147

NEC

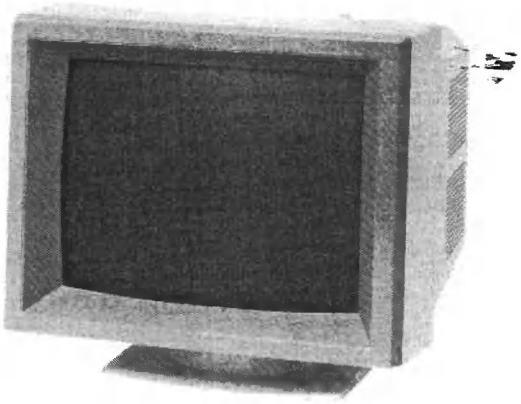
MODEL JC-1401P3A

330
4/16V

MULTISYNC COLOR MONITOR
SERVICE MANUAL

PART NO. 599910248

Better Service
Better Reputation
Better Profit



SPECIFICATIONS

A. Electrical Description

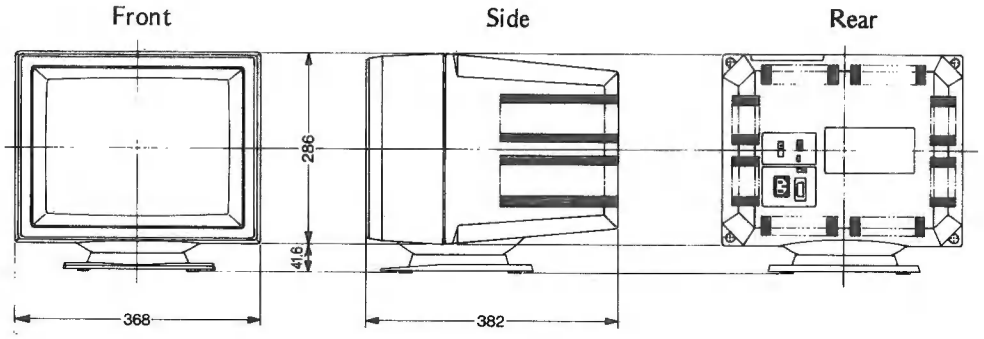
Picture Tube	370HYB22 13 Visual inches diagonal 90 degree deflection, 0.31 mm Trio dot pitch Dot type black matrix, Non-long persistence phosphor, Dark bulb, Direct etch
Input Signal	Video : TTL Level Positive : ANALOG 0.6Vp-p/75Ω Positive Sync. : Separate sync. TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative : Composite sync. TTL Level Positive/Negative : Composite sync. on Green Video sync. 0.3 Vp-p Negative (Video 0.6 Vp-p Positive)
Display Colors	TTL Input : 8/16/64 colors Analog Input : Unlimited colors
Synchronization	Horizontal : 15.5 KHz to 35 KHz (Automatically) Vertical : 56 Hz to 62 Hz (Manual), Non-interlace
Resolution	Horizontal : 800 dots Vertical : 560 lines
Video Band Width	30 MHz
Active Display Area	Horizontal : 250mm Vertical : 180mm

Misconvergence	Less than 0.6mm		
Power Supply	AC 120V, 60 Hz		
Power Consumption	76 W		
Environmental Considerations	Operating	Temperature	0°C to +40°C
		Humidity	30% to 80%
	Storage	Temperature	−20°C to +60°C
		Humidity	10% to 90%

NOTE: The above specifications are subject to change without notice for further improvement.

B. Mechanical Description (See below diagrams)

1. Cabinet: Molded plastic cabinet with attachable tilt swivel base.
2. Dimensions: 368(W) x 327.6(H) x 382(D) mm
3. Weight: 15.2 kg



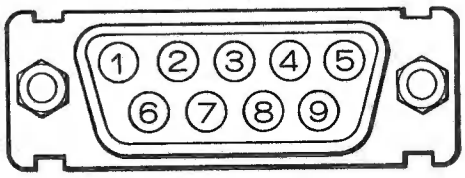
4. Controls

Rear Controls:	Power Switch
	Manual Switch
	Color Switch
	Text color Switch
	TTL/ANALOG Switch
Top Controls:	Brightness Control
	Contrast Control
	V. Size Control
	V. Position Control
	V. Hold Control
	H. Position Control
	Text Switch
	H. Width Switch

5. Input Signal Terminal: 9 Pin D-Sub Connector (female)
(See Page 2 for Pin Assignments)

PIN ASSIGNMENTS AND SIGNAL LEVELS

D-SUB Type 9P



PIN ASSIGNMENT OF IBM GRAPHICS ADAPTER

IBM ADAPTERS / PIN-ASSIGNMENT	COLOR GRAPHICS TTL 16 COLORS	ENHANCED GRAPHICS TTL 64/16 COLORS	PROFESSIONAL GRAPHICS ANALOG
1	GROUND	GROUND	* RED
2	GROUND	SECONDARY RED	* GREEN
3	RED	PRIMARY RED	* BLUE
4	GREEN	PRIMARY GREEN	COMPOSITE SYNC
5	BLUE	PRIMARY BLUE	MODE CONTROL
6	INTENSITY	SECONDARY GREEN /INTENSITY	RED GROUND
7	NON-CONNECTION	SECONDARY BLUE	GREEN GROUND
8	HORIZONTAL SYNC.	HORIZONTAL SYNC.	BLUE GROUND
9	VERTICAL SYNC.	VERTICAL SYNC.	GROUND

PIN ASSIGNMENT OF OTHER COMPUTERS

SIGNAL / PIN-ASSIGNMENT	TTL			ANALOG		
	8 COLORS	16 COLORS	64 COLORS	SEPARATE SYNC.	COMPOSITE SYNC.	SYNC. ON GREEN
1	GROUND			* RED		
2	——		SECONDARY RED	* GREEN		GREEN ◎ H/V SYNC
3	RED		PRIMARY RED	* BLUE		
4	GREEN		PRIMARY GREEN	H. SYNC.	H/V SYNC.	——
5	BLUE		PRIMARY BLUE	V. SYNC.	——	
6	——	INTENSITY	SECONDARY GREEN	GROUND		
7	——		SECONDARY BLUE			
8	H. SYNC./H/V SYNC.					
9	V. SYNC.					

"——" means GROUND or NON-CONNECTION

SIGNAL LEVEL

All signal levels, except for those listed below, are TTL.

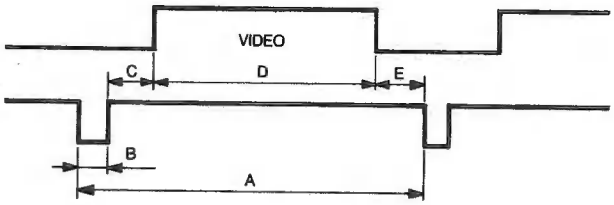
"*" means 0.6 Vp-p (VIDEO)

"◎" means 0.6 Vp-p (VIDEO), 0.3 Vp-p (SYNC)

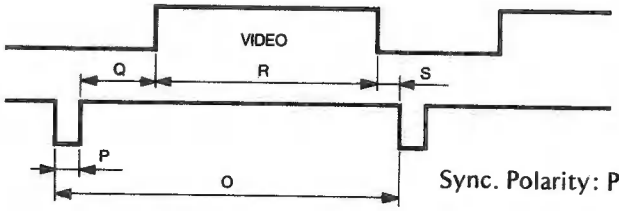
TIMING CHART

SEPARATE SYNC.

HORIZONTAL



VERTICAL



Sync. Polarity: Positive/Negative

	f_H	EXAMPLE TIMING			REMARKS
		15.75kHz	24.83kHz	30.1kHz	
Horizontal	$A_{\mu s}$	63.5	40.28	33.2	64.5 to 28.6μs (15.5 to 35kHz)
	$B_{\mu s}$	5.08	3.04	3.43	2 to 10μs
	$C_{\mu s}$	7.62	2.80	2.86	2 to 8μs
	$D_{\mu s}$	46.3	32.4	25.76	20 to 48μs *
	$E_{\mu s}$	4.4	2.04	1.14	1 to 6μs and E/(B + C) = 0.1 to 0.45 Range 1: E/(B+C) = 0.3 to 0.5
Vertical	O_{mS}	16.6	17.72	17.66	16.1 to 17.8 mS (56 to 62Hz)
	P_{mS}	0.26	0.32	0.26	0.05 to 0.7 mS
	Q_{mS}	1.6	1.01	0.73	0.08 to 2.2 mS
	R_{mS}	13.84	16.11	16.6	12 to 17 mS and (O − R) = 0.8 to 4.0
	S_{mS}	0.9	0.28	0.066	0 to 1.6 mS and Q = [(O−R)−0.8]/2 ±0.2

Range 1: A = 64.5 to 50μs
Range 2: A = 50 to 37μs
Range 3: A = 37 to 28.6μs

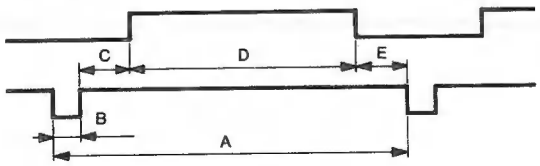
* Both SEPARATE SYNC. & COMPOSITE SYNC.
Range 1: D/A = 0.7~0.75
Range 2: D/A = 0.8~0.85
Range 3: D/A = 0.75~0.8

PRESET TIMING

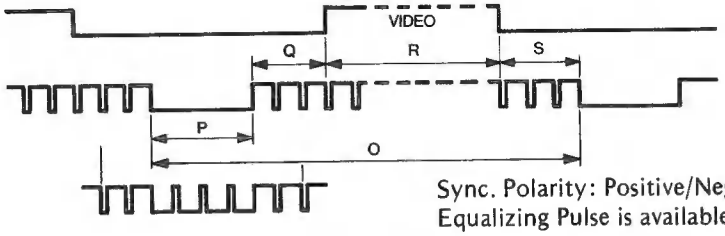
Horizontal	f_H	15.8kHz	22kHz	30.5kHz	Vertical	f_H	15.8kHz	22kHz	30.5kHz
	$A_{\mu s}$	63	45.5	33		O_{mS}	16.4	16.68	16.6
	$B_{\mu s}$	4.2	4.9	4.5		P_{mS}	0.075	0.6	0.07
	$C_{\mu s}$	7.2	1.6	2.8		Q_{mS}	1.525	0.08	2.12
	$D_{\mu s}$	45	39	25.6		R_{mS}	12.6	16	13.05
	$E_{\mu s}$	6.6	0	0.1		S_{mS}	2.2	0	1.36

COMPOSITE SYNC.

HORIZONTAL



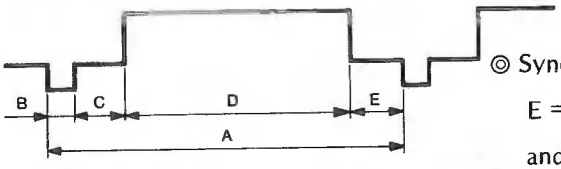
VERTICAL



Sync. Polarity: Positive/Negative
Equalizing Pulse is available.

Composite Sync. & Video (Sync. on Green)

HORIZONTAL

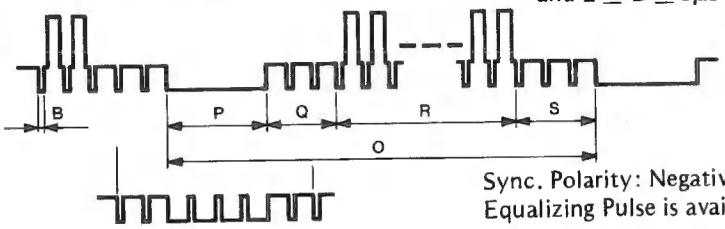


◎ Sync. on G:

$$E = \frac{A-(D+B) \pm (5-B)}{2}$$

and $2 \leq B \leq 5\mu S$

VERTICAL



Sync. Polarity: Negative
Equalizing Pulse is available.

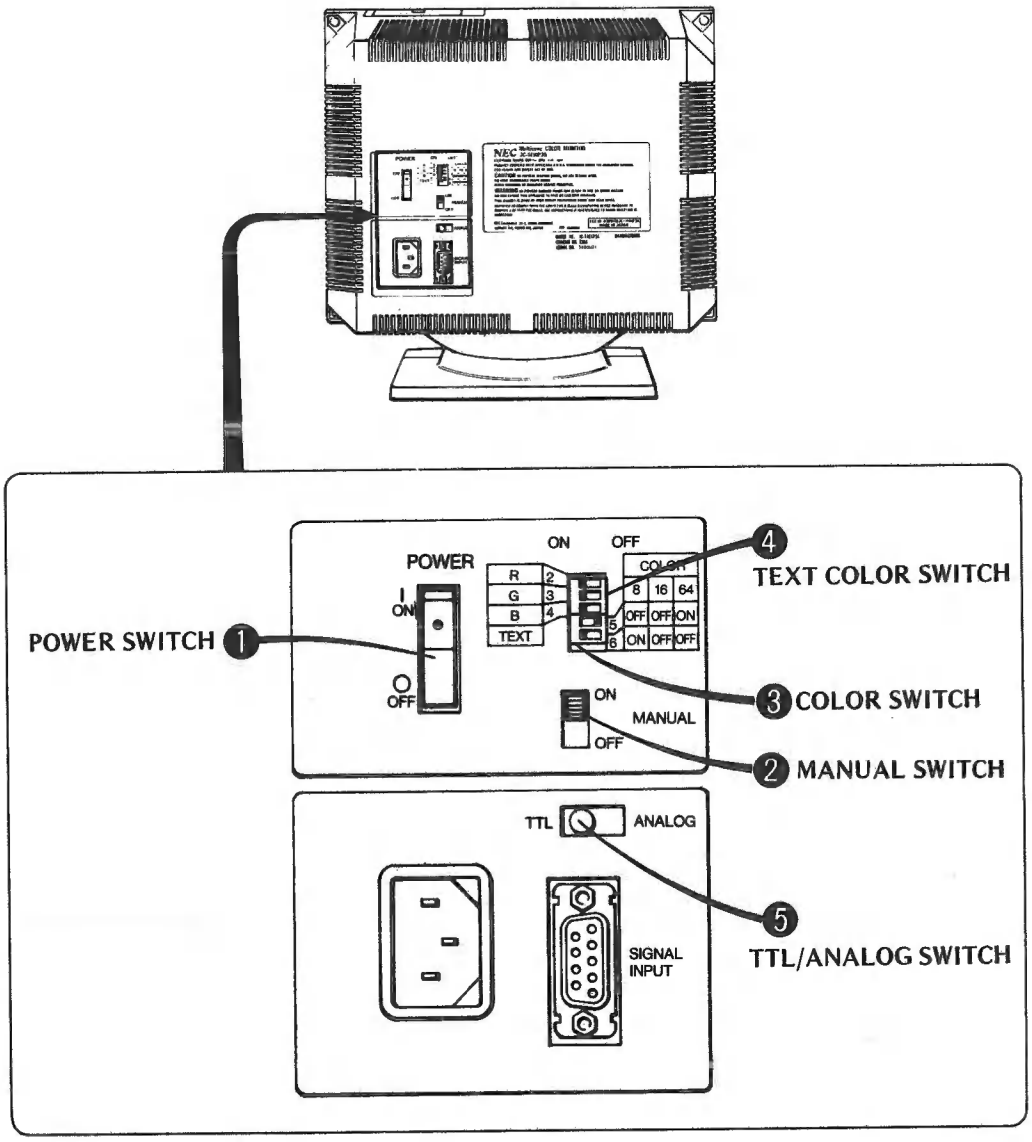
	f_H	EXAMPLE TIMING			REMARKS
		15.98kHz	25.5kHz	31.5kHz	
Horizontal	$A_{\mu s}$	62.6	39.2	31.75	64.5 to 28.6μs (15.5 to 35kHz)
	$B_{\mu s}$	5.41	2.51	2.06	2 to 10μs
	$C_{\mu s}$	8.0	3.30	3.62	3.3 to 8μs
	$D_{\mu s}$	44.7	32.14	24.52	20 to 48μs *
	$E_{\mu s}$	4.47	1.25	1.56	1 to 6μs and E/(B + C) = 0.1 to 0.45 Range 1: E/(B+C) = 0.3 to 0.5 ◎
Vertical	O_{mS}	16.35	16.67	16.67	16.1 to 17.8 mS (56 to 62Hz)
	P_{mS}	0.19	0.12	0.19	0.05 to 0.19 mS
	Q_{mS}	1.82	0.80	1.02	0.8 to 2.2 mS
	R_{mS}	13.47	15.63	15.24	12 to 17 mS and (O − R) = 0.8 to 4.0
	S_{mS}	0.87	0.12	0.22	0 to 1.6 mS and Q = [(O−R)−0.8]/2±0.2

GENERAL

MultiSync, The Inteligent Monitor, is a high resolution color monitor that automatically adjusts to graphics board scanning frequencies from 15.5 KHz to 35 KHz.
MultiSync gives IBM PC, PC/XT, and PC/AT users crisp text and vivid color graphics displays when used with any of the three IBM graphics adapters (the CGA, EGA or PGA)
MultiSync can also be used with other IBM compatible graphics adapters to provide IBM users with the widest range of color monitor compatibility and capability available in the market place.

FEATURES

- MultiSync automatically scans all frequencies between 15.5 KHz and 35 KHz.
- MultiSync is compatible with the IBM PC, PC/XT, PC/AT and look-alikes.
- MultiSync is compatible with the IBM Professional Graphics Adapter, the IBM Enhanced Graphics Adapter, the IBM Color Graphics Adapter and other IBM compatible graphics adapters.
- MultiSync's wide compatibility makes it possible to upgrade boards or software without purchasing a new monitor.
- MultiSync has a maximum horizontal resolution of 800 dots and a maximum vertical resolution of 560 lines for superior clarity of display.
- MultiSync offers both TTL and ANALOG signal inputs, and in the ANALOG mode can display an unlimited palette of colors depending on the graphics board and software being used.
- MultiSync features a TEXT SWITCH with a choice of seven colors (red, blue, green, cyan, yellow, white and magenta) displaying word processing, spread sheets, databases or other software in crisp alphanumeric text on a dark-bulb black background.
- MultiSync has a 14 inch diagonal display and a large, 13 inch viewing area.



1 POWER SWITCH

Used to turn the power ON or OFF. When the power is ON, the power indicator is lit.

2 MANUAL SWITCH

This switch selects either the IBM mode when OFF or the manual mode when ON.

When this switch is OFF, MultiSync automatically works in the IBM mode and adjusts itself to the scanning frequency, resolution and color requirements of the IBM compatible graphics adapter being used.

When this switch is ON, the user must manually select the number of colors (8/16/64) needed by the graphics adapter being used with the COLOR SWITCH (see No. 3 below). Refer to instructions accompanying the graphics adapter being used for information on how many colors the adapter can display.

❸ COLOR SWITCH

The three color configurations (8/16/64 colors) necessary when using non-IBM compatible graphics adapters can be set using No. 5 and 6 of the dip switches as shown below. Refer to instructions accompanying the graphics adapter being used for information on how many colors the adapter can display.

COLOR MODE	DIP SWITCH	
	No. 5	No. 6
8 colors	OFF	ON
16 colors	OFF	OFF
64 colors	ON	OFF
UNUSED	ON	ON

NOTE

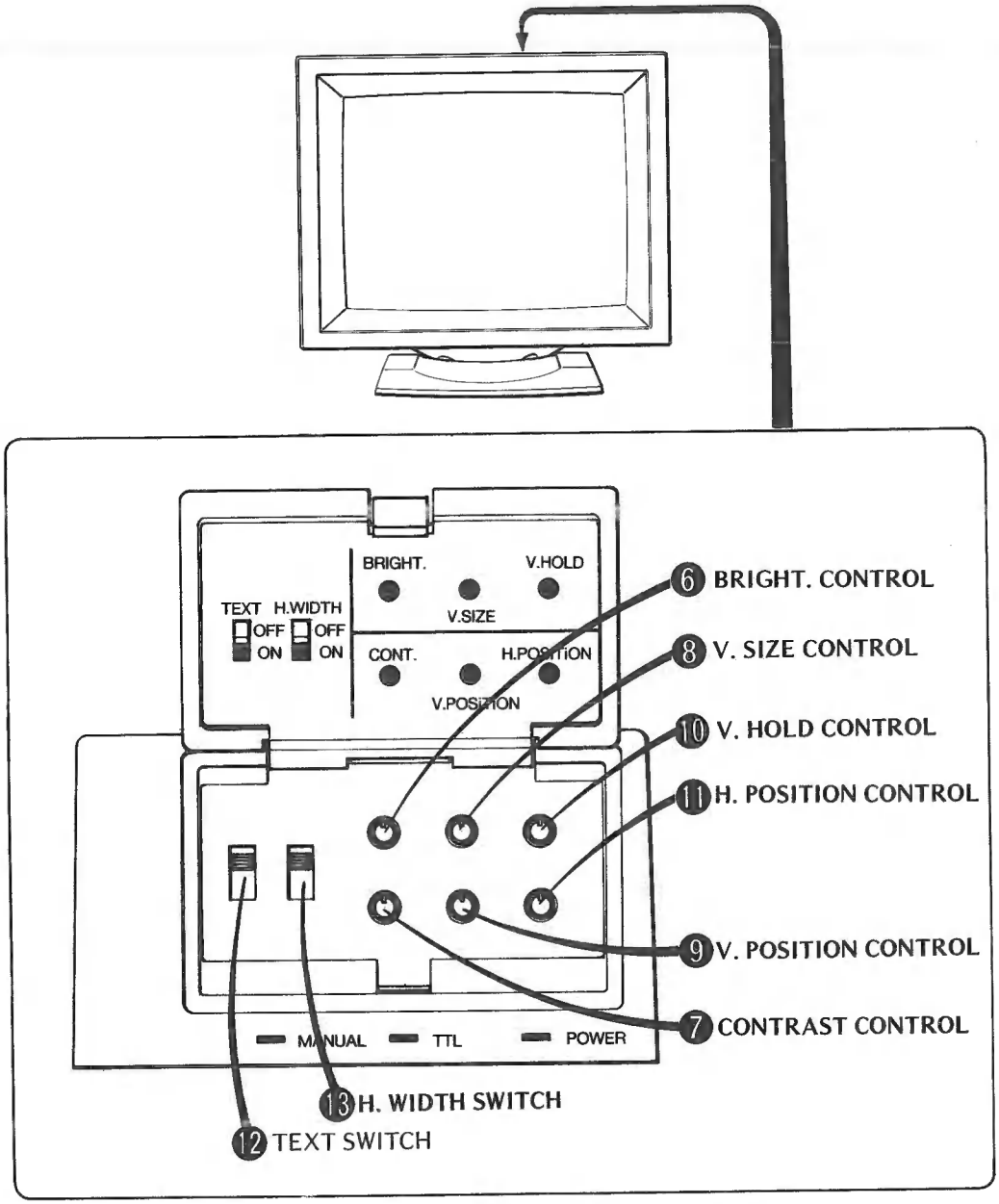
These switches should be set correctly in relation to the input signal of the graphics adapter being used. Refer to instructions accompanying the graphics adapter for information on the input signal and refer to No.❺below.

❹ TEXT COLOR SWITCH

Refer to No.⓬ TEXT SWITCH for full information on using the TEXT SWITCH.

❺ TTL/ANALOG SWITCH

Used to select an input video signal – either TTL or ANALOG – of the graphics adapter. It is important to determine whether the input signal of the graphics adapter being used is ANALOG or TTL prior to connecting the adapter with your personal computer. Refer to instructions accompanying the graphics adapter for information on the input signal.



6 BRIGHT. CONTROL

Used to adjust the picture brightness of the screen.

7 CONTRAST CONTROL

Adjusts the display to the contrast preferred by the user.

⑧ V. SIZE CONTROL

Turn this knob for the proper vertical size of the display. Turn the knob clockwise for a larger display; turn it counterclockwise for a smaller display.

⑨ V. POSITION CONTROL

Turn this knob for the proper vertical position of the display. Turn the knob clockwise for a lower display position; turn it counterclockwise for a higher display position.

⑩ V. HOLD CONTROL

Adjusts the vertical stability of the display.

⑪ H. POSITION CONTROL

Turn this knob for the proper horizontal position of the display. Turn the knob clockwise to reposition display to the right; turn it counterclockwise to reposition to the left.

⑫ TEXT SWITCH

This switch controls the text mode of MultiSync.

When it is ON, the text of the display will appear in one color selected by the TEXT COLOR SWITCH (No. 2, 3 and 4 of the dip switch on the rear of MultiSync), regardless of the colors of the software program being used.

When it is OFF, the color of the software program being used will again be displayed.

The diagram below of the dip switches shows how to display text in your choice of seven colors.

TEXT COLOR	DIP SWITCH		
	2 R	3 G	4 B
RED	ON	OFF	OFF
GREEN	OFF	ON	OFF
BLUE	OFF	OFF	ON
YELLOW	ON	ON	OFF
CYAN	OFF	ON	ON
MAGENTA	ON	OFF	ON
WHITE	ON	ON	ON

NOTE

The text switch works only in the TTL mode.

⑬ H. WIDTH SWITCH

Adjust this switch for the horizontal size of display preferred. When this switch is ON, the width of the display size changes.

NOTE

When the horizontal scanning frequency is between 15 and 20 kHz, H. WIDTH cannot be adjusted.

THE METHOD FOR MOUNTING AND REMOVING THE TILT SWIVEL BASE

1

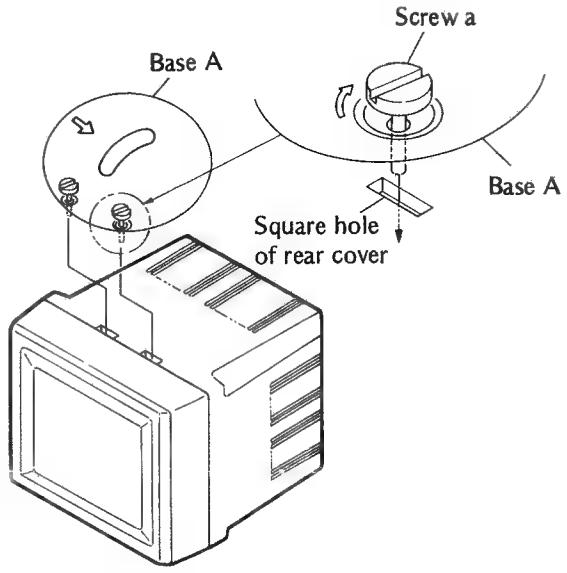


Fig. 1

1) Put the screw "a" into the round hole in the base "A".
2) Screw the base to the display set with flat type screw driver as per Fig. 1.

2

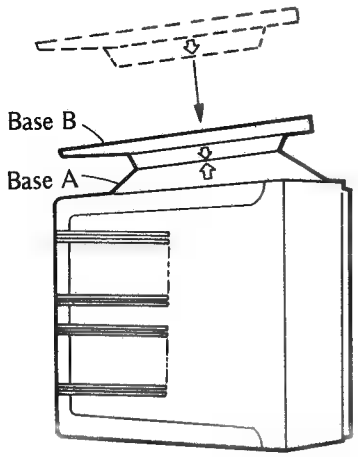


Fig. 2

1. Prace the base "B" to the base "A" as per Fig. 2. ("⇧" on the base "A" and "B".)
2. Turn the base "B" 180° so that the base "B" can not be unfastened.
4. To remove the swivel base, reverse the mounting procedure.

3

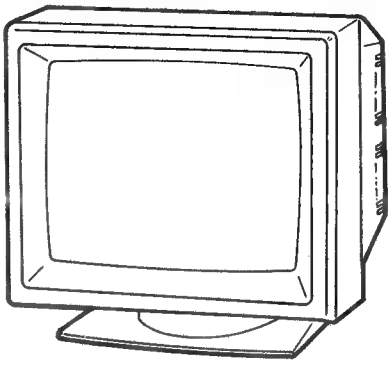


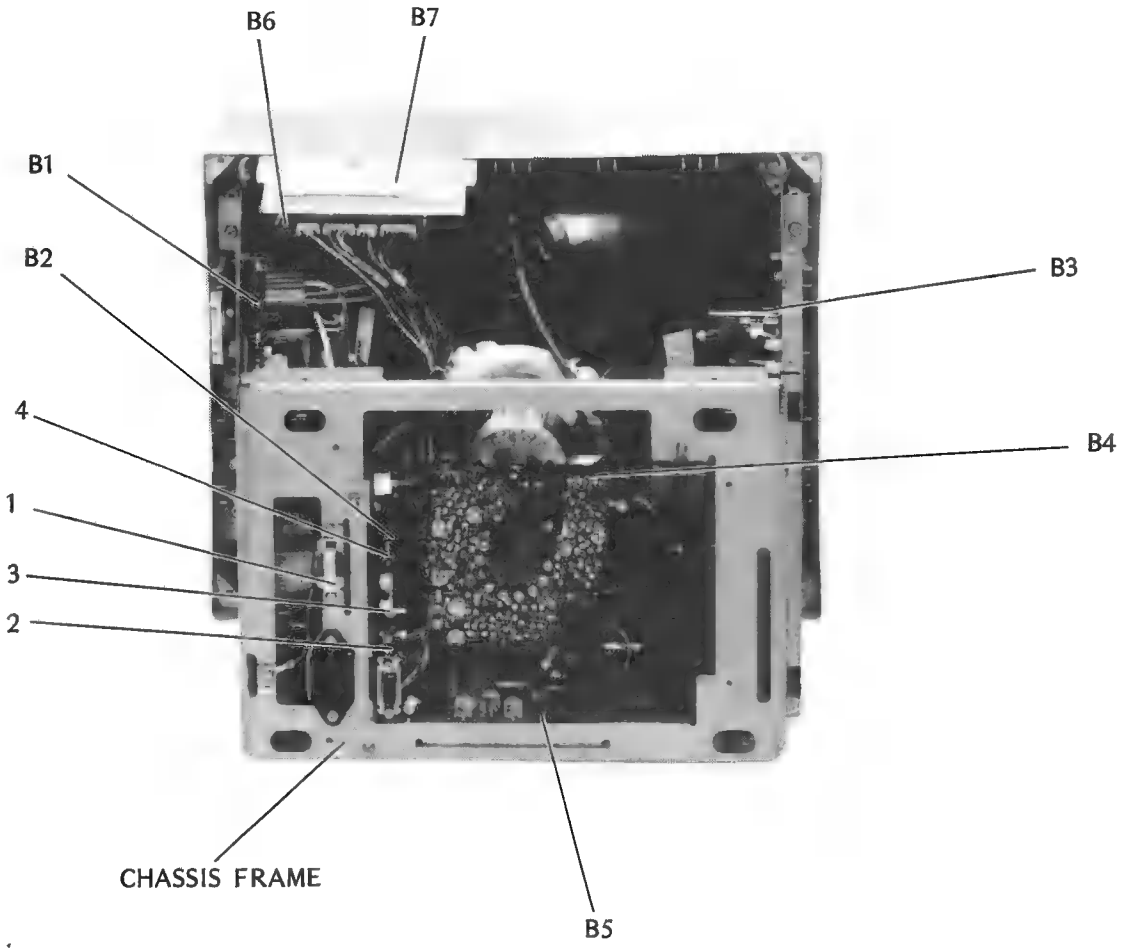
Fig. 3

Stand the display correctly so the JC-1401P3A name on the base "B" can be seen from the front.

(NOTE) When turning the displag in any direction, do not apply any sudden pressure.

PART LOCATIONS

BOARD LAYOUT



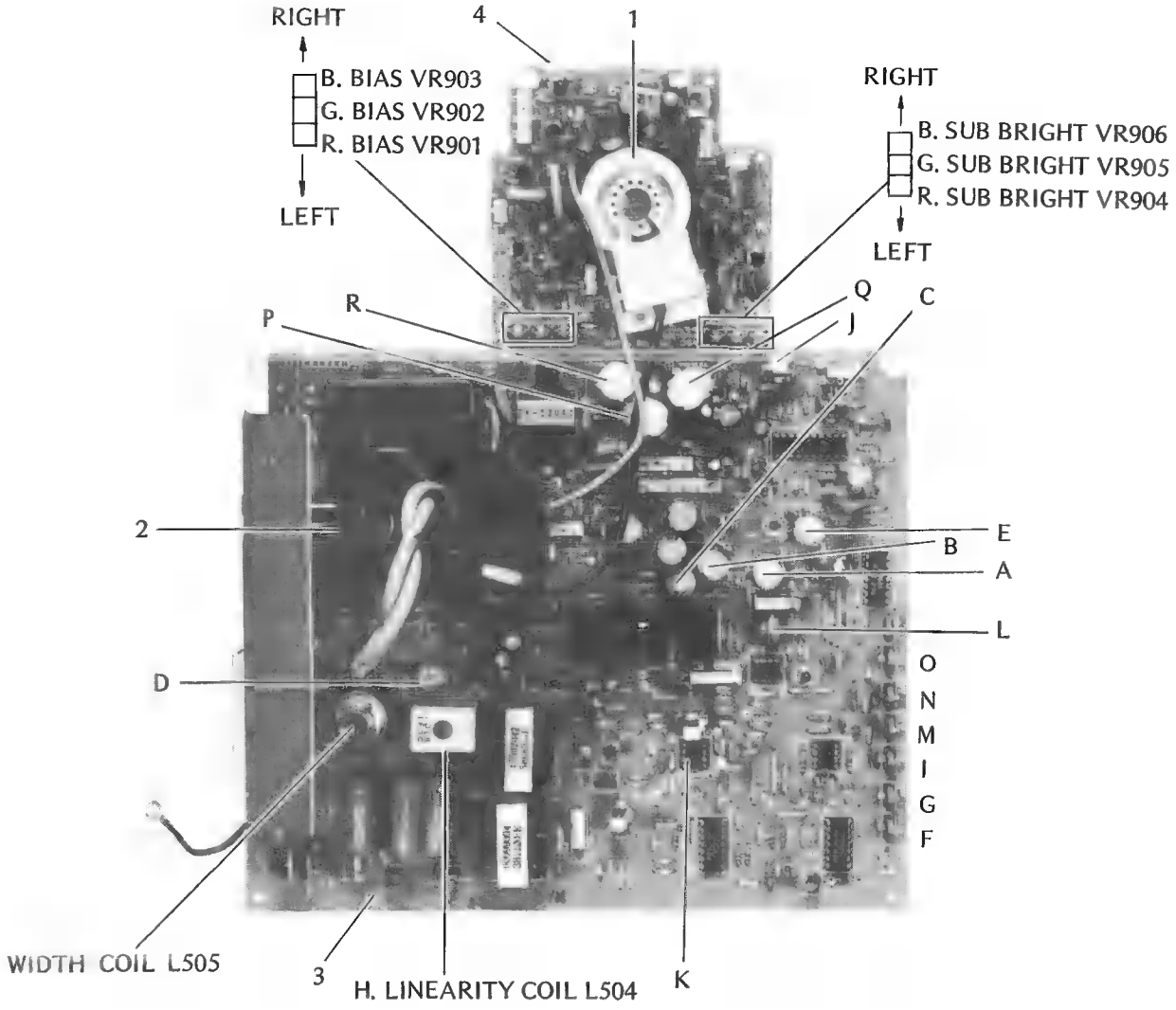
BOARDS

B1	SWITCHING REGULATOR POWER SUPPLY BOARD	PWE 107
B2	INTERFACE BOARD	PWE 110
B3	VIDEO BOARD	PWE 122
B4	CRT BOARD	PWE 123
B5	DEFLECTION BOARD	PWE 105
B6	CONTROL BOARD	PWE 125A
B7	LED BOARD	PWE 125B

USER CONTROLS

1	POWER SWITCH
2	TTL/ANALOG SWITCH
3	MANUAL SWITCH
4	TEXT COLOR SWITCH

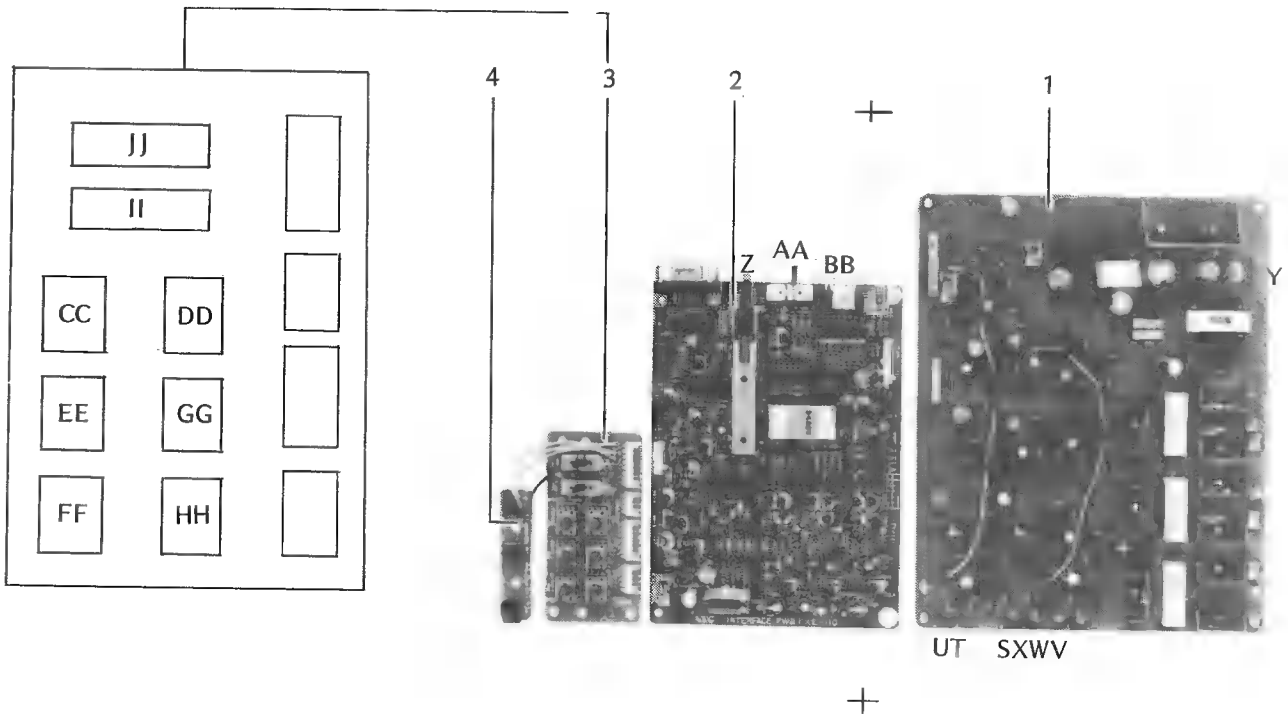
1	CRT SOCKET	
2	FLYBACK TRANSFORMER	
3	DEFLECTION BOARD	PWE 105
4	CRT BOARD	PWE 123



ADJUSTMENT CONTROLS

A	V. LINEARITY (2) (VR401)	K	+16V ADJUST (VR551)
B	V. LINEARITY (1) (VR402)	L	F.V ADJUST (VR552)
C	SUB. HEIGHT (1) (VR403)	M	SUB. H CENTER (2) (VR553)
D	SIZE PIN-CUSION (VR404)	N	SUB. H CENTER (3) (VR554)
E	V. BIAS (VR405)	O	H. HOLD (2) (VR555)
F	V. MODE (VR451)	P	H. V. ADJUST (VR2001)
G	SUB. HEIGHT (2) (VR452)	Q	H. V. PROTECTER (1) (VR2002)
I	SUB. H. CENTER (1) (VR501)	R	H. V. PROTECTER (2) (VR2003)
J	H. HOLD (1) (VR502)		

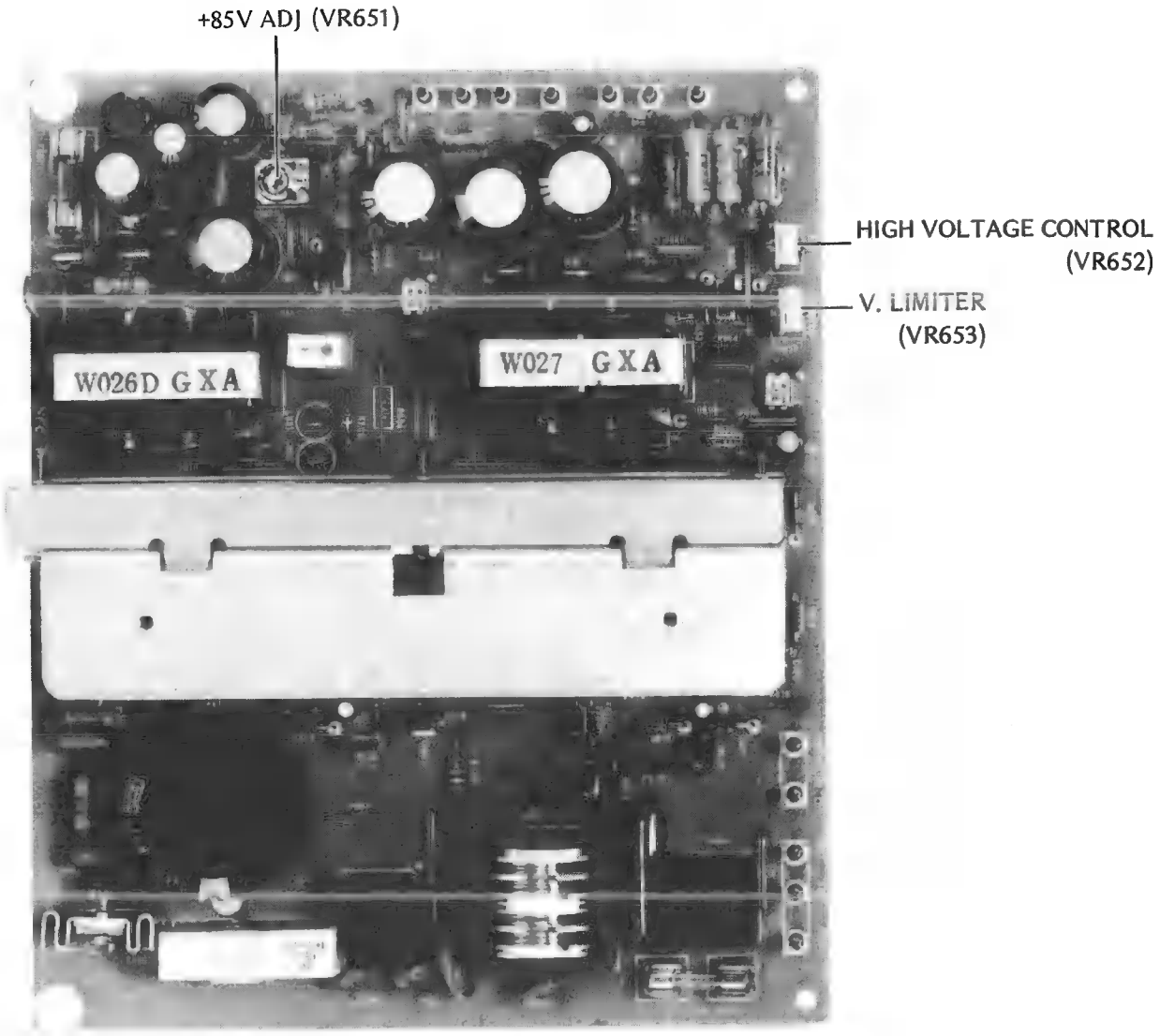
1	VIDEO BOARD	PWE 122
2	INTERFACE BOARD	PWE 110
3	CONTROL BOARD	PWE 125A
4	LED BOARD	PWE 125B



ADJUSTMENT CONTROLS

S	R. SUB CONTRAST CONTROL (VR701)	BB	COLOR SWITCH (SW803 NO. 5, 6)
T	G. SUB CONTRAST CONTROL (VR702)	CC	CONTRAST CONTROL (VR1)
U	B. SUB CONTRAST CONTROL (VR703)	DD	BRIGHTNESS CONTROL (VR2)
V	R. GAIN CONTROL (VR704)	EE	V. POSITION CONTROL (VR3)
W	G. GAIN CONTROL (VR705)	FF	H. POSITION CONTROL (VR5)
X	B. GAIN CONTROL (VR706)	GG	V. SIZE CONTROL (VR4)
Y	+6V ADJUST CONTROL (VR707)	HH	V. HOLD CONTROL (VR6)
Z	TTL/ANALOG SWITCH (SW801)	II	H. WIDTH SWITCH
AA	MANUAL SWITCH (SW802)	JJ	TEXT SWITCH
BB	TEXT COLOR/SWITCH (SW803 NO. 2, 3, 4)		

SW. REG. PWB LAYOUT



ALIGNMENT PROCEDURE

Adjustment conditions and Precautions

1. Power supply voltage: AC 120V, 60 Hz
2. Warm up time
   The display must be on for at least 20 minutes before starting alignments.
   This is especially critical in color temperature and white balance adjustments.
3. Signals
   Video: Analog 0.6 Vp-p, 75Ω, positive
   analog sync. on green
   video: 0.6 Vp-p
   synchronizing: 0.3 Vp-p
   Synchronizing: TTL level negative/positive
   separate/composite
   Scanning Frequency: H 15 kHz ~ 35 kHz
   V 60 Hz
   Unless otherwise specified, adjust at signal 6 (22 kHz).

1. SW. REG. UNIT

1-1. $+B_1$ (VR651) +85V LINE
Adjust VR651 to be 85 VDC

1-2. $+B_H$ (VR652) High Voltage control
This control is permanently sealed at factory.
Do not attempt to readjust.

1-3. $+B_{LIM}$ (VR653) V. limit (C1 – Gnd Voltage)
Remove C-connector.
Adjust VR653 to be 122 Volts.

Note: Do not operate the SW. Reg. unit itself without any load.

2. DEF PWB Pre-Adjustment

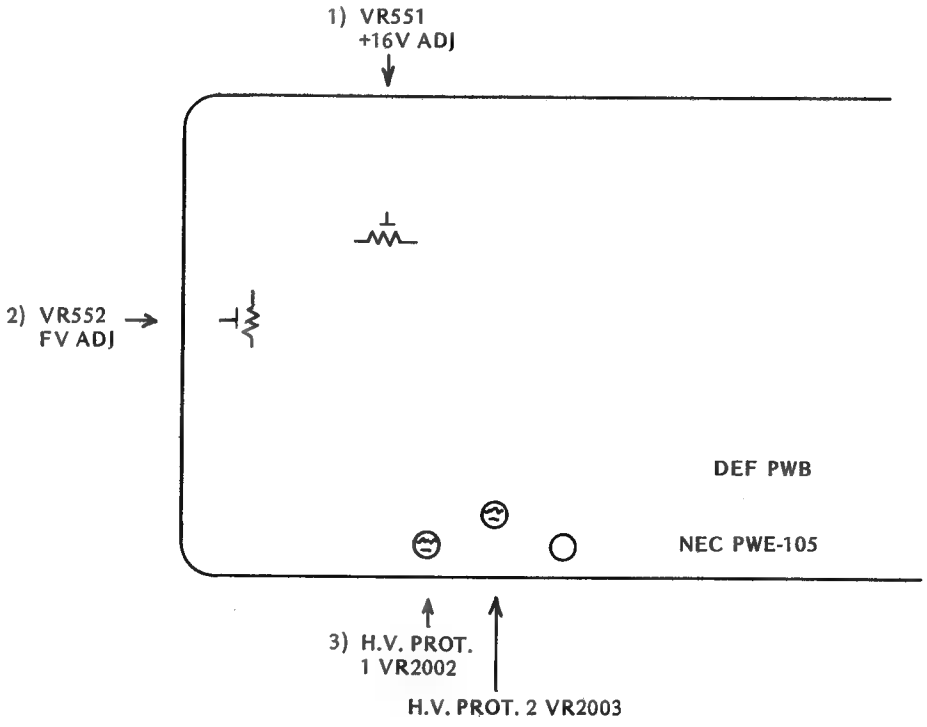


Figure 1

Remove K and C connectors, and Apply 24V DC between K2 and K3.
Or just only remove C connector.

(1) +16V adjustment
Adjust TP551-GND to 16V±0.05V DC. (VR551)

(2) Receive signal 1 and adjust VR552 so that the voltage between TP552 and Gnd is 10±0.05V DC.

(3) H.V. Protector
The high Voltage protector control 1 (VR2002) and control 2 (VR2003) are permanently sealed at factory.
Do not attempt to readjust!

3. Video PWB pre-Adjustment

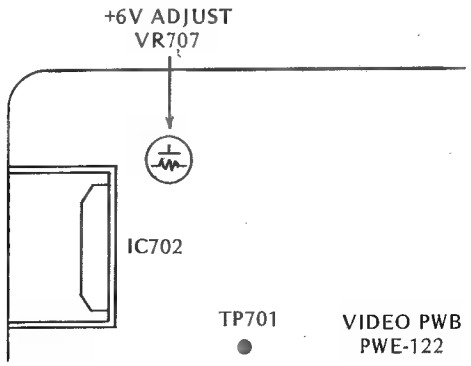


Figure 2

(1) +6V adjustment
Adjust VR707 so that the voltage between TP701 and GND is 6V±0.05V DC.

4. Main Adjustments

Unless otherwise specified, adjust the controls on the control PWB as shown below:

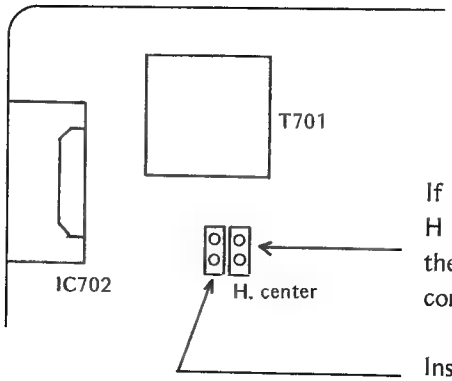
VR1 Contrast : Max. (fully clockwide)
VR2 Brightness: So that no background raster appears
VR3 V. position: Center
VR4 H. position: Center
VR5 V. size: Center
VR6 V. hold: Proper position

SW2 H. size: ON
SW3 TEXT SW: OFF

Focus control: Adjust for the optimum picture.

4-1) Adjustment of H. raster centering

Turn the brightness control fully clockwise so that background raster can be seen, then connect the H connector in the position so that the background raster is in the center of the CRT screen.



If the raster is off to one side, insert the H connector here (adjust to one side or the other by changing the direction of the connector).

Insert here if raster centering correction is not needed.

Video PWB component side

Figure 3

NOTE: Due to overscan, it is not possible to center the background raster if the horizontal frequency is between 15 kHz and 20 kHz.

4-2)

(1) H. hold
   a) Short between TP501 and GND.
   b) Apply signal 3 (30 kHz) and adjust H. hold (1) VR502 so that the entire picture appears.
   c) Apply signal 2 (20 kHz) and adjust H. hold (2) VR555 so that the entire picture appears.

(2) H.V. ADJ (VR2001)
   The H.V. ADJ (VR2001) is permanently sealed at factory.
   Do not attempt to readjust.

(3) H. linearity
   Adjust L504 for the optimum H. linearity. If at this time the picture is horizontally mispositioned, it is possible to adjust VR4 to center it, but after adjustment of the linearity set VR4 to the mechanical center.

(4) H. position (adjust to the center of the raster)
   a) Adjust sub H. center 1 VR501 to center the picture when signal 3 (30.48 kHz) is applied.
   b) Adjust sub H. center 3 VR554 to center the picture (1 mm to the left) when signal 6 (22 kHz) is input for mutuality between actual EGA timing and test timing.
   c) Adjust sub H. center 2 VR553 to center the picture when signal 5 (15.75 kHz) is applied.
   d) Check that the picture is centered when the signals in a), b), and c) above are applied.
   NOTE: Adjust in the order a) → b) → c)

(5) Side pincushion
   Adjust VR404 for the optimum side pincushion distortion.
   Be careful that there is no barrel distortion.

(6) H. width
Adjust H. width L505 so that the size of the picture when signal 6 (22 kHz) is applies is 250mm. Perform this adjustment with the H. wide switch SW2 on. If the size cannot be adjusted to 250mm even if H. width L505 is turned fully, turn L504 slightly to correct this.

(7) V. position
Vertically center the picture when adjustment signal 6 (22 kHz) is applies (VR3, V. POSITION)

(8) V. linearity
Adjust VR401 and VR402 so that vertical linearity is optimum when signal 6 (22 kHz) is applies.

(9) V. size/V. bias
a) Adjust sub height VR403 so that the vertical amplitude is 180 mm when signal 3 (30.48 kHz) is applies is 180 mm.
Also adjust V. bias VR405 so that the voltage between DY4 and GND is 11.5V DC.
b) Adjust sub height VR452 so that the vertical amplitude when signal 5 (15.75 kHz) is applies is 180 mm.
c) Adjust V-mode VR451 so that the vertical amplitude is 180 mm when V-mode signal 4 (30.48 kHz, 400 lines) is applies.
Set the MANUAL switch to the OFF (PRE-SET mode) when performing this adjustment.
Also V-mode (Input pin #5) should be low.
d) Applies the signals in above steps a), b), and c) and check that the vertical amplitude for each is 180 mm±2 mm. If readjustment is necessary, start from step a) and proceed in order.

4-3) Adjustment of video amplitude and white balance

NOTE: Before performing this adjustment, check that the video signals are as follows:
Be sure to set the TTL/ANALOG SW to ANALOG position.
Video: analog 0.6 Vp-p
Synchronizing: separate TTL level
Unless otherwise specified, use signal 8 for the adjustments.

(1) Initial setting of adjustment VR

VR701 ~ 703 SUB cont. control	Fully clockwise
VR704 ~ 706 GAIN control	Fully counterclockwise
VR901 ~ 903 BIAS control	Fully counterclockwise
VR904 ~ 906 SUB BRIGHT control	Fully clockwise

(2) Video contrast adjustment
a) Adjustment of gain control — use signal 7
i) Receive a window pattern (within a range for which ABL does not function even with a maximum contrast, and preferably with a video range of 1/3 to 1/2H x 1/2V).
ii) Turn the contrast control fully clockwise and the brightness control fully counterclockwise.
iii) Adjust VR704, VR705, and VR706 so that R, G, and B OUT respectively on the video PWB become 40 Vp-p. After adjusting, check each Vp-p, and if not proper readjust.

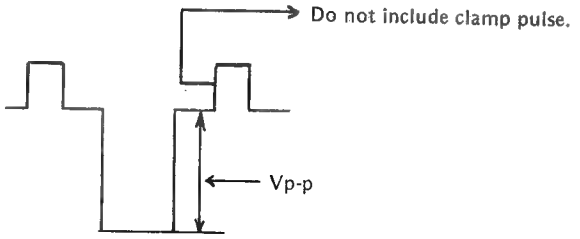


Figure 4

b) Adjustment of sub-contrast control — use signal 7
   i) Turn both the contrast and brightness controls fully conterclockwise.
   ii) Adjust VR701, VR702, and VR703 so that R, G, and B OUT respectively on the video PWB become 10 Vp-p. After adjusting, check each Vp-p, and if not proper readjust.

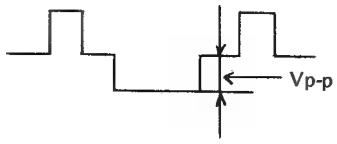


Figure 5

(3) Cut-off adjustment (all black signals)
Turn the contrast control (VR1) and screen control of FBT fully counterclockwise.
   a) Short TP401 — GND. (DEF PWB)
   Short TP901 — TP902. (CRT PWB)
   b) Turn the screen control clockwise gradualy and set to the position at which a single horizontal color appears faintly.
   Take this color as the reference color for cut-off adjustment.
   c) Turn the bias controls for a color other than the reference color clockwise until it is as bright as the reference color.
   d) Remove the TP401-GND and TP901-TP902 shorts.

NOTE: Perform the cut-off adjustment in as dark a place as possible, as this will facilitate white tracking.

(4) Adjustment of sub-brightness VR
   a) Receive the signal 8 (15.75 kHz) H grey scale (16 grades).
   IF signal generator does not function white H grey scale (16 grades), Apply 0.2 V Video input insted of 5/16 grades.
   b) Turn the contrast control fully clockwise and the brightness control fully counter-clockwise.
   c) Adjust sub-bright VR905 so that the 5/16 grade appears faintly.
   From this point on, leave VR905 in this position.
   d) Turn the contrast control fully counterclockwise and the brightness control fully clockwise.
   e) Receive all black signals.
   f) Adjust VR904 and VR906 so that the background raster becomes white.

(5) Fine adjustment of white balance
   a) Receive the white H grey scale (16 grades).
   IF signal generator does not function white H grey scale (16 grades), Apply white window pattern.
   (Window pattern ..... within a range for which ABL does not function)

b) Turn the contrast control fully clockwise.
Adjust the brightness control so that no background raster appears and check that the white balance is proper for each grade.
If the white balance is off for the upper grades, fine adjust the gain control, VR704, and VR706 to match the white.

ATTENTION: Do not touch VR705 – G Gain.

c) Turn the contrast control fully counterclockwise and the brightness control fully clockwise.
Check that the white balance is proper for each grade.
If the white balance is off, fine adjust sub cont. VR701 and VR703 to match the white.

ATTENTION: Do not touch VR702 – G sub cont.

If the background raster and the white for the different grades are off, fine adjust sub bright VR904 and VR906.

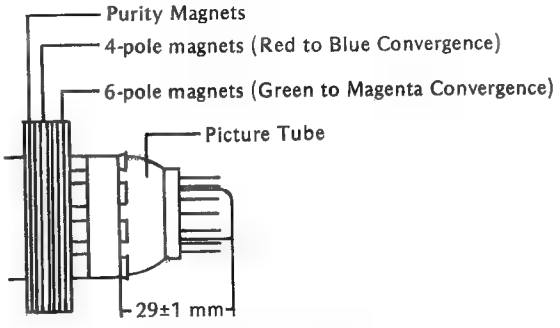
ATTENTION: Do not touch VR905 – G sub bright.

6. Focus Adjustment (Use signal 3)

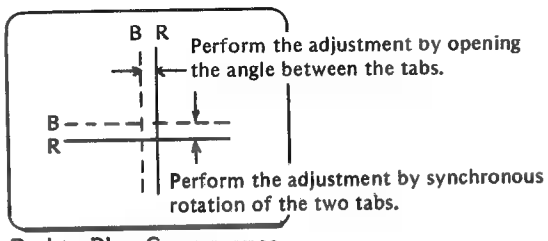
Turn the contrast control fully clockwise and set the brightness control to a suitable position. Adjust the focus control to the optimum position.

7. Purity Adjustment

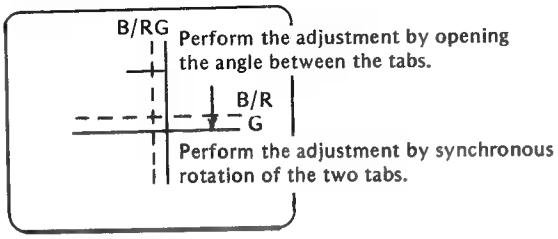
1) Be sure that the display is not being exposed to any external magnetic fields.
2) Ensure that the spacing between the Purity, Convergence Magnet, (PCM), assembly and the CRT stem is 29 mm±1 mm. (See below diagram)
3) Produce a complete, red pattern on the display. Adjust the Purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180°.
4) Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.



Purity, Convergence Magnet Assembly (PCM)



Red to Blue Convergence (Magenta)



Green to Magenta Convergence (White)

8. Convergence Adjustment

1) Produce a magenta crosshatch on the display.
2) Adjust the focus for the best overall focus on the display.
   Also adjust the brightness to the desired condition.
3) Vertical red and blue lines are converged by varying the angle between the two tabs of the 4-pole magnets on the PCM assembly. (See above diagrams)
4) Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.
5) Produce a white crosshatch pattern on the display.
6) Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.
7) Horizontal green and magenta lines are converged by varying the two tabs together, keeping the angle between them constant.

9. Switches and Controls Operation

Confirm the following SWs and controls operatecorrectly.
Switches

Switches

1) TTL/ANALOG SW
2) MANUAL SW
3) 8/16/64 color select SW
4) TEXT SW
5) TEXT color SW
6) H. Width SW

Low C

No effect

Controls

1) Brightness
2) Contrast
3) V. size
4) V. position
5) V. Hold
6) H. position

10. Multi Scanning Operation

Confirm the Multi Sync operate correctly with IBM PC W/C GA, EGA also PGA, or with signal 3, 4, 5, and 6.

BY LVG-1600

①	②	③	④	⑤
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz
2	V FREQ	VERTICAL FREQUENCY	2	Hz
3	CH	CHARACTOR CELL SIZE	3	DOT
4	Nht	4	4	CHR
5	Nht	5	5	CHR
6	Nhsp	6	6	CHR
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)
8	Nadj	8	8	H (LASTER)
9	Nvt	9	9	LINE
10	Nvd	10	10	LINE
11	Nvsp	11	11	LINE
12	Nvsadj	12	12	H (LASTER)
13	INT	13	13	
14	OUT	14	0 Sync NEG, Hsync, Sync OFF, TTL OUT, RZ..... without dots 1 POS, HVsync, Sync ON, ANALOG OUT, NRZ..... dots	

ROM Adress	ROM DATA Signal 1 25K						ROM DATA Signal 2 20K					
(X00)	2	0.	8	0	0	F	1	6.	6	4	0	F
(X03)	2	5.	0	0	0	F	2	0.	0	0	0	F
(X06)	5	9.	9	5	2	F	6	0.	0	6	0	F
(X09)			H_0	8	V_1	0			H_0	8	V_1	0
(X0B)			F	1	0	4			F	1	0	4
(X0D)			F	0	8	0			F	0	8	0
(X0F)			F	0	8	8			F	0	8	8
(X11)			V_0	3	H_0	8			V_0	3	H_0	8
(X13)					0	7					0	3
(X14)			F	0	4	1			F	0	3	3
(X16)			F	0	3	8			F	0	3	0
(X18)			F	0	3	8			F	0	3	0
(X1A)					0	1					0	1
(X1B)					0	0					0	0
(X1C)	F	0	0	0	0	1	F	0	0	0	0	1

BY LVG-1600

①	②	③	④	⑤	ROM Adress	ROM DATA signal 3 480 LINE 30.48K						ROM DATA signal 4 400 LINE 30.48K					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	(X00)	2	5.	1	1	0	F	2	5.	1	1	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	(X03)	3	0.	4	7	3	F	3	0.	4	7	3	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	(X06)	5	9.	9	8	7	F	5	9.	9	8	7	F
3	CH	CHARACTOR CELL SIZE	3	DOT	(X09)			H_0	8	V_1	0			H_0	8	V_1	0
4	Nht	4	4	CHR	(X0B)			F	1	0	3			F	1	0	3
5	Nht	5	5	CHR	(X0D)			F	0	8	0			F	0	8	0
6	Nhsp	6	6	CHR	(X0F)			F	0	8	0			F	0	8	0
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	(X11)			V_0	2	H_1	4			V_0	2	H_1	4
8	Nadj	8	8	H (LASTER)	(X13)					0	8					0	8
9	Nvt	9	9	LINE	(X14)			F	0	5	0			F	0	5	0
10	Nvd	10	10	LINE	(X16)			F	0	4	8			F	0	4	0
11	Nvsp	11	11	LINE	(X18)			F	0	4	8			F	0	4	4
12	Nvsadj	12	12	H (LASTER)	(X1A)					0	1					0	1
13	INT	13	13		(X1B)					0	0					0	0
14	OUT	14	0 Sync NEG Hsync Sync OFF TTL OUT RZ..... without dots 1 POS HVsync Sync ON ANALOG OUT NRZ..... dots		(X1C)	F	1	1	0	1	1	F	1	1	0	1	1

BY LVG-1600

①	②	③	④	⑤	ROM Adress	ROM DATA Signal 5 15.75K						ROM DATA Signal 6 22K					
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz	(X00)	1	4.	2	0	0	F	1	6.	3	7	0	F
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz	(X03)	1	5.	8	5	0	F	2	2.	0	0	3	F
2	V FREQ	VERTICAL FREQUENCY	2	Hz	(X06)	6	0.	5	7	7	F	5	9.	9	5	3	F
3	CH	CHARACTOR CELL SIZE	3	DOT	(X09)			H_0	8	V_1	0			H_0	8	V_1	0
4	Nht	4	4	CHR	(X0B)			F	1	1	2			F	0	9	3
5	Nht	5	5	CHR	(X0D)			F	0	8	0			F	0	8	0
6	Nhsp	6	6	CHR	(X0F)			F	0	9	2			F	0	8	0
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)	(X11)			V_0	1	H_0	7			V_1	3	H_1	0
8	Nadj	8	8	H (LASTER)	(X13)					0	0					0	6
9	Nvt	9	9	LINE	(X14)			F	0	2	6			F	0	3	6
10	Nvd	10	10	LINE	(X16)			F	0	2	0			F	0	3	5
11	Nvsp	11	11	LINE	(X18)			F	0	2	3			F	0	3	5
12	Nvsadj	12	12	H (LASTER)	(X1A)					0	5					0	1
13	INT	13	13		(X1B)					0	0					0	0
14	OUT	14	0 Sync NEG / 1 POS; Hsync / HVsync; Sync OFF / Sync ON; TTL OUT / ANALOG OUT; RZ..... without dots / NRZ..... dots		(X1C)	F	1	0	0	0	1	F	1	0	0	0	1

BY LVG-1600

①	②	③	④	⑤
0	CLOCK	DOT CLOCK FREQUENCY	0	MHz
1	H FREQ	HORIZONTAL FREQUENCY	1	KHz
2	V FREQ	VERTICAL FREQUENCY	2	Hz
3	CH	CHARACTOR CELL SIZE	3	DOT
4	Nht	4	4	CHR
5	Nht	5	5	CHR
6	Nhsp	6	6	CHR
7	Vpw-Hpw	7	7	V (LASTER) H (CHR)
8	Nadj	8	8	H (LASTER)
9	Nvt	9	9	LINE
10	Nvd	10	10	LINE
11	Nvsp	11	11	LINE
12	Nvsadj	12	12	H (LASTER)
13	INT	13	13	
14	OUT	14	0 Sync NEG, Hsync, Sync OFF, TTL OUT, RZ..... without dots 1 POS, HVsync, Sinc ON, ANALOG OUT, NRZ..... dots	

ROM Adress	ROM DATA signal 7 ¼H WINDOW 15.75K						ROM DATA Signal 8 15.75K					
(X00)	1	4.	2	0	0	F	1	4.	2	0	0	F
(X03)	1	5.	8	5	0	F	1	5.	8	5	0	F
(X06)	6	0.	5	7	7	F	6	0.	5	7	7	F
(X09)			H_0	8	V_1	0			H_0	8	V_1	0
(X0B)			F	1	1	2			F	1	1	2
(X0D)			F	0	2	0			F	0	8	0
(X0F)			F	0	6	2			F	0	9	2
(X11)			V_0	1	H_0	7			V_0	1	H_0	7
(X13)					0	0					0	0
(X14)			F	0	2	6			F	0	2	6
(X16)			F	0	1	0			F	0	2	0
(X18)			F	0	1	8			F	0	2	3
(X1A)					0	5					0	5
(X1B)					0	0					0	0
(X1C)	F	1	0	0	1	1	F	1	0	0	1	1

① Indication address ② Abbreviation ③ Description ④ Contents ⑤ Unit

Description of each address

add.	Description	Condition
0		05.000 ~ 40.000 MHz, 5- or 6-digit 2.5KHz step for 10 MHz or lower, 5 KHz step for 10 ~ 20 MHz, and 10 KHz step for 20 MHz or higher
1		Reference data, 5-digit
2		Reference data, 5-digit
3		(H direction) x (V direction), 02 to 16 01 to 32 each 2-digit
4	Total number of characters, horizontal	255 characters or less, 3-digit
5	Number of indication characters, horizontal	N_{ht} or less, 3-digit
6	Horizontal sychronization position	N_{ht} or less, 3-digit
7	Vertical/horizontal pulse width	V: 1 to 16 H/H:1 to 15 chr.
8	Total raster adjustment	31 H or less
9	Total number of characters, vertical	127 rows or less, 3-digit
10	Number of indication characters, vertical	N_{vt} or less
11	Vertical synchronization position	N_{vt} or less
12	Vertical indication position correction	0 ~ 16 H (Synchronization position moves in the form of $N_{vsp} + N_{vsadj}$)
13	Interlace select	00: non-interlace 01: interlace
14	Output condition setting	

Likewise, when significant data is a single digit, do not forget to enter 0.

DATA FORMAT FOR USING Quantum 801C

TIMING PARAMETERS:

Real Time Parameters

Dot Rate	MHz
Horizontal Rate	KHz
Vertical Rate	Hz

Non-Real Time Parameters

Horizontal	Vertical
Dots/Character	Lines/Character
Total	Total
Characters	Rows
Drive Delay	Drive Delay
Drive Width	Drive Width
	Step Width

SIGNAL'S DISCRIPTION:

Signal No.	Description
1	H: 25kHz
2	H: 20kHz
3	H: 30.48kHz (480 lines)
4	H: 30.48kHz (400 lines)
5	H: 15.85kHz
6	H: 22kHz
7	H: 15.85kHz WINDOW PATTERN
▮	H: 15.85kHz

OPTION PARAMETERS

Signal Gating

Composite Sync	OP 1.—0 = off 1 = on
Vertical Step	OP 2.—0 = off 1 = on
Horizontal Drive	OP 3.—0 = off 1 = on
Vertical Drive	OP 4.—0 = off 1 = on

Signal Polarity

Composite Sync	OP 5.—0 = non-inverted 1 = inverted
Vertical Step	OP 6.—0 = non-inverted 1 = inverted
Horizontal Drive	OP 7.—0 = non-inverted 1 = inverted
Vertical Drive	OP 8.—0 = non-inverted 1 = inverted
Video	OP 13.—0 = non-inverted/positive 1 = inverted/positive 2 = non-inverted/negative 3 = inverted/negative
Interlace Mode	OP 9.—0 = non-interlace 1 = interlaced sync only 3 = interlaced sync & video
Video Mode	OP 10.—0 = monochrome 1 = color
Duty Cycle	OP 11.—0 = 50% 1 = 100% (OP 12.0) 0 or 1 = 100% (OP 12.2)
Character Clocking Mode	OP 12.—0 = single-phase 2 = dual-phase
Horizontal Skew	OP 14.—skew right 0—3 dots
Vertical Skew	OP 15.—skew down 0—9 lines
Cursor	OP 16.—0 = off 1 = fast blink 2 = slow blink 3 = on continuous

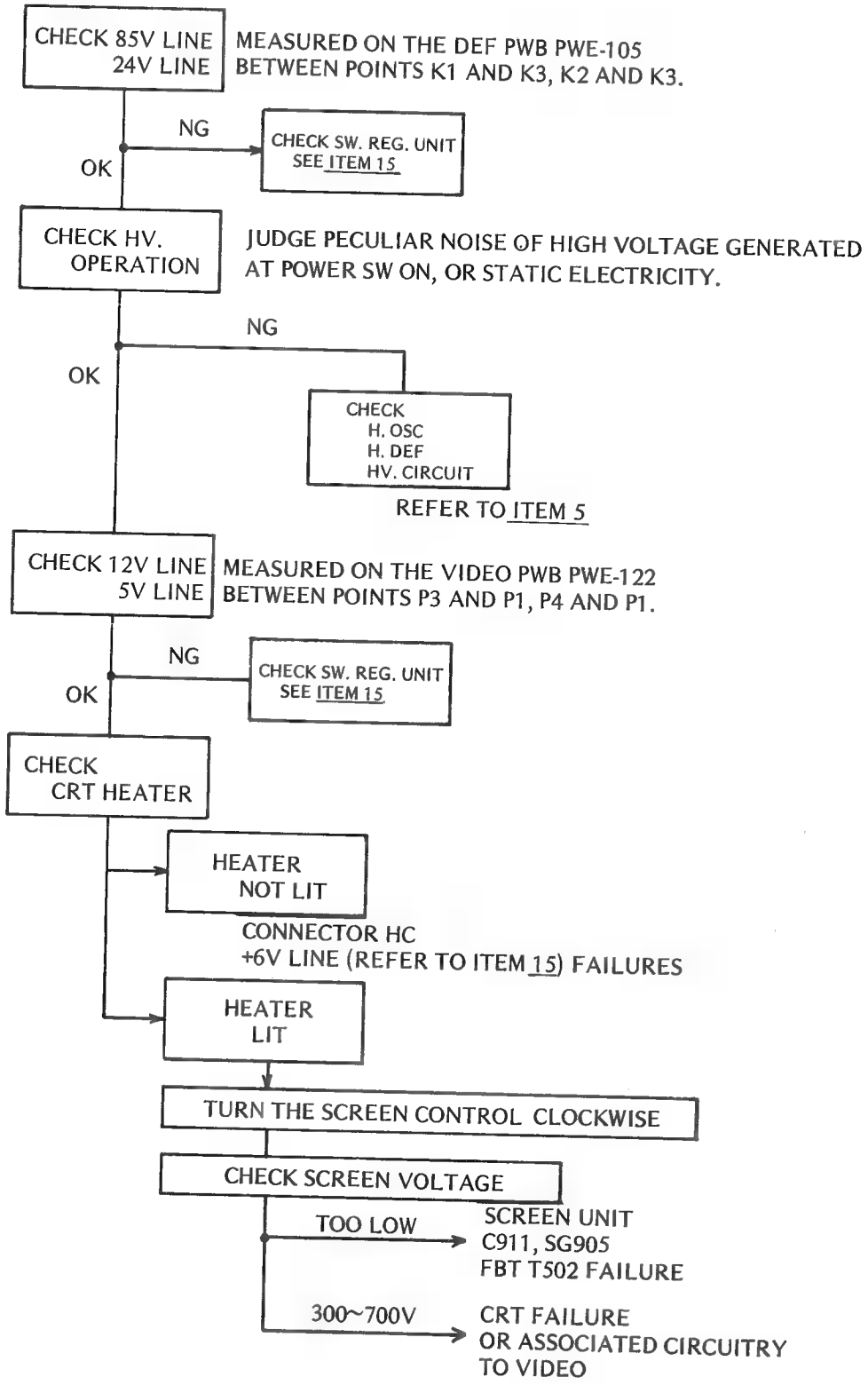
TEST SIGNALS FOR USING Quantum 801C

SIGNAL No.	1	2	3	4	5	6	7	8
Real Time Parameters								
Dot Rate (MHz)	20.800	16.640	25.112	25.112	14.200	16.368	14.200	14.200
Horizontal Rate (kHz)	25.000	20.000	30.476	30.476	15.848	22.000	15.848	15.848
Vertical Rate (Hz)	59.95	60.06	59.99	59.99	60.03	60.11	60.03	60.03
Non-Real Time Parameters	8	8	8	8	8	8	8	8
H: Dots/Character	104	104	103	103	112	93	112	112
Total	80	80	80	80	80	80	20	80
Characters	88	88	80	80	92	80	62	92
Drive Delay	8	8	14	14	7	10	7	7
Drive Width	10	10	10	10	10	10	10	10
V: Lines/Character	417	333	508	508	264	366	264	264
Total	38	30	48	40	20	35	10	20
Rows	38	30	48	44	23	35	18	23
Drive Delay	3	3	2	2	1	13	1	1
Drive Width	–	–	–	–	–	–	–	–
Step Width								
Signal Gating								
Composite Sync	1	1	1	1	1	1	1	1
Vertical Step	0	0	0	0	0	0	0	0
Horizontal Drive	1	1	1	1	1	1	1	1
Vertical Drive	1	1	1	1	1	1	1	1
Signal Polarity								
Composite Sync	1	1	1	1	1	1	1	1
Vertical Step	–	–	–	–	–	–	–	–
Horizontal Drive	1	1	1	1	1	1	1	1
Vertical Drive	1	1	1	1	1	1	1	1
Video	0	0	0	0	0	0	0	0
Interlace Mode	0	0	0	0	0	0	0	0
Video Mode	1	1	1	1	1	1	1	1
Duty Cycle	0	0	0	0	0	0	0	0
Character Clocking Mode	0	0	0	0	0	0	0	0
Horizontal Skew	–	–	–	–	–	–	–	–
Vertical Skew	–	–	–	–	–	–	–	–
Cursor	–	–	–	–	–	–	–	–

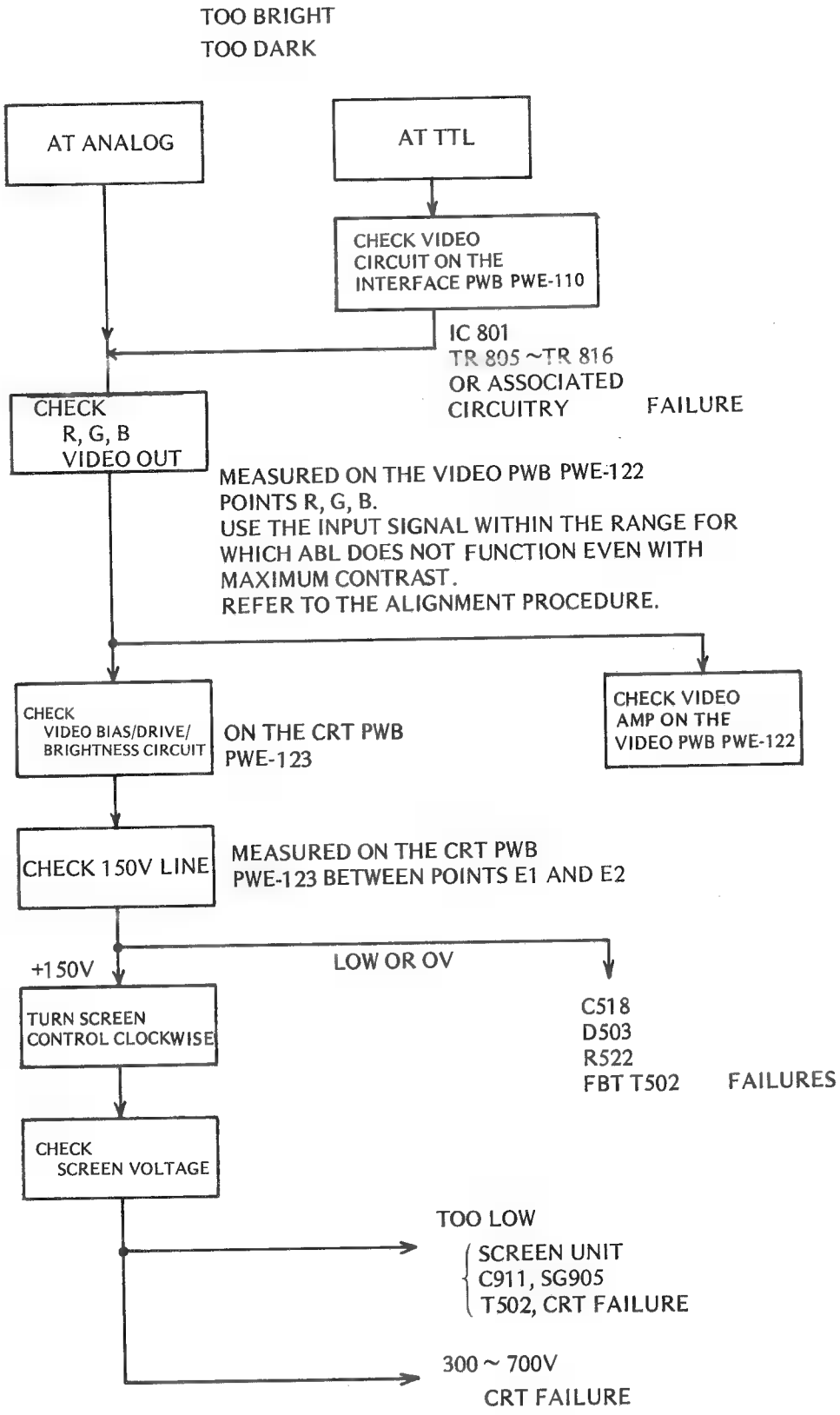
TROUBLE SHOOTING

BEFORE USING THIS CHART, PLEASE REFER TO THE TROUBLESHOOTING THE USER'S MANUAL.

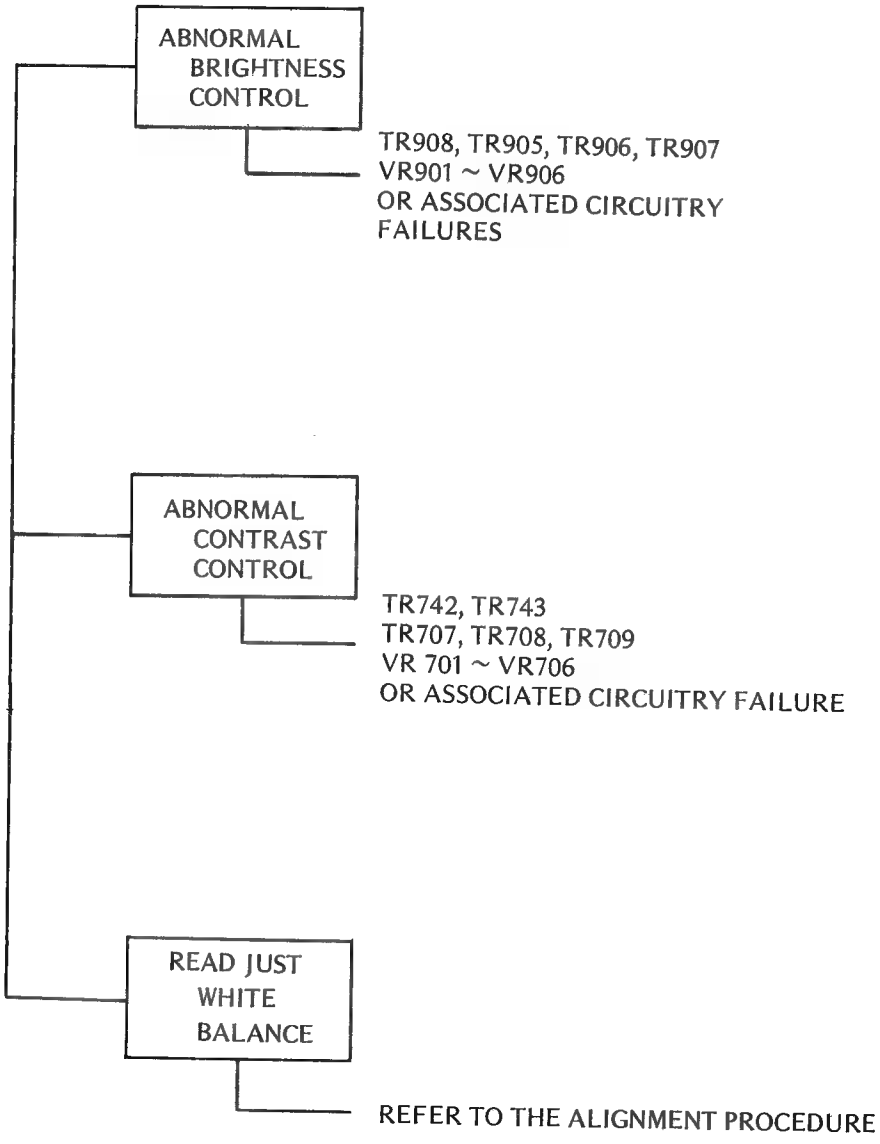
1. NO RASTER



2. ABNORMAL VIDEO ON CRT SCREEN

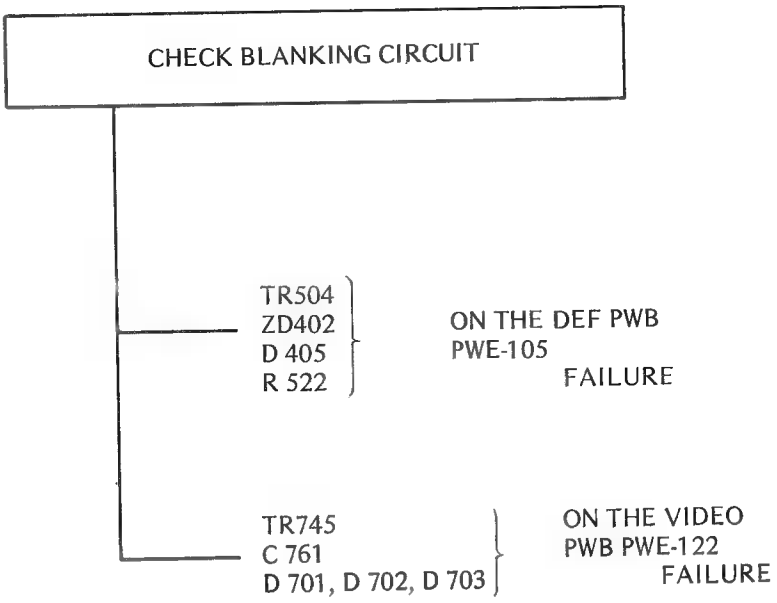


3. ABNORMAL WHITE BALANCE AND TRACKING



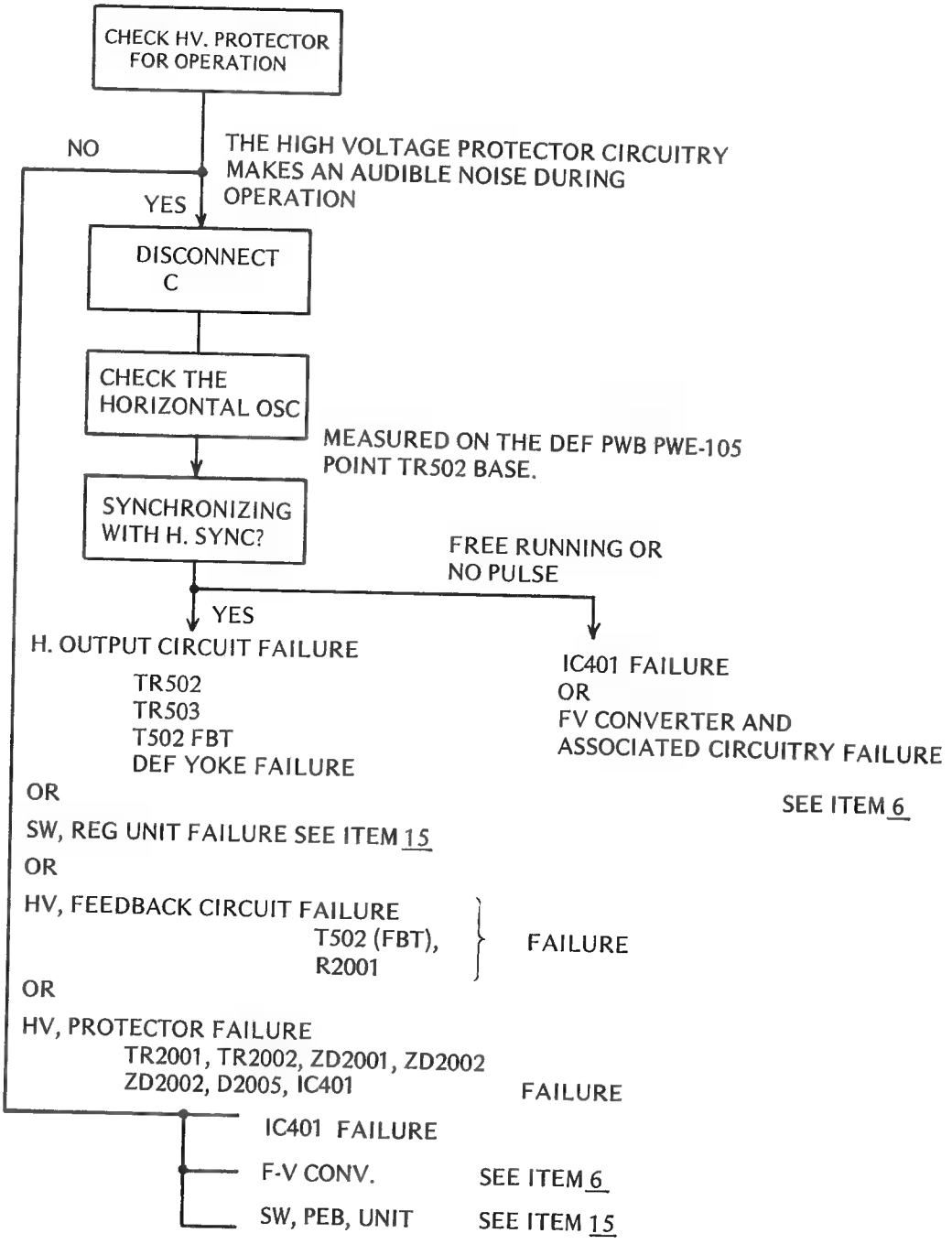
4. NO BLANKING WORKS

VISIBLE RETRACE LINE ON THE BACK RASTER

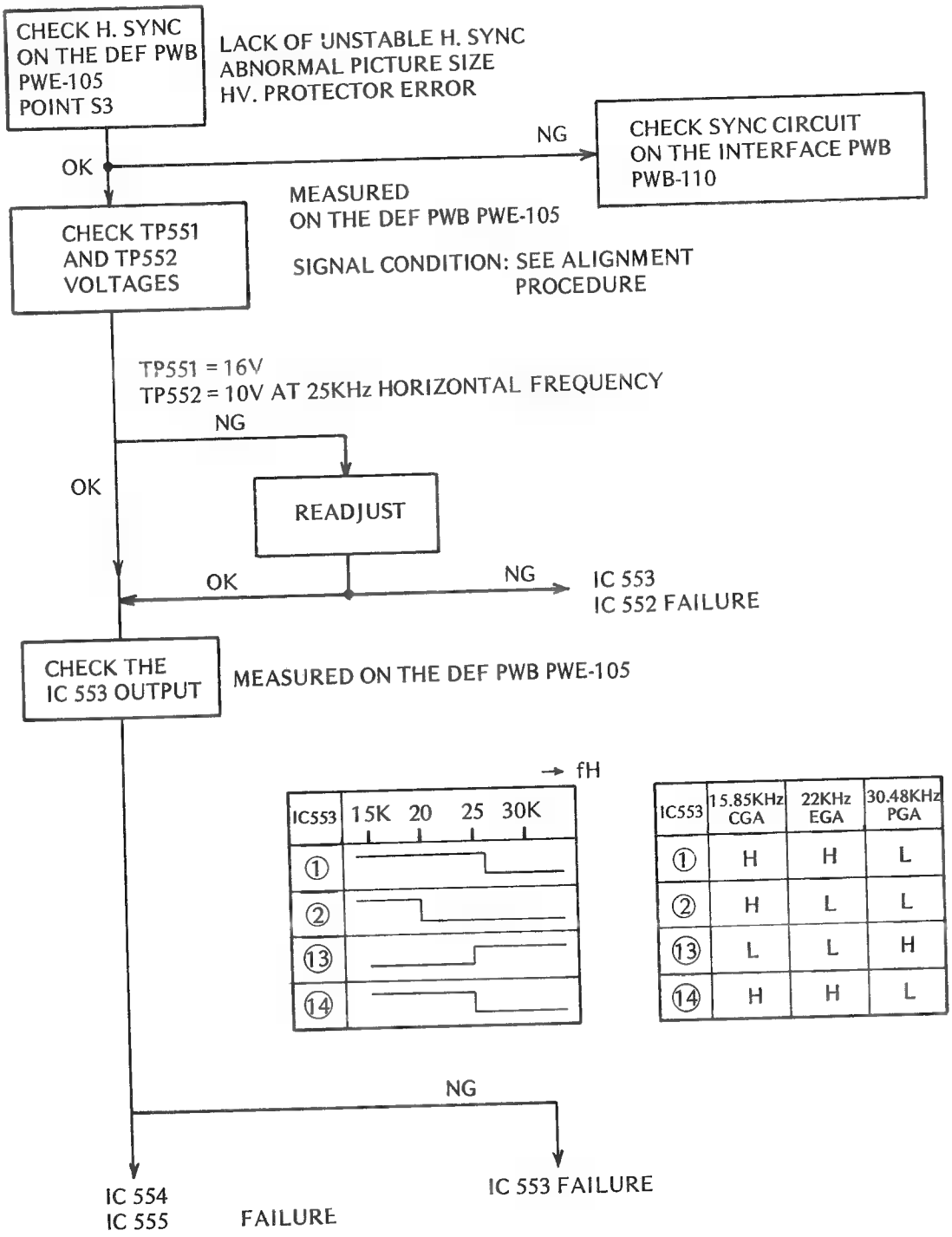


5. H. OSC/DEF/HV. CIRCUIT FAULT

NO RASTER
ABNORMAL PICTURE SIZE
ABNORMAL VIDEO ON THE CRT SCREEN



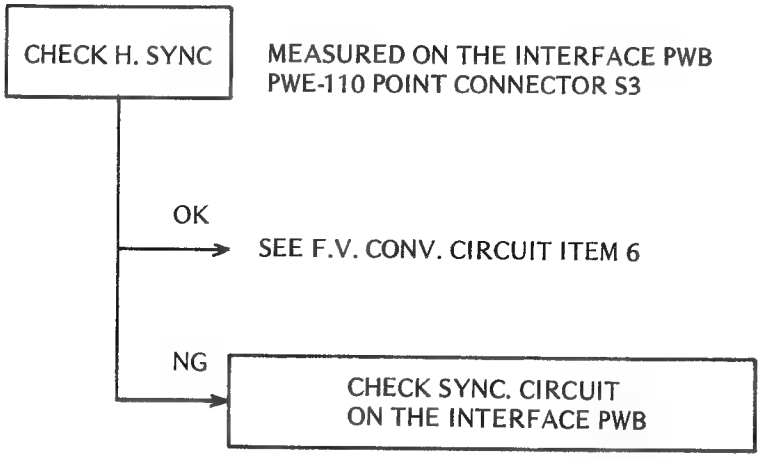
6. F-V CONVERTER AND ASSOCIATED CIRCUITRY



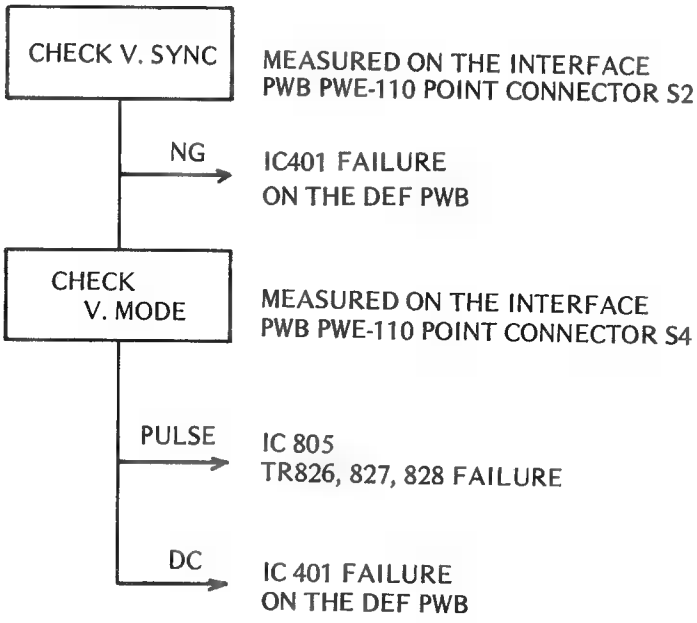
IC553	15.85KHz CGA	22KHz EGA	30.48KHz PGA
①	H	H	L
②	H	L	L
⑬	L	L	H
⑭	H	H	L

7. LACK OF UNSTABLE SYNCHRONIZATION

HORIZONTAL

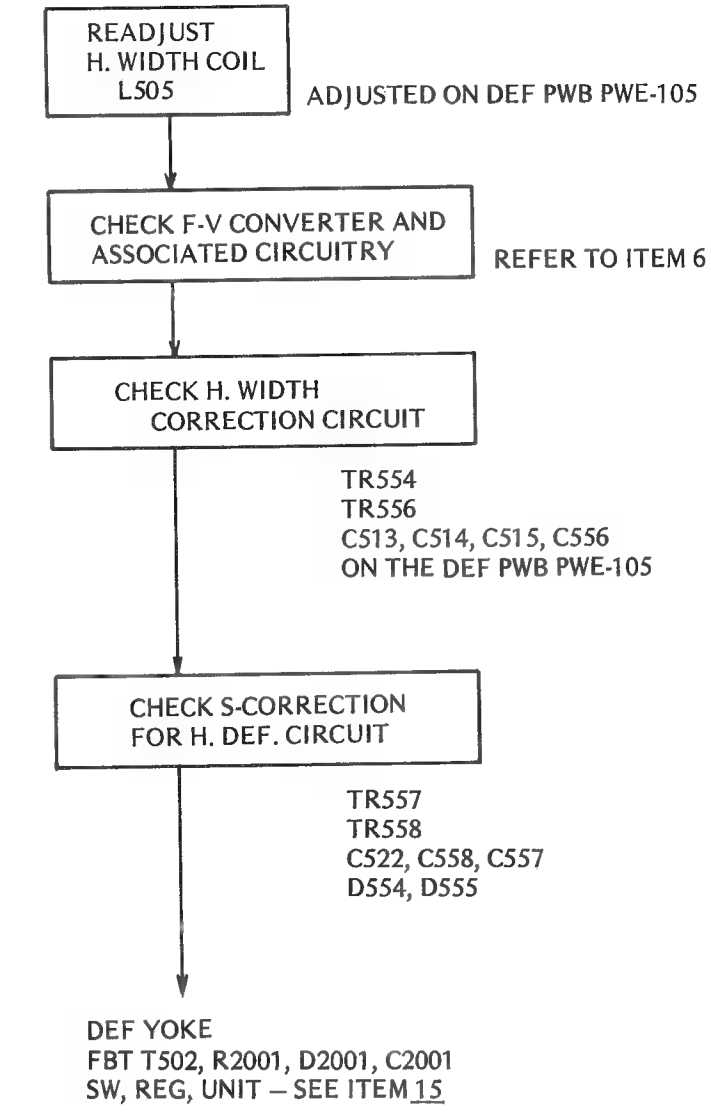


VERTICAL

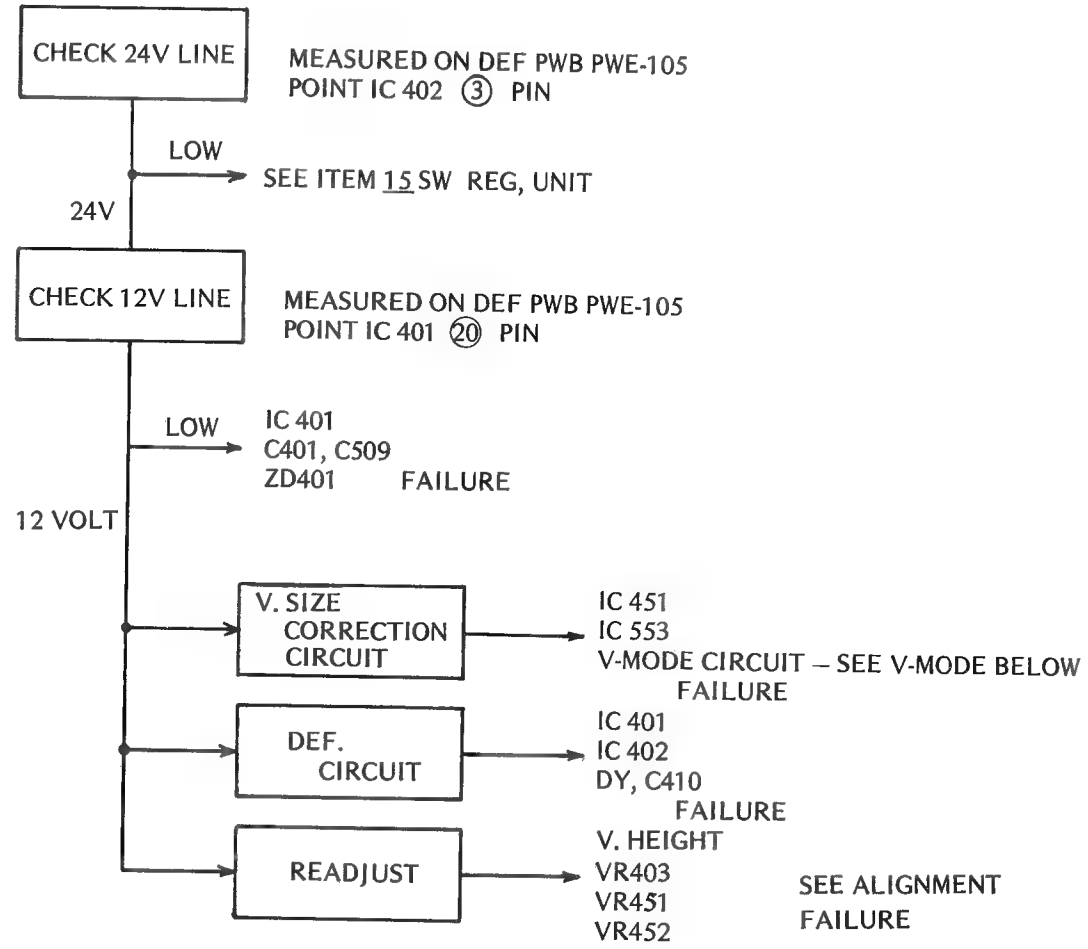


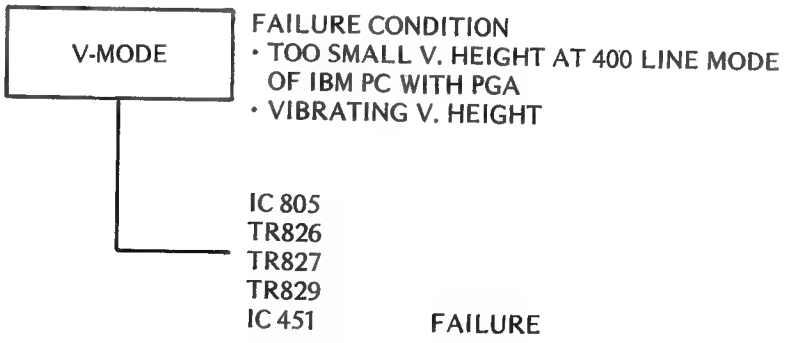
8. PICTURE SIZE

ABNORMAL HORIZONTAL WIDTH



ABNORMAL VERTICAL HEIGHT

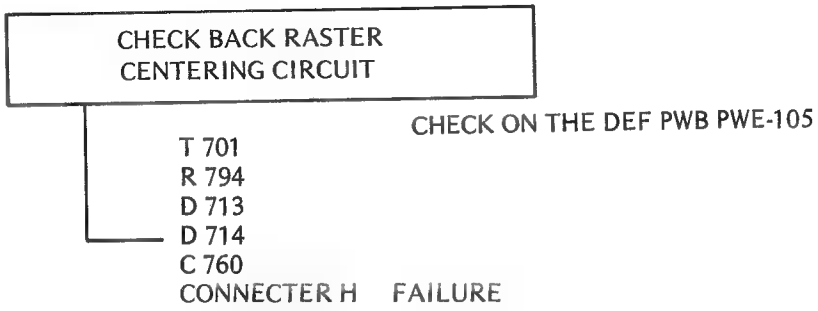




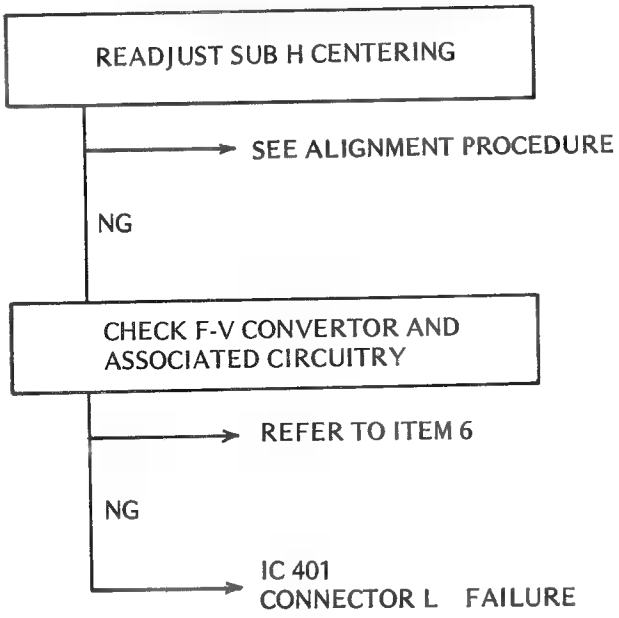
9. CENTERING

9-1. HORIZONTAL

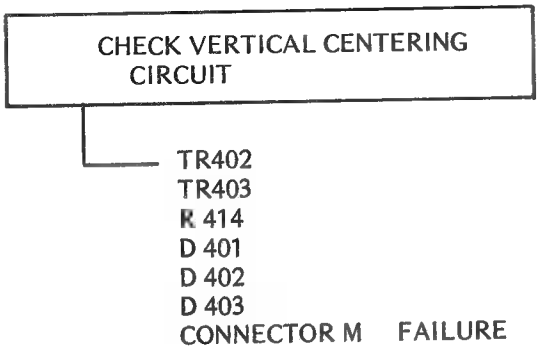
a) BACK RASTER CENTERING



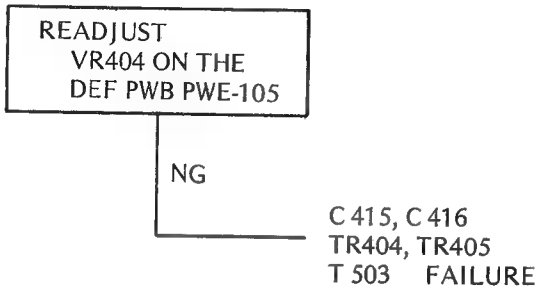
b) PICTURE CENTERING



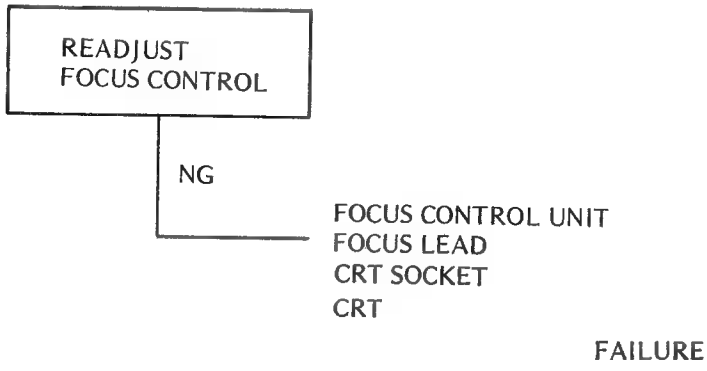
9-2. VERTICAL



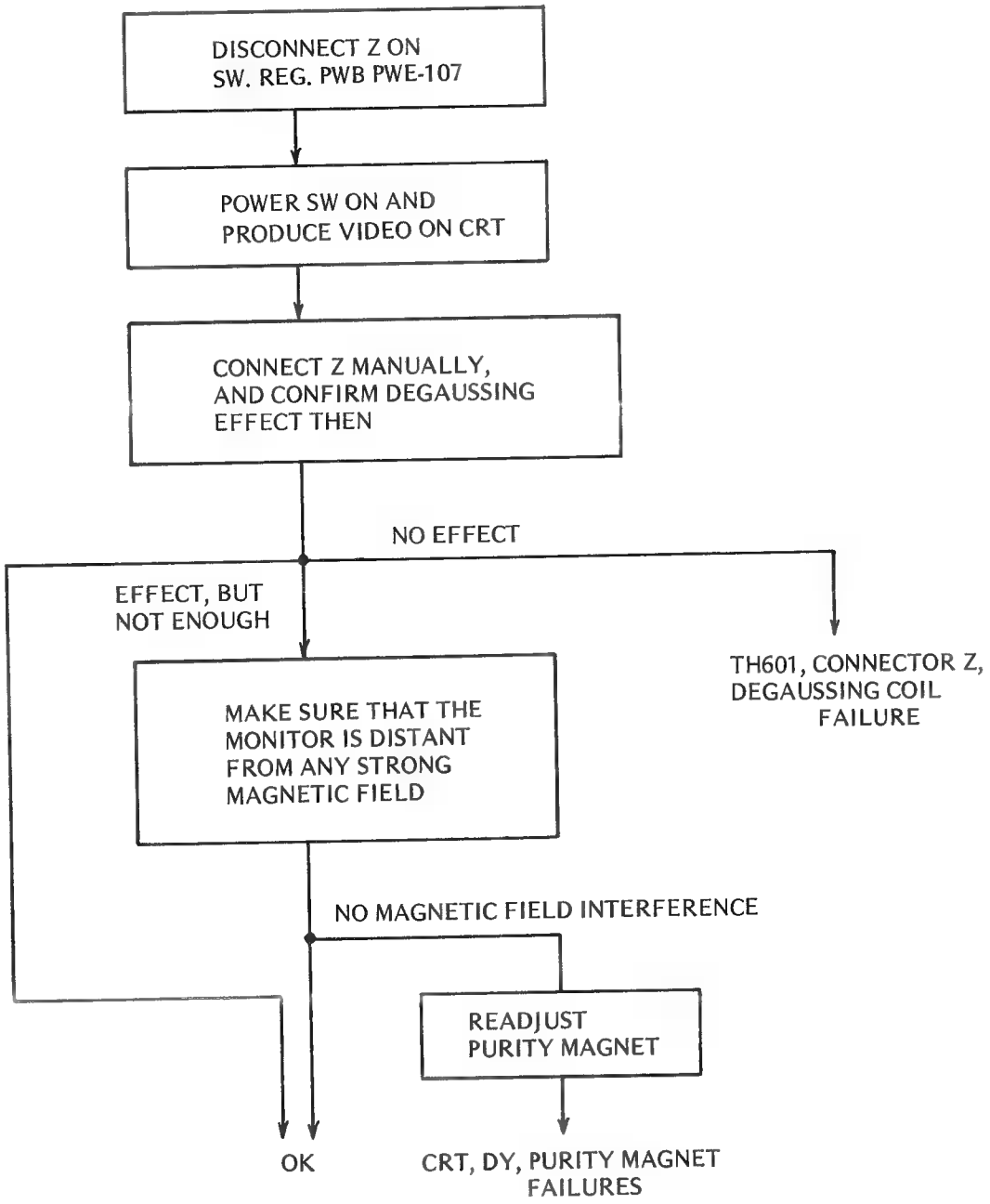
10. SIDE PINCUSHION DISTORTION FAILURE



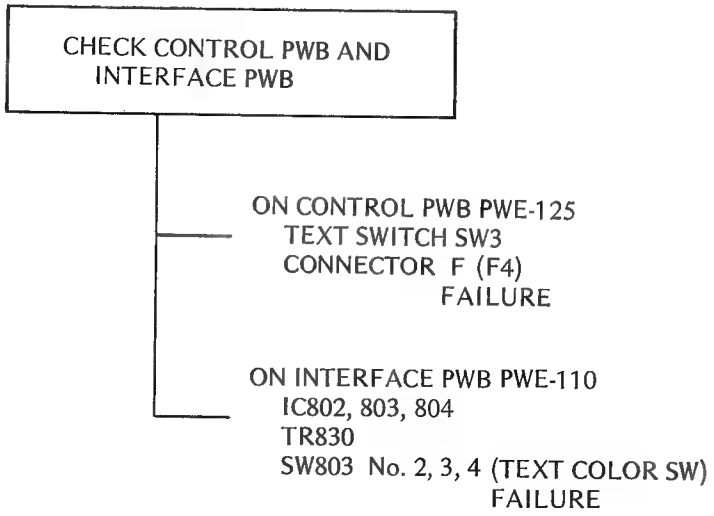
11. POOR FOCUS



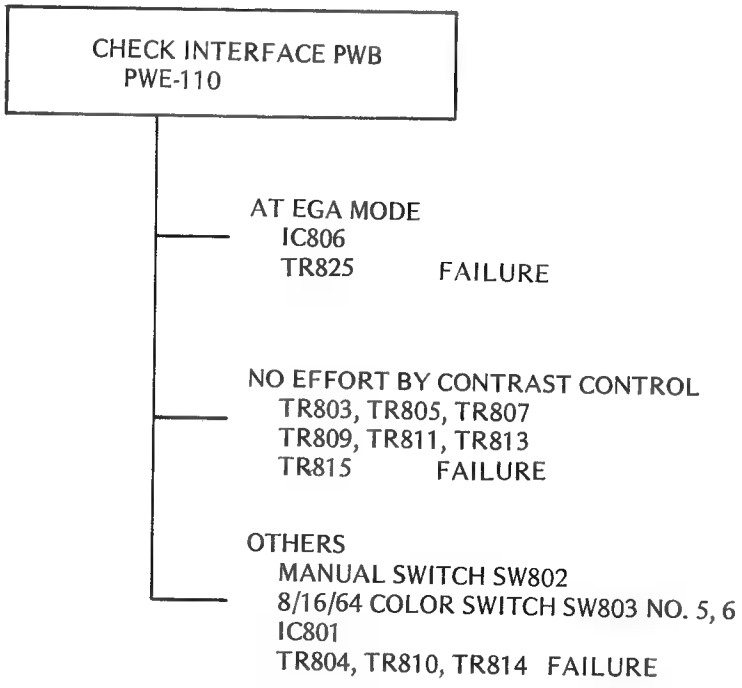
12. IMPURITY ON CRT SCREEN



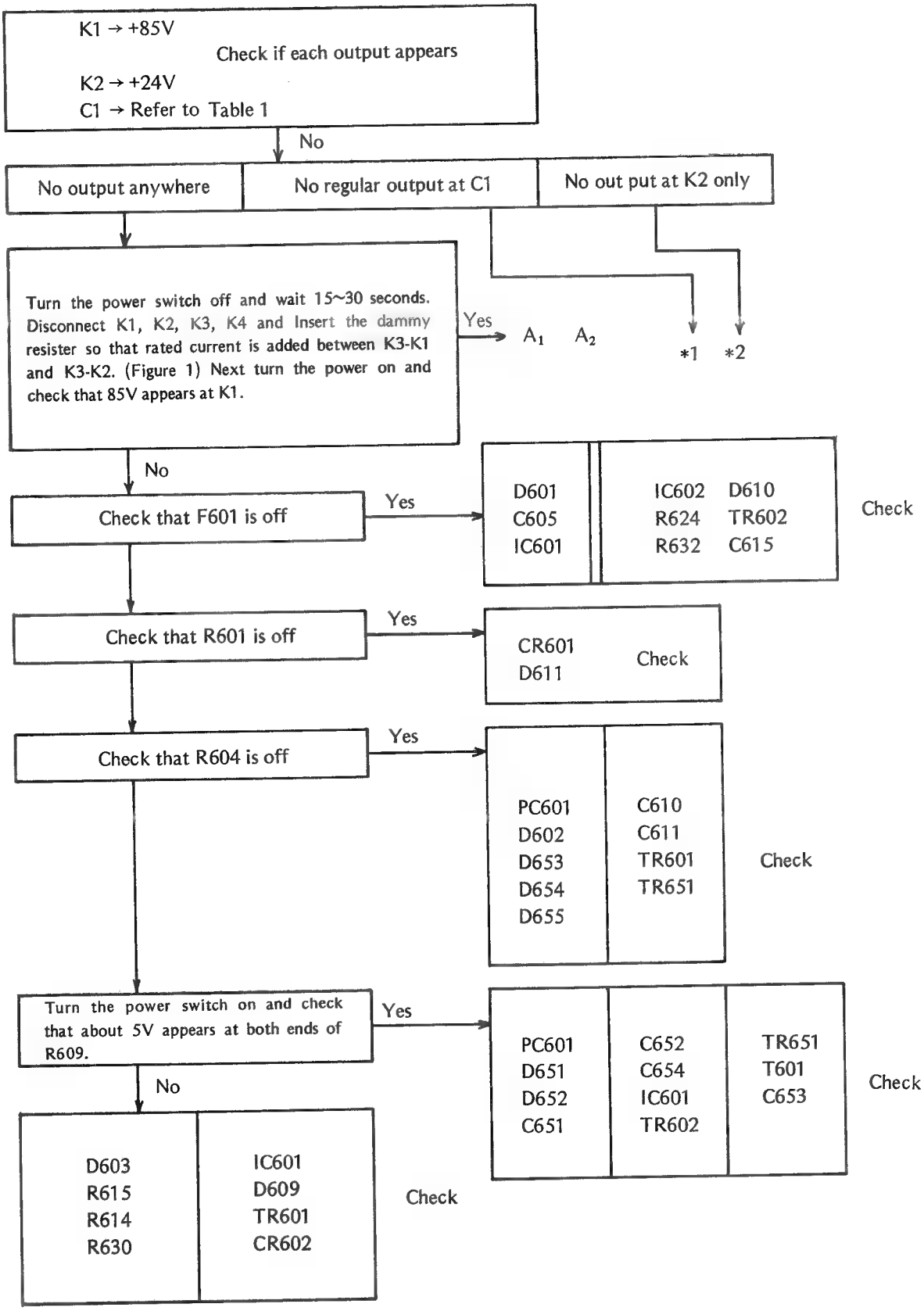
13. ABNORMAL TEXT MODE OPERATION

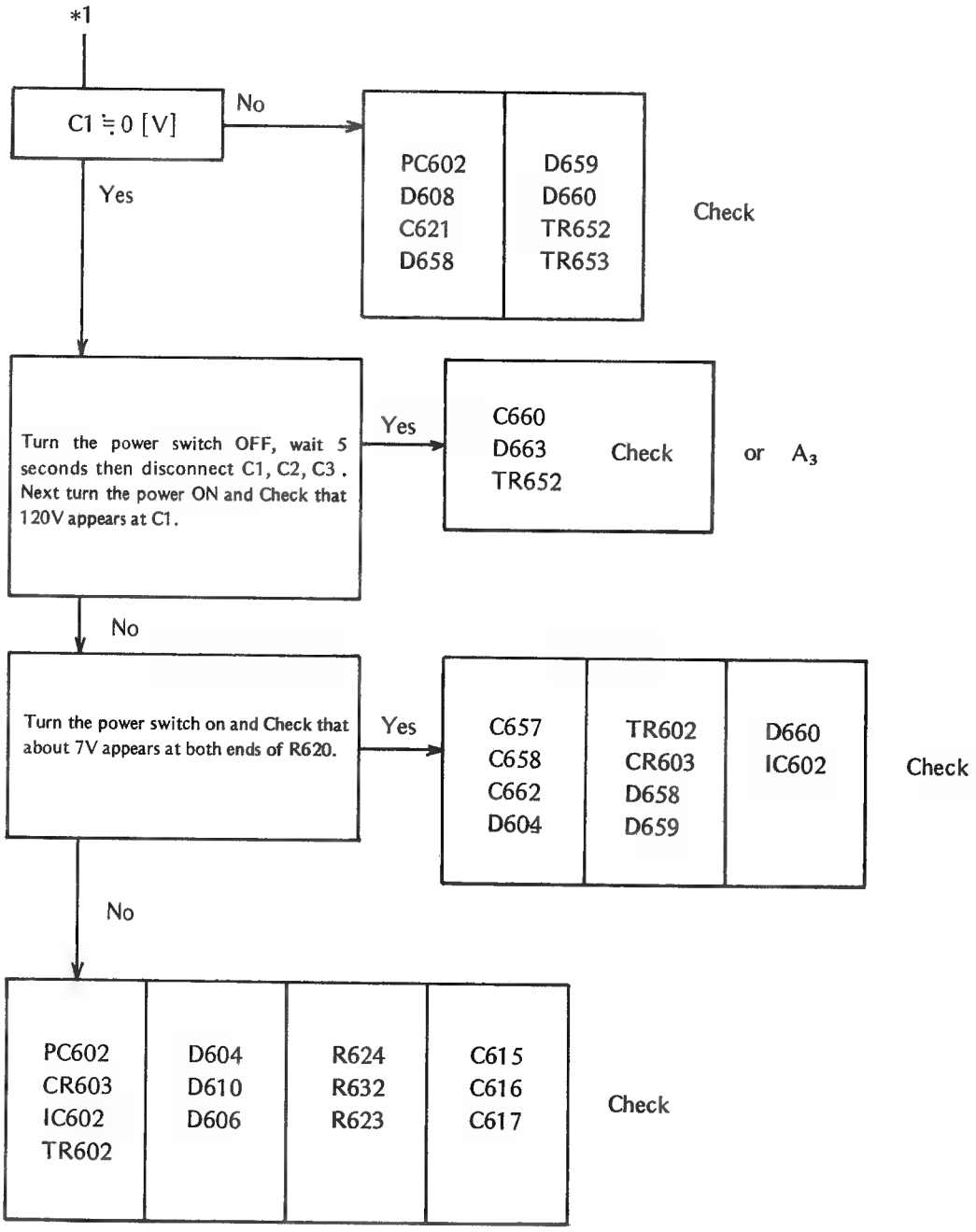


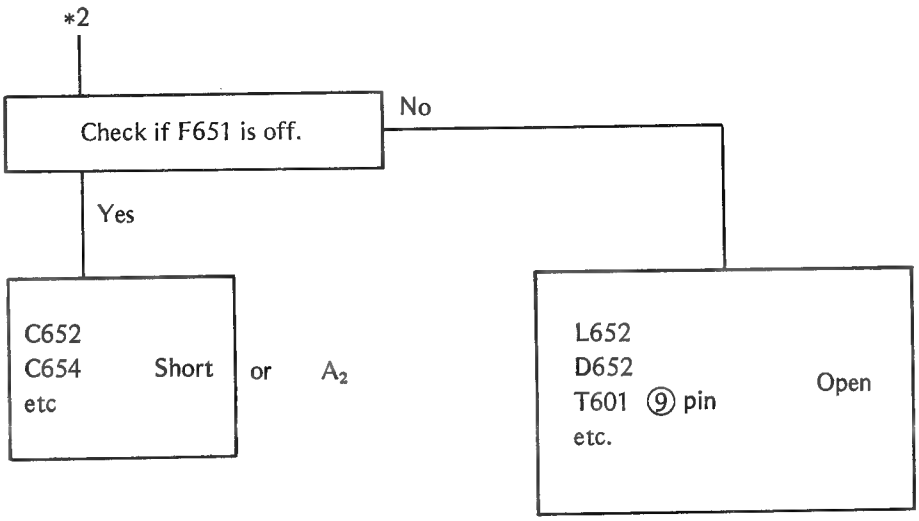
14. ABNORMAL COLOR AT TTL MODE



15. SWITCHING REGULATOR UNIT




*1
C1 ≒ 0 [V]
No
Yes
PC602
D608
C621
D658
D659
D660
TR652
TR653
Check
Turn the power switch OFF, wait 5 seconds then disconnect C1, C2, C3 . Next turn the power ON and Check that 120V appears at C1.
Yes
C660
D663
TR652
Check
or A3
No
Turn the power switch on and Check that about 7V appears at both ends of R620.
Yes
C657
C658
C662
D604
TR602
CR603
D658
D659
D660
IC602
Check
No
PC602
CR603
IC602
TR602
D604
D610
D606
R624
R632
R623
C615
C616
C617
Check



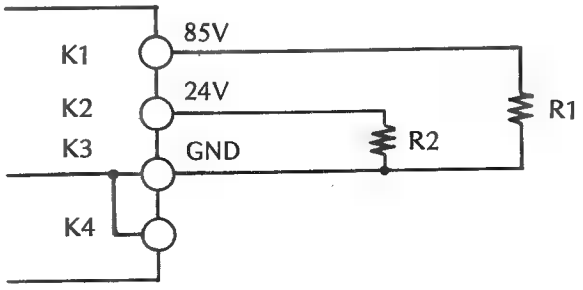
An Trouble excluding Switching Regulator (see next page)

Table 1. C1 output voltage

Horizontal Frequency [KHz]	C1 Voltage [V]
15.85 (CGA)	51 ± 2.6
22 (EGA)	64 ± 3.2
30.48 (PGA)	93 ± 4.7

With no input signal, about 45V should appears at C1.

Figure 1. Rated load current at K1 and K2 terminal



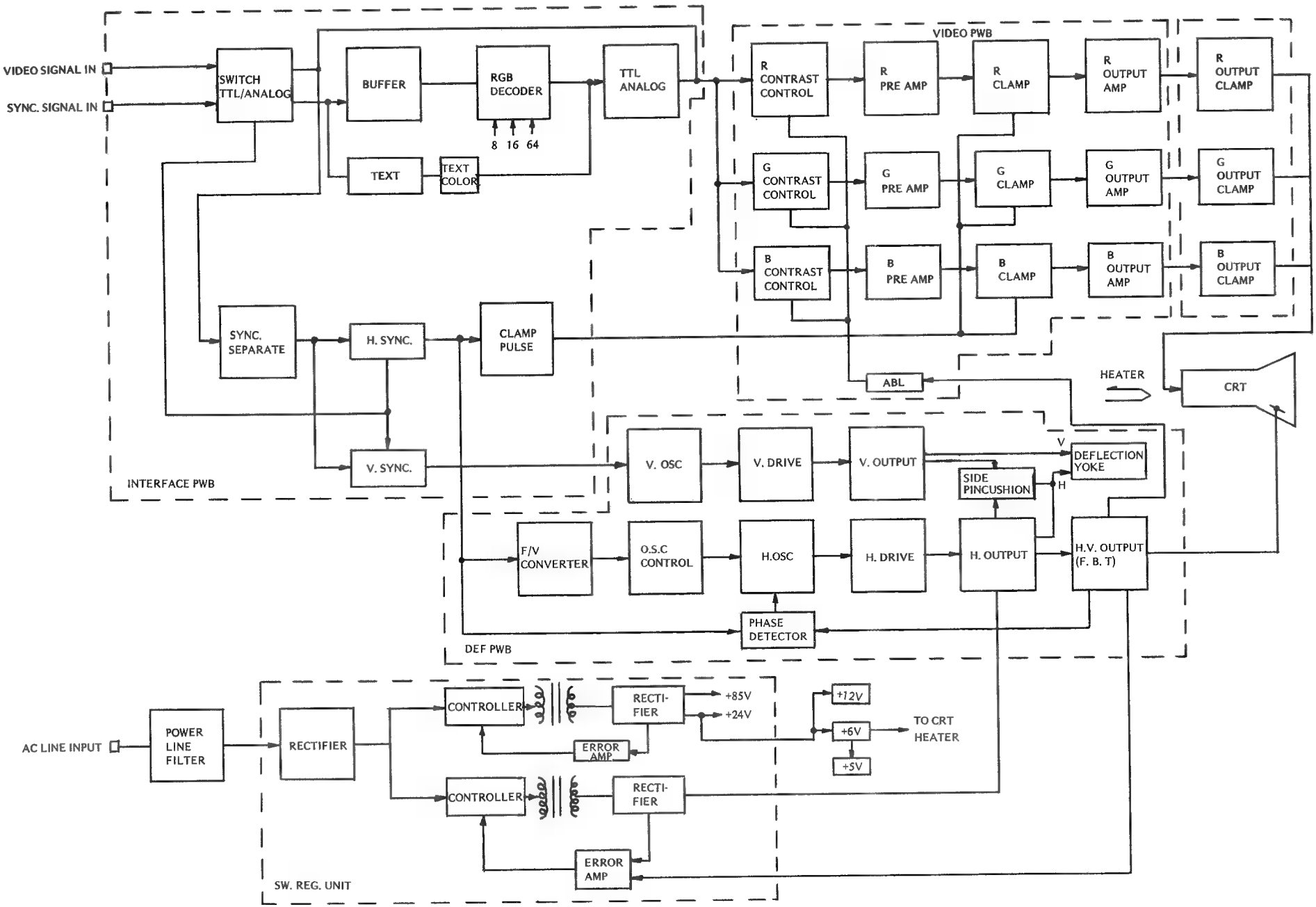
+85V	0.015 ~ 0.11 A R1 (5.67KΩ ~ 772Ω)
+24V	0.4 ~ 1.0 A R2 (60Ω ~ 24Ω)

Attention) Do not power on SW. REG. unit itself without the load at K1, K2, or it may misoperate protector.

MAIN VOLTAGE LINE FAILURE EXCEPT SW. REG. UNIT

VOLTAGE LINE		FAILURE PARTS	PWB ASSY	REMARKS
(A1) 85V CONNECTOR K1–K3		D554, D555 TR501 TR502	DEF PWB PWE-105	
		TR728 ~ TR733 R770 ~ R775 C742, C743, C745	VIDEO PWB PWE-122	
(A2) 24V K2–K3 AND ASSOCIATED VOLTAGE LINES	24V CONNECTOR K2–K3	D404, IC402, C409	DEF PWB PWE-105	BECAUSE OF FAILURE BELOW PART MAY BE DAMAGE 1. F651 1.6A 2. R780 2.2Ω 1/2W 3. R781 4.7Ω 1/2W 4. TR741
		TR741, IC701, IC702 ZD702 C752, C758, C759, T501	VIDEO PWB PWE-122	
	12V CONNECTOR P3–P1	C704 ~ 706 AND ASSOCIATED CIRCUITRY OF VIDEO AMP CIRCUIT USING 12 Volts Supply	VIDEO PWB PWE-122	
		IC755 C810, C829, TR801 ZD801, C810	INTERFACE PWB PWE-110	
	6V CONNECTOR HC2–HC3	CRT HEATER	CRT PWB PWF-123	
		C759	VIDEO PWB PWE-122	
		INTERFACE CIRCUIT BASED ON 5V LINE BETWEEN CONNECTOR P4 AND P1 TTL ICs	INTERFACE PWB PWE-110	
(A3) 45 ~ 120V CONNECTOR C1–C3		C516 FBT D501 TR503 C513, C514, C515 DEFLECTION YOKE	DEF PWB PWE-105	
(A3) HIGH VOLTAGE FEEDBACK VOLTAGE CONNECTOR C2–C3		FBT C2001 D2001 OTHERS	DEF PWB PWE-105	SEE ITEM 5

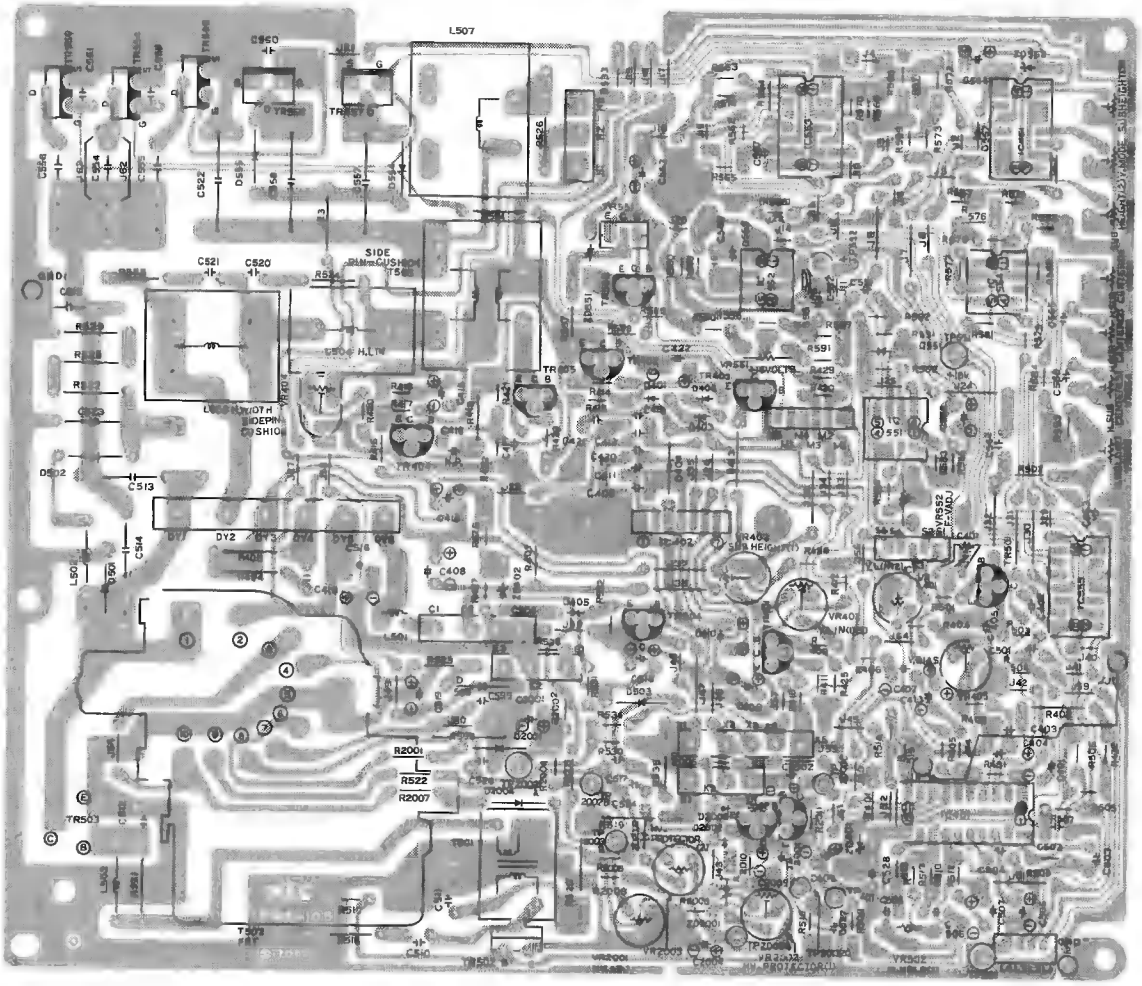
JC-1401P3A BLOCK DIAGRAM



PRINTED WIRING BOARD

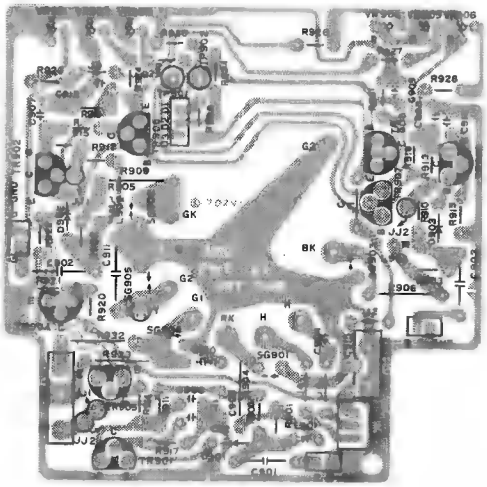
DEFLECTION PWB ARR'Y (PWE 105)

— Solder Side —



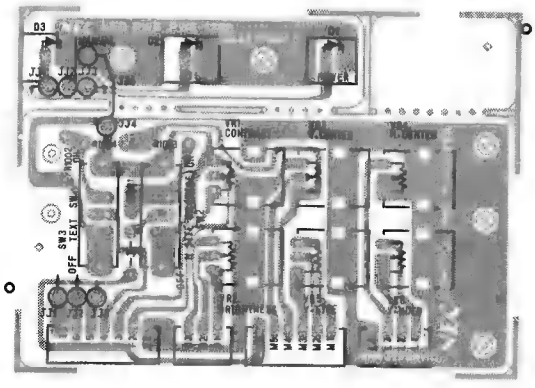
CRT PWB ASS'Y (PWE 123)

— Solder Side —



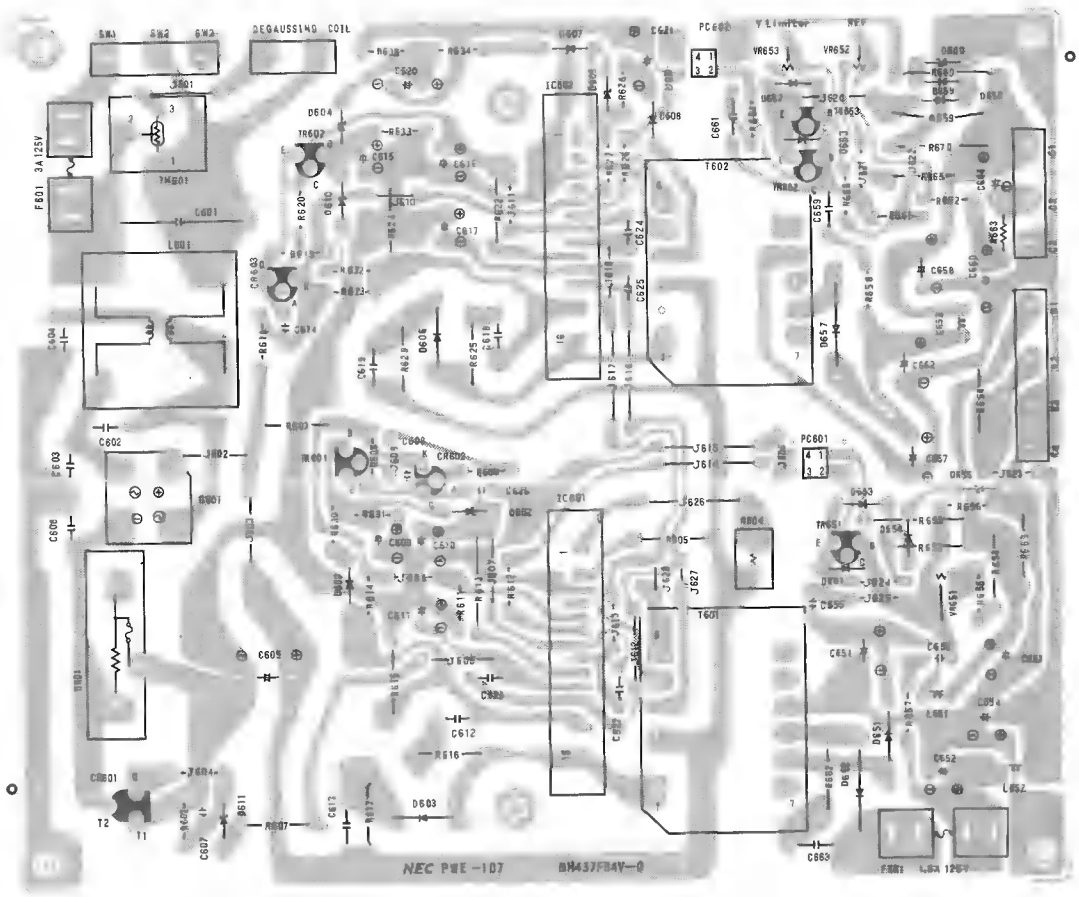
CONTROL PWB ASS'Y (PWE 125A)
LED PWB ASS'Y (PWE 125B)

— Solder Side —



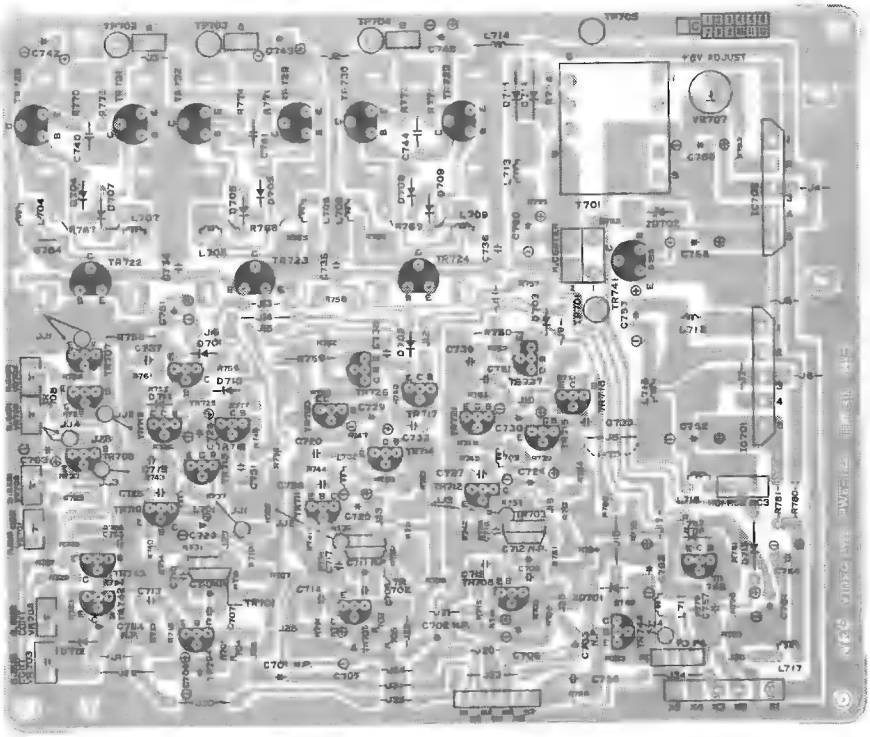
SWITCHING REGULATOR POWER SUPPLY PWB ASS'Y (PWE 107)

— Solder Side —



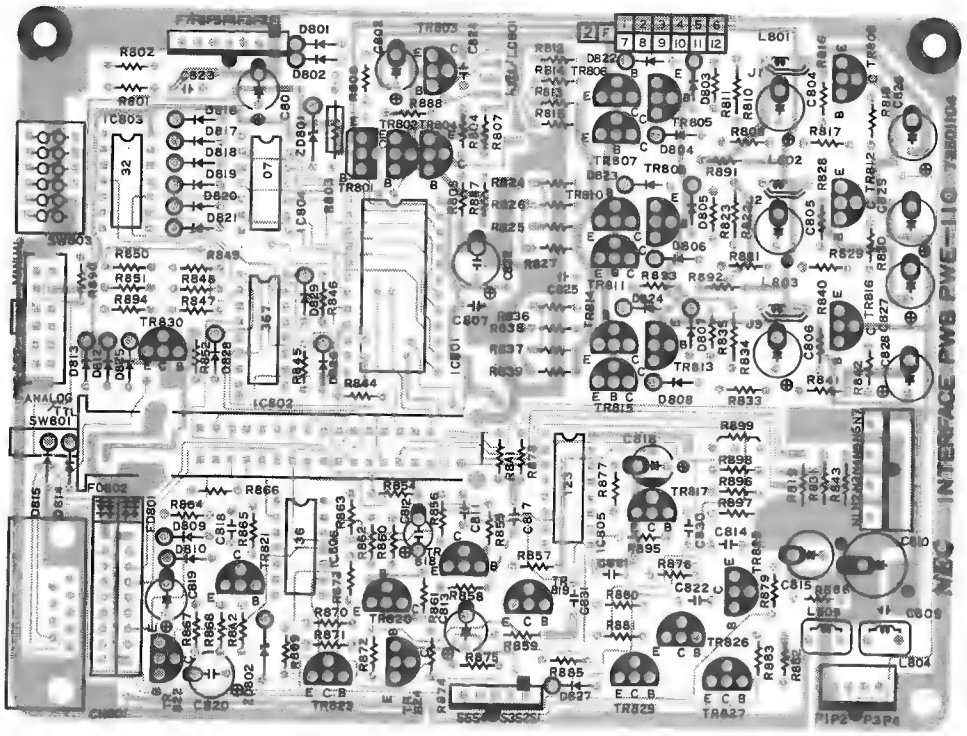
VIDEO PWB ASS'Y (PWE 122)

— Solder Side —



INTERFACE PWB ASS'Y (PWE 110)

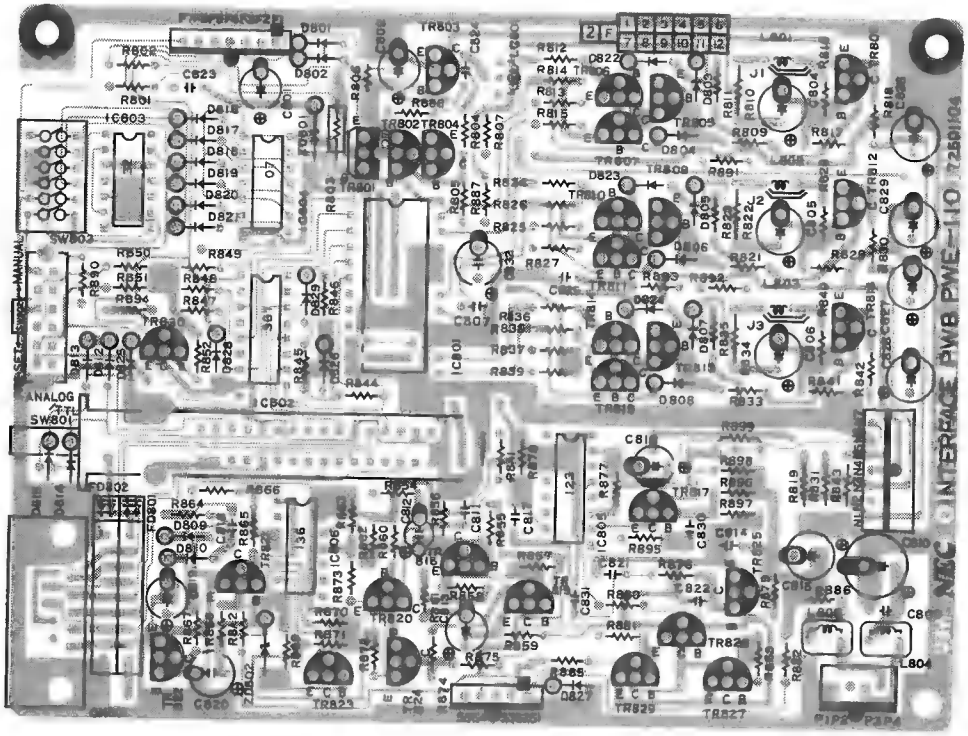
— Component Side —



↑ Pin 2 5V Vert +
Pin 3 8V Horiz —

INTERFACE PWB ASS'Y (PWE 110)

See-through view of reverse-side components



REPLACEMENT PARTS LIST

Note: The components identified by ⚠ make are critical for safety. Replace only with Parts Number Specified.

SYMBOL	PARTS NO	DESCRIPTION	QTY
	*** CRT & TUNER ***		
⚠CRT	33014109	CRT(370HYB22-TC100 (PN2))	1
	*** ICS ***		
IC552 IC554	37011010	IC MPC4557C (OP-AMP)	2
IC553	37011054	IC UPC339C (COMP)	1
IC451 IC555	37051036	MOS UPD4066BC (ESD)	2
IC803	37051081	IC SN74LS32N (OR)	1
IC802	37051096	IC SN74LS367AN (BUFF)	1
IC804	37051108	IC SN7407N (BUFF)	1
IC805	37051179	IC SN74LS123N (MONO MLT)	1
IC806	37052011	IC SN74LS136N (EX-OR)	1
IC402	37056216	IC LA7833	1
⚠IC401	37056217	IC LA7850	1
⚠IC551	37056218	IC IR9331	1
IC702	37056219	IC STR2005	1
IC701	37056220	IC STR2012	1
⚠IC601 ⚠IC602	37056228	STK7404-105	2
IC801	37056233	IC PCD-016MI	1
	*** TRANSISTORS ***		
TR2002 TR401 TR404	350D7217	TR,2SC945-T Q	35
TR501 TR504 TR552			
TR713 TR714 TR715			
TR716 TR717 TR718			
TR719 TR720 TR721			
TR743 TR802 TR804			
TR808 TR812 TR816			
TR817 TR818 TR819			
TR821 TR822 TR823			
TR824 TR825 TR826			
TR827 TR829 TR830			
TR904 TR908			
TR704 TR705 TR706	350H5017	TR,2SC3811-TA Q	20
TR710 TR711 TR712			
TR725 TR726 TR727			
TR744 TR805 TR806			
TR807 TR809 TR810			
TR811 TR813 TR814			
TR815 TR820			
⚠TR2001 TR707 TR708	350K3517	TR 2SA733/2SA733A Q	7
TR709 TR742 TR745			
TR803			
TR403	350K4412	TR,2SA952 L	1
TR405	35004312	TR,2SA953 L	1
TR901 TR902 TR903	35005217	TR,2SA1018 Q	3
TR731 TR732 TR733	35006504	TR 2SA1406-RA D	3
⚠TR601 ⚠TR602	35047216	TR,2SC945 P	2
⚠TR651 ⚠TR652 ⚠TR653	35053011	TR,2SC1941 K	3
TR402	35055312	TR 2SC2001 L	1
TR502	35056311	TR,2SC2688 K	1
TR801	35063511	TR 2SD471 (1) K	1
TR551	35065416	TR,2SD882 P	1
TR741	35065417	TR,2SD882 Q	1
⚠TR503	35082401	TR 2SC3486-YB	1
TR722 TR723 TR724	35082505	TR,2SC3502 E	3
TR905 TR906 TR907	35084417	TR,2SC1473 G	3
TR728 TR729 TR730	35084504	TR,2SC3600-RA D	3
⚠TR557 ⚠TR558	35121000	TR,2SK430	2
⚠TR554 ⚠TR556	35121100	TR,2SK319	2
TR701 TR702 TR703	35170102	TR,2SC1583	3
⚠CR601	35595008	TRIAC BCR6AM-8L	1
⚠CR602 ⚠CR603	35595010	THYRISTOR 03P4M-L	2
	*** DIODES ***		
D701 D702 D703	360K1009	DIODE,SI.1S2473	10
D704 D705 D706			
D707 D708 D709			
D716			
D710 D711 D712	360K1010	DIODE,SI.1S2472	3
D401 D402 D403	360K1027	DIODE 1SS132	34
D405 D551 D552			
D553 D557 D801			
D802 D803 D804			
D805 D806 D807			
D808 D809 D810			
D812 D813 D814			
D815 D816 D817			
D818 D819 D820			
D821 D822 D823			
D824 D825 D826			
D827			
⚠D607 ⚠D608 D901	360K1032	DIODE 1SS82-TA	5
D902 D903			
⚠D609 ⚠D610 ⚠D653	360K1528	DIODE 1S954-T4	9
⚠D654 ⚠D658 ⚠D659			
⚠D661 ⚠D662 ⚠D663			
ZD401	360K3098	DIODE RD12EB(3)-T4	1
ZD701	360K3106	DIODE RD6.2EB(3)-T4	1
ZD801	360K3112	DIODE RD9.1EB (3)-T4	1
ZD702	360K3121	DIODE RD6.8EB(3)-T4	1
ZD402	360K3123	DIODE RD20EB(3)	1
⚠D604	360K3129	DIODE,RD27EB(4)-T4	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
⚠ZD2001⚠ZD2002 ZD551	360K3143	DIODE,RD8.2JSB(1)-T4	3
⚠D602	360K3149	DIODE RD10EB(2)-T4	1
⚠D655 ⚠D660	360K3151	DIODE RD6.8EB(2)-T4	2
D716	36001009	DIODE,SI.1S-2473	1
D826 D827	36001027	DIODE 1SS132	2
ZD802	36003100	DIODE RD5.1EB-2	1
⚠D605	36003133	DIODE,RD7.5EB(2)	1
ZD552	36003147	DIODE RD18EB(1)	1
⚠D611	36003162	DIODE, RD2.7EB (1)	1
D2C01⚠D2004 D404 D505 ⚠D554 ⚠D555 D713 D714 D715	361K7160	RECTIFIER,SI. TVR-06G G23	9
⚠D501	361K7259	CGJ-1	1
D503	361K7505	RECTIFIER,SI.ERB44-06V1	1
⚠D603 ⚠D606	36107174	RECTIFIER,SI RU1P	2
⚠D651	36107180	DIODE RU3AM,LFB2	1
D502	36107268	RECTIFIER,SI V11N	1
⚠D652	36107511	RECTIFIER,SI. RL4Z,LFK2	1
⚠D657	36107512	RECTIFIER,SI. RG4C,LFK2	1
⚠D601	36108009	DIODE,RB-40C BRIDGE	1
FD802	36108054	DIODE ARRAY 1S2473*7A	1
FD801	36108055	DIODE ARRAY 1S2473*7K	1
D1 D2 D3	36801046	DIODE,LIGHT-E SG235D	3
⚠D2002⚠D2005	38005011	VARISTER,VD1220	2
⚠TH601	38112026	THERMISTER,POSITIVE	1
⚠PC601⚠PC602	38200214	PHOTO COUPLER	2

*** TRANSFORMERS ***

T501	45803008	TRANSFORMER	1
T701	46305101	TRANS,CONVERTER	1
⚠T601	46308101	TRANS,SWITCHING	1
⚠T602	46308102	TRANS,SWITCHING	1
⚠T502	47105626	FLY BACK TRANSFORMER	1
⚠T503	47502042	TRANS,SIDE PINCUSHION	1

*** VARIABLE RESISTORS ***

VR5	41011270	R,VARIABLE B500-V(M)	1
VR1 VR2	41011271	R,VARIABLE B10K-V(M)	2
VR4	41011272	R,VARIABLE B10K-V(M)	1
VR3	41011273	R,VARIABLE B20K-V(M)	1
VR6	41011274	R,VARIABLE B200K-V(M)	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
VR401	41061006	R,VARIABLE B100K	1
VR707	41061008	R,VARIABLE B4.7K	1
VR402 VR403	41061013	R,VARIABLE B220H	2
VR405	41061623	R,VARIABLE 33K	1
VR552	41067027	R,VARIABLE B3K	1
VR551	41067105	R,VARIABLE 1K 0.1W	1
VR502	41067108	R,VARIABLE B5K	1
VR701 VR702 VR703	41071160	R,VARIABLE B3.3K	3
VR704 VR705 VR706	41071161	R,VARIABLE B4.7K	3
VR901 VR902 VR903	41071169	R,VARIABLE B100K	6
VR904 VR905 VR906			
VR451 VR452	41085005	R,VARIABLE B1K	2
VR553 VR554	41085012	R,VARIABLE B50K	2
VR501	41085015	R,VARIABLE B300K	1
VR555	41085016	R,VARIABLE B500K	1
VR404	41085054	R,VARIABLE B500H	1
⚠VR651	41087058	R,VARIABLE B5K	1
⚠VR2002⚠VR2003 VR652	41505005	R,VARIABLE B2K	3
⚠VR653	41505007	R,VARIABLE B5K	1
⚠VR2001	41505008	R,VARIABLE B10K	1

*** RELAYS & SWITCHES ***

SW802	65163001	SWITCH,SLIDE	1
⚠SW2 ⚠SW3	65163002	SWITCH,SLIDE	2
SW801	65169901	LEVER SWITCH,SLIDE	1
⚠SW803	65208004	SEE SAW SWITCH	1
	66098006	SW,LEVER SDLR06CP	1

*** COILS & FILTERS ***

⚠L505			60908043	COIL,VARIABLE WIDTH	1
⚠L504			60918101	COIL,H.LIN	1
⚠L507			60999004	COIL,CHOKE	1
L901	L902	L903	610E1711	COIL,FILTER 3.3UH	3
L716	L804	L805	610E1714	COIL,FILTER 5.6UH	3
L502	L714		610F6014	COIL,FILTER 5.6UH	2
L503			610F7010	COIL,FILTER 2.7UH	1
L712			61022081	COIL (SF471M1R0)	1
L701	L702	L703	61051707	COIL,FILTER 1.5UH	3
L704	L705	L706	61051710	COIL,FILTER 2.7UH	6
L707	L708	L709			
⚠L601			61062038	LINE FILTER(3.9MH-2.2A)	1
⚠			61062057	LINE FILTER	1
L501	L711	L717	61064006	COIL,FILTER 50UH	3

SYMBOL	PARTS NO	DESCRIPTION	QTY
⚠L651 ⚠L653 L713 L715	61099011	COIL,CHOKE 33UH	2
	61099019	COIL,CHOKE	2
⚠L652	61099020	COIL,CHOKE	1
⚠	61314108	COIL,DEGAUSSING	1
LC401	61606022	NOIZE FILTER DSS-222M	1
LC801	61606023	FILTER DSS-223S	1
*** PWB ASSYS ***			
	84J57A03	SW.REG.PWB ASSY	1
	84J57C03	VIDEO PWB ASSY	1
	84J57D02	DEF PWB ASSY	1
	84J57J02	CRT PWB ASSY	1
	84J57K03	INTERFACE PWB ASSY	1
	84J57L01	CONTROL PWB ASSY	1
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***			
	31709201	INSULATOR SHEET	1
	31709202	SHEET,INSULATOR	1
HS-402	66653013	FUSE 1.6A UC	1
⚠F651	66653031	FUSE 3A UC	1
⚠F6C1 SG901 SG902 SG903 SG904 SG905	66706001	SPARK GAP 1.2KV	5
	70032223	SG/CRT SOCKET	1
⚠	70102009	SOCKET,IC 24PIN	1
	70810707	POWER CORD (UL)	1
	71205037	HOLDER,FUSE	4
CN-CE CN-H CN-H1	73721003	CONNECTOR PIN 2P	3
	73893013	CABLE,SIGNAL	1
*** APPEARANCE PARTS ***			
	24514792	COIL SPRING	1
	25305821	CABINET BACK	1
	25305831	CABINET FRONT	1
	25404081	ESCUTCHEON,CONTROL	1
	25404091	REVOLVING STAND (B)	1
	25761881	NAME PLATE,INSTRUCTION	1
	25404111	REVOLVING STAND (T)	1
	25404121	LID,CONTROL	1

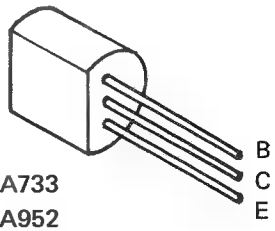
SYMBOL	PARTS NO	DESCRIPTION	QTY
*** PRINTED & PACKING MATERIALS ***			
	24806961	BAG,POLYETHYLENE(270*370)	1
	24813191	BAG,POLYETHYLENE	1
	25810221	FILLER(L),CARTON	1
	25810231	FILLER(R),CARTON	1
	25810241	CARTON BOX	1
	25810711	FILLER(T),CARTON	1
	78117552	USER'S MANUAL	1
	78117561	JC-1401P3A QUESTIONARE	1
	78033751	HEW RECORDING CARD	1
	78041522	WARRANTY CARD	1
	599910248	SERVICE MANUAL	
*** RESISTORS ***			
⚠R594	401C6649	R,CARBON 100H 5% 1/4W	1
⚠R626	401C6657	R,CARBON 220H 5% 1/4W	1
⚠R658	401C6661	R,CARBON 330H 5% 1/4W	1
⚠P6C2 ⚠P608 ⚠R611 ⚠R619 ⚠P663 ⚠R6C9 ⚠R620 ⚠R623 ⚠R662 ⚠R631	401C6673	R,CARBON 1.0K 5% 1/4W	5
	401C6675	R,CARBON 1.2K 5% 1/4W	2
	401C6677	R,CARBON 1.5K 5% 1/4W	1
	401C6679	R,CARBON 1.8K 5% 1/4W	1
	401C6681	R,CARBON 2.2K 5% 1/4W	1
⚠R666 ⚠R633 ⚠P656 ⚠R661 ⚠R612 ⚠R636 ⚠R655 ⚠R664	401C6683	R,CARBON 2.7K 5% 1/4W	1
	401C6685	R,CARBON 3.3K 5% 1/4W	3
	401C6687	R,CARBON 3.9K 5% 1/4W	1
	401C6691	R,CARBON 5.6K 5% 1/4W	2
	401C6695	R,CARBON 8.2K 5% 1/4W	1
⚠R627 ⚠R657 ⚠R618	401C6709	R,CARBON 33K 5% 1/4W	1
	401C6723	R,CARBON 120K 5% 1/4W	1
	401C6745	R,CARBON 1.0M 5% 1/4W	1
⚠R6C5 ⚠R6C3	401H5721	R,CARBON 100K 5% 1/2W	1
	401H5735	R,CARBON 390K 5% 1/2W	1
⚠R2C02 R734 R735 R736 R779	401K5679	R,CARBON 1.8K 5% 1/6W	5
⚠R2C05 ⚠R2009 R504 R556 R788 R807 R887	401K5687	R,CARBON 3.9K 5% 1/6W	7
⚠R2004 ⚠R2008 R502 R591	401K5693	R,CARBON 6.8K 5% 1/6W	4
⚠R2003 ⚠R2006 ⚠R2010 R416 R513 R531 R551 R552 R558	401K5697	R,CARBON 10K 5% 1/6W	18

SYMBOL	PARTS NO	DESCRIPTION	QTY
R592 R731 R732 R733 R8A1 R852 R854 R875 R920 ⚠R2011 R506 R868 R921	401K5699	R/CARBON 12K 5% 1/6W	4
⚠R587	40175117	R/CARBON 4.7H 5% 1/4W	1
⚠R414	40175133	R/CARBON 22H 5% 1/4W	1
⚠R630 ⚠R632 ⚠R634	40175143	R CARBON 56H 5% 1/4W	3
⚠R614	40175181	R/CARBON 2.2K 5% 1/4W	1
⚠R623	40175189	R/CARBON 4.7K 5% 1/4W	1
⚠R794	40177109	R/CARBON 2.2H 5% 1/4W	1
⚠R770 ⚠R771 ⚠R772 ⚠R773 ⚠R774 ⚠R775	40177141	R/CARBON 47H 5% 1/4W	6
⚠R781	40178117	R/CARBON 4.7H 5% 1/2W	1
⚠R6C1	40299001	R/WIRE 10H 10% 2W	1
R767 R768 R769	40318179	R/METAL 1.8K 5% 5W	3
R526	40371137	R/METAL 33H 5% 1W	1
R8C3	40371161	R/METAL 330H 5% 1W	1
⚠R615 ⚠R624	40372101	R/METAL 1.0H 5% 2W	2
R4C7	40372113	R/METAL 3.3H 5% 2W	1
⚠R622 ⚠R667	40372137	R/METAL 33H 5% 2W	2
⚠R616 ⚠R625	40372141	R/METAL 47H 5% 2W	2
⚠R6C7	40372147	R/METAL 82H 5% 2W	1
R401 R413	40372157	R/METAL 220H 5% 2W	2
⚠R652	40372203	R/METAL 18K 5% 2W	1
⚠R654	40372205	R/METAL 22K 5% 2W	1
⚠R665	40372209	R/METAL 33K 5% 2W	1
⚠R617 ⚠R629	40372217	R/METAL 68K 5% 2W	2
⚠R613	40373133	R/METAL 22H 5% 3W	1
R519	40373163	R/METAL 390H 5% 3W	1
R520	40373165	R/METAL 470H 5% 3W	1
⚠R653	40373195	R/METAL 8.2K 5% 3W	1
⚠R660	40373197	R/METAL 10K 5% 3W	1
⚠R659 ⚠R670	40373203	R/METAL 18K 5% 3W	2
⚠R604	40399031	R/METAL 2.2K 5% 2W	1
⚠R2001 ⚠R2007 ⚠R523	40405109	R/METAL 2.2H 5% 1/4W	3
⚠R522	40405117	R/METAL 4.7H 5% 1/4W	1
⚠R525	40812661	R/FUSE 330H 5% 1/2W	1
⚠R524	40812665	R/FUSE 470H 5% 1/2W	1
⚠R780	40822609	R/FUSE 2.2H 5% 1/2W	1

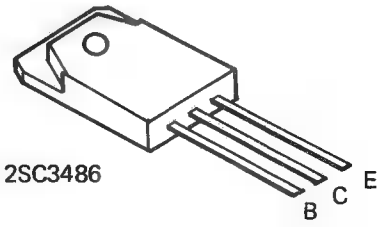
SYMBOL	PARTS NO	DESCRIPTION	QTY
*** CAPACITORS ***			
C412 C524	420C9551	C/CERAMIC 500V 100PF	1
	420C9555	C/CERAMIC 500V 220PF	1
⚠C521	420C9557	C/CERAMIC 500V 330UF	1
C411 C420 C510 ⚠C520	420C9560	C/CERAMIC 500V 560PF	4
C512 C912 C913 C914	420C9563	C/CERAMIC 500V 0.001UF	4
C9C5 C906 C907 C9C8	420C9567	C/CERAMIC 500V 2200PF	4
C511	4201J575	C/CERAMIC 500V 0.01UF	1
C911	42019175	C/CERAMIC 2KV 0.01UF	1
⚠C626	4203J554	C/CERAMIC 500V 180PF	1
C740 C741 C744	4203J575	C/CERAMIC 500V 0.01UF	3
C910	42034143	C/CERAMIC 2KV 1000PF	1
⚠C6C6	42053013	C/CERAMIC 400V 1000PF	1
⚠C6C3 ⚠C604	42053067	C/CERAMIC 400V 2200PF	2
⚠C6C2	42053125	C/CERAMIC 400V 0.01UF	1
⚠C663	42099082	C/CERAMIC 2KV 1500PF	1
⚠C612 ⚠C618 ⚠C622 ⚠C623 ⚠C624 ⚠C625	42099085	C/CERAMIC 2KV 560PF	6
C559 C560 C807 C8C9 C814	421AC425	C/CERAMIC 50V 0.01UF	5
C419 C527 C567 ⚠C561 C707 C708 C7C9 C716 C717 C718 C719 C720 C721 C734 C735 C736 C755 C757 C818 C823 C824 C825 C831 C915 C916	421C0213 421J9C01	C/CERAMIC 50V 1000PF C/CERAMIC 50V 0.1UF	3 22
C568	4213K211	C/CERAMIC 50V 680PF	1
C1C01	4219J002	C/CERAMIC 50V 0.1UF	1
C5C1 C562 C5C3 C811	423A1045 423A1055 423A1074	C/CERAMIC 50V 100PF C/CERAMIC 50V 270PF C/CERAMIC 50V 270PF	2 1 1
C830	423A2023	C/CERAMIC 50V 12PF	1
C713 C714 C715 C737 C738 C739	423A2037 423A2043	C/CERAMIC 50V 47PF C/CERAMIC 50V 82PF	3 3
C563	427A7005	C/FILM 100V 0.0022UF	1
C5C8	427A7007	C/FILM 100V 0.0033UF	1
C5C2	427F4005	C/FILM 50V 2200PF	1
C4C4	427F4010	C/FILM 50V 5600PF	1
C4C5	427F4017	C/FILM 50V 0.022UF	1
C4C3	427F4025	C/FILM 50V 0.1UF	1
C817 C822	427F4051	C/FILM 50V 1000PF	2

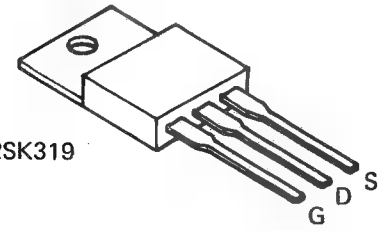
SYMBOL	PARTS NO	DESCRIPTION	QTY
C402	427F4052	C/FILM 50V 1200PF	1
C551 C821	427F4053	C/FILM 50V 1500PF	2
C566	427F4058	C/FILM 50V 3900PF	1
C417	427F4059	C/FILM 50V 4700PF	1
C504	427F4061	C/FILM 50V 6800PF	1
C506 C565 C731	427F4063	C/FILM 50V 0.01UF	5
C732 C733			
C406	427F4071	C/FILM 50V 0.047UF	1
C421 C526	427F4075	C/FILM 50V 0.1UF	2
⚠C515	42703867	C/FILM 400V 0.022UF	1
C517	42754267	C/FILM 200V 0.022UF	1
⚠C608 ⚠C614	4276D063	C/FILM 50V 0.01UF	2
⚠C656	4276D073	C/FILM 50V 0.068UF	1
⚠C607	4276D075	C/FILM 50V 0.1UF	1
⚠C655	4279J058	C/FILM 100V 5600PF	1
⚠C513	42807514	C/METAL FILM 1.6K 3600PF	1
⚠C514	42807516	C/METAL FILM 1.6K 4300PF	1
⚠C556	42807517	C/METAL FILM 1.6K 4700PF	1
C528	4282C025	C/METAL FILM 50V 1UF	1
⚠C601	42824229	C/METAL FILM 250V 0.22UF	1
⚠C661	42839021	C/METAL FILM 250V 0.068UF	1
⚠C613 ⚠C619 ⚠C659	42839022	C/METAL FILM 250V 0.1UF	3
C901 C902 C903	42899010	C/METAL FILM 250V 0.22UF	3
C523	42899012	C/METAL FILM 1KV 0.068UF	1
⚠C522 ⚠C557 ⚠C558	42899042	C/METAL FILM 400V 0.64UF	3
C728 C729 C730	430A4103	C/ELEC 50V 0.47UF	3
C505 C507	430A4105	C/ELEC 50V 1UF	2
⚠C2002 ⚠C2005	430A9015	C/ELEC 10V 47UF	2
C763 C819	430A9061	C/ELEC 50V 1UF	2
C820	430A9062	C/ELEC 50V 2.2UF	1
⚠C2004	430A9065	C/ELEC 50V 10UF	1
C415	430B3102	C/ELEC 50V 1UF	1
⚠C2001	430B3109	C/ELEC 50V 47UF	1
C743 C745	430B3182	C/ELEC 160V 1UF	2
C742	430K5116	C/ELEC 160V 1UF	1
C518	430K5135	C/ELEC 200V 10UF	1
⚠C660	4302C101	C'ELEC 50V 0.47UF	1
C519	4302C107	C/ELEC 50V 22UF	1
⚠C651	4302C172	C/ELEC 100V 330UF	1
⚠C664	4302C182	C/ELEC 160V 1UF	1
⚠C657 ⚠C658 ⚠C662	4302C190	C/ELEC 160V 100UF	3
⚠C611 C617	4302E051	C/ELEC 16V 220UF	2

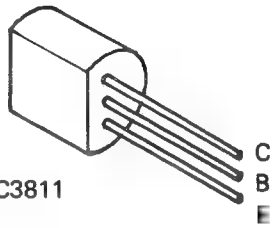
SYMBOL	PARTS NO	DESCRIPTION	QTY
⚠C610 ⚠C616	4302E053	C/ELEC 50V 470UF	2
⚠C654	4302E090	C/ELEC 35V 100UF	1
⚠C652	4302E093	C/ELEC 35V 470UF	1
⚠C609 ⚠C615	4302E105	C/ELEC 50V 4.7UF	2
⚠C620 ⚠C621	4302E107	C/ELEC 50V 22UF	2
⚠C653	4302E170	C/ELEC 100V 100UF	1
C516	4309J040	C/ELEC 160V 10UF	1
⚠C605	4310E101	C/ELEC 200V 470UF	1



2SA733
2SA952
2SA953
2SA1018
2SC945
2SC1473
2SC1730
2SC2001







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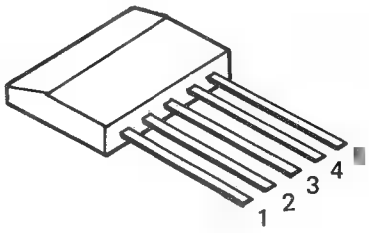

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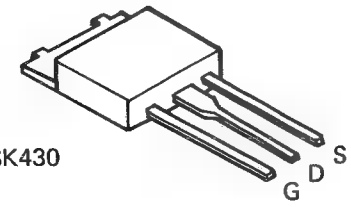
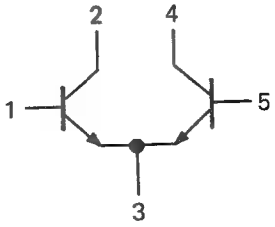
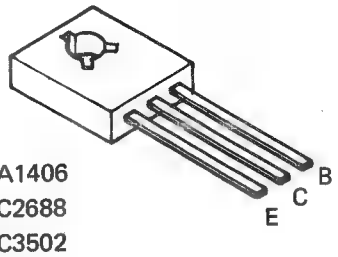


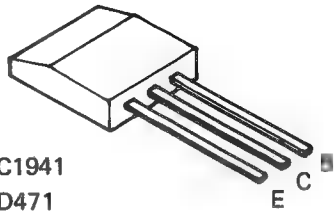




2SA1406
2SC2688
2SC3502
2SC3600
2SD882

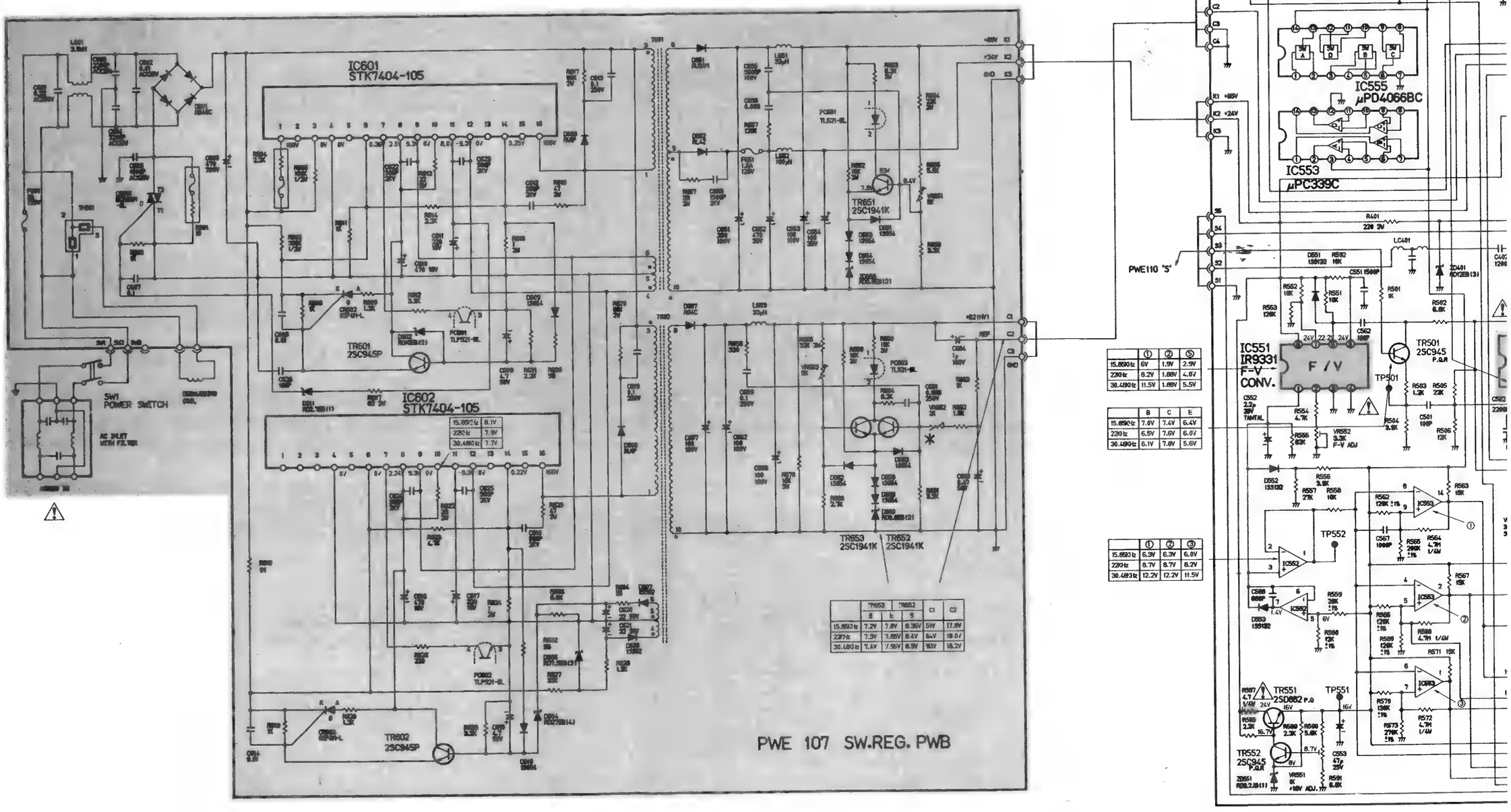
NOTE:

E: EMITTER
B: BASE
C: COLLECTOR
G: GATE
D: DRAIN
S: SOURCE



2SC1941
2SD471

MODEL JC-1401P3A
SCHEMATIC DIAGRAM



THIS SCHEMATIC DIAGRAM IS FUNDAMENTAL AND SUBJECT TO CHANGE

PWE 107 SW.REG. PWB

PWE 125A
CONTROL PWB

IC451 μPD4066BC

IC552 μPC4557C

IC554 μPC4557C

IC555 μPD4066BC

IC553 μPC339C

IC402 LA7830 V.OUT

IC551 IR9331 F-V CONV.

IC401 LA7850

TR651 2SC1941K

TR653 2SC1941K

TR652 2SC1941K

TR501 2SC945 P.Q.R

TR401 2SC945 P.Q.R

TR551 2SD882 P.Q

TR552 2SC945 P.Q.R

TR2001 2SA733 P.Q.R

TR2002 2SC945 P.Q.R

TR402 2SC2001

TR403 2SA952L

TR405 2SA953

TR404 2SC945 P.Q.R

TR503 2SC3486

TR502 2SC2371

TR557 2SK430

TR558 2SK430

TR554 2SK319 2SK320

TR556 2SK319 2SK320

PWE110 "S"

PWE123 "D"

TP401

TP501

TP552

TP551

TP2003C

TP2002C

TP2002B

TP2003A

TP2003B

	①	②	⑤
15.690kHz	6V	1.9V	2.9V
22kHz	8.2V	1.88V	4.0V
30.480kHz	11.5V	1.88V	5.5V

	B	C	E
15.690kHz	7.0V	7.4V	6.4V
22kHz	6.5V	7.6V	6.0V
30.480kHz	6.1V	7.8V	5.6V

	①	②	③
15.690kHz	6.3V	6.3V	6.0V
22kHz	8.7V	8.7V	8.2V
30.480kHz	12.2V	12.2V	11.5V

	TR653 B	TR653 E	TR652 S	C1	C2
15.690kHz	7.2V	7.8V	8.36V	51V	17.6V
22kHz	7.3V	7.85V	8.4V	64V	18.0V
30.480kHz	7.4V	7.95V	8.5V	93V	18.2V

SAVE THIS SCHEMATIC DIAGRAM FOR LATER SERVICE.

RUN NO.1

	PIN NO	15.890Hz	22kHz	30.480Hz
①	⑧	6.3V	8.7V	12.2V
	⑨	9.5V	9.5V	9.3V
	⑭	16V	16V	0V
②	④	6.3V	8.7V	12.2V
	⑤	7.7V	7.5V	7.5V
	②	15.5V	0V	0V
③	⑥	6.3V	8.7V	12.2V
	⑦	10.1V	10.1V	9.9V
	①	15.5V	15.7V	0V
④	⑩	16V	16V	0V
	⑪	7.5V	7.5V	7.5V
	⑬	0V	0V	16V
⑤	⑥	15.5V	0V	0V
	⑧	5.2V	5.6V	6.2V
	③	5.2V	0V	0V
⑥	⑩	5.2V	5.6V	6.2V
	⑪	5.1V	5.5V	0V
	⑫	15.5V	15.7V	0V
⑦	①	1.3V	1.3V	6.5V
	②	6.6V	6.6V	6.6V
	⑬	0V	0V	16V
⑧	③	6.6V	6.5V	14.5V
	④	6.6V	6.6V	6.6V
	⑤	16V	16V	0V
⑨	①	3.1V	10.4V	15.4V
	②	6.4V	8.8V	10.1V
	③	6.3V	8.7V	12.2V
⑩	⑤	6.3V	8.7V	12.2V
	⑥	9.4V	9.4V	12.2V
	⑦	1.38V	1.38V	8.6V
⑪	B	0.32V	0.37V	0.38V
	C	56V	48V	45V
⑫	TP2003A	24.7V	24.9V	25.1V
	TP2002A	25.2V	25.4V	25.6V

IBM PROFESSIONAL MODE	11.5V
22kHz	
15.890kHz	12.5V

PWE 125A
CONTROL PWB

PWE 125B
LED PWB

PWE 105 DEF PWB

IC552 μPC4557C

IC554 μPC4557C

IC402 LA7830 V.OUT

IC401 LA7850

PWE123 'D'

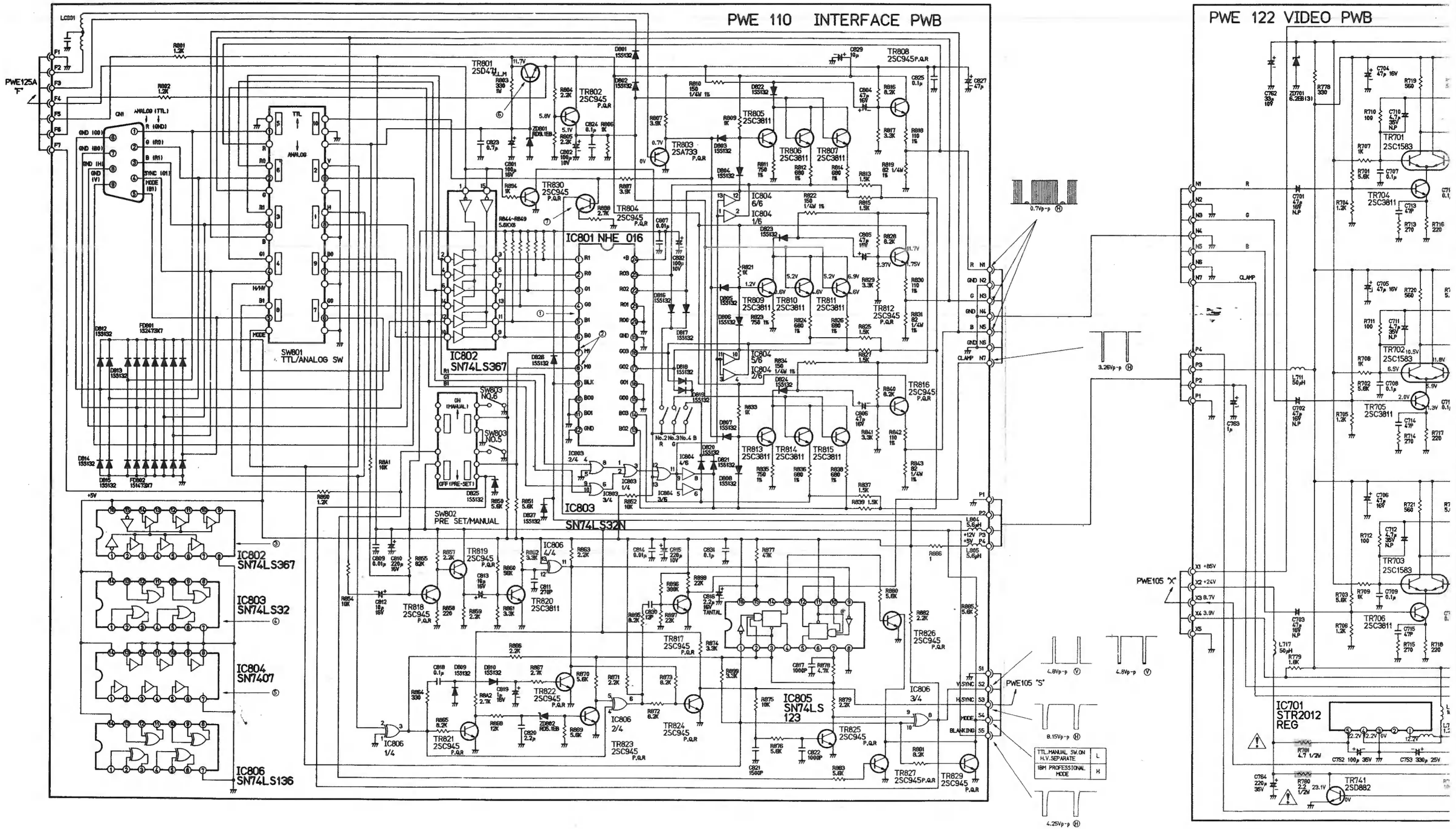
PWE110 'F'

PWE123 'Y'

PWE122 'X'

PWE123 'E'

PWE122 'H'



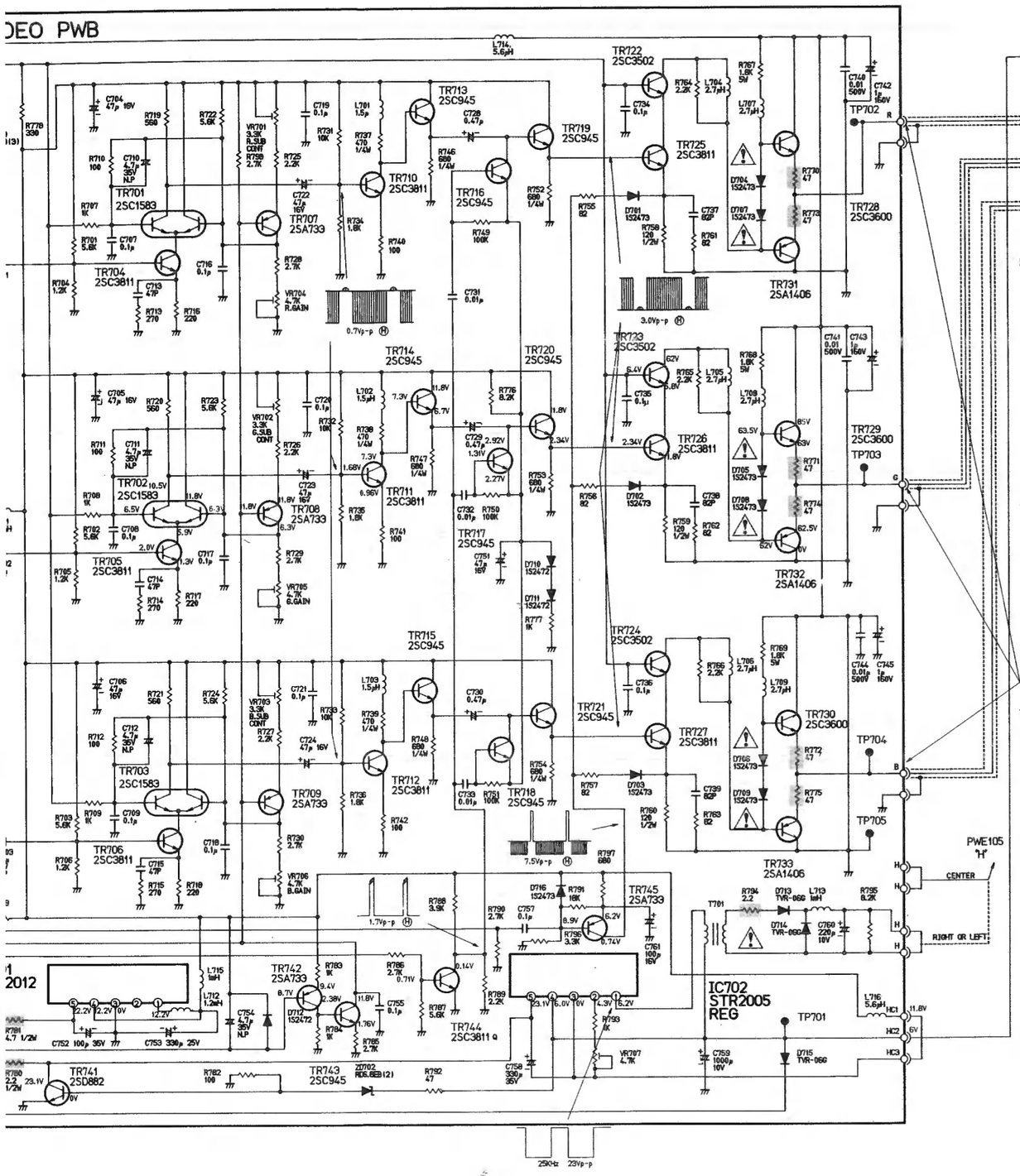
THIS SCHEMATIC DIAGRAM IS FUNDAMENTAL AND SUBJECT TO CHANGE.

PWE 110 INTERFACE PWB

PWE 122 VIDEO PWB

SAVE THIS SCHEMATIC DIAGRAM FOR LATER SERVICE

RUN NO.



	15.85KHz	22KHz	30.4MHz
	22.2KV	22.5KV	22.7KV

① IC801	TEXT SW OFF	TEXT SW ON		SW6 ON	SW6 OFF
1	2.0V	4.7V	13	2.5V	0.3V
2	0V	4.7V	14	2.5V	
3	2.0V	4.7V	15	0V	
4	0V	4.7V	16	0V	
5	2.0V	4.7V	17	2.5V	0.3V
6	0V	4.7V	18	2.5V	
	SW6 ON	SW6 OFF	19	0V	
7	4.8V	0V	20	0V	
	SW5 ON	SW5 OFF	21	0V	
8	4.8V	0V	22	2.5V	0.3V
9	3.5V		23	2.5V	
10	0V		24	4.8V	
11	0V				
12	0V				

③ IC802	TEXT SW OFF	TEXT SW ON
1	0V	5V
2	1.95V	
3	2.25V	4.8V
4	1.95V	
5	2.25V	4.8V
6	1.95V	
7	2.25V	4.8V
8	0V	
9	2.25V	4.8V
10	1.95V	
11	2.25V	4.8V
12	1.95V	
13	2.25V	4.8V
14	1.95V	
15	0V	5V
16	4.8V	

④ IC803	TEXT SW OFF	TEXT SW ON
1	2.1V	
2	2.1V	
3	2.1V	
4	1.95V	
5	0V	
6	2.1V	
7	0V	
8	2.1V	
9	1.95V	
10	1.95V	
11	4.0V	2.1V
12	2.1V	
13	4.8V	0V
14	4.8V	
15		
16		

⑤ IC804	TEXT SW OFF	TEXT SW ON
1	4.0V	2.0V
2	2.2V	
3	4.0V	2.0V
4	2.2V	
5	4.0V	2.0V
6	2.2V	
7	0V	
8	2.3V	
9	2.3V	
10	4.0V	2.0V
11	2.3V	
12	4.0V	2.0V
13	4.0V	2.0V
14	4.8V	
15		
16		

② DECODER

COLORS	B	16	64
M1	L	L	H
M0	H	L	L

⑥ VIDEO AMP

	B	E
TTL	9.2V	8.5V
ANALOG	0V	0V

⑦ SYNC SEP

TTL	0V
ANALOG	0.7V

INPUT VIDEO SIGNAL : TTL.16colors. high Intensity
all inverted "H" pattern
H.Sync : 22KHz

NOTES

1. RESISTOR VALUES ARE IN Ω (OHM) K = 1,000Ω M = 1,000,000Ω
2. ALL RESISTORS ARE 1/4WATT EXCEPT WHERE OTHERWISE INDICATED.
3. CAPACITOR VALUES ARE IN μF UNLESS OTHERWISE INDICATED. P = PF
4. ALL CAPACITORS ARE 50VOLTS EXCEPT WHERE OTHERWISE INDICATED.
5. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE INVERTED "H" CHARACTER SIGNALS. THE CONTRST CONTROL IS MAXIMUM , THE BRIGHTNESS CONTROL IS MINIMUM AND ALL OTHER CONTROLS ARE NORMAL= OPERATION.
6. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE FOLLOWING SYNC. AND VIDEO, EXCEPT WHERE OTHERWISE INDICATED.
   SYNC : HORIZONTAL RATE = 15.85KHz , SEPARATE SYNC , TTL LEVEL , POSITIVE
   VIDEO : TTL LEVEL,POSITIVE
7. Ⓗ..... HORIZONTAL RATE. Ⓥ.....VERTICAL RATE.

WARNING

REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY ⚠ SHADING ON THE SCHEMATICS. REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS.
DON'T DEMAGE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

CONTROL (S) MARKED ※ IS PERMANENTLY FROZEN.
DO NOT ATTEMPT TO DEFEAT OR IMPROPERLY REPLACE.