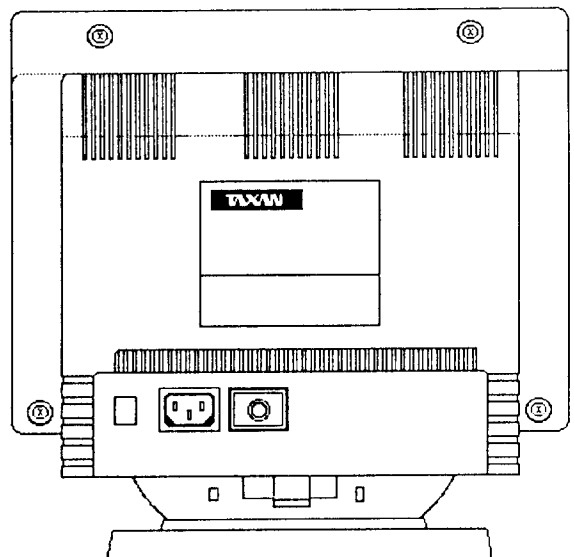
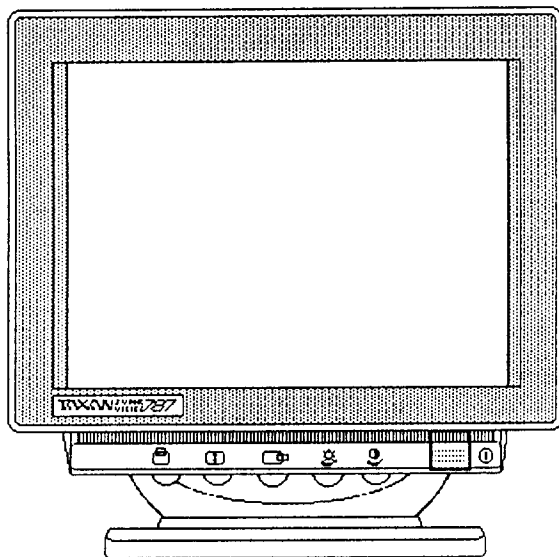


# TAXAN



## Service Manual

For the Supervision 787 and 787LR  
14" SVGA Colour Monitor



## **Please Note:**

The following information is provided in the interests of safety.

- 1). This equipment is mains powered (230 Volts AC) and is therefore potentially hazardous once the cover is removed.
- 2). Only trained engineering staff should attempt any work on the unit with the cover removed.
- 3). While servicing the unit, protect the mains supply to the equipment under test and all electrically powered test equipment with a suitably rated Residual Current Circuit Breaker (rccb) unit. These devices are readily available and are designed to remove the mains supply quickly in the event of a serious leakage of current to earth.
- 4). Ensure all test equipment, and the unit under test is adequately earthed.
- 5). Always discharge the CRT before attempting any work on the high voltage power circuits.
- 6). We advise the use of Electrostatic Damage Prevention equipment when servicing electronic equipment containing static sensitive devices.



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## SPECIFICATIONS

Application:	A typical data display device for graphics & text PC applications.
Power Input:	80 watts (nominal) AC rated voltage. Refer to rating label.
Video Signals:	Analog: 0.7 Vp-p, RGB positive.
Sync. Signals:	Separate Sync: Horiz./Vert., TTL, positive or negative.
Sync. Frequencies:	Horizontal: 31.468 KHz / 35.52 KHz Vertical: 50 - 87 Hz
Signal Connectors:	15-pin, D-shell connector.
Display Tube:	14" 90 degrees, 575R, 29.1o neck, 0.28mm dot pitch, in-line gun, non-glare screen.  Type number: M34KBV80X11
Display Area:	VGA modes : 243 x 183mm (H x V) SVGA mode : 240 x 180mm (H x V) 8514/A mode: 246 x 183mm (H x V)
Display Colors:	Infinite
Display Characters:	80 char. x 60 rows on a 10x10 matrix.
Maximum Resolution:	1024 dots x 768 lines
Misconvergence:	Center Area: $\leq 0.3\text{mm}$ Corner Area: $\leq 0.4\text{mm}$
User Controls:	Power ON/OFF, Brightness, Contrast, Horiz. Phase, Vert. Size. Vert. Center.

Service Controls: PWB-1002: R-BKG, G-BKG, B-BKG ,  
R-Bias, G-Bias, B-Bias.

PWB-1029: G1 Voltage Adjust,  
Pincushion, Horiz. Width, Horiz. Hold 1,  
Horiz. Hold 2, Horiz. Phase, Vert. Size,  
Vert. Center, Vert. Linearity, Vert. Hold, Screen.

Environmental  
Conditions: Operation: 10 to 35 degrees C ambient.  
Storage: 0 to 65 degrees C ambient.  
Humidity: 8% to 80% (non-condensing).  
Altitude: up to 7000 ft. above sea-level.

Dimensions: 347mm (H) x 355mm (W) x 390mm (D).

Gross Weight: 14 kgs.

#### SIGNAL CABLE PIN CONNECTIONS

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

## SAFETY PRECAUTIONS AND NOTICES

### SAFETY PRECAUTIONS

1. Observe all cautions and safety related notes located inside the monitor cabinet and on the monitor chassis.
2. Operation of the monitor outside its cabinet or with the cover removed involves the risk of shock from the monitor power supply. Repair work on the monitor should not be attempted by anyone who is not thoroughly familiar with all necessary safety precautions and procedures for working on high voltage equipment.
3. Do not install, remove, or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept at a distance during handling of the picture tube. Keep the picture tube away from the body during handling.
4. The picture tube is constructed to limit X-radiation to 0.5mR/HR at 300 micro-amperes anode current. For continued protection, use the recommended replacement tube only, and adjust the voltages so that the designated maximum rating at the anode will not be exceeded.

### PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have been specially inspected for safety, and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage etc. Before replacing any of these components, read the Spare Parts List at the end of this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as those specified in the Spare Parts List may result in shock, fire, X-radiation or other hazards.

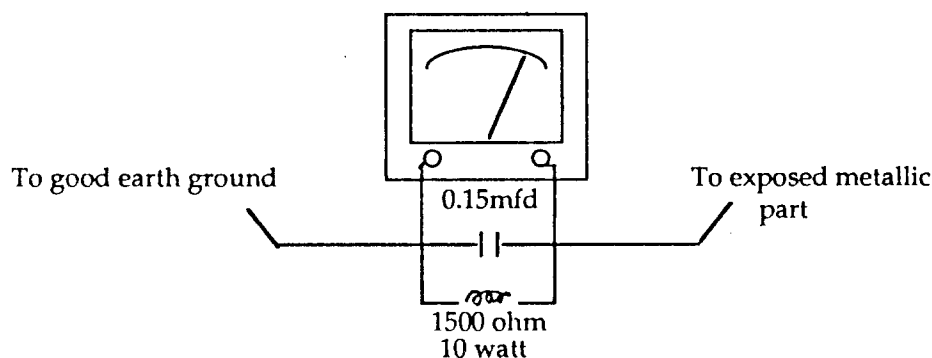
## SERVICE NOTES

1. When replacing parts or circuit boards, clamp the lead wires around the terminals before soldering.
2. When replacing a high wattage resistor ( >0.5 W metal oxide film resistor) in the circuit board, keep the resistor about 1 cm (1/2") away from the circuit board.
3. Keep wires away from high voltage or high temperature components.
4. Keep wires in their original positions so as to minimize interference.

## SAFETY TEST

Before returning a serviced monitor to the customer, a thorough safety test must be performed to verify that the monitor is safe to operate without danger of shock. Always perform an AC current leakage check on the exposed metallic parts, such as screw heads, as follows:

1. Plug the AC line cord directly into a rated AC. Do not use a Line Isolation Transformer during this check).
2. Use an AC voltmeter having at least 5000 ohms per volt sensitivity as follows: Connect a 1500 ohms 10 watt resistor, paralleled by a 0.15mfd, AC type capacitor between a known good earth ground (such as a water pipe or conduit etc.) and the exposed metallic part simultaneously. Measure the AC voltage across the combination of 1500 ohms resistor and 0.15mfd capacitor.
3. Reverse the AC plug at the AC outlet and repeat the steps for AC voltage measurements for each exposed metallic part.
4. Voltage measured must not exceed 0.3 volts RMS. This corresponds to 0.2 milli-amps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



# ALIGNMENT AND ADJUSTMENT

## 1. ADJUSTMENT CONDITIONS

Power Supply: AC 220V, 60 Hz.

Warm-up Time: The monitor should be powered on for at least 15 minutes before any adjustments are made, except for convergence, when 30 minutes are required.

Signal Input:

1. Video: RGB Analog, 0.7 Vp-p, positive.
2. Sync. : Horiz. and Vert. separated, positive or negative.
3. Scanning Frequencies: FH: 31.468 KHz / 35.52 KHz  
FV: 50 - 87 Hz
4. All adjustments should be made using a signal of FH=31.468 KHz, unless otherwise defined.

## 2. ADJUSTMENT EQUIPMENT

- a. Volt-ohm-A meter (Sanwa FD-750C or equivalent).
- b. 30KV high voltage probe (HP34111A).
- c. Oscilloscope (TEK2235 or equivalent).
- d. White balance adjuster (Minolta Color Analyzer II).
- e. Signal generator (IBM PC with VGA card or equivalent).
- f. Screwdriver.

## 3. SWITCHING POWER SUPPLY - Regulator Adjustment (PWB1029)

The regulated B+ control has been preset in the factory and needs no adjustment. However, if any repairs are made on the equipment, the following readjustment procedures are recommended.

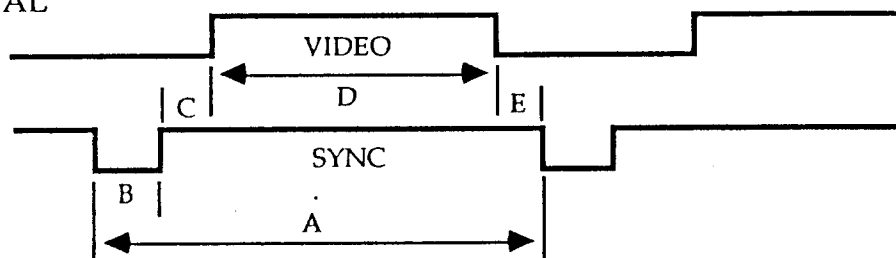
- a. Allow the monitor to warm-up for about 15 minutes.
- b. Do not apply any signal to the monitor.
- c. Connect a DC meter to C820 (on the main PCB), and adjust VR823 for 84V DC.
- d. If a fuse is broken during adjustment, remember to replace it with the exact same type of fuse.



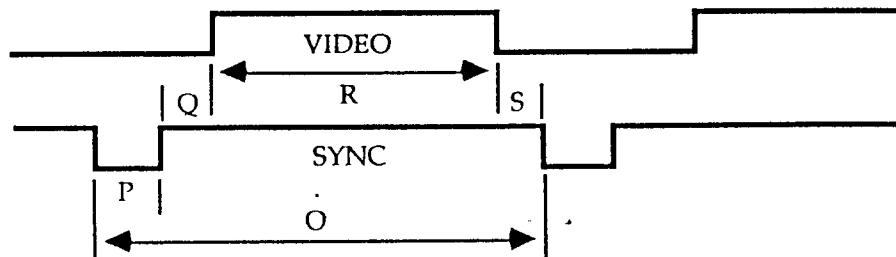
#### 4. Parameter list of signal timings generated:

Vertical Lines	350	400	480	600	768
Horizontal Freq.	— 31.468 KHz—			35.2 KHz	35.5 KHz
Sync. Polarity	POS	NEG	NEG	POS	POS
A us	31.78	31.78	31.78	28.44	28.15
B us	3.81	3.81	3.81	2.00	3.92
C us	1.91	1.91	1.91	3.66	1.16
D us	25.42	25.42	25.42	22.22	22.80
E us	0.64	0.64	0.64	0.67	0.67
Vertical Freq.	70 Hz	70 Hz	60 Hz	56.25 Hz	87 Hz interlaced
Sync. Polarity	NEG	POS	NEG	POS	POS
O ms	14.27	14.27	16.68	17.78	11.50
P ms	0.06	0.06	0.06	0.06	0.11
Q ms	1.91	1.11	1.05	0.63	0.56
R ms	11.12	12.71	15.25	17.07	10.80
S ms	1.18	0.38	0.32	0.03	0.01

HORIZONTAL



VERTICAL



## 5. ALIGNMENT PROCEDURES

### A) SYNCRONIZATION ADJUSTMENT

Input Signal: Cross Hatch Pattern

640 mode: Adjust Horiz. Hold 1 [VR405] to obtain horiz. freq.  
31.468 KHz (+/-10%).

800 & 1024 modes: Adjust Horiz. Hold 2 [VR414] to obtain horiz. freq.  
35.52 KHz.

640 mode: Adjust Vert. Hold [VR304] until the cross hatch pattern is stable.

### B) DISPLAY DATA POSITION ADJUSTMENT

Input Signal: Cross Hatch Pattern

1. Set Brightness to maximum.

2a. 31.468 KHz mode: Adjust Horiz. Phase 1 [VR411] & Vert. Center  
[VR318] so that the display data is central on the screen.

b. 35.52 KHz modes: Adjust Horiz. Phase 1 [VR411] & Vert. Center  
[VR318] so that the display data is central on the screen.

### C) PICTURE SIZE ADJUSTMENT

Input Signal: Cross Hatch Pattern

Horiz. Width:

600 mode: Adjust L402 so that the horiz. width of the picture  
is 240mm + 3mm / - 2mm

Vert. Height:

350 mode: Adjust VR124 so that the vert. height of the picture  
is 183mm +/- 3mm

400 mode: Adjust VR125 so that the vert. height of the picture  
is 183mm +/- 3mm

480 mode: Adjust VR126 so that the vert. height of the picture  
is 183mm +/- 3mm

600 mode: Adjust VR127 so that the vert. height of the picture  
is 180mm + 3mm / - 2mm

768 mode: Adjust VR127 so that the vert. height of the picture  
is 183mm +/- 3mm

## D) WHITE BALANCE ADJUSTMENT

Input Signal: Full White Video - VGA mode

Drive VRs: VR502, VR532, VR562.

Bias VRs: VR910, VR940, VR970.

- 1a. Set Brightness & Contrast to maximum.
- b. First adjust VR940 to its center position.  
Then adjust VR970 so that  $Y = 0.290 \pm 0.030$   
and adjust VR910 so that  $X = 0.280 \pm 0.020$
- 2a. Set Brightness to center detent & Contrast to maximum.
- b. Adjust VR532 for 45Vp-p of the G. gun input at the cathode.
- 3a. Set Brightness to center detent & Contrast to 10 Fl.
- b. First adjust VR562 so that  $Y = 0.290 \pm 0.030$   
then adjust VR502 so that  $X = 0.280 \pm 0.020$
- 4a. Set Brightness to maximum & the G2 voltage just before the raster appears.
- b. Check the white balance in the VGA mode.
- 5a. Set Brightness just before the raster disappears.
- b. Repeat steps 2b. to 5b. until the best white balance is obtained.

## E) FOCUS ADJUSTMENT

Input Signal: Dot Test Pattern

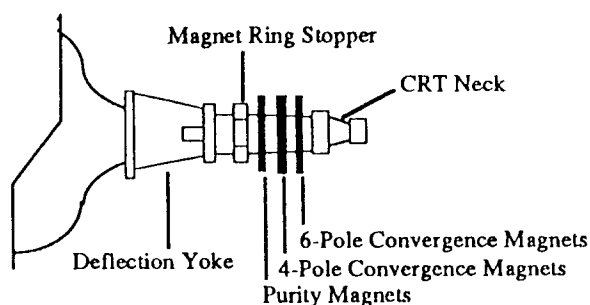
1. Set Brightness & Contrast for a normal display.
2. Adjust the focus control at the high voltage resistor block to obtain the best focus over the entire display area.

## F) STATIC CONVERGENCE ADJUSTMENT

NB: The monitor should be operated for at least 30 mins. before any convergence adjustments are made.

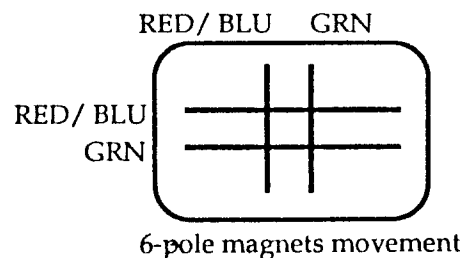
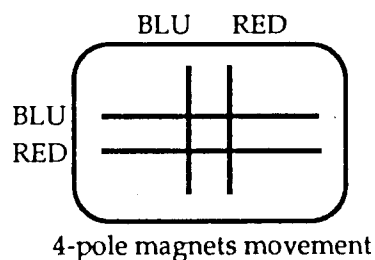
Input Signal: Cross Hatch Pattern

1. Set Brightness & Contrast so that a well-defined pattern is obtained.
2. Ensure that the convergence magnets on the CRT are in the correct position.



3. Turn the 2 tabs of the 4-pole magnets independently to adjust their angles. Align the red & blue vert. lines at the center of the screen.
4. Turn the 2 tabs of the 4-pole magnets simultaneously to keep their angles constant. Align the red & blue horiz. lines at the center of the screen.
5. Turn the 2 tabs of the 6-pole magnets independently to superimpose the red/blue vert. line on the green one.
6. Turn the 2 tabs of the 6-pole magnets simultaneously to superimpose the red/blue horiz. line on the green one.
7. Repeat steps 3, 4, 5 & 6 until the best convergence is obtained.

NB: The 4-pole magnets & the 6-pole magnets interact, making dot movements complex.



## G) DEGAUSSING

Degaussing is required when poor color purity appears on the screen. This monitor uses an automatic degaussing circuit that is activated at power ON. Automatic degaussing will be fully functional within 15 minutes.

The degaussing effect is confined to the picture tube since the coils are mounted at the back of the tube. Should any part of the chassis or cabinet become magnetized, it will be necessary to degauss the affected area with a manual degaussing coil.

### Manual Degaussing

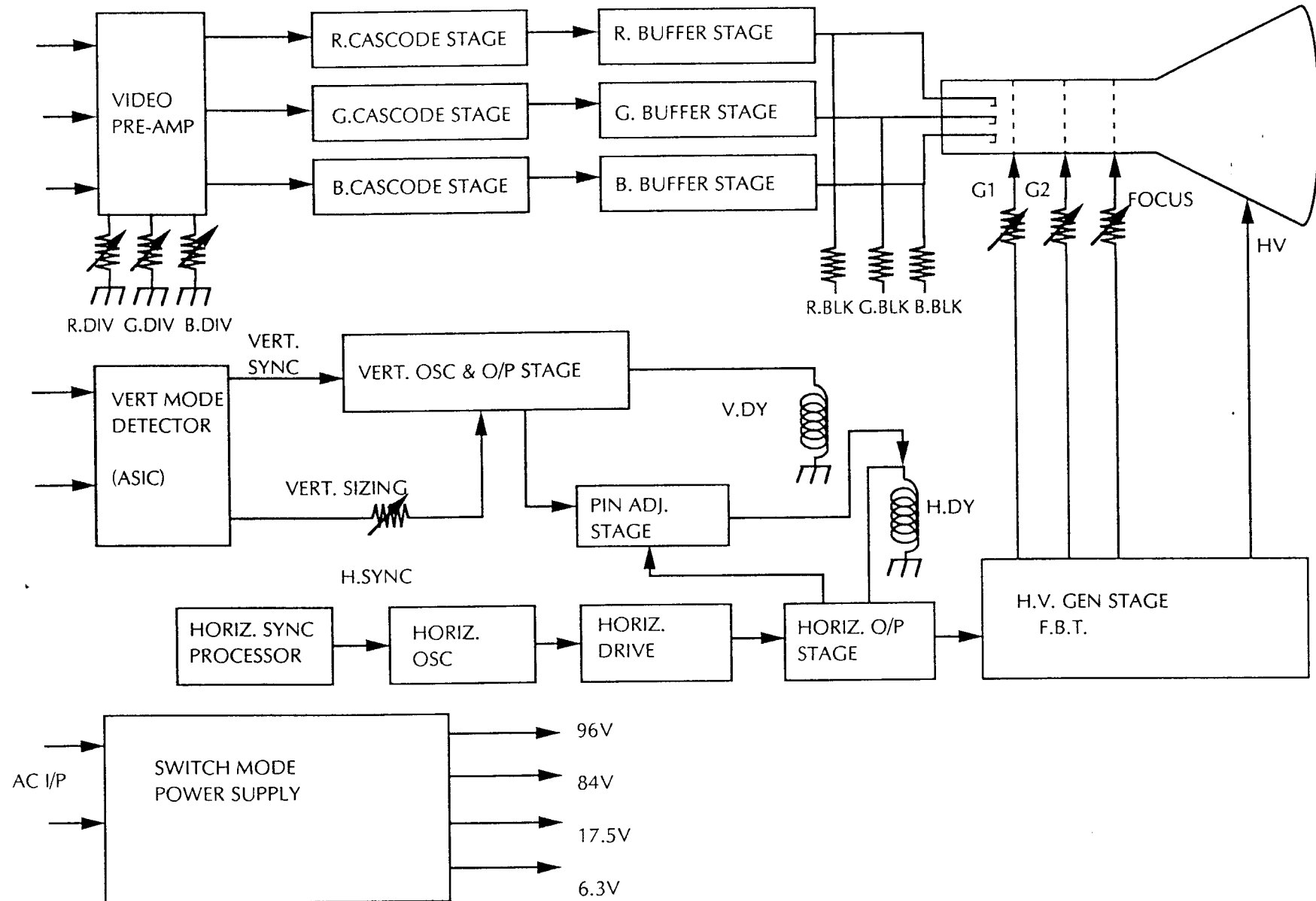
- a. Apply line voltage to the degaussing coil and move it in a rotary motion over the front, sides, and top of the monitor. The coil should be kept away from the rear of the monitor to avoid damaging the magnetic neck components.
- b. Slowly rotate and back the coil away from the monitor to about 6 feet beyond the point where no effect on the CRT will be noticeable.

For proper degaussing, it is essential that the field be gradually reduced by moving the coil slowly away from the monitor. The degaussing coil must never be shut off or disconnected while near the monitor, as this would introduce a strong field instead of cancelling the effect of the stray fields.

NOTES:

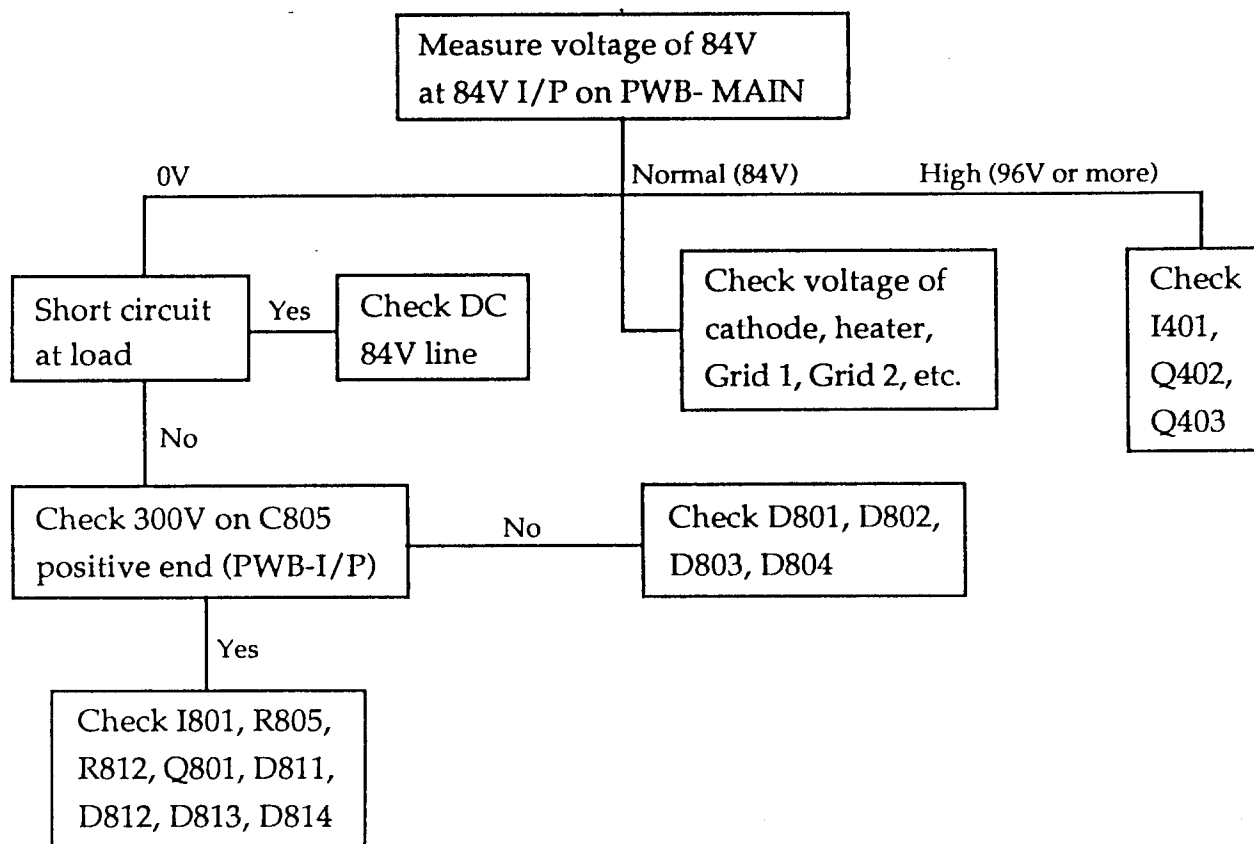
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# BLOCK DIAGRAM OF SUPERVISION 787 / 787LR COLOUR MONITOR

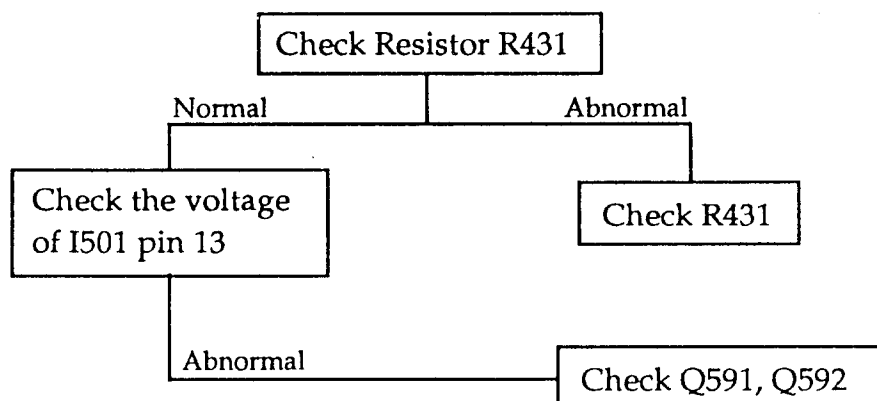


# TROUBLE-SHOOTING CHART

## 1. NO RASTER

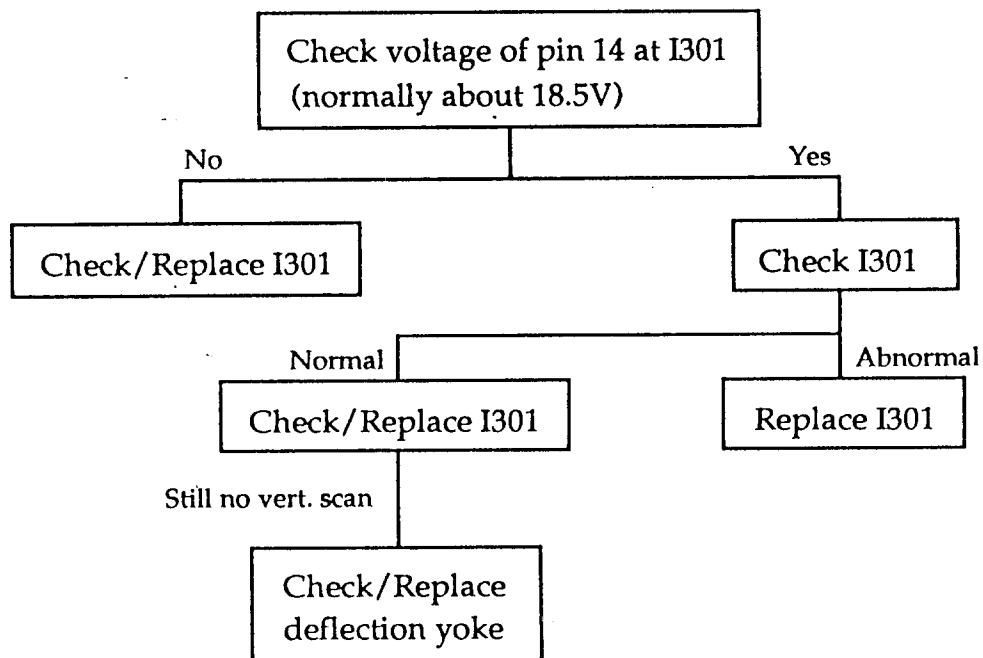


## 2. AUTOMATIC BRIGHTNESS LIMITER NOT FUNCTIONING

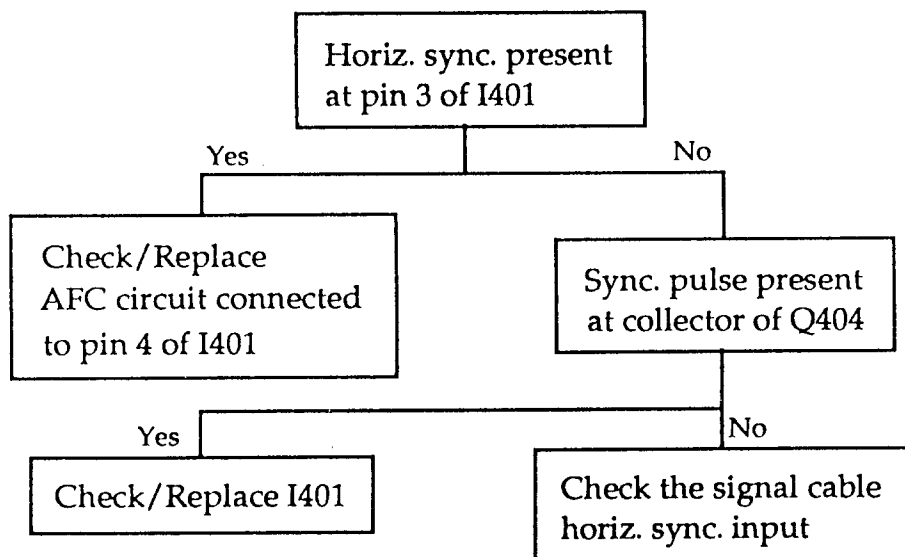




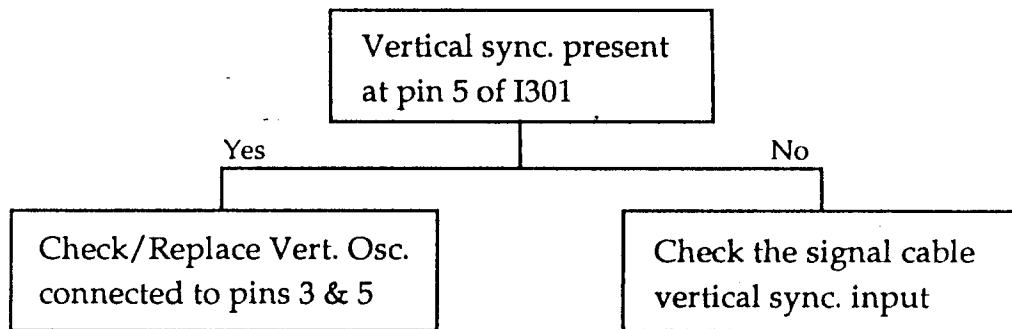
### 3. NO VERTICAL SCAN (RASTER IS ONE HORIZ. LINE)



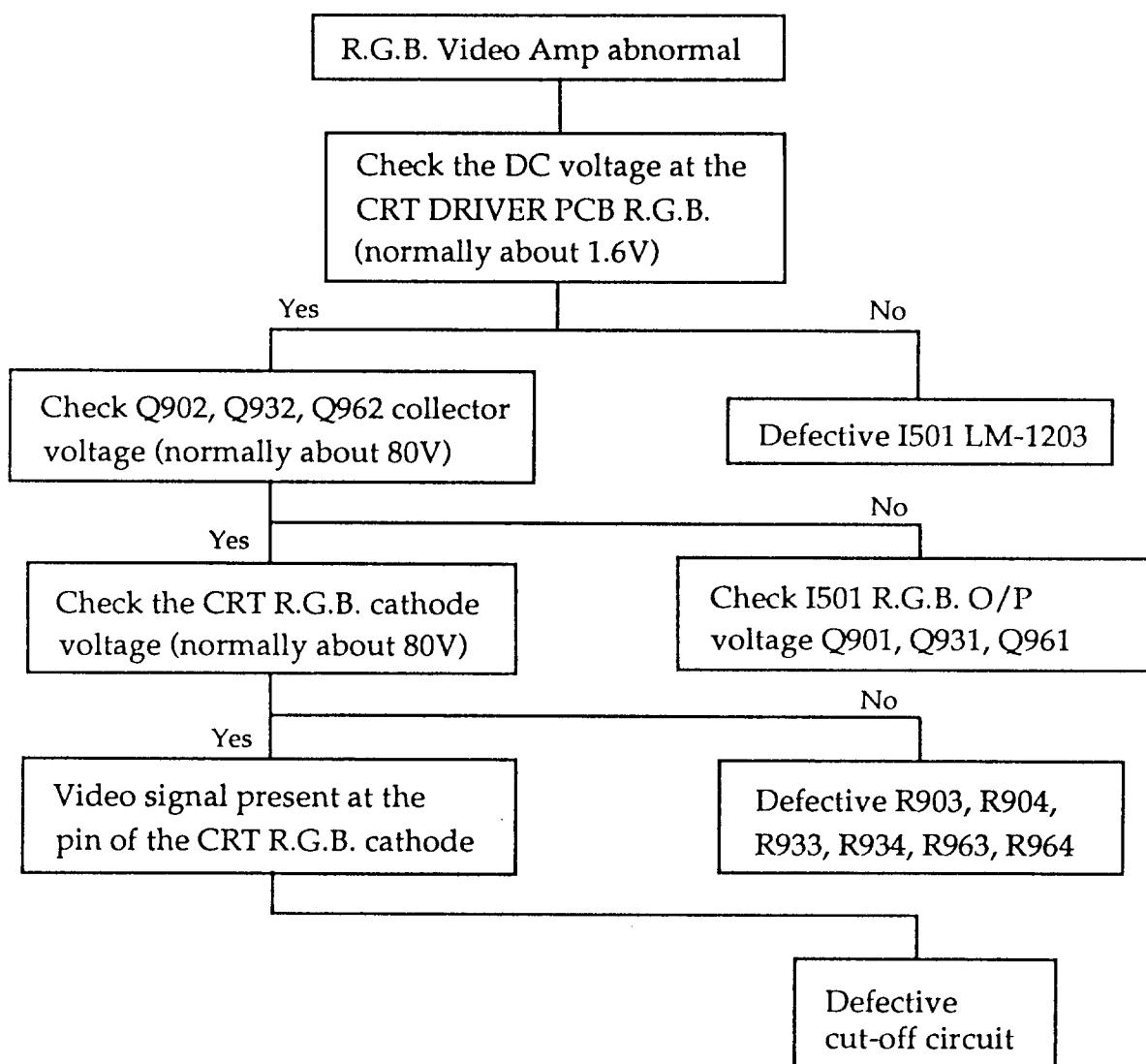
### 4. OUT OF HORIZ. SYNC.



## 5. OUT OF VERTICAL SYNC.



## 6. VIDEO AMP ABNORMAL



## SPARE PARTS LIST

## SV-787

ITEM	LOCATION	PART NO.	DESCRIPTION
1	T803	6131050310	XFRMER PWR
2	T403	6133035010	FBT
3	R802	6201050011	THERMISTOR
4	R803	6203200017	POSISTOR
5	R430	6212220253	RES CF
6	R429	6212220254	RES CF
7	R424	6243502100	VR
8	C802 - 803	6302147201	CAP CD
9	C806	6312622126	ALU
10	D801 - 804	6412000104	DIODE SW
11	D404, D413	6412000904	DIODE SW
12	D403, D405, D407, D819 - 820	6412001004	DIODE SW
13	D808 - 809	6412002506	DIODE SW
14	D304 - 305	6414000104	DIODE ZENER
15	D108	6414051004	DIODE ZENER
16	Q409	6412000700	THYRISTOR SCR
17	Q404, Q802, Q591	6422000205	TR NPN
18	Q402	6422000305	TR NPN
19	Q403	6422000400	TR NPN
20	Q902, Q932, Q962	6422000600	TR NPN
21	Q901, Q931, Q961	6422000700	TR NPN
22	Q934, Q964	6422000800	TR NPN
23	Q406	6422000905	TR NPN
24	Q405	6422001405	TR NPN
25	Q593	6422001505	TR NPN
26	Q803, Q303	6424000105	TR PNP

# SV-787 PARTS

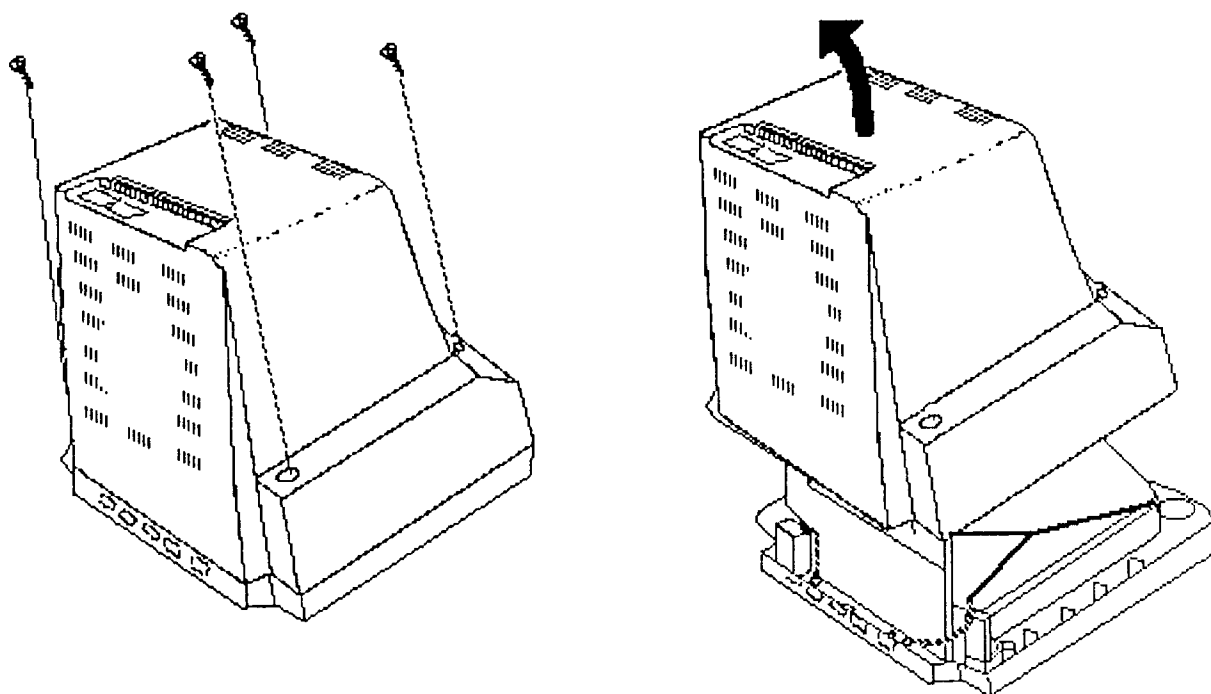
27	Q592	6424000205	TR PNP
28	Q903, Q933, Q963	6424000405	TR PNP
29	Q801	6426000030	POWER-MOS-FET
30	I301	6442001400	IC LINEAR
31	I401	6442000300	IC LINEAR
32	I108	6442000400	IC LINEAR
33	I801	6442002500	IC LINEAR
34	I501	6442000500	IC LINEAR
35	I802	6442001200	IC LINEAR
36	I803	6442001300	IC LINEAR
37	I109	6442002600	IC ASIC-1
38	I104	6446000500	IC
39	F801	6851004050	FUSE [4A, 250V]
40		7742201722	front cover
41		7742201343	rear cover
42		7749101010	polylon (L)
43		7749191011	polylon (R)
44		7749201032	carton

## Supervision 787 / 787LR Cabinet Dis-assembly

Instructions for the removal of the tilt-swivel base are contained in the user manual for the product, however it is not necessary to remove the tilt-swivel base to dis-assemble the unit for maintenance purposes.

Remove all power from the monitor and wait at least 20 seconds to allow the mains filter to fully discharge before beginning dis-assembly. Disconnect the video lead from any signal source.

Place the monitor face down on a non-abrasing surface such as soft polyethylene foam or a felt pad.



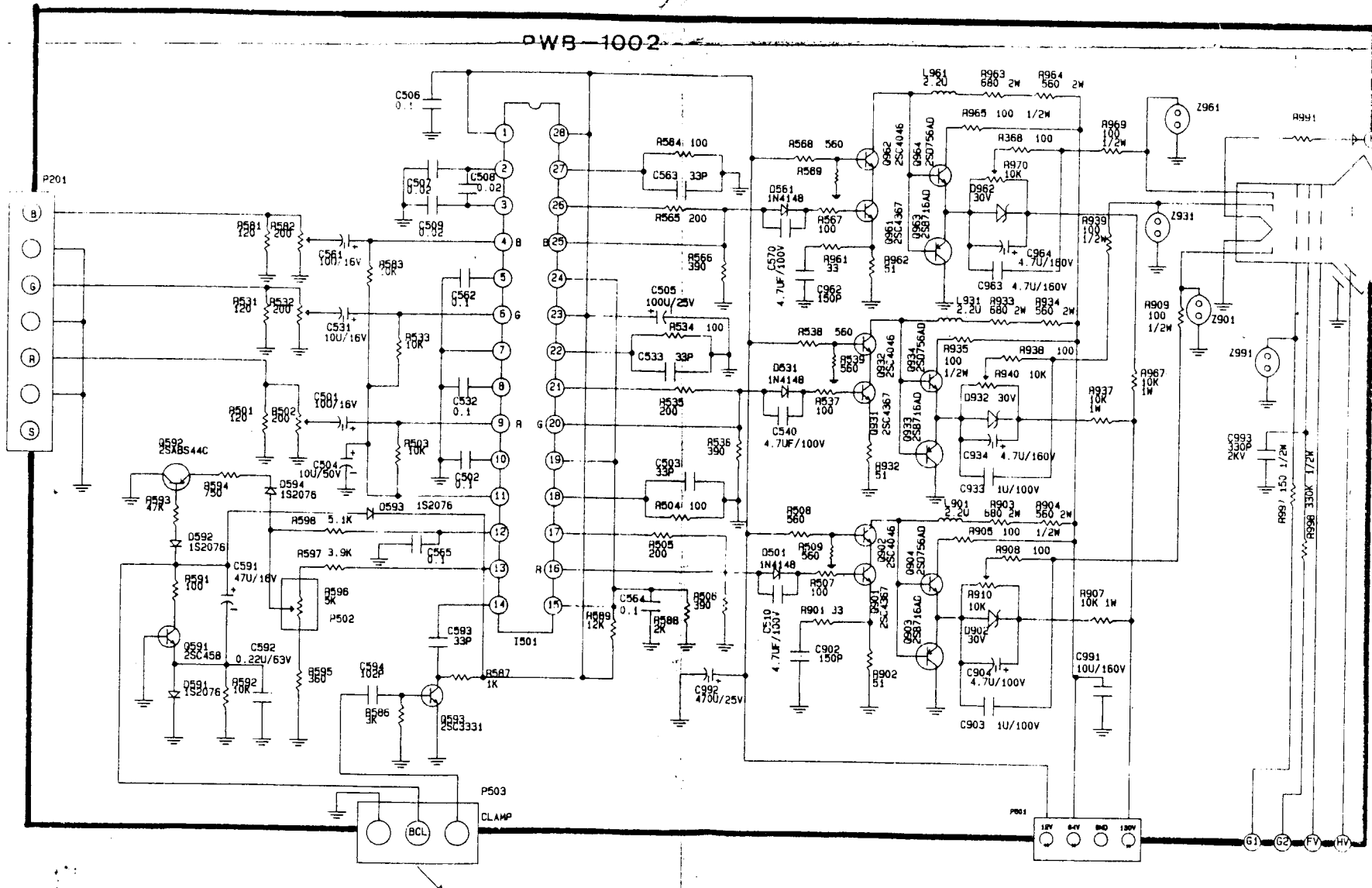
The rear cabinet is secured with four 'Philips' headed machine screws which may be found in the recesses in the back cabinet behind the CRT. These screws are 18mm M4 types. Self-tapping screws should not be used as substitutes.

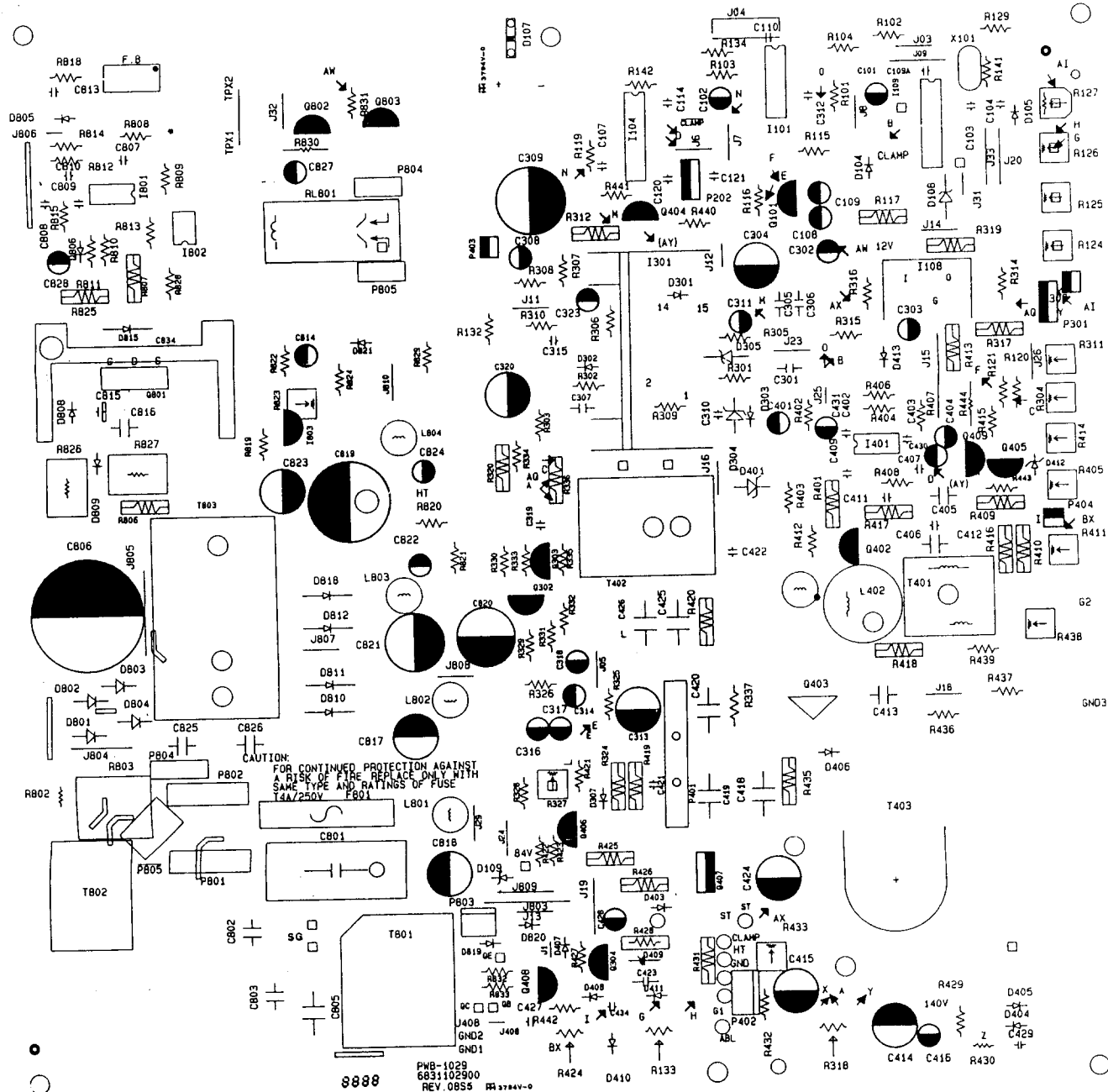
Once the machine screws have been removed, the rear cabinet may be lifted upwards clear of the remainder of the unit.

Please note that the video pcb is connected permanently to the main pcb and cannot therefore be removed independently without the use of de-soldering equipment.

Great care must be taken to avoid electric shock if power is applied while the monitor is dis-assembled. Please note carefully the warnings and precautions on page 3 of this manual.

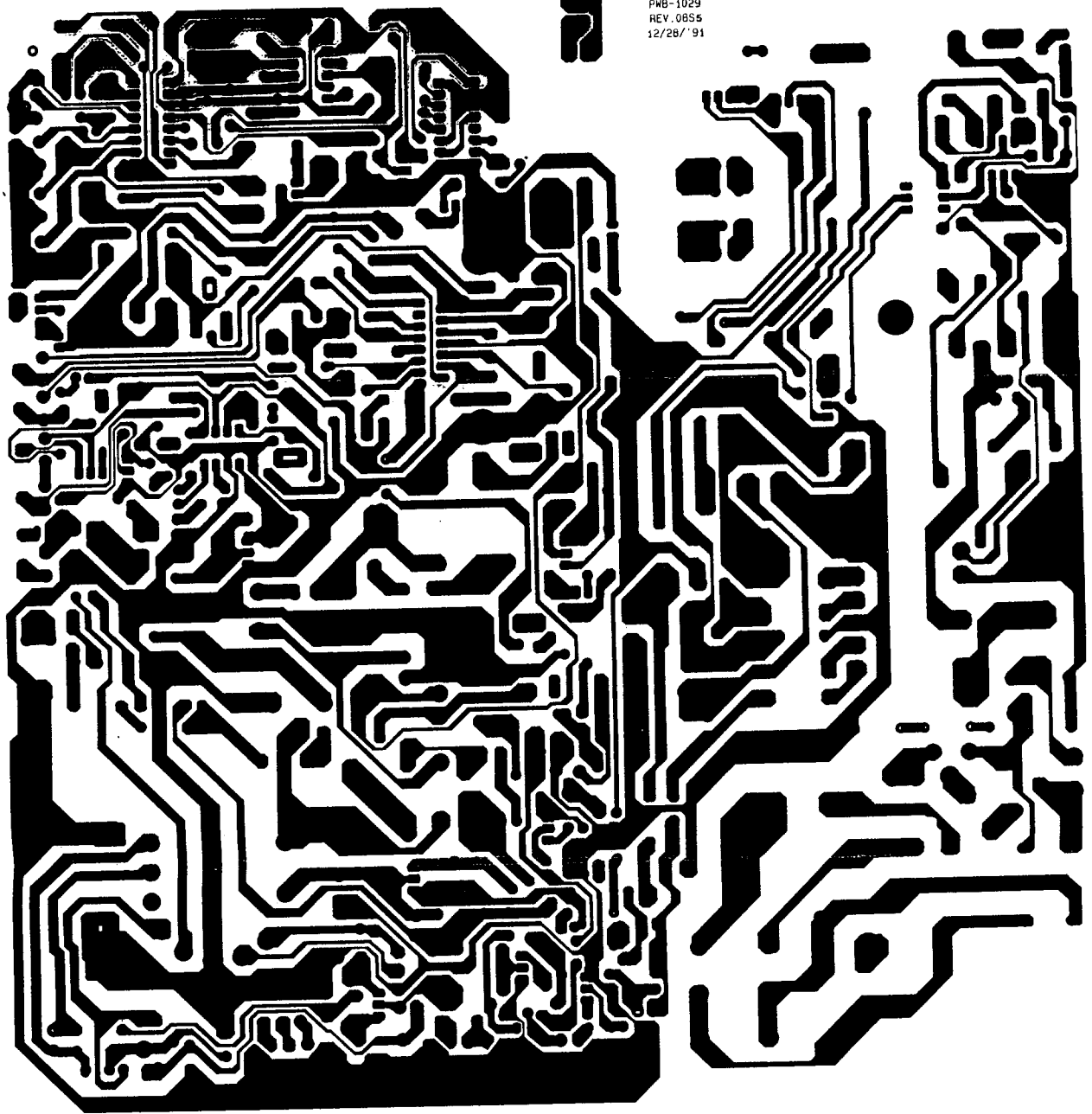
R502	Red Drive
R532	Green Drive
R562	Blue Drive
R596	External Contrast (User Control)
R910	Red Cut-off
R940	Green Cut-off
R970	Blue Cut-off





Supervision 787/787LR  
Main PC Board Rev 08  
Component Layout

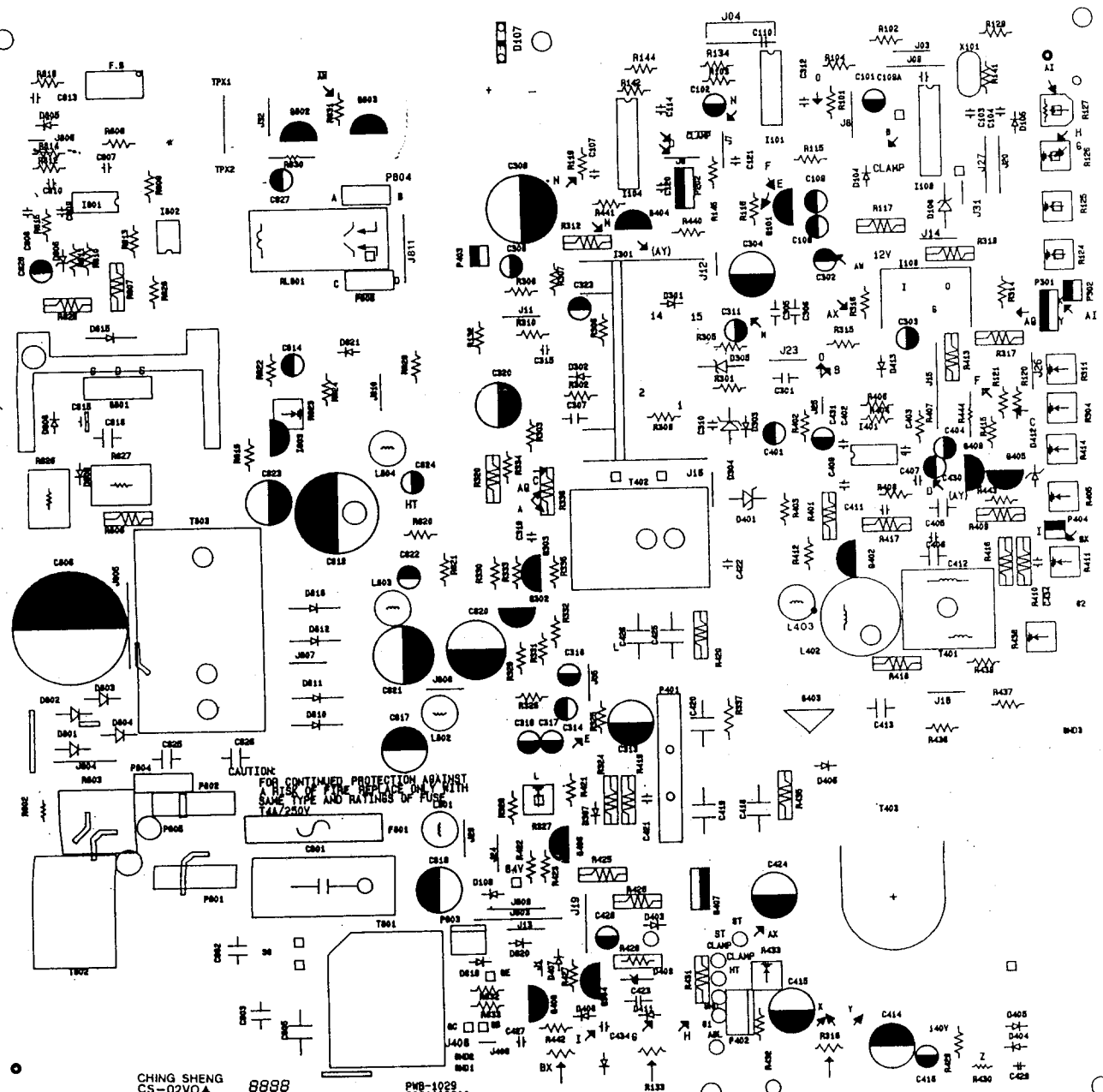
PWB-1029  
REV.0855  
12/28/'91



Supervision 787/ 787LR  
Main PC Board Rev 08  
Printed Track Layout

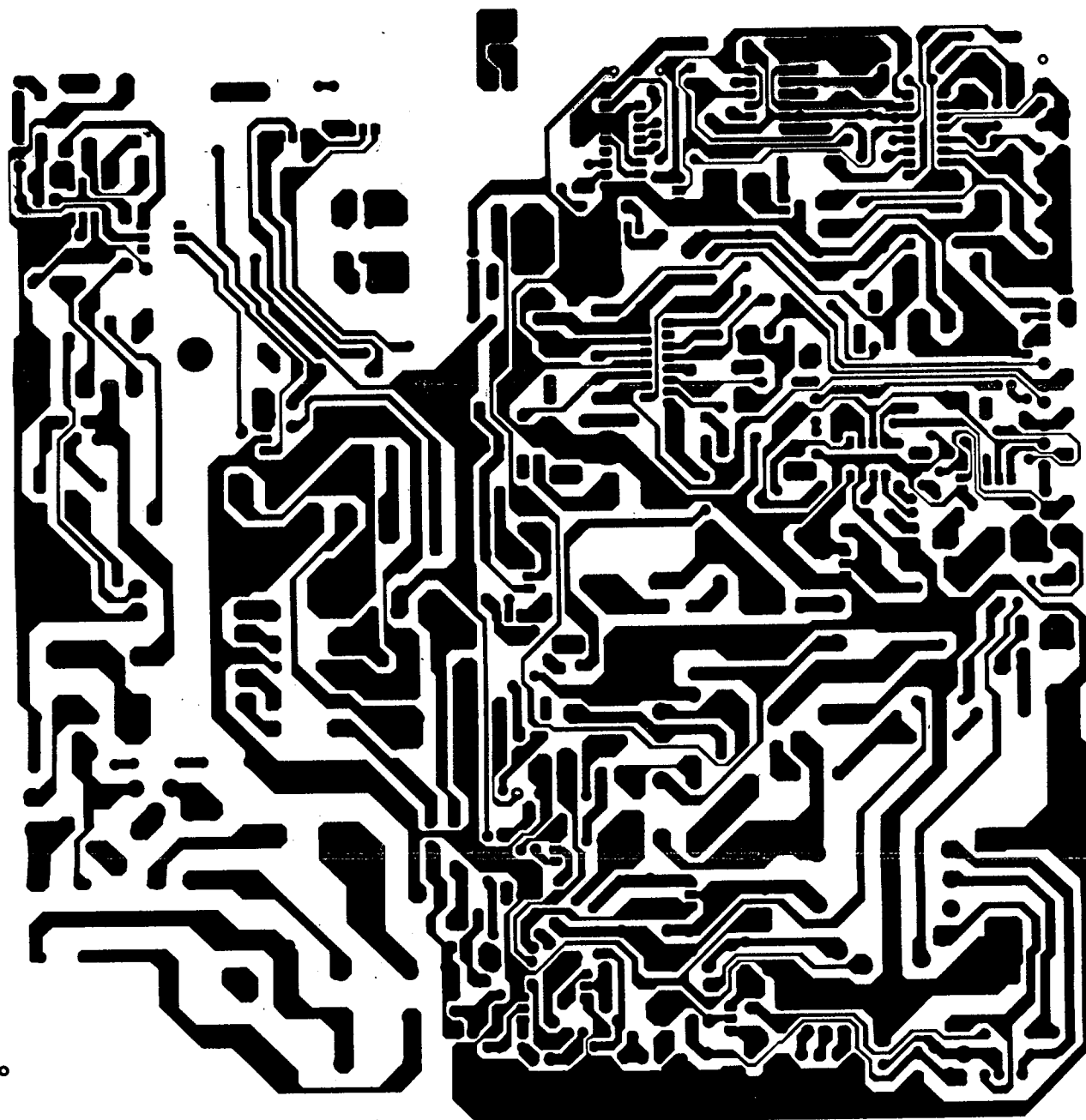


Supervision 787/787LR  
Main PC Board Rev 08  
Component Layout (solder side)

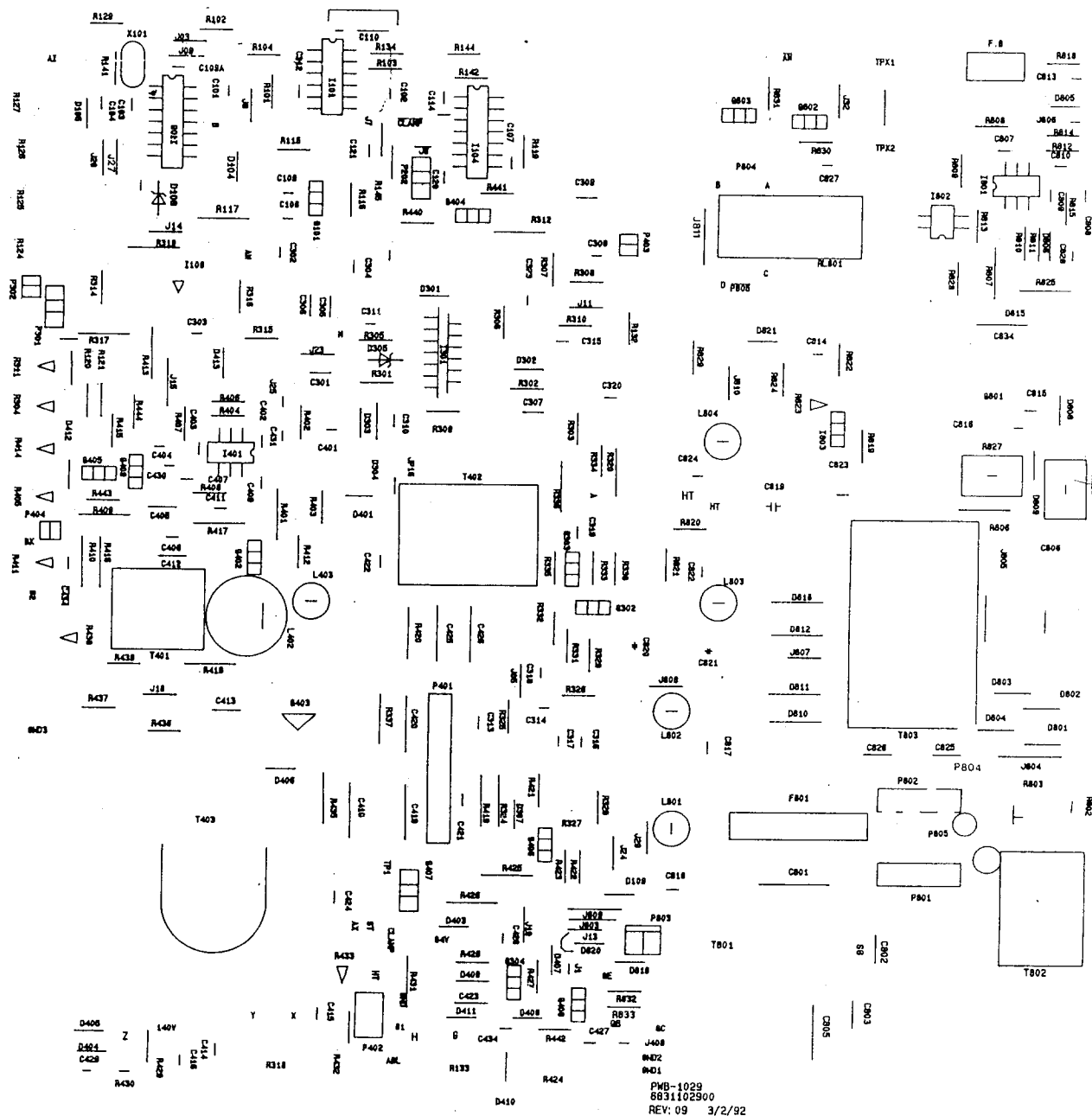


COMPONENT SIDE

Supervision 787/787LR  
Main PC Board Rev 09  
Component Layout

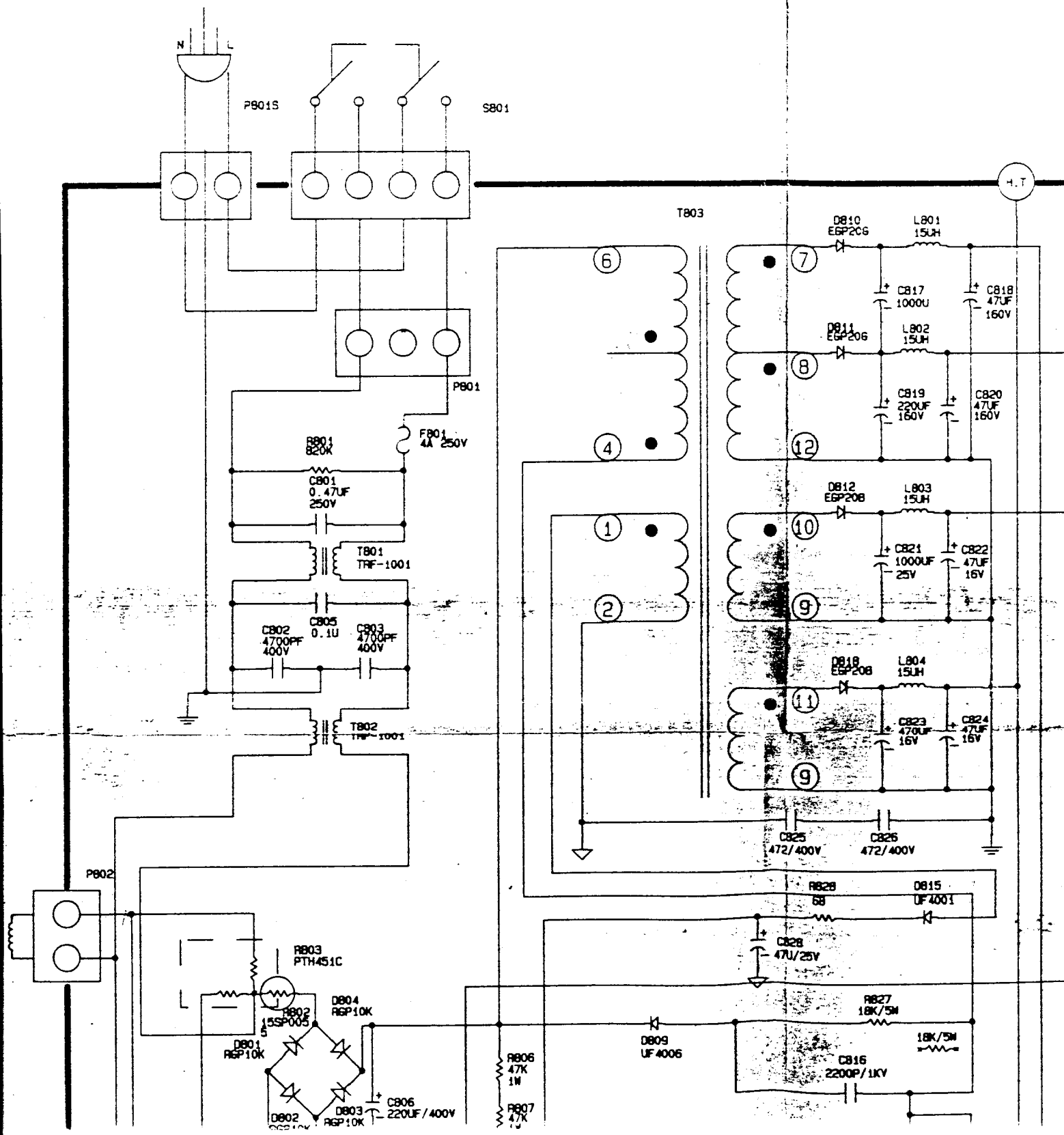


Supervision 787/787LR  
Main PC Board Rev 09  
Printed Track Layout

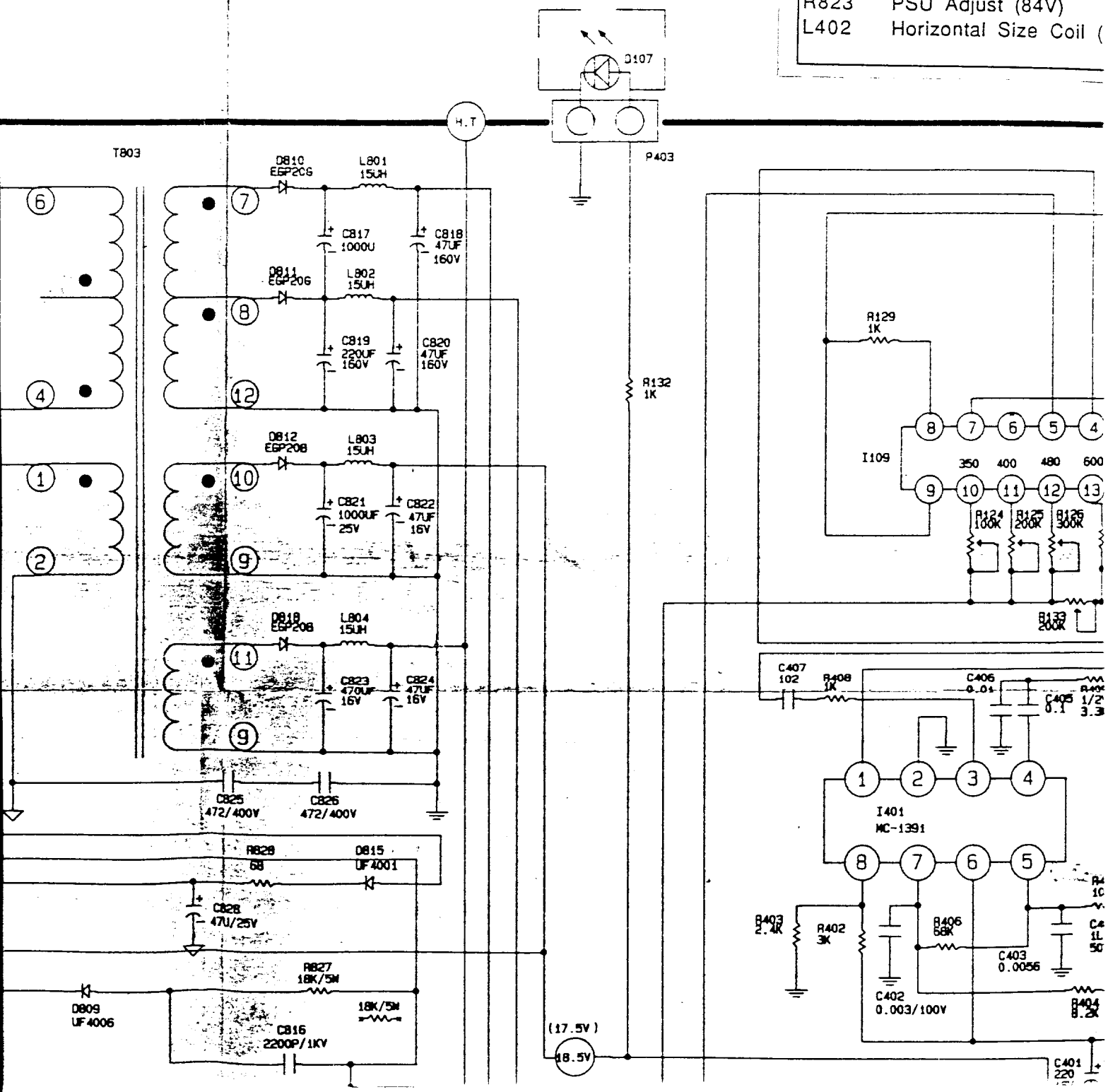


SILKBOT SIDE

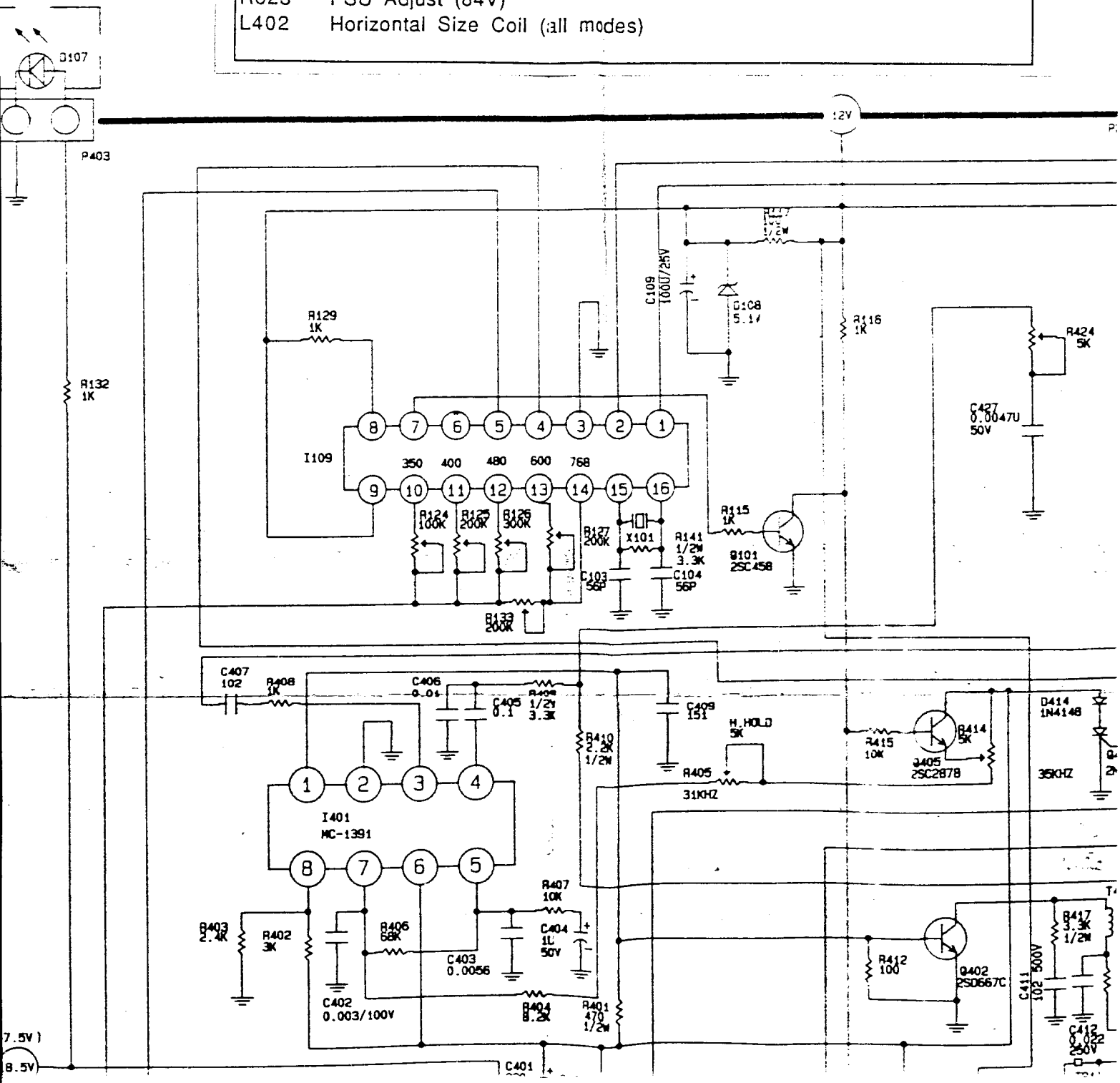
Supervision 787/787LR  
Main PC Board Rev 09  
Component Layout (solder side)



R124	Vertical Size (350 li
R125	Vertical Size (400 li
R126	Vertical Size (480 li
R127	Vertical Size (600 lin
R304	Vertical Hold (VGA)
R311	Vertical Linearity
R318	Vertical Centre (all r
R327	Pin Cushion Correctio
R405	Horizontal Hold (640
R411	Horizontal Phase 1 (a
R414	Horizontal Hold (800
R424	Not fitted - factory u
R433	Sub-Brightness
R434	External Brightness (I
R483	G2
R823	PSU Adjust (84V)
L402	Horizontal Size Coil (



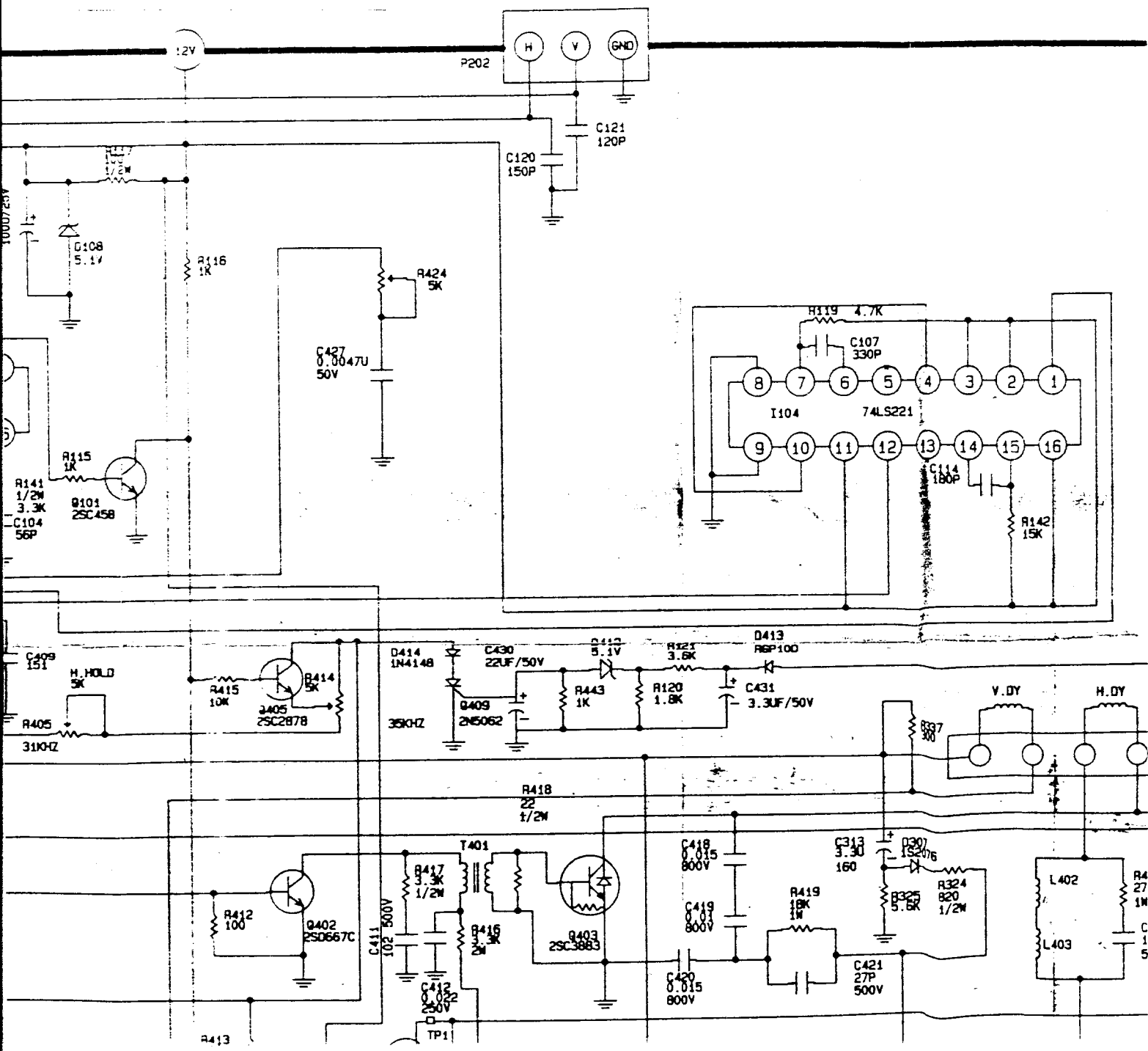
R124	Vertical Size (350 lines)
R125	Vertical Size (400 lines)
R126	Vertical Size (480 lines)
R127	Vertical Size (600 lines - affected by external VSize set 768 lines 1st)
R304	Vertical Hold (VGA)
R311	Vertical Linearity
R318	Vertical Centre (all modes)
R327	Pin Cushion Correction
R405	Horizontal Hold (640 pixels)
R411	Horizontal Phase 1 (all modes)
R414	Horizontal Hold (800 & 1024 pixels)
R424	Not fitted - factory use only
R433	Sub-Brightness
R434	External Brightness (User Control)
R483	G2
R823	PSU Adjust (84V)
L402	Horizontal Size Coil (all modes)



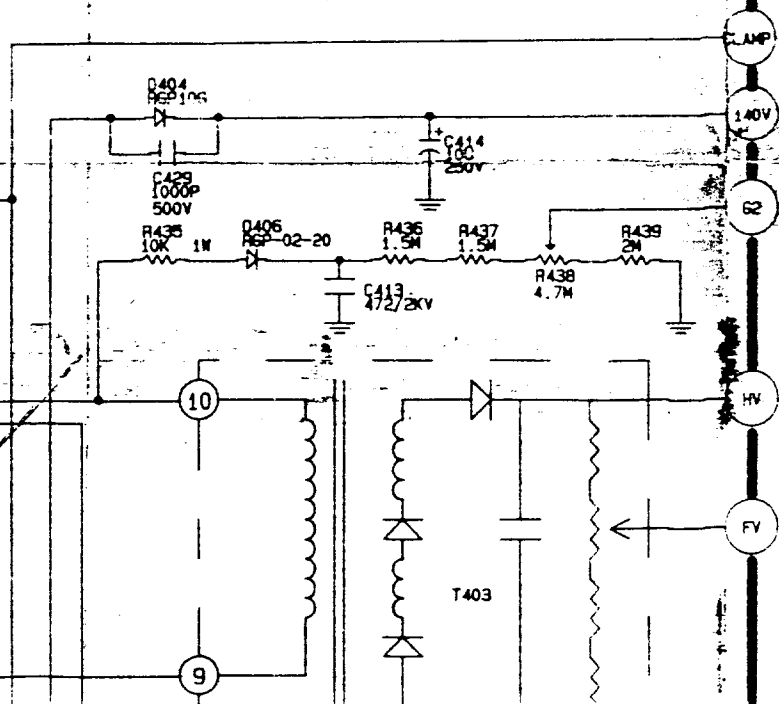
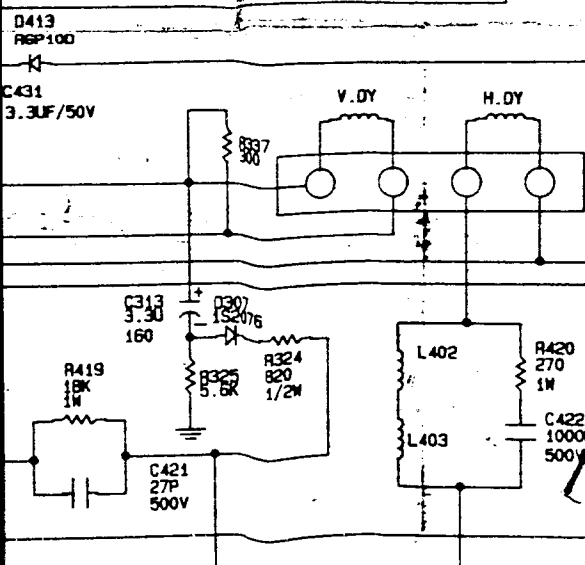
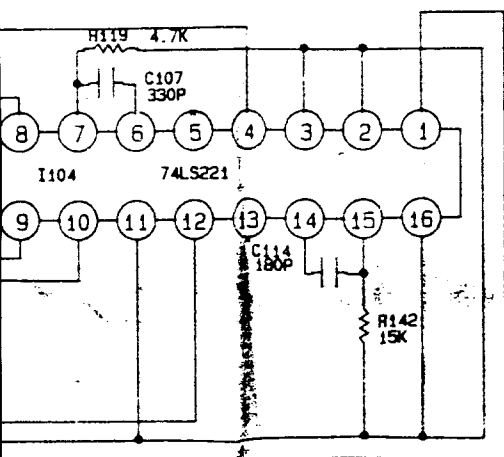
# Function List

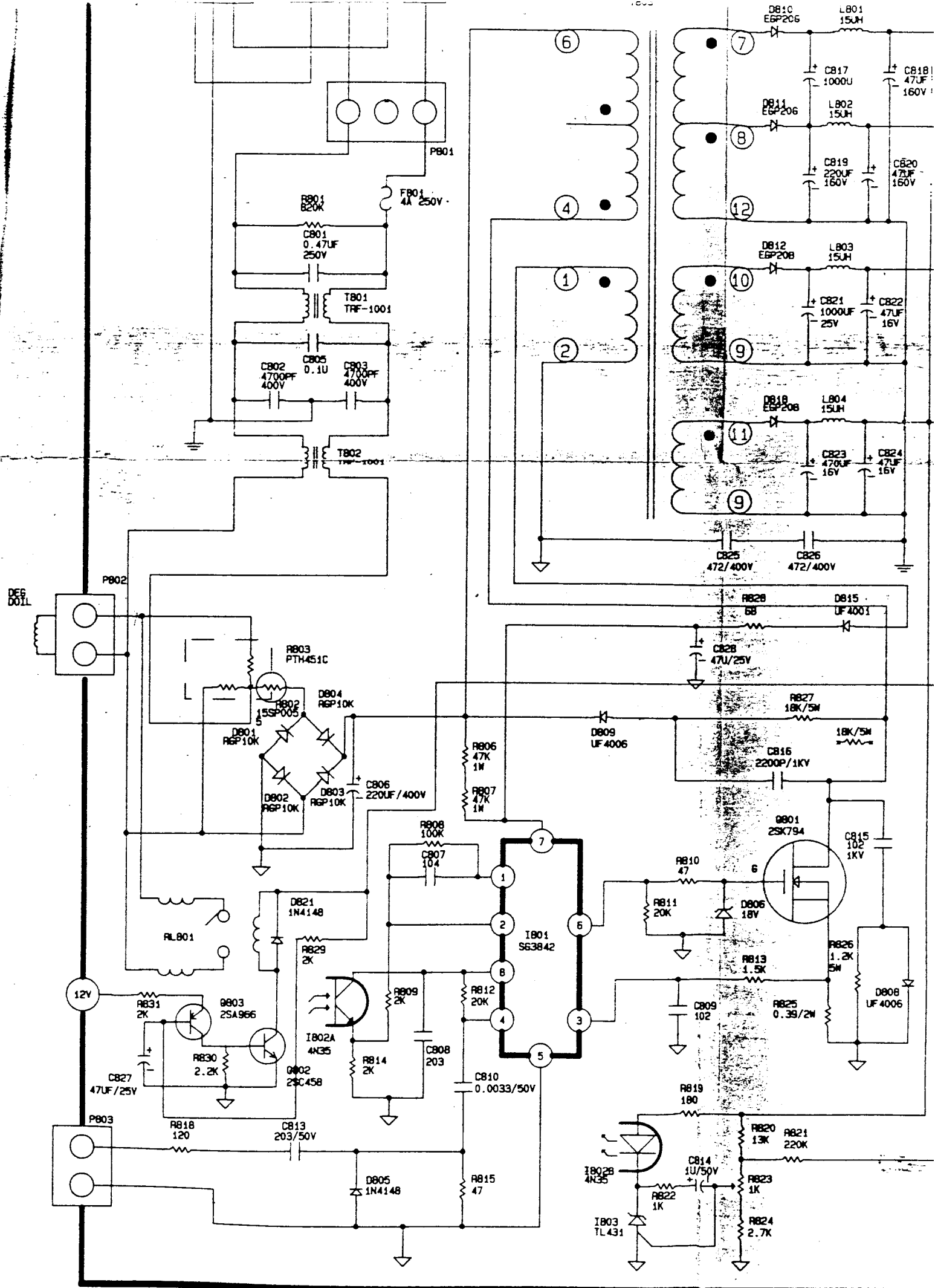
d by external VSize set 768 lines 1st)

(s)









T803

P403

