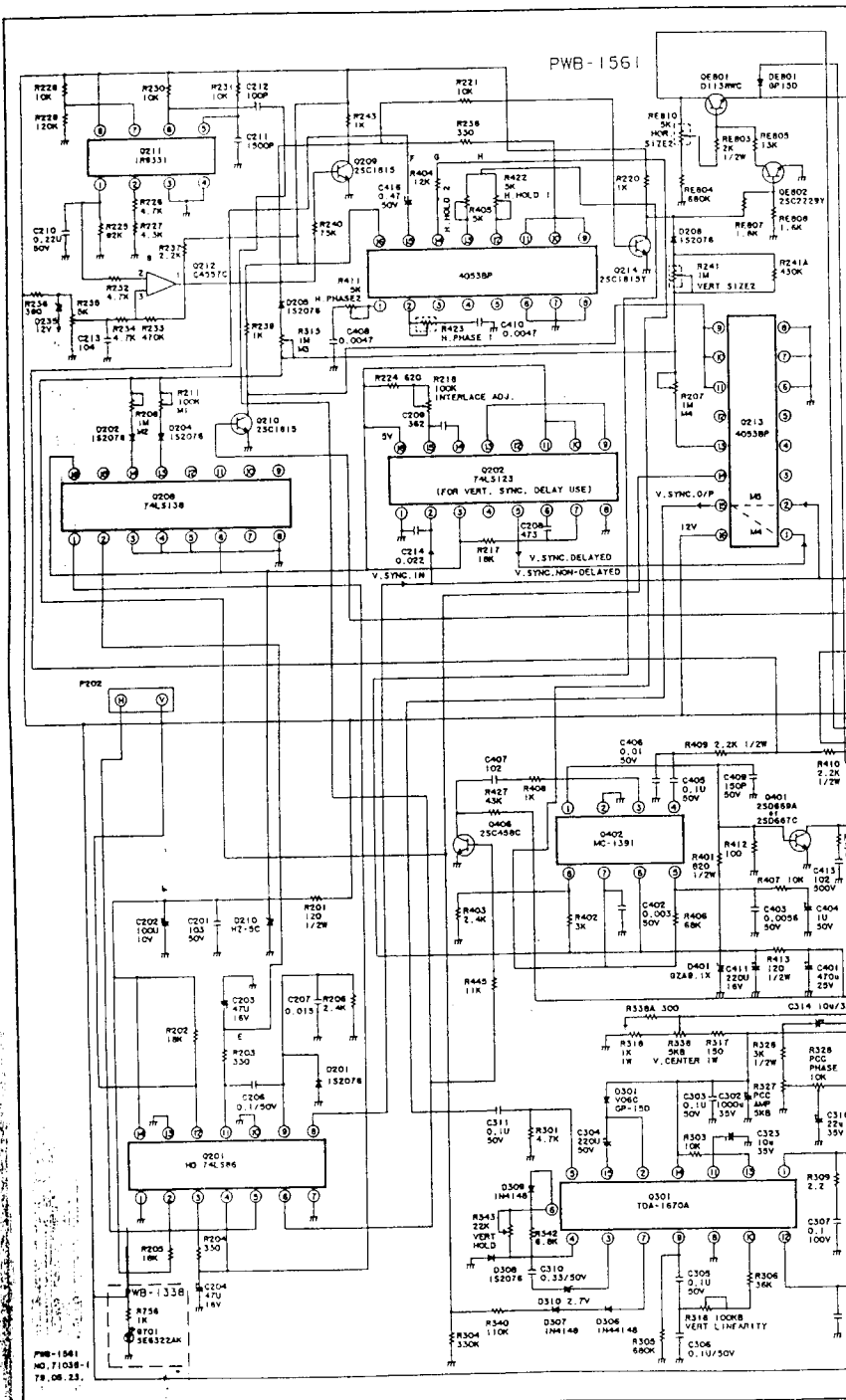
PWB-1627

COLOR MONITOR CM-1498X-U01 CIRCUIT DIAGRAM

BRAND NAME-TATUNG
 MODEL CM-1498X-U01
 BRAND NAME-
 CHASSIS NO-
 NOTE.V901 CRT/DY
 MODE 1.MODE 1,2,3
 MODE 2.MODE 4,5

- * NOTE.
 1. IF Q304 USES MOTOROLA IC,
 R345 IS 160K.
 2. IF Q304 USES HITACHI IC,
 R345 IS 150K.





COLOR MONITOR CM-1498X-U01 CIRCUIT DIAGRAM

BRAND NAME-TATUNG
 MODEL CM-1498X-U01
 BRAND NAME-
 CHASSIS NO-
 NOTE.V901 CRT/DY
 MODE 1.MODE 1,2,3
 MODE 2.MODE 4,5

- * NOTE.
- 1. IF Q304 USES MOTOROLA IC, R345 IS 160K.
- 2. IF Q304 USES HITACHI IC, R345 IS 150K.

