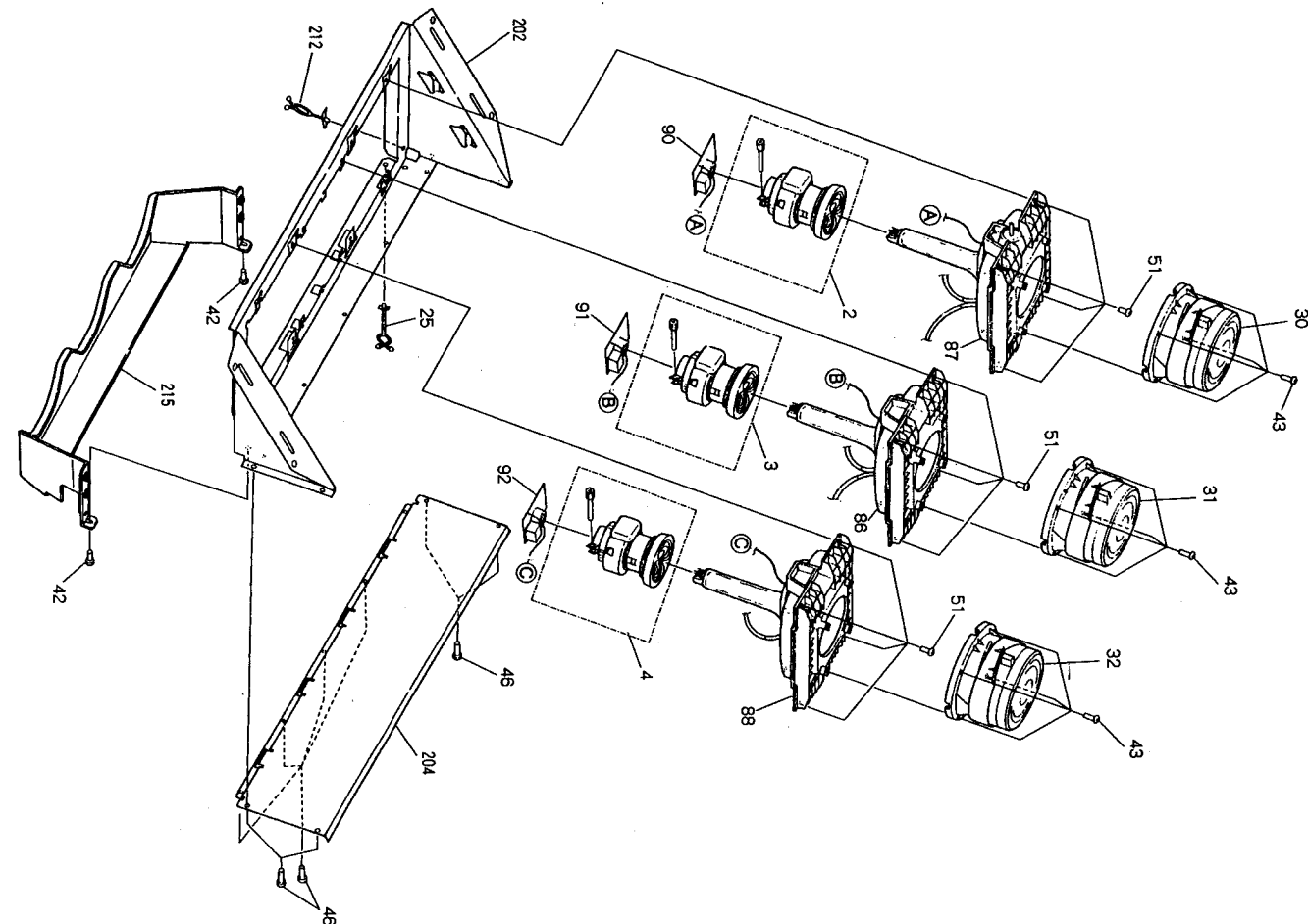


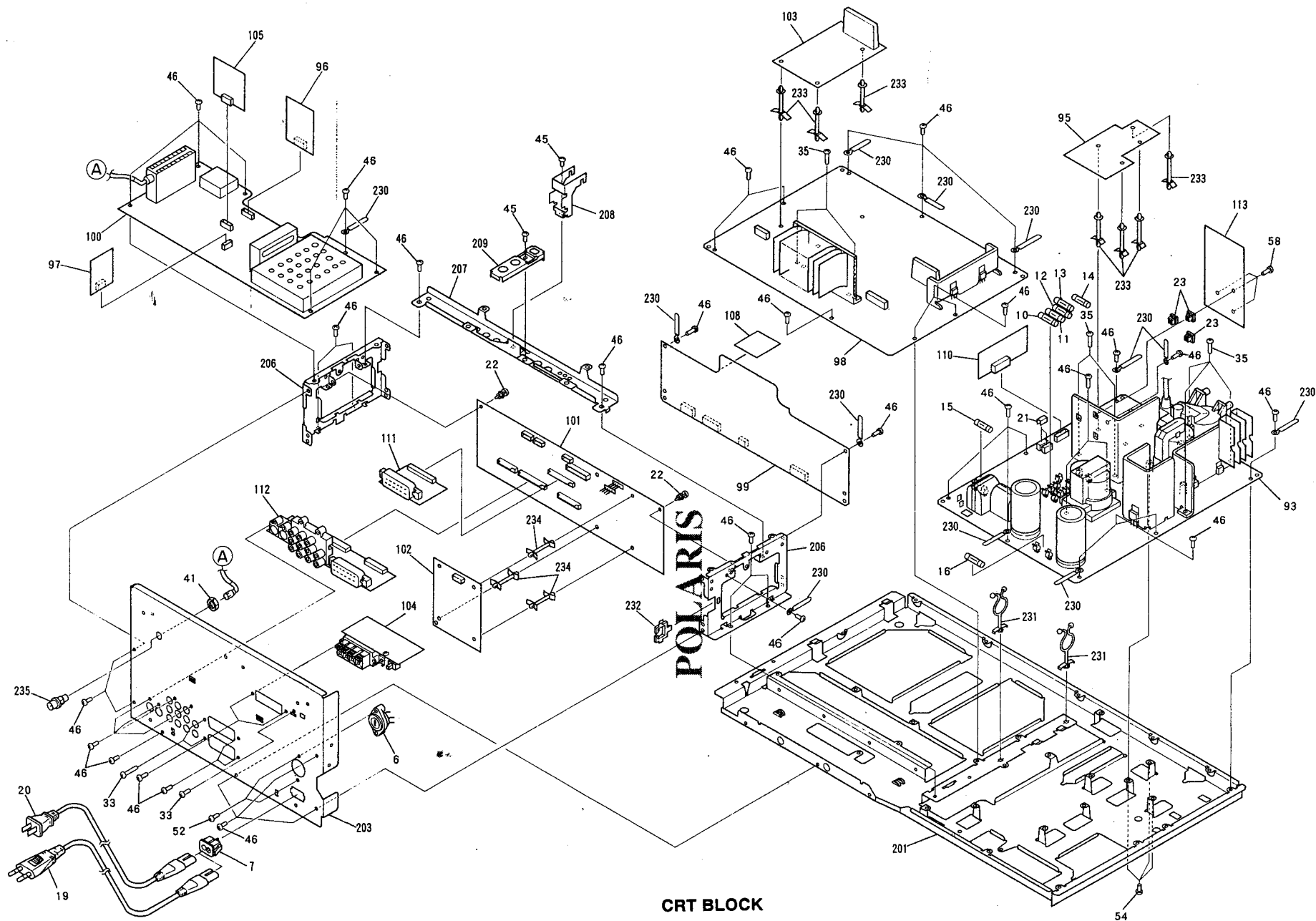
PIONIER

Mod. SD-T 4000

SD-T 5000

NOTE





CRT BLOCK

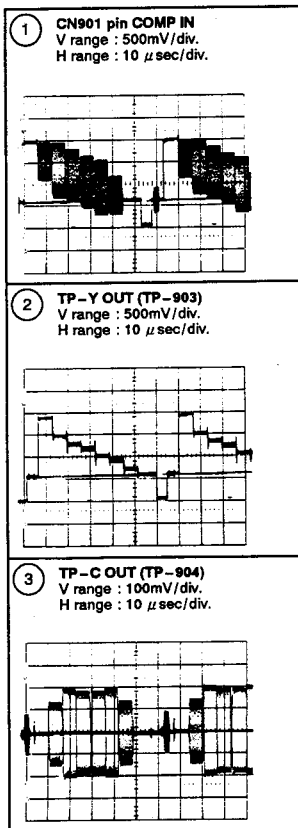
The waveforms at each position

Table 1. H and V values of each system

	NTSC/NTSC 4.43	PAL/SECAM
V (msec)	16.7 (60Hz)	20.0 (50Hz)
H (μsec)	63.6 (15.75kHz)	64.0 (15.625kHz)

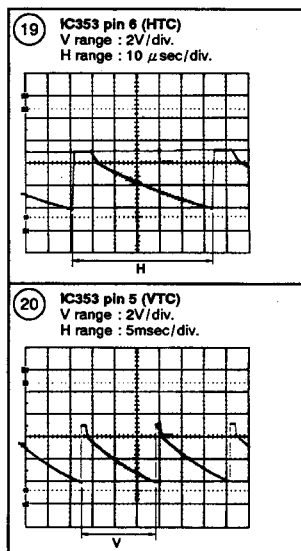
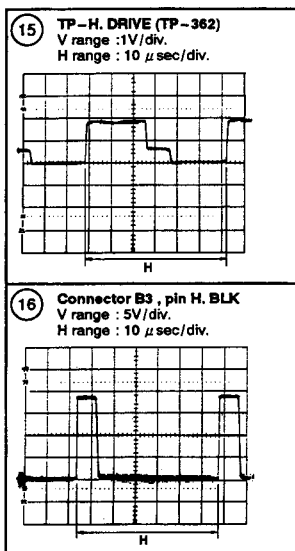
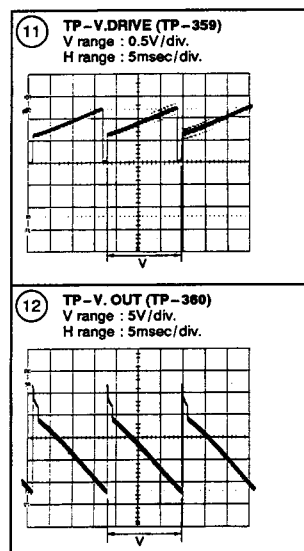
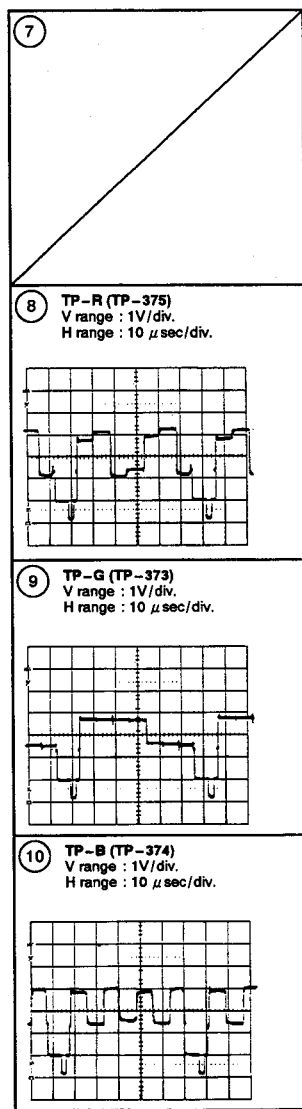
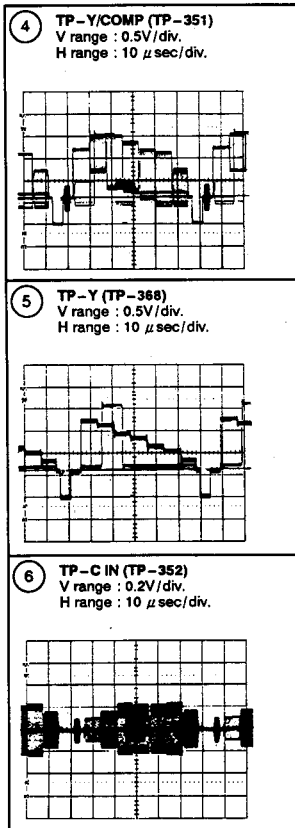
• Y-C SEPARATION assembly

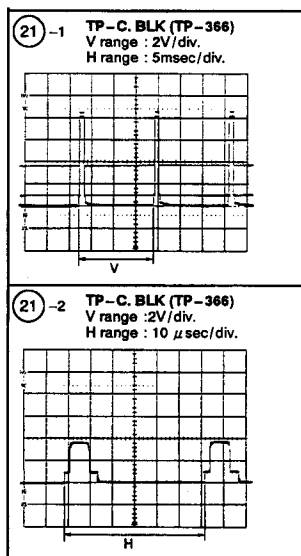
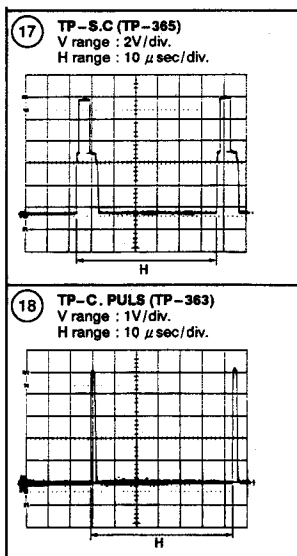
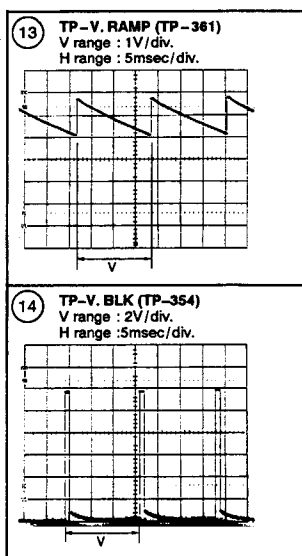
(1) For PAL color-bar signal input



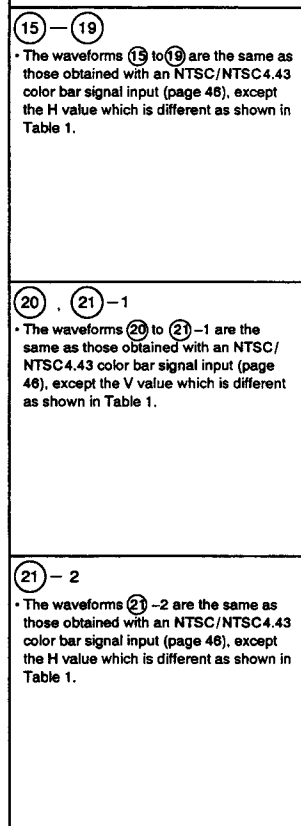
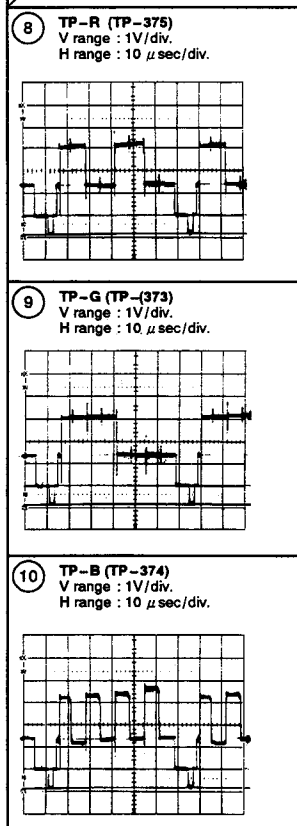
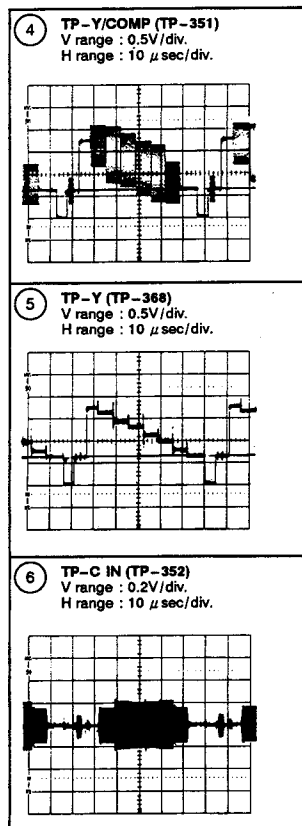
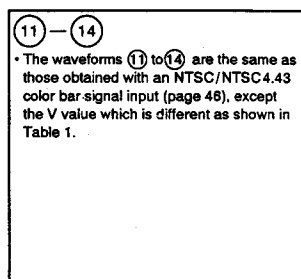
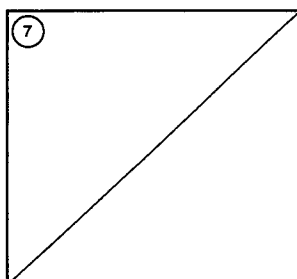
• VIDEO-AUDIO assembly

(1) For NTSC/NTSC 4.43 color-bar signal input



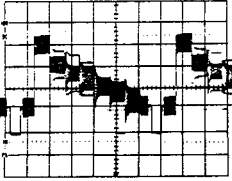


(2) For PAL color-bar signal input

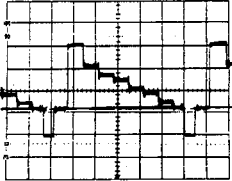


(3) For SECAM color-bar signal input

- 4 TP-Y/COMP (TP-351)
V range : 0.5V/div.
H range : 10 μ sec/div.

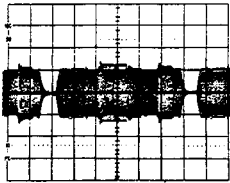


- 5 TP-Y (TP-368)
V range : 0.5V/div.
H range : 10 μ sec/div.

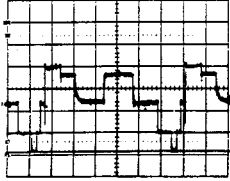


6

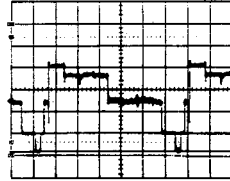
- 7 IC356 pin 18 (SECAM IN)
V range : 0.2V/div.
H range : 10 μ sec/div.



- 8 TP-R (TP-375)
V range : 1V/div.
H range : 10 μ sec/div.



- 9 TP-G (TP-373)
V range : 1V/div.
H range : 10 μ sec/div.



- 10 TP-B (TP-374)
V range : 1V/div.
H range : 10 μ sec/div.



11 — 14

• The waveforms 11 to 14 are the same as those obtained with an NTSC/NTSC4.43 color bar signal input (page 48), except the V value which is different as shown in Table 1.

15 — 19

• The waveforms 15 to 19 are the same as those obtained with an NTSC/NTSC4.43 color bar signal input (page 48), except the H value which is different as shown in Table 1.

20 , 21 — 1

• The waveforms 20 to 21-1 are the same as those obtained with an NTSC/NTSC4.43 color bar signal input (page 48), except the V value which is different as shown in Table 1.

21 — 2

• The waveforms 21-2 are the same as those obtained with an NTSC/NTSC4.43 color bar signal input (page 48), except the H value which is different as shown in Table 1.

7.2 WHEN POWER SUPPLY-DEFLECTION ASSEMBLY IS REPAIRED

Note: VR591 and VR593 are protected by the shield covers (ANH1166) so that they can not be adjusted. Do not try to turn these volumes by removing their shield cover. (Otherwise, the sensitivity of the protection circuit against the X-ray and the anode voltage will be affected.)

- Adjustment test points (TP) are located in the POWER SUPPLY - DEFLECTION assembly.

7.2.1 Power Supply Section

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	135V power supply adjustment	Monoscope signal	VR651(D)	Adjust the voltage of both sides of C741(POWER SUPPLY-DEFLECTION assembly) to 135V $\pm$ 1V.

• Each Output Voltages Check

After performing +135V adjustment, confirm the each voltages as follows.

Measuring Point	Voltage	Measuring Point	Voltage
E1 +13.5V (pin 9 or 10) for GND (pin 11)	+13.5V $\pm$ 0.5V	E2 +35V (pin 3 or 4) for GND (pin 1 or 2)	+32V $\pm$ 5V (less than +40V)
E1 +8V (pin 7 or 8) for GND (pin 11)	+8V $\pm$ 2V -1V	E4 +25V(pin 5) for V.GND(pin 4 or 3)	+25V $\pm$ 3V
E1 +30V (pin 13) for GND (pin 11)	+30V $\pm$ 5V	E4 - 24V(pin 1) for V.GND(pin 4 or 3)	- 24V $\pm$ 3V
E1 +39V (pin 14) for GND (pin 11)	+39V $\pm$ 3V	E5 +220V(pin 1) for TP554(GND)	+220V $\pm$ 20V
ES H.T.+ (pin 4) for H.T. - (pin5)	+6.25V $\pm$ 0.25V		

7.2.2 Deflection Section

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Focus adjustment	Cross hatch signal	Focus VR (VR1)	Optimize the focus of each CRT assembly. (Focus is easier to judge if red and blue are displaced by turning the convergence controls on the remote control as shown in Fig. 7- 13. Readjust these controls to their original positions after completing the focus adjustment.)
2	Horizontal size adjustment	Monoscope signal or ordinary broadcasting	VR592(D)	Adjust the right and left frames for the following values. When adjusting with ordinary broadcasting, adjust so that the does not blacken. • With NTSC and NTSC 4.43 •With PAL and SECAM Right = 92.5 $\pm$ 2% Right = 94.5 $\pm$ 2% Left = 92 $\pm$ 2% Left = 93.5 $\pm$ 2% After this adjustment, check the convergence, V. SIZE and H. BLK adjustments.
3	White balance adjustment	Ordinary broadcasting	Screen (VR1) (R) (B)	Adjust the white if proper adjustment cannot be achieved as follows. Set the COLOR by the remote control to minimum, adjust the screen VRs to obtain the best picture.

7.4 WHEN Y-C SEPARATION ASSEMBLY IS REPAIRED

- Adjustment for NTSC system only.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Comb filter adjustment	Color bar	VR902 (Y) L916 (Y)	Adjust so that color signal elements at TP-YOUT (TP-903) in the Y-C SEPARATION assembly are reduced as much as possible.
2	Check for PIONEER standard	If the best picture is not obtained, adjust as described in section 7.6.		

7.5 WHEN Y-C SEPARATION ASSEMBLY IS REPLACED

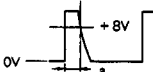
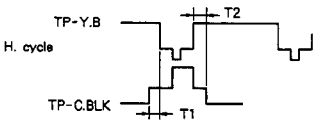
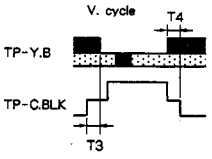
- No adjustment required.

7.6 WHEN VIDEO-AUDIO ASSEMBLY IS REPAIRED

- Adjustment test points (TP) are located in the VIDEO - AUDIO assembly unless otherwise specified.
- Before the adjustment, check the comb filter adjustment as described in section 7.4. (for NTSC system only).

7.6.1. Adjustment Procedure

- Steps 5 and 6 are separately described in other tables.
- See sections 7.6.2 and 7.6.3.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	V. SIZE adjustment *1	Monoscope signal	VR357 (V)	Adjust the upper and lower frames for the following values. When adjusting with ordinary broadcasting, adjust so that the picture does not blacken. • With NTSC and NTSC 4.43 Upper : $91\% \pm 3\%$ Lower : $95\% \pm 3\%$ • With PAL and SECAM Upper : $92\% \pm 3\%$ Lower : $94\% \pm 3\%$ After this adjustment, check the convergence and H. SIZE adjustments.
2	V. BLK width adjustment (1) *1	White 100% signal	VR354 (V)	Adjust the TP-V.BLK (TP-354) pulse width "a" so that it is the value specified below at the +8 V point. Waveform of TP-354  • NTSC and NTSC 4.43 a = 1.2 msec • PAL a = $1.2 \text{ msec} \pm 60 \mu \text{ sec}$ • SECAM a = 1.2 msec
3	H. BLK width adjustment	White 100% signal	VR352 (V)	While simultaneously observing TP-Y.B (TP-369) and TP-C.BLK (TP-366), adjust T1 in H cycle to the value specified below. After adjusting T1, check that T2 is the value specified below. • With NTSC and NTSC 4.43 T1 = $1.2 \mu \text{ sec} \pm 200 \text{ nsec}$ T2 = $2.4 \mu \text{ sec} \pm 400 \text{ nsec}$ • With PAL and SECAM T1 = $1.0 \mu \text{ sec} \pm 400 \text{ nsec}$ T2 = $1.8 \mu \text{ sec} \pm 400 \text{ nsec}$ 
4	V. BLK width adjustment (2) *1	White 100% signal	VR351 (V) VR353 (V)	Observing the V. cycle with the setting in step 3, adjust T3 to the value specified below. After adjusting T3, check that T4 is the value specified below. ① For the NTSC or NTSC 4.43 system Adjust T3 and T4 to the following values with VR351. T3 = $300 \mu \text{ sec} \pm 50 \mu \text{ sec}$ T4 = $390 \mu \text{ sec} \pm 100 \mu \text{ sec}$ If a signal of the PAL or SECAM system is received after this adjustment, the set value ② (VR353) is deviated. Using the PAL or SECAM SG, adjust VR353 to obtain the value ② shown below. ② For the PAL or SECAM system Adjust T3 and T4 to the following values with VR353. T3 = $350 \mu \text{ sec} \pm 50 \mu \text{ sec}$ T4 = $500 \mu \text{ sec} \pm 100 \mu \text{ sec}$ 

*1: When the V.SIZE adjustment is performed, be sure to check the V.BLK adjustments (1) and (2).

7.3 WHEN POWER SUPPLY-DEFLECTION ASSEMBLY IS REPLACED

Note: As VR591 and VR593 in the POWER SUPPLY - DEFLECTION assembly supplied as a spare part are protected by the shield cover (ANH1166).
Never take off the shield cover (ANH1166).

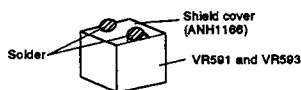


Fig. 7-3 Shield cover

7.3.1 Power Supply Section

- No adjustment required.

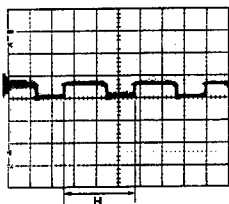
7.3.2 Deflection Section

- Adjust focus, horizontal size and white balance as described in section 7.2.2.

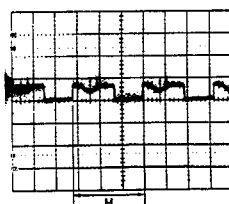
• POWER SUPPLY-DEFLECTION assembly

The waveforms (25) to (34) are input for the PAL color-bar signal. These waveforms are the same as those obtained with an NTSC/NTSC4.43 color bar signal input, except the V and H values which are different as shown in Table 1.

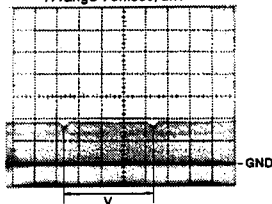
25 Q571 base
V range : 1V/div.
H range : 20 μ sec/div.



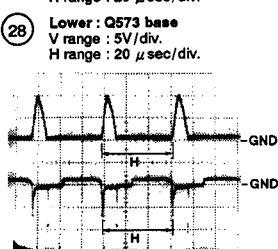
26 Q561 base
V range : 1V/div.
H range : 20 μ sec/div.



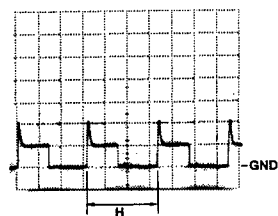
27 Q573 collector
V range : 500V/div.
H range : 5msec/div.



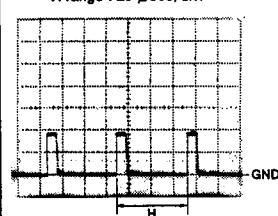
27 Upper : Q573 collector
V range : 500V/div.
H range : 20 μ sec/div.



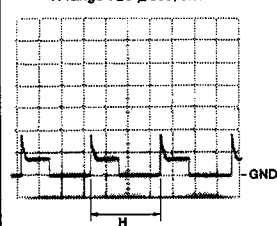
28 Lower : Q573 base
V range : 5V/div.
H range : 20 μ sec/div.



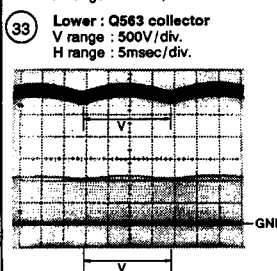
29 Q571 collector
V range : 50V/div.
H range : 20 μ sec/div.



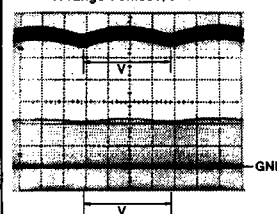
31 Q561 collector
V range : 50V/div.
H range : 20 μ sec/div.



32 Upper : Q562 emitter
V range : 20V/div.
H range : 5msec/div.

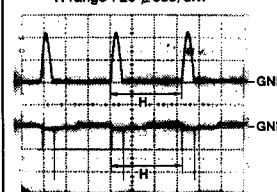


33 Lower : Q563 collector
V range : 500V/div.
H range : 5msec/div.



33 Upper : Q563 collector
V range : 500V/div.
H range : 20 μ sec/div.

34 Lower : Q563 base
V range : 10V/div.
H range : 20 μ sec/div.



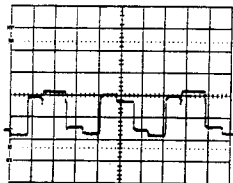
• R CRT assembly, G CRT assembly, B CRT assembly

(1) For NTSC/NTSC 4.43 color-bar signal input

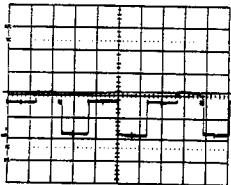
(2) For PAL color-bar signal input

(3) For SECAM color-bar signal input

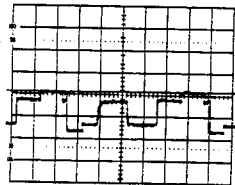
22 R-cathode
V range : 50V/div.
H range : 10 μ sec/div.



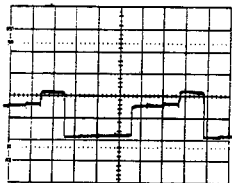
22 R-cathode
V range : 50V/div.
H range : 10 μ sec/div.



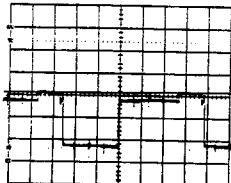
22 R-cathode
V range : 50V/div.
H range : 10 μ sec/div.



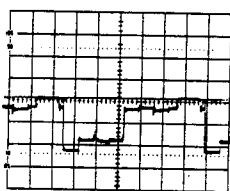
23 G-cathode
V range : 50V/div.
H range : 10 μ sec/div.



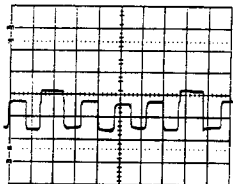
23 G-cathode
V range : 50V/div.
H range : 10 μ sec/div.



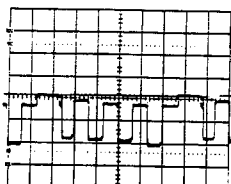
23 G-cathode
V range : 50V/div.
H range : 10 μ sec/div.



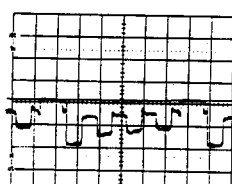
24 B-cathode
V range : 50V/div.
H range : 10 μ sec/div.



24 B-cathode
V range : 50V/div.
H range : 10 μ sec/div.



24 B-cathode
V range : 50V/div.
H range : 10 μ sec/div.



7.6.2 PAL System Adjustment

- This adjustment is separated from the table in 7.6.1 as it is to be performed only for the PAL system.
- The adjustment requires the DEM pattern.
- If the adjustment is not correctly performed, colors change at each scanning line, and this can be judged only by using the DEM pattern.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
5-1	Adjustment of glass delay line for PAL demodulator.	PAL DEM pattern	—	Set oscilloscope as follows:H=2mS/div; V=100mV/div. Observe the waveforms at pin 60 (R-Y IN) and pin 62 (B-Y IN) of IC356.
5-2			L354 (V)	Adjust so that the waveform of the measuring area 1 in Fig. 7-5 (Fig. 7-6 a) appears as shown in Fig. 7-6 b.
5-3			VR356 (V)	Adjust so that the waveform of the measuring area 2 in Fig. 7-5 appears as shown in Fig. 7-6 c.
5-4	Repeat steps 5-2 and 5-3 until the optimum picture is obtained. (Adjust so that the measuring area 1 is set below 50mVp-p, and the measuring area 2 is set below 180mVp-p.)			

G-Y=0		Y=50%	
Δ (R-Y)	Δ (R-Y)	$\square$ (B-Y)	$\square$ (B-Y)
Δ (R-Y)	Δ (R-Y)	$\square$ (B-Y)	$\square$ (B-Y)
Reference Y=50%			

NOTE:
 Δ : (B-Y) = 0
 $\square$: (R-Y) = 0

Fig. 7-4 DEM pattern

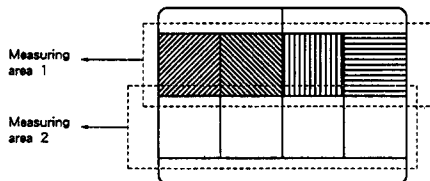


Fig. 7-5 Measuring area

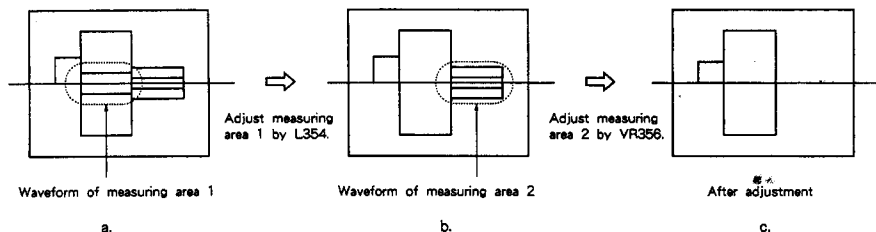
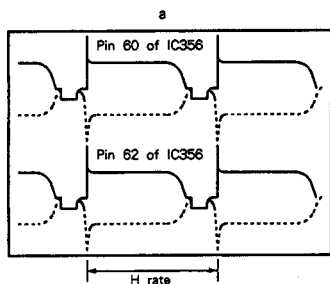


Fig. 7-6 Oscilloscope screen

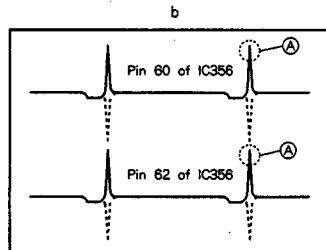
7.6.3 SECAM System Adjustment

- This adjustment is separated as it is to be performed only for the SECAM system.

Step No.	Adjustment item	Input signal	Adjustment point	Adjustment procedure
6-1	SECAM identity adjustment	SECAM color bar	L357 (V)	Adjust so that the DC voltage at pin 23 of IC356 is maximum.
6-2	Detection coil and Bell filter adjustment	Black signal (including SECAM color carrier)	L355 (V): Pin 60(R - Y IN) L353 (V): Pin 62(B - Y IN)	Adjust so that waveform appears as shown in Fig. 7-7 b at pin 60 (R - Y IN) and pin 62 (B - Y IN) of IC356.
6-3			L362 (V)	Adjust so that the waveform appears as shown in Fig. 7-7 c at pin 60 (R - Y IN) and pin 62 (B - Y IN) of IC356.
6-4	Repeat steps 6-2 to 6-3 until the optimum picture is obtained. Check to see that the color bars are displayed correctly on the screen after adjustment.			



Adjust L355 and L353 so that the waveform as shown in figure b is obtained.



Adjust L362 so that the (A) portion becomes minimum.

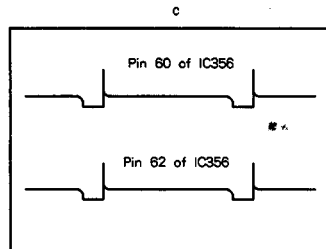


Fig. 7-7 SECAM detection coil adjustment

7.7 WHEN VIDEO-AUDIO ASSEMBLY IS REPLACED

- Before the adjustment, check the comb filter adjustment as described in section 7.4. (For NTSC system only).
- Perform the V. size adjustment, V. BLK width adjustment(1), H. BLK width adjustment, V. BLK width adjustment (2), white balance, PIONEER standard setting, and Blue tailing adjustment as described in section 7.6.

7.8 WHEN TUNER-NICAM ASSEMBLY IS REPAIRED

- Adjustment test points (TP) are located in the TUNER-NICAM assembly unless otherwise specified.

7.8.1 Tuner Section Adjustment

- The items to be adjusted here depend on the local TV standard systems. The systems for which the adjustments are required are shown in the respective rows of the table.
- For the necessary input signal, see Table 7-1. If not mentioned in the table, supply the signals to the antenna input terminal. Observe Fig. 7-9 when connecting.
- When receiving another TV system after performing the adjustments with the specified TV system, the reception condition may become insufficient. In this case, readjust with the current TV system or the best systems specified in Table 7-1.
- The trap adjustment in step 3 is separately described in another table. See section 7.8.2.
- This model is not equipped with the AFT (Automatic Fine Tuning) function.

Table 7-1

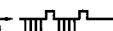
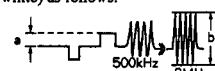
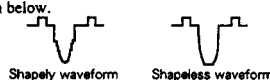
*Values shown for "fp" in the table are the reference values. Set for the nearest frequency and channel of those available in your servicing area.

Signal No.	Signal Contents	Antenna input Level *2	SG system setting *1
①	33.4MHz unmodulated signal	90 dB μ V	L'
②	39.9 MHz unmodulated signal	90 dB μ V	
③	fp=119.25MHz, Color bar Audio ; 1kHz, 100% MOD. monaural	80 dB μ V	Any of M, B, G, I, D, K, L and L' (B and G are the best.)
④	fp=196.25MHz, Multi burst Audio ; 1kHz, 100% MOD. monaural	58 dB μ V	Any of M, B, G, I, D and K (B and G are the best.)
⑤	fp=175.25MHz, 100% white Audio ; 1kHz, 100% MOD. stereo	80 dB μ V	
⑥	fp=487.25MHz, Color bar Audio ; 400Hz, 100% MOD. monaural	80dB μ V	L
⑦	fp=55.25MHz, Color bar Audio ; 1kHz, 100% MOD. $\pm$ 25kHz dev, monaural	80 dB μ V	M (US)
⑧	fp=67.25MHz, Cross hatch Audio ; 300Hz, 30% MOD. stereo (L ch only)	80 dB μ V	
⑨	fp=175.25MHz, 10 steps Audio ; 5kHz, 30% MOD. stereo (L ch only)	80 dB μ V	

*1: Set the SG system to the local TV system.

*2: Set the SG audio level to a value lower than the antenna input level by the following value.

- System M : 6dB , • System B : 10dB , • System G : 10dB , • System I : 7dB , • System D : 7dB ,
- System K : 7dB , • System L : 10dB , • System L' : 10dB

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
5	PAL system adjustment	Adjust the glass delay line for PAL demodulator as described in section 7.6.2. (Adjust for PAL system only.)		
6	SECAM system adjustment	Adjust the SECAM IDENT coil, detection coil and BELL FILTER as described in section 7.6.3. (Adjust for SECAM system only.)		
7	White balance adjustment	Color bar signal without color signal	Screen VR (R),(B) (VR1) VR651(R) Drive VR653(B) VR (V)	Adjust the screen VRs (R) and (B) until grey color can just be seen in the color of dark area. (Do not move the green VR at this stage.)
				Using the drive VR, adjust the color of bright area to white.
8		Set to the PIONEER standard setting mode of FACTORY ADJ mode. (When adjustment is completed, resume the normal condition.)		
9	PIONEER Standard setting	Brightness adjustment	Cross hatch signal	COLOR(*2) Minimize color by remote control.
BRITE(*2) Adjust the cut off level at TP-RK of R. CRT DRIVE assembly to DC190V. (After adjustment, confirm the white balance.)  (After this adjustment, adjust color as described in step No. 4).				
Sharpness adjustment		Multi burst	SHARP(*2) At TP-G(TP-373), set the rate of b(peak-to-peak value at 2MHz) to a (level from black to white) as follows. •With NTSC and NTSC 4.43 a : b = 2 : 2.7 (+2.6dB) •With PAL a : b = 2 : 2.6 (+2.3dB) •With SECAM a : b = 2 : 2.7 (+2.6dB) 	
				Color adjustment
Tint adjustment (*3)		TINT(*2) Adjust screen to the optimum condition.		
13		Contrast adjustment	Free signal	CONTR(*2) Adjust screen to the optimum condition.
14				— At the TP-BK of B. CRT DRIVE assembly, confirm that the signal is shaped as shown below. 
15		Blue tailing adjustment	Cross signal	— Adjust the SG output of the input cross signal to the maximum level.
	— Maximize contrast by remote control.			
	VR652(V) Turn VR652 fully counterclockwise (resulting in blue tailing). Turn the VR clockwise until there is no blue tailing at the vertical cross line on the screen.			

*2: Adjust by remote control.

*3: Adjust for NTSC and NTSC 4.43 only.

7.8.2 Trap Adjustment

- This adjustment is separately described, as the adjustment procedure of the tuner section depends on the TV standard systems.
- For the signal to be input, see Table 7-2. Connect the signal to the antenna input terminal.

- Alternately adjust F13 and F19 for the optimum setting.

Table 7-2 Input signal

- Use the channel specified for the signal ①.

Signal No.	Video	Audio	Antenna Input Level	Channel
Signal ①	Color bar	1kHz, 100% MOD.	80dB μ V	Free channel.
Signal ②				Next higher channel of the signal ①.
Signal ③				Next lower channel of the signal ①.

Note: Set the SG audio level to a value lower than the antenna input level by the following value.

- System M : 6dB , • System B : 10dB , • System G : 10dB , • System I : 7dB , • System D : 7dB ,
- System K : 7dB , • System L : 10dB , • System L' : 10dB

• For System M

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Adjacent video trap adjustment	Signal ②	F12 (T)	Adjust the 32.9MHz element of TP- SAW IN (P-19) to a minimum.
3-2	Audio trap adjustment	Signal ①	F13, F19 (T)	Adjust the 34.4MHz element of TP- SAW IN (P-19) to a minimum.
3-3	Adjacent audio trap adjustment	Signal ③	F18 (T)	Adjust the 40.4MHz element of TP- SAW IN (P-19) to a minimum.

• For System B

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Adjacent video trap adjustment	Signal ②	F12 (T)	Adjust the 31.9MHz element of TP- SAW IN (P-19) to a minimum.
3-2	Audio trap adjustment	Signal ①	F13, F19 (T)	Adjust the 33.4MHz element of TP- SAW IN (P-19) to a minimum.
3-3	Adjacent audio trap adjustment	Signal ③	F18 (T)	Adjust the 40.4MHz element of TP- SAW IN (P-19) to a minimum.

• For System G

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	F12 adjustment	—	F12 (T)	Adjust only when the picture is not displayed correctly.
3-2	Audio trap adjustment	Signal ①	F13, F19 (T)	Adjust the 33.4MHz element of TP- SAW IN (P-19) to a minimum.
3-3	F18 adjustment	—	F18 (T)	Adjust only when the picture is not displayed correctly.

● For system I

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Audio trap adjustment	Signal ①	F12 (T)	Adjust the 32.9MHz element of TP-SAW IN (P-19) to a minimum.
3-2	F13 and F19 adjustment	—	F13, F19 (T)	Adjust only when the picture is not displayed correctly.
3-3	F18 adjustment	—	F18 (T)	

● For any of system D, K, L and L'

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
3-1	Audio trap adjustment	Signal ①	F12 (T)	Adjust the 32.4MHz element of TP-SAW IN (P-19) to a minimum.
3-2	F13 and F19 adjustment	—	F13, F19 (T)	Adjust only when the picture is not displayed correctly.
3-3	Adjacent audio trap adjustment	Signal ③	F18 (T)	Adjust the 40.4MHz element of TP-SAW IN (P-19) to a minimum.

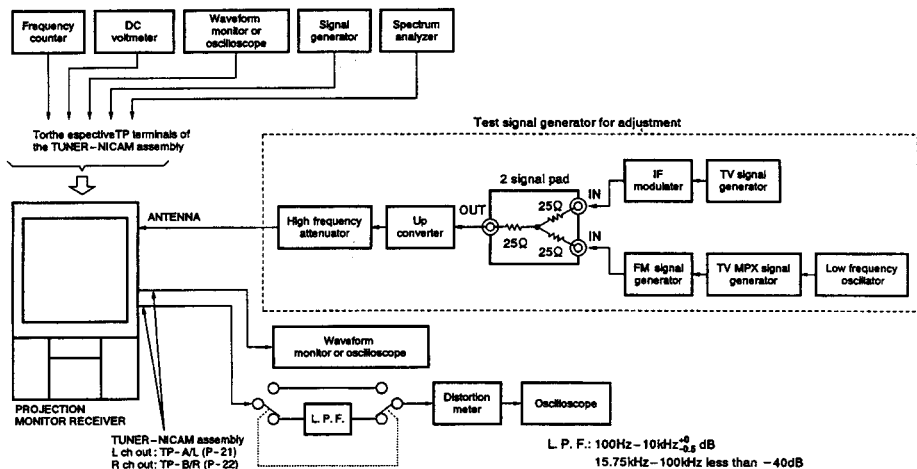
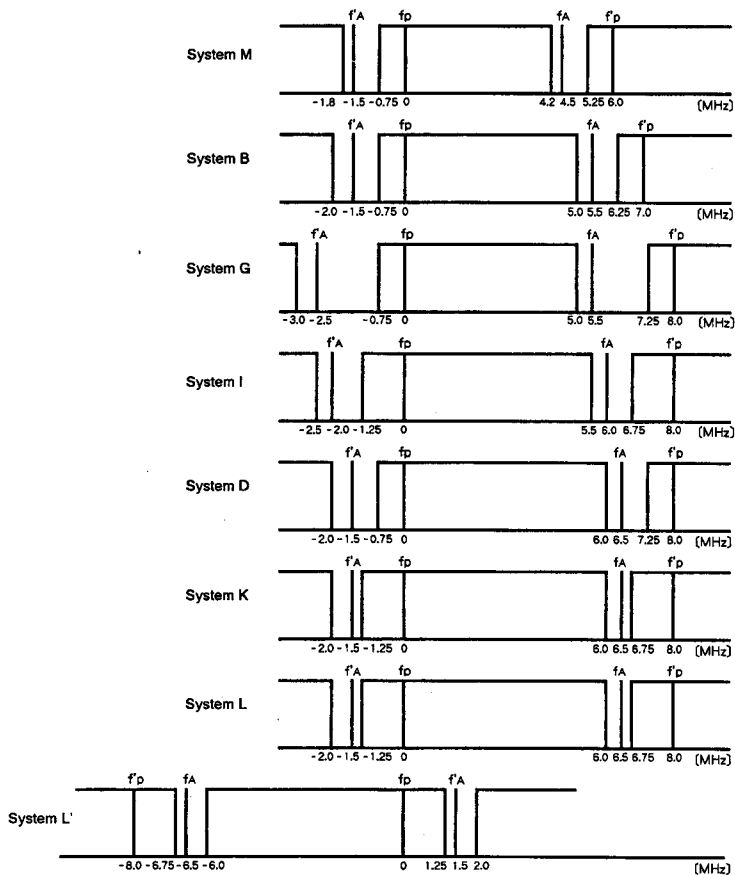


Fig. 7-9 Connection diagram when adjusting the tuner section

Step No.	Adjustment Item	System for which the adjustment is required	Input Signal	Adjustment Point	Adjustment Procedure
1	L' OSC adjustment	L'	Signal① input to TP- IF IN (P-12)	L16 (T)	Adjust the frequency of TP- TRAP IN (P-23) to 38.9MHz ± 20kHz. (Use the spectrum analyzer.)
2	Balance circuit of the inverter circuit		Signal② input to TP- IF IN (P-12)	VR11 (T)	Minimize the 39.9MHz element of TP- TRAP IN (P-23). (Use the spectrum analyzer.)
3	Trap adjustment	This adjustment depends the local TV system. See section 7.8.2.			
4	Video LLD adjustment	M, B/G, I, D/K, L, L'	Signal ③	L22 (T)	Check that the color-bar signal is provided to TP-VIDEO (P-17). If not, adjust L22 to provide the color bar.
					Minimize the color signal element of TP- VIDEO (P-17).
5	AGC adjustment *1	M, B/G, I, D/K, L, L'	Signal ④	VR17 (T)	Adjust the DC voltage of TP-AGC (P-14) to 6.5V ± 0.3V.
6	Video level adjustment *1		Signal ⑤	VR13 (T)	Adjust the output level of video signal at TP- VIDEO (P-17) to 2.2Vp- p ± 0.1V.
7	SECAM level adjustment	L, L'	Signal ⑥	VR14 (T)	Adjust the video detection level at TP- VIDEO (P-17) to 2.2Vp- p ± 0.2V.
8	VCO adjustment	M, B/G, I, D/K	Signal ⑤	L30 (T)	Check that the video signal (100% white) is provided to TP- LOCK (P-20). If not, adjust the video signal.
9				—	Measure the DC voltage of TP- APC (P-16) when TP-IF AGC (P-15) and TP- GND (P-11) are short circuited.
10				L30 (T)	Release TP-IF AGC (P-15) and TP- GND (P-11) and adjust the DC voltage of TP- APC (P-16) to ± 100mV with respect to the value obtained in step 9.
11	US audio distortion adjustment	System M (US only)	Signal ⑦	L32 (T)	Adjust to minimize the distortion of 1kHz sine- wave output to TP- A/L (P-21:L ch output terminal).
12	US stereo separation adjustment		Signal ⑧	RV03(IC)	Minimize the output of TP- A/L (P-21:L ch output terminal).
			Signal ⑨	RV06(IC)	Minimize the output of TP- A/L (P-21:L ch output terminal).

*1: When adjusting AGC and the video level in the L or L' system area, use SG of M, B, G, I, D or K (SG of B or G is best).

If these items are not adjusted properly, white saturation, noise or beat may be observed on the picture or the picture may be darkened.



NOTE: fp :Video carrier
 fA :Audio carrier
 f'p :Upper adjacent video carrier
 f'A :Lower adjacent audio carrier
 IF :38.9(MHz)

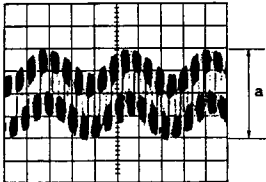
Fig. 7 - 8 Relationship between the video and audio carrier frequencies of the TV system

7.8.3 NICAM Section Adjustment

- This adjustment is required only in the B/G CCIR audio multiplex area.

- Perform this adjustment after 7.8.1 Tuner Section Adjustment and 7.8.2 Trap Adjustment.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	CCIR FM stereo adjustment	Free signal of B/G CCIR audio multiplex signal (STEREO or DUAL)	F201 (T)	Connect an oscilloscope to pin 8 of IC202 and observe the waveform (Fig. 7-10). Adjust the amplitude (Fig. 7-10 a) of waveform to a maximum.



H : 5 μ sec/div. , V : 100 mV/div.

Fig. 7-10 Waveform of pin 8 of IC202

Adjust " a " to a maximum.

Note : If it is not adjusted properly, a waveform having a smaller and flatter amplitude than that shown in Fig. 7-10 will be displayed.

7.9 WHEN TUNER-NICAM ASSEMBLY IS REPLACED

- No adjustment required.

7.10 WHEN AM-DEMOD ASSEMBLY IS REPAIRED

- This adjustment is required only for System L or L'.
- Adjustment test points (TP) are located in the AM-DEMOD assembly.

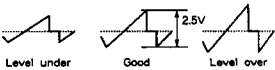
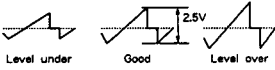
Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	AM detection adjustment	Supply a channel of System L or L' to the antenna input terminal. The audio signal should be 1 kHz, 50% MOD, AM while there are no requirements for the video signal.	L1018 (A)	Adjust so that a sinewave of 1 kHz is output from pin 5 of IC1012 with minimum distortion and maximum level.
2	Audio level adjustment		VR1012 (A)	Adjust so that the level of the sinewave of 1 kHz output from pin 5 of CN1016 is 200 mVrms $\pm$ 50 mV.

7.12 WHEN CONVERGENCE ASSEMBLY IS REPAIRED OR REPLACED

7.12.1 PARABOLA WAVEFORM TOP LEVEL

ADJUSTMENT

- Adjustment test point(TP) are located in the CONVERGENCE assembly.
- Perform this adjustment only when convergence is shifted.

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	H SAWTOOTH WAVEFORM LEVEL	VR701 (C)	At TP-H.NOKO (P-805), set the level of output waveform to 2.5Vp-p. 
2	TOP LEVEL OF H PARABOLA WAVEFORM	VR750 (C)	At TP-H.PARA (P-802), set the top level of output waveform to 0V ± 20mV. 
3	V SAWTOOTH WAVEFORM LEVEL	VR702 (C)	At TP-V.NOKO (P-803), set the level of output waveform to 2.5Vp-p. 
4	TOP LEVEL OF V PARABOLA WAVEFORM	VR749 (C)	At TP-V.PARA (P-801), set the top level of output waveform to 0V ± 20mV. 

7.12.2 CONVERGENCE ADJUSTMENT

- Picture movement and adjustment points are summarized in Fig. 7-14 and 7-15.
- Input signal is the cross-hatch signal for PAL.
- Perform the position adjustment by remote control keys as follows. (Refer to Fig. 7-11.)
- After performing all adjustments, release the short-circuit to obtain white screen and perform the pre-adjustment.
- Correct the vertical line by horizontal correcting signal and correct the horizontal line by vertical correcting signal.
- Adjustment points are located in the CONVERGENCE assembly.

(1) GREEN LINE ADJUSTMENT

- Since the green lines are used as a reference when adjusting red and blue, be sure to adjust them accurately.
- Short-circuit TP-R (TP-375), TP-B (TP-374) and TP-GND (TP-377) in the VIDEO-AUDIO assembly, then green lines appear on the screen. Release the short-circuit after green line adjustment.

Step No.	Adjustmen Item	Adjustment Point	Adjustment Procedure
1	GH- PIN	VR705 (C)	Adjust the green line to a straight line(refer to Fig. 7- 14 and 7-15).
2	GH- KEY	VR704 (C)	
3	GV- SKEW	VR706 (C)	
4	GV- BOW	VR707 (C)	
5	GV- KEY	VR708 (C)	
6	GV- S- KEY	VR709 (C)	
7	GV- PIN	VR710 (C)	
8	Repeat steps 1 thru 7 until the best possible picture is obtained.		

7.13 WHEN MICROCOMPUTER ASSEMBLY IS REPAIRED

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	When replacing IC307 (X24C08P) in the microcomputer assembly, the PIONEER standard, DPO base and the convergence position are set to the center of the variable ranges. Readjust them according to the specified adjustment procedures. The user settings are also to be made according to the user's preference.			
2	Telop position adjustment	Free video signal	VR301 (M)	Generate test cross signal, and adjust the cross to the center of the screen.

7.14 WHEN MICROCOMPUTER ASSEMBLY IS REPLACED

- Adjust the telop position as described in section 7.13, and perform the user setting.

7.15 WHEN I/O-TEXT ASSEMBLY IS REPAIRED

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	13.5MHz VCO output adjustment	No signal input	L605 (I)	Adjust the oscillation frequency at pin 17 of IC602 in the I/O-TEXT assembly to 13.5MHz $\pm$ 100kHz.

7.16 WHEN I/O-TEXT ASSEMBLY IS REPLACED

- No adjustment required.

7.17 WHEN DPO ASSEMBLY IS REPAIRED

- Adjust the DPO sensitivity adjustment as described in section 7.26.

7.18 WHEN DPO ASSEMBLY IS REPLACED

- No adjustment required.

7.19 WHEN DYNAMIC FOCUS ASSEMBLY IS REPAIRED OR REPLACED

- Check the focus (the four corners of the screen). If the focus is not proper, adjust VR1 for the optimum setting.

7.20 WHEN HIGH VOLTAGE CONTROL ASSEMBLY IS REPAIRED OR REPLACED

- Check the H. SIZE, V. SIZE and convergence if required.

7.21 WHEN R, G OR B CRT DRIVE ASSEMBLY IS REPAIRED OR REPLACED

- White balance ought to provide the best picture. If not, adjust the white balance as follows.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	White balance adjustment	Ordinary broadcasting	Screen (VR1) (R) (B)	Adjust the white if proper adjustment cannot be achieved as follows. Set the COLOR by the remote control to a minimum, adjust the screen VRs to obtain the best picture.

(2) RED LINE ADJUSTMENT

- Short-circuit TP-B (TP-374) and TP-GND (TP-377) in the VIDEO-AUDIO assembly, then green lines and red lines appear on the screen. Release the short-circuit after red line adjustment.

- Adjust each VR so that the red lines converge with the green lines to obtain yellow lines.
- After adjustment, perform fine-adjustment by observing the overall screen.

• Red Horizontal Distortion Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	RH-SKEW	VR711 (C)	Adjust the red vertical lines in the center of the screen to straight lines without distortion and lean. (Refer to Fig. 7-14.)
2	RH-BOW	VR712 (C)	
3	Repeat steps 1 and 2.		
4	RH-KEY	VR713 (C)	Adjust the red vertical lines in the right and left section of the screen to straight lines without lean. (Refer to Fig. 7-14.)
5	RH-S-KEY	VR714 (C)	
6	Repeat steps 4 and 5.		
7	RH-PIN	VR715 (C)	Adjust the red vertical lines in the right and left sections of the screen to straight lines without distortion. (Refer to Fig. 7-14.)
8	RH-S-PIN	VR716 (C)	
9	Repeat steps 7 and 8 or steps 1 thru 8.		

• Red Horizontal Interval Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	RH-POSITION	Remote control keys, 4 and 6	Adjust so that the red vertical lines converge with the green vertical lines in the center of the screen to obtain yellow lines. (This serves as the reference setting, but if the lines diverge during the adjustment, proceed with the adjustment after considering this divergence.)
2	RH-LIN	VR717 (C)	
3	RH-4-LIN	VR720 (C)	Adjust so that the red vertical lines converge with the green vertical lines in the right and left sections of the screen to obtain yellow lines. (Refer to Fig. 7-14)
4	RH-S-LIN	VR718 (C)	
5	RH-SIZE	VR719 (C)	
6	Repeat steps 1 thru 5.		

• Red Vertical Distortion Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	RV-SKEW	VR721 (C)	Adjust the red horizontal lines in the center of the screen to straight lines without distortion and lean. (Refer to Fig. 7-15.)
2	RV-BOW	VR722 (C)	
3	Repeat steps 1 and 2.		
4	RV-KEY	VR723 (C)	Adjust the red horizontal lines in the lower and upper sections of the screen to straight lines without lean. (Refer to Fig. 7-15.)
5	RV-S-KEY	VR724 (C)	
6	RV-S-PIN	VR726 (C)	
7	RV-PIN	VR725 (C)	
8	Repeat steps 4 thru 7 or steps 1 thru 7.		

• Red Vertical Interval Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	RV-LIN	VR727 (C)	Adjust so that the red horizontal lines converge the green horizontal lines in the center of the screen to obtain yellow lines. (This serves as the reference setting, but if the lines diverge during the adjustment, proceed with the adjustment after considering this divergence.) (Refer to Fig. 7-15.)
2	RV-S-LIN	VR729 (C)	
3	RV-POSITION	Remote control keys, 2 and 8	
4	RV-SIZE	VR728 (C)	Adjust so that the red horizontal lines converge the green horizontal lines in the lower and upper sections of the screen to obtain yellow lines. (Refer to Fig. 7-15.)
5	Repeat steps 1 thru 4.		

7.22 WHEN CRT ASSEMBLY R, G, OR B IS REPLACED

- The CRT assembly R, G, B replacement procedure is described in Section "8. Replacing the CRT assembly".

- When one or two tubes are replaced, match the new tubes with the remaining tube. If all three tubes are replaced, first adjust G, and then match the other two tubes with the G tube.

7.23 WHEN LENS ASSEMBLY IS REPLACED

- Remove the lenticular sheet, and attach tracing paper with a plastic tape, etc. instead. (Refer to Fig. 7-20.) Adjust the focus of the lens assembly newly mounted, by observing the picture shown on the tracing paper.

7.24 WHEN OTHER ASSEMBLIES ARE REPAIRED OR REPLACED

- No adjustment required.

Step No.	Adjustment Item	Input Signal	Adjustment Point	Adjustment Procedure
1	Deflection yoke angle and centering adjustment	Cross signal (or the test cross signal for convergence : Refer to Fig. 7-13.)	Centering magnet of deflection yoke of replaced CRT assembly (Refer to Fig. 7-19)	Adjust the deflection yoke angle until the color cross of the replaced CRT assembly is parallel with the color cross of a CRT assembly which has not been replaced.
				Reset the convergence position (by operating CNT-to-MAX (MIN)-to-CNT in FACTORY ADJ mode) when the red or blue CRT assembly is replaced.
				Adjust the centering magnet of the deflection yoke in the replaced CRT assembly until cross becomes converge.
2	Focus adjustment	Cross hatch	Replaced color focus VR (VR1) and lens assembly connected to replaced CRT assembly (Refer to Fig. 7-20 and Fig. 7-21.)	Adjust the focus of the replaced CRT assembly to the optimum condition. (Shifting the convergence position may provide easier observation. Be sure to return it to the original position after the adjustment is completed.)
3	Convergence adjustment		Match the color convergence of the replaced CRT assembly with the color of an assembly which has not been replaced. See Section 7.12.2 CONVERGENCE ADJUSTMENT for details on the matching procedure. (When CRT assembly G is replaced, match the color convergence of the R, G and B.)	
4	White balance	Color bar signal without color signal	Screen VR(VR1) VR651 (R) } Drive VR (V) VR653 (B) }	Set the picture quality to standard by remote control.
				Adjust the replaced color screen VR until grey can be seen in the color of dark area.
				Adjust the replaced color drive VR until the color of bright area becomes white. (When CRT assembly G is replaced, slightly adjust the drive VR (R) and (B) .)
				Adjust the PIONEER Standard Brightness only when the above adjustments have not been successfully effectuated due to the abnormal brightness.
5	PIONEER standard settings	Adjust as described in steps 8 thru 14 in Section 7.6.1.		

(3) BLUE LINE ADJUSTMENT

- Short-circuit TP- R (TP- 375) and TP- GND (TP- 377) in the VIDEO - AUDIO assembly, then green lines and blue lines appear on the screen. Release the short - circuit after blue line adjustment.
- Adjust each VR so that the blue lines converge with the green lines to obtain cyan lines.
- After adjustment, perform fine-adjustment by observing the overall screen.

● Blue Horizontal Distortion Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	BH-SKEW	VR730 (C)	Observe the blue vertical lines on the screen, and adjust in the same way as the red horizontal distortion compensation adjustment.
2	BH-BOW	VR731 (C)	
3	BH-KEY	VR732 (C)	
4	BH-S-KEY	VR733 (C)	
5	BH-PIN	VR734 (C)	
6	BH-S-PIN	VR735 (C)	

● Blue Horizontal Interval Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	BH-POSITION	Remote control keys, 4 and 6	Adjust so that the blue lines converge with the green lines to obtain cyan lines in the same way as the red horizontal interval compensation adjustment.
2	BH-LIN	VR736 (C)	
3	BH-4-LIN	VR739 (C)	
4	BH-S-LIN	VR737 (C)	
5	BH-SIZE	VR738 (C)	

● Blue Vertical Distortion Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	BV-SKEW	VR740 (C)	Observe the blue horizontal lines on the screen, and adjust in the same way as the red vertical distortion compensation adjustment.
2	BV-BOW	VR741 (C)	
3	BV-KEY	VR742 (C)	
4	BV-S-KEY	VR743 (C)	
5	BV-S-PIN	VR745 (C)	
6	BV-PIN	VR744 (C)	

● Blue Vertical Interval Compensation Adjustment

Step No.	Adjustment Item	Adjustment Point	Adjustment Procedure
1	BV-LIN	VR746 (C)	Adjust so that the blue lines converge with the green lines to obtain cyan lines in the same way as the red vertical interval compensation adjustment.
2	BV-S-LIN	VR748 (C)	
3	BV-POSITION	Remote control keys, 2 and 8	
4	BV-SIZE	VR747 (C)	

7.25 DPO BASE SETTING

The DPO function features a DPO light-sensitive section in the front control panel designed to judge the level of external light when the front panel DPO switch (S859) is ON, thereby matching the PROJECTION MONITOR RECEIVER picture quality (contrast, color, bright) with the external light.

There are two STANDARD kinds of DPO picture qualities. When the environment is bright, the first DPO quality (DPO LIGHT) is selected. When the environment is dark, the second DPO quality (DPO DARK) is selected. The data on these two DPO qualities are stored in IC307 (non-volatile memory).

Hence, if IC307 (or peripheral circuits) is repaired or replaced, or if MICROCOMPUTER assembly is replaced, picture quality must be stored in IC307 again.

To store the DPO picture quality data, refer to the operating instructions. The values set at the factory are shown here for reference. These values are subject to change.

• DPO LIGHT

● (COLOR) : 0

● (CONTRAST) : 0

☀ (BRIGHT) : 0

• DPO DARK

● (COLOR) : -2

● (CONTRAST) : -15

☀ (BRIGHT) : +3

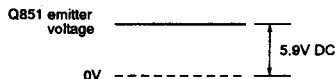
Note: For this adjustment, it is not necessary to activate FACTORY ADJ mode.

7.26 DPO SENSITIVITY ADJUSTMENT

The sensitivity of the DPO light-sensitive section is adjusted to determine the level of external light at which the DPO feature is activated. This adjustment is made by VR851 in the DPO assembly (refer to Fig. 7-21), and should be carried out according to the customer's preferences. The adjustment procedure used at the factory is given for reference.

- (1) Using an incandescent light bulb as the light source, light is beamed directly into the DPO light sensitive section with a light intensity level of 50 lux at the DPO.
- (2) Switch the DPO switch (S859) on. "DPO ON" appears on the screen.

- (3) DPO assembly VR851 is adjusted to obtain a voltage of $5.9V (\pm 0.1V)$ at the Q851 emitter.



7.27 ANODE VOLTAGE MEASURING METHOD

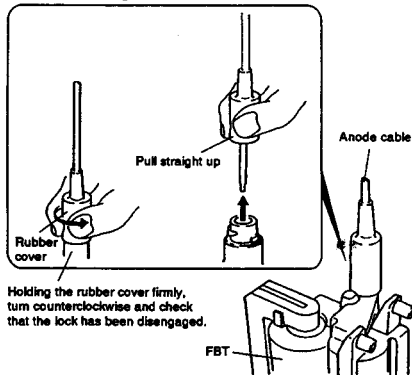
Disconnect the FBT anode cable as outlined in Fig. 7-16. Measure at the point where the cable enters the FBT.

Caution: Take extra precaution when measuring this high voltage. High voltages are also present in surrounding circuit boards (CRT DRIVE assembly, POWER SUPPLY - DEFLECTION assembly).

SERVICEMAN WARNING

Before removing the anode cable, turn off the power, unplug the AC plug and let the unit discharge for more than 1 minute.

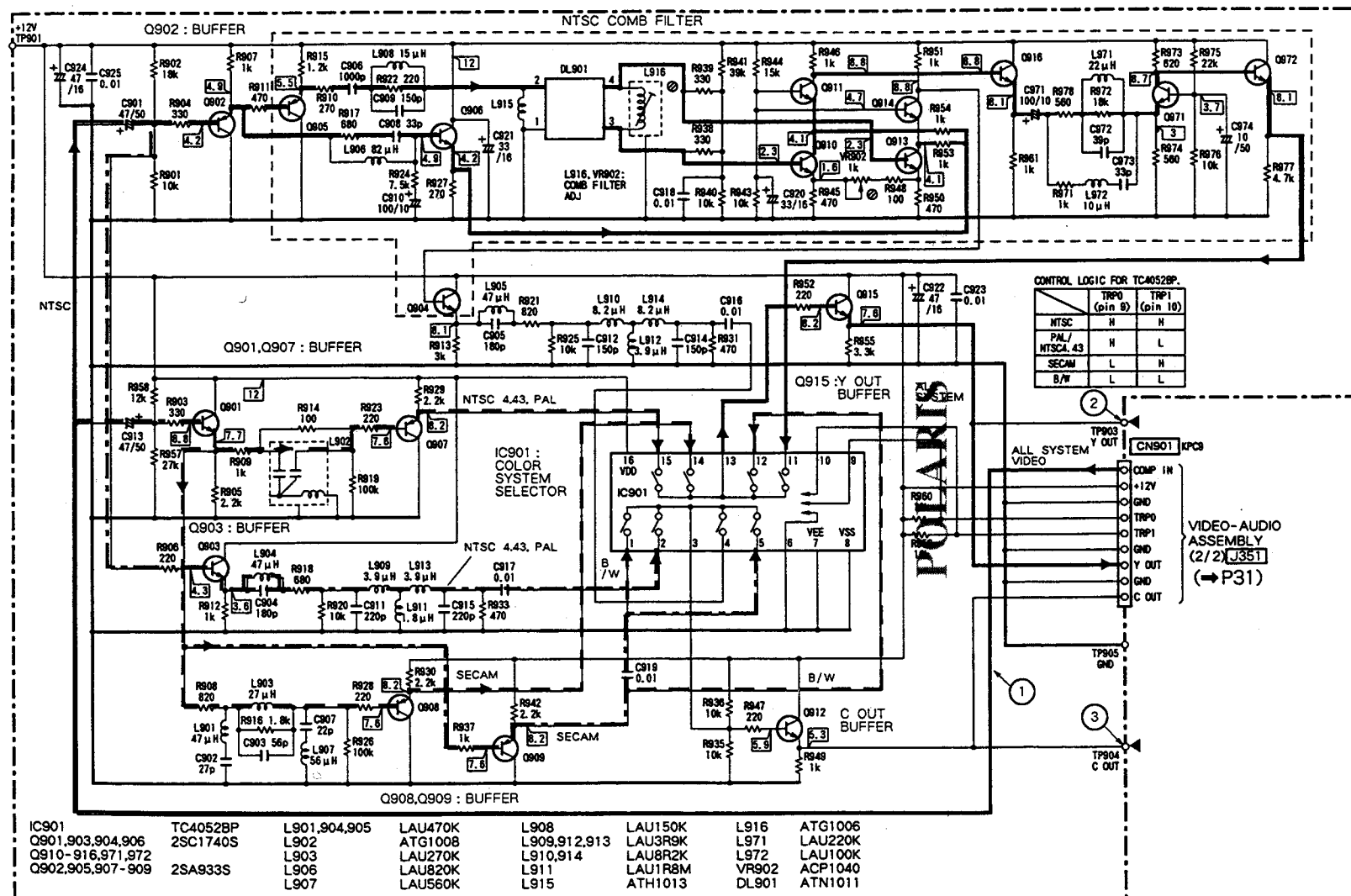
Note: Determine the extent of the rubber cover before disconnecting the cable.



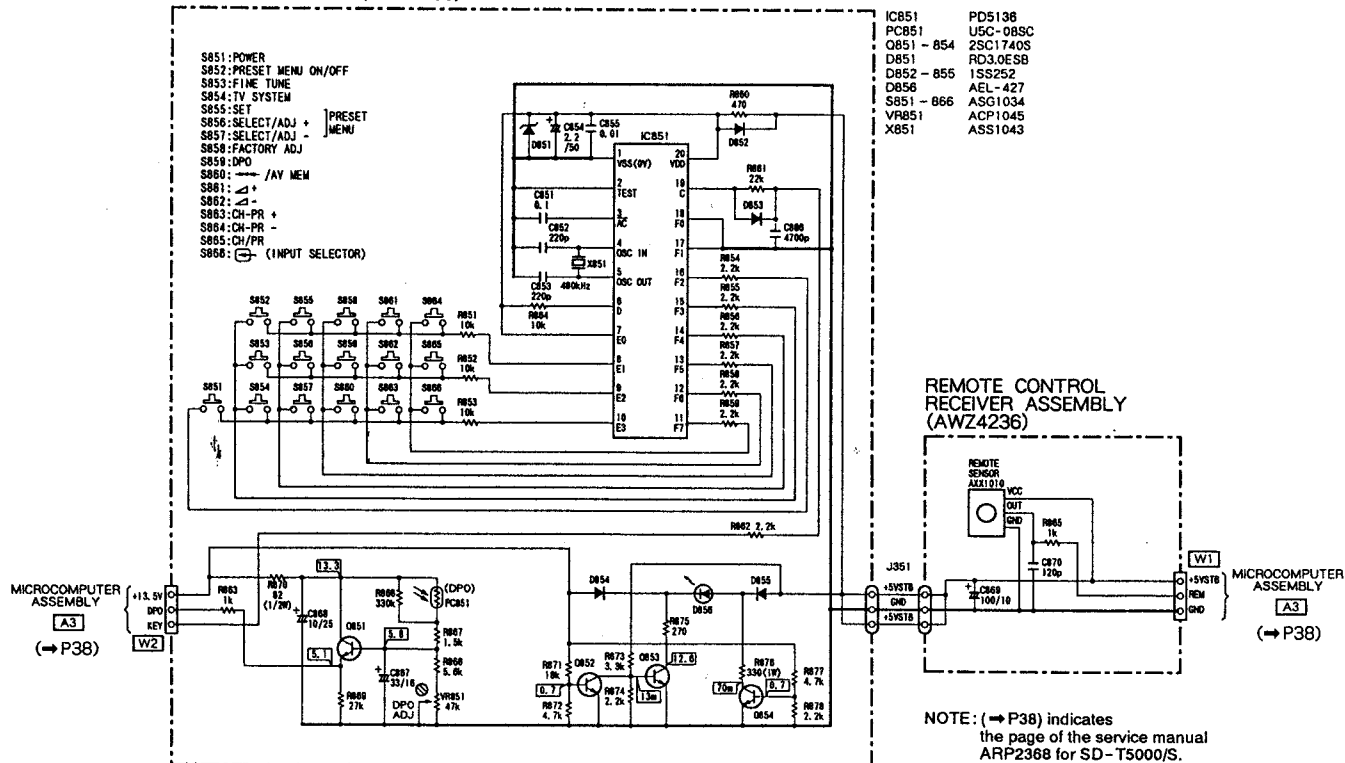
Note: When reconnecting the cable, proceed in the reverse order. After reconnecting, tug on the cable to check that it is secure.

Fig. 7-16 Disconnecting the anode cable

Y-C SEPARATION ASSEMBLY (AWZ3999)



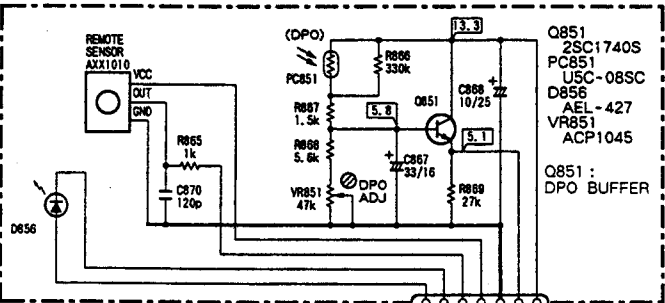
FRONT ASSEMBLY (AWZ4235)



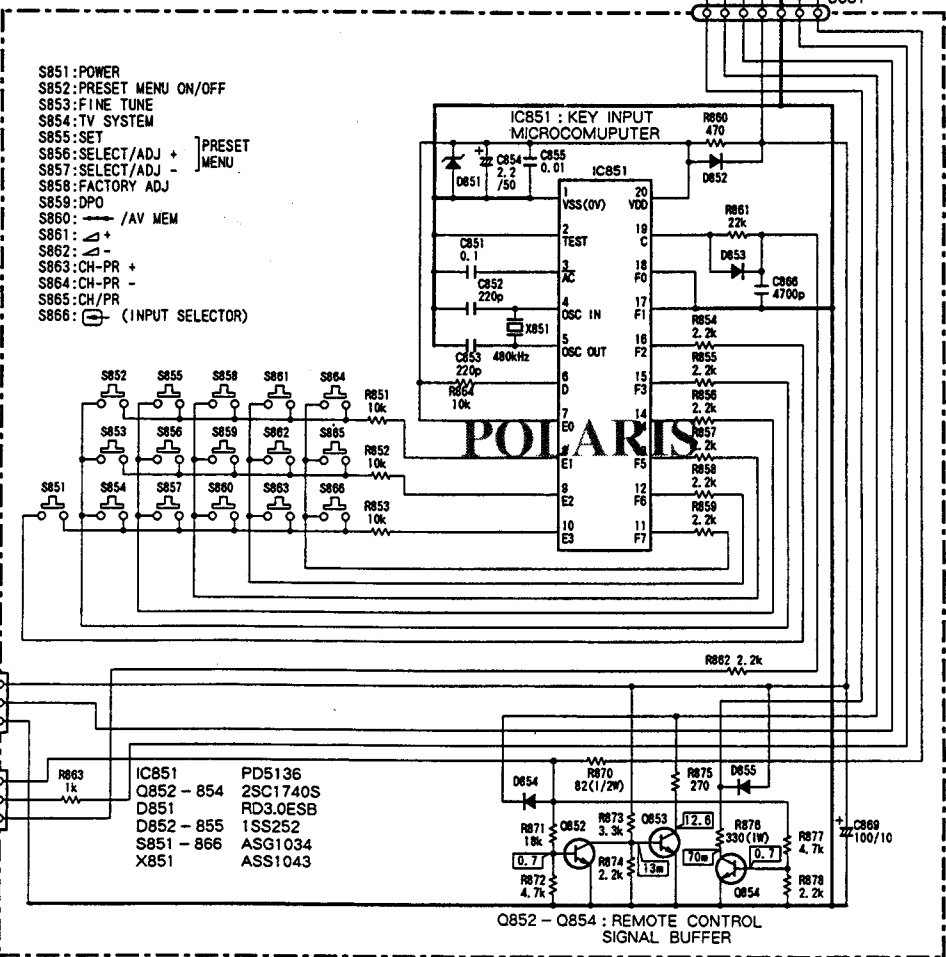
IC851 PD5138
 PC851 U5C-08SC
 Q851 - 854 2SC1740S
 D851 RD3.0ES8
 D852 - 855 1SS252
 D856 AEL-427
 S851 - 866 ASG1034
 VR851 ACP1045
 X851 ASS1043

DPO AND FRONT ASSEMBLIES

DPO ASSEMBLY (AWZ4003)



FRONT ASSEMBLY (AWZ4002)



5.5 TUNER-NICAM, AM - DEMOD, SOUND TRAP AND 4.5MHz B.P.F. ASSEMBLIES

● Waveforms and voltages

(1) Voltage Indication

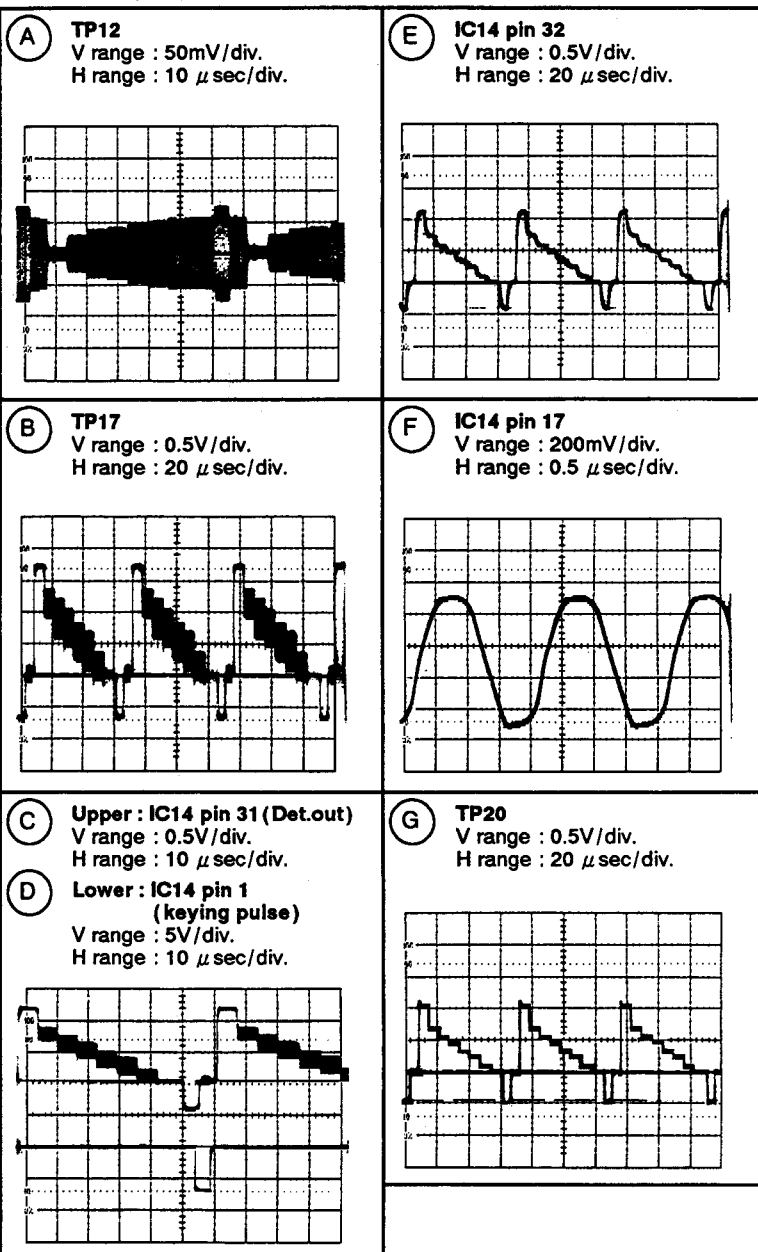
- $\square$ V: DC voltage (V) at no input signal without notice.
- Meaning of the marked (input signals are described in the below.)
- M : For input a signal of the system M.
- B/G : For input a signal of the system B/G.
- I : For input a signal of the system I.
- D/K : For input a signal of the system D/K.
- L/L' : For input a signal of the system L/L'.

● Input Signal Contents

- System M : US 9ch (fp=187.25MHz), NTSC color bar
Audio: 1kHz, 25kHz DEV.
RF intensity: 80dB μ V
- System B/G : CCIR 7ch (fp=189.25MHz), PAL color bar (EBU)
Audio: 1kHz, 30kHz DEV.
RF intensity: 80dB μ V
- System I : CCIR 7ch (fp=189.25MHz), PAL color bar (EBU)
Audio: 1kHz, 30kHz DEV.
RF intensity: 80dB μ V
- System D/K : CCIR 7ch (fp=189.25MHz), SECAM color bar
Audio: 1kHz, 30kHz DEV.
RF intensity: 80dB μ V
- System L : French F'1ch (fp=176MHz), SECAM color bar
Audio: 1kHz, 70% MOD.
RF intensity: 80dB μ V
- System L' : French FC1 ch (fp=60.5MHz), SECAM color bar
Audio: 1kHz, 70% MOD.
RF intensity: 80dB μ V

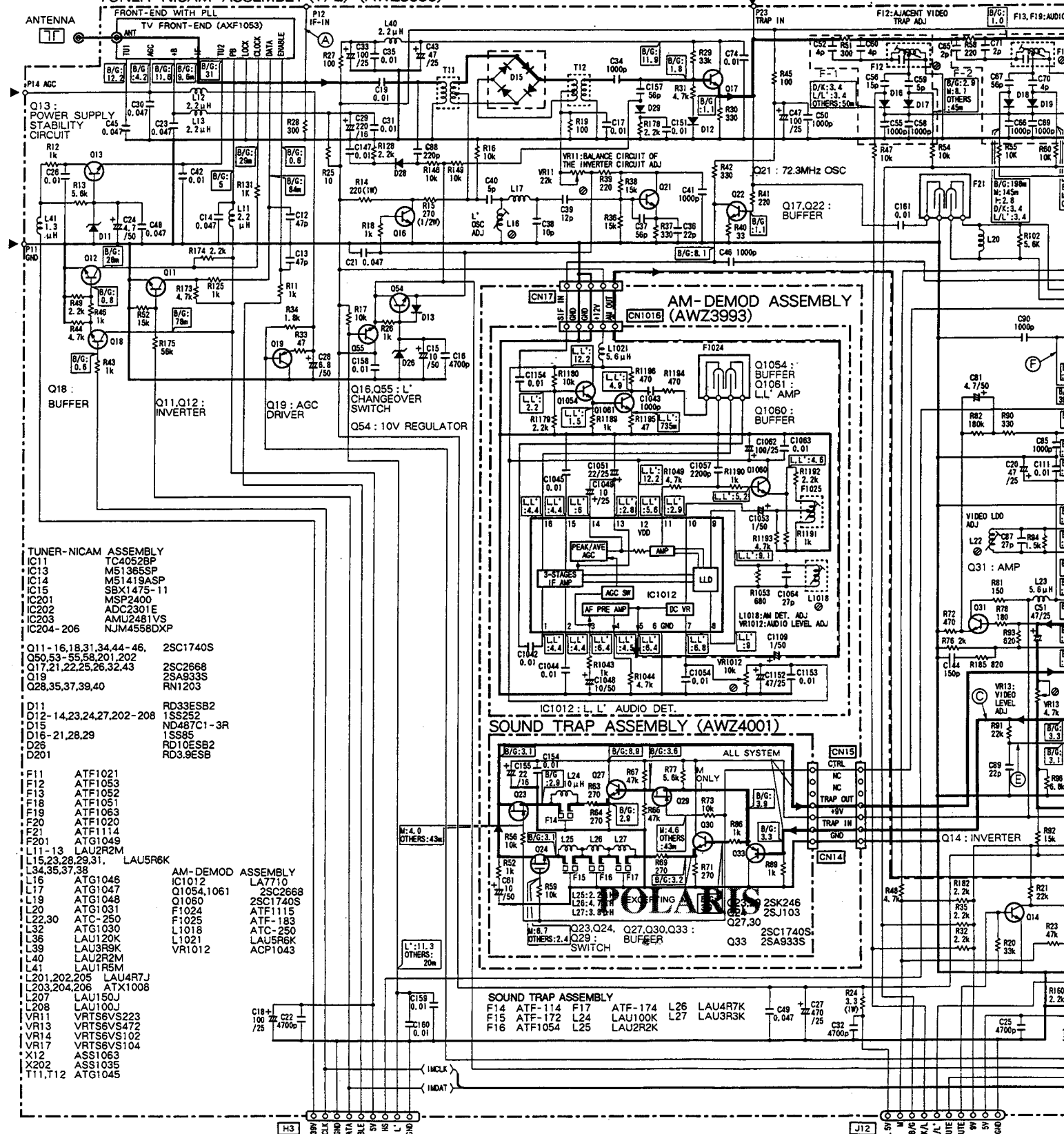
(2) Waveforms

Input signal: System B/G, PAL color bar (EBU),
fp=189.25MHz, 80dB μ V
(Only Ⓐ is no audio carrier.)



TUNER-NICAM, AM-DEMOD, SOUND TRAP AND 4.5MHz B.P.F. ASSEMBLIES

TUNER-NICAM ASSEMBLY (1/2) (AWZ3996)



MICROCOMPUTER ASSEMBLY (P38)

MICROCOMPUTER ASSEMBLY (P38)

F-1 to F-4 (B.P.F. circuit of 4.5MHz to 6.5MHz)

SYSTEM	M	B	G	I	D/K	L/L'
F-1	32.9	31.9	Loss than 31.9	32.9	32.4	32.4
F-2	34.4	33.4	33.4	Loss than 32.9	Loss than 32.4	32.4
F-3	40.4	40.4	More than 40.4	More than 40.4	40.4	40.4
F-4	34.4	33.4	33.4	Under 32.9	Loss than 32.4	32.4

Unit: MHz

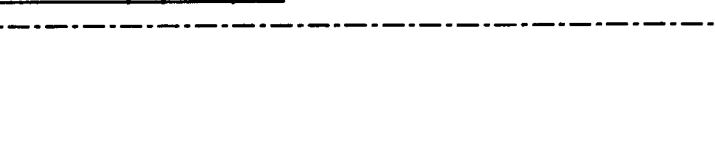
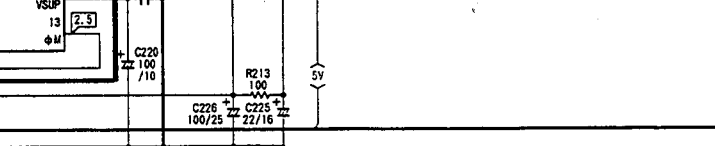
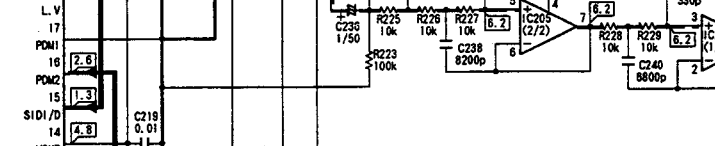
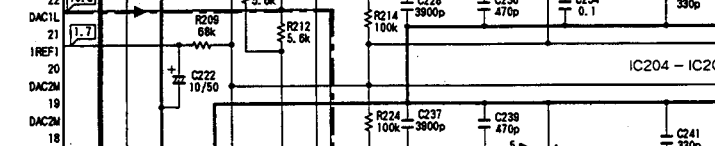
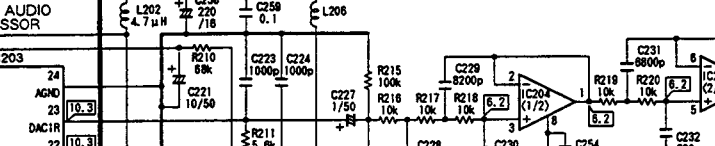
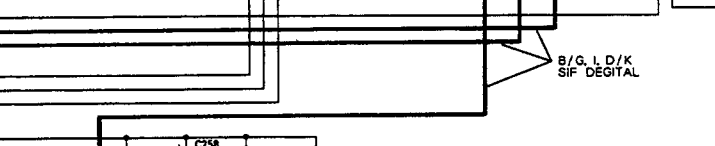
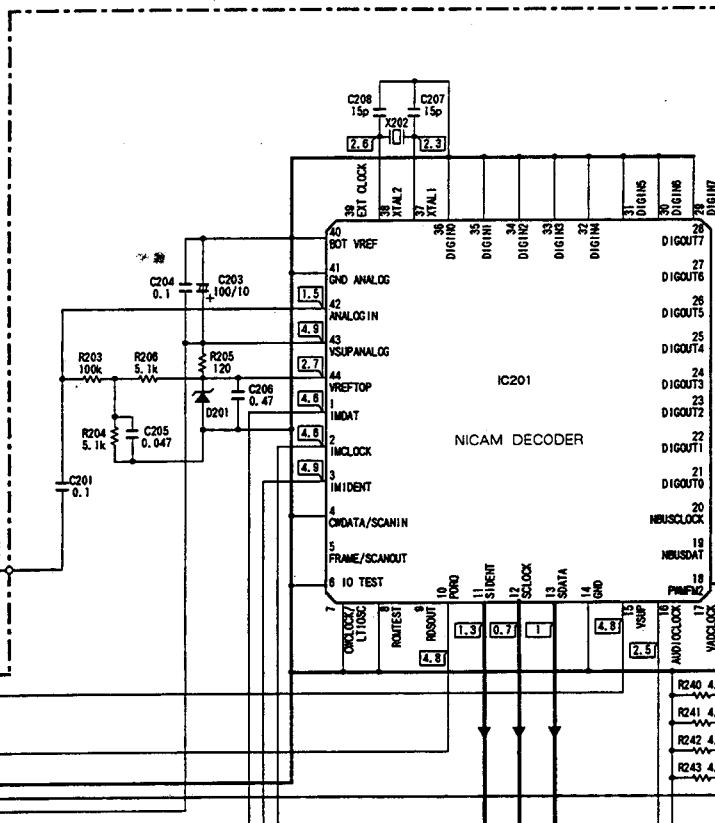
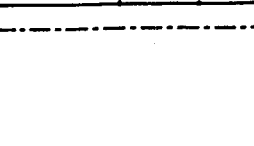
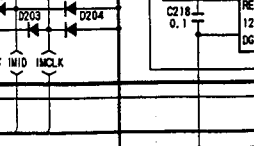
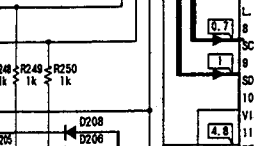
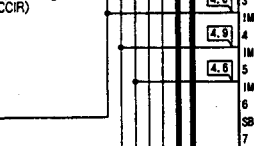
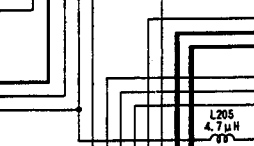
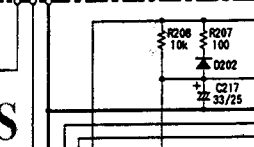
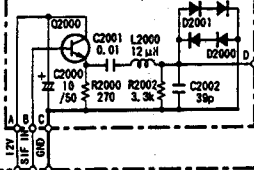
*** 2 Voltages of J12.**

SYSTEM	Pin	M	B/G	D/K/L	L/L'
M	47.7m	8.1	45m	23m	
B/G	7.6	6.0	45m	23m	
I	7.6	45m	45m	23m	
D/K	7.6	45m	8	23m	
L/L'	7.6	45m	8	4.6	

TUNER-NICAM ASSEMBLY (2/2) (AWZ3996)

Q2000 - 2SC1740S
D2000 - 2003 1SS252
L2000 LAU120J

Q2000 : SIF AMP



SIGNAL ROUTES

- CHARGED SECTION
- VIF (M or all system), VIDEO(NTSC or all system) and Y(NTSC or all system) signal
- Y(any of NTSC4.43,PAL and SECAM) or Black and White (B/W) signal
- C(NTSC or all system) signal
- C(any of NTSC4.43,PAL and SECAM) signal
- SIF
- SIF DIGITAL
- AUDIO (L ch)
- H. deflection signal
- V. deflection signal
- R, R - Y signal
- G signal
- B, B - Y signal

VIDEO-AUDIO ASSEMBLY (2/2:VIDEO-DEFLECTION SECTION), R., G. AND B. CRT DRIVE ASSEMBLIES

Note: DC voltage (V) in the VIDEO - AUDIO assembly (2/2) is color bar signal input state.

• Switch the color system of connector B16

Mode	Switch	SW1 (Pin5)	SW2 (Pin3)	SW3 (Pin2)
AUTO		L	L	M*1
Manual PAL		H	H	H
Manual SECAM		H	L	H
Manual NTSC		L	L	H
Manual NTSC4.43		L	H	H

Note: Input signal from MICROCOMPUTER assembly except *1.

*1 is output signal from IC356.
H: 6VDC, M: 2VDC, L: 0VDC

• Voltages of Q359 - Q361.

	Q359		Q360		Q361	
	B	C	B	C	B	C
NORMAL	—	9	0.6	0	0.2	10.5
S INPUT	—	0	0	12	0.6	0
SECAM	11.4	—	—	—	—	—
OTHER	12	—	—	—	—	—

• Voltages of IC356 (TA8659AN) (Unit: V)

Pin	Voltage (V)	Remarks	Pin	Voltage (V)	Remarks
1	8.7	-	31	-	-
2	8	-	32	-	-
3	8.7	-	33	6	-
4	6.5	-	34	-	-
5	6.5	5.5V for SECAM	35	4.1	-
6	12	-	36	7.5	-
7	3.3	-	37	3.1	-
8	6.5	-	38	6.7	-
9	6.5	5.5V for SECAM	39	5.1	-
10	-	Refer to Table 1 and 2.	40	9.1	-
11	-	-	41	2.8	-
12	5.2	-	42	2.8	At the black level.
13	5.2	-	43	2.8	-
14	10.3	8V for PAL, SECAM	44	3.2	-
15	5.9	-	45	3.2	-
16	11.3	10.7V for B/W, PAL, SECAM	47	6	-
17	3.6	-	49	6	-
18	4.5	7.5V for NTSC, NTSC 4.43.	50	GND	-
19	GND	-	51	6	-
20	5.9	-	52	GND	-
21	-	-	53	GND	-
22	-	Refer to Table 1 and 2.	54	GND	-
23	-	-	55	8.2	-
24	5.8	-	56	3.3	-
25	6	-	57	5.9	-
26	3.2	-	58	4.8	-
27	-	Refer to Table 1 and 2.	59	3	-
28	3.2	-	60	6.2	-
29	-	-	61	12	-
30	9.5	-	62	6.2	-
			63	12	-
			64	8	-

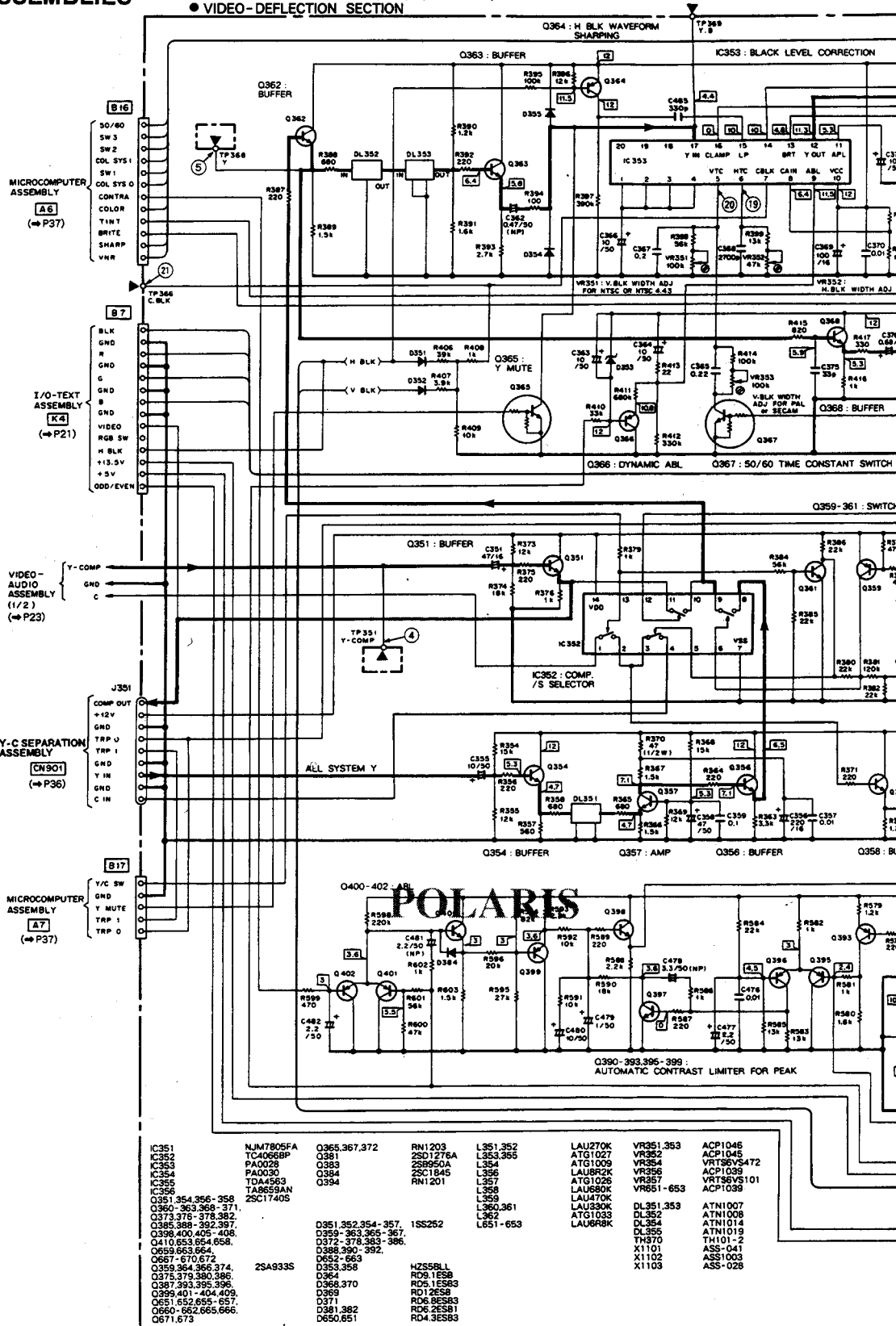
Table 1 Voltages of IC356 for AUTO mode (Unit: V)

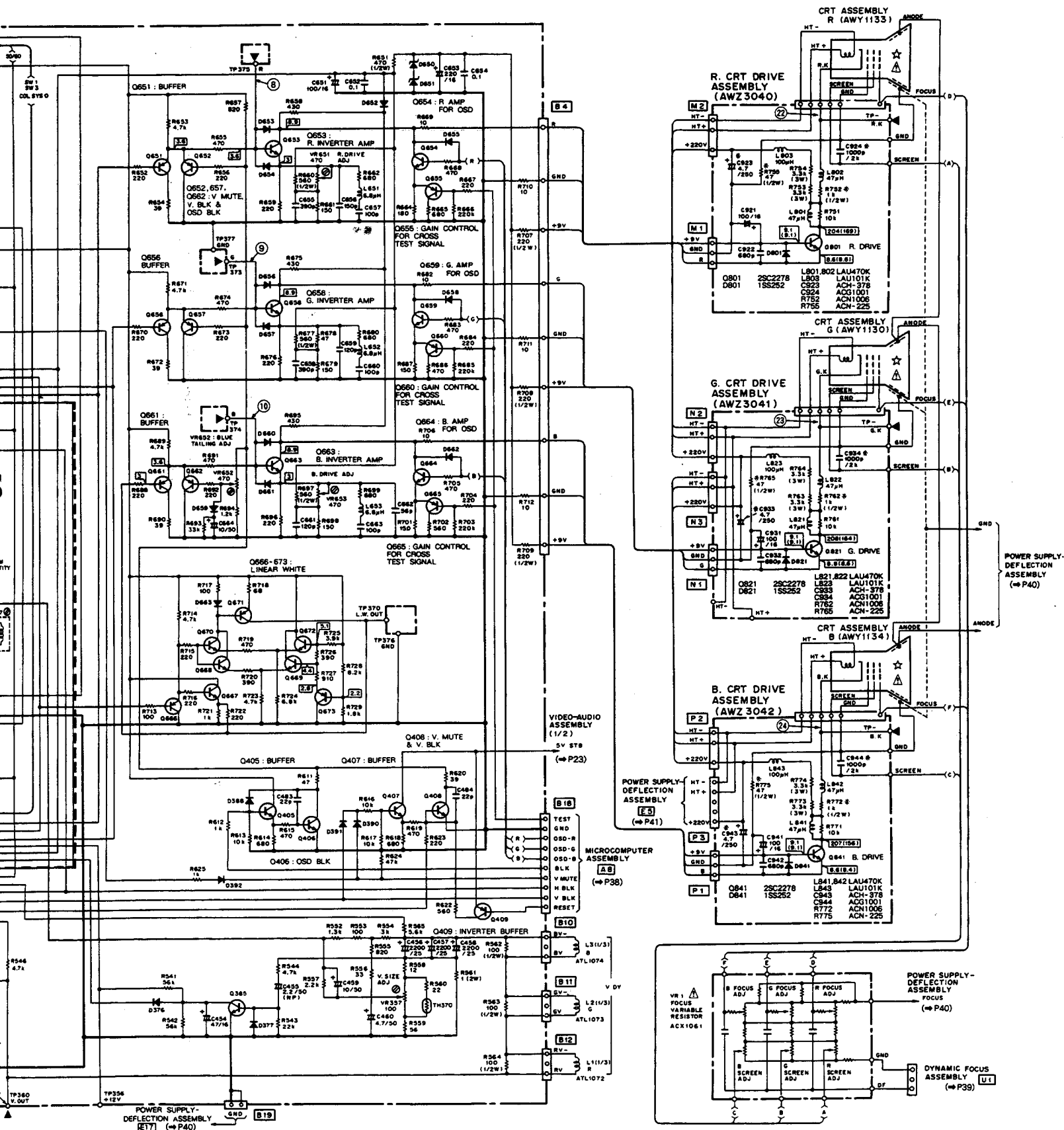
Pin	System	PAL	SECAM	NTSC4.43	NTSC
10		6	6	0	0
11		6	2	6	0
21		2	2	2	2
22		11.4	5.3	5.3	5.3
23		5.4	8	5.3	5.3
27		11	4.9	11	11

Table 2 Voltages of IC356 for Manual mode (Unit: V)

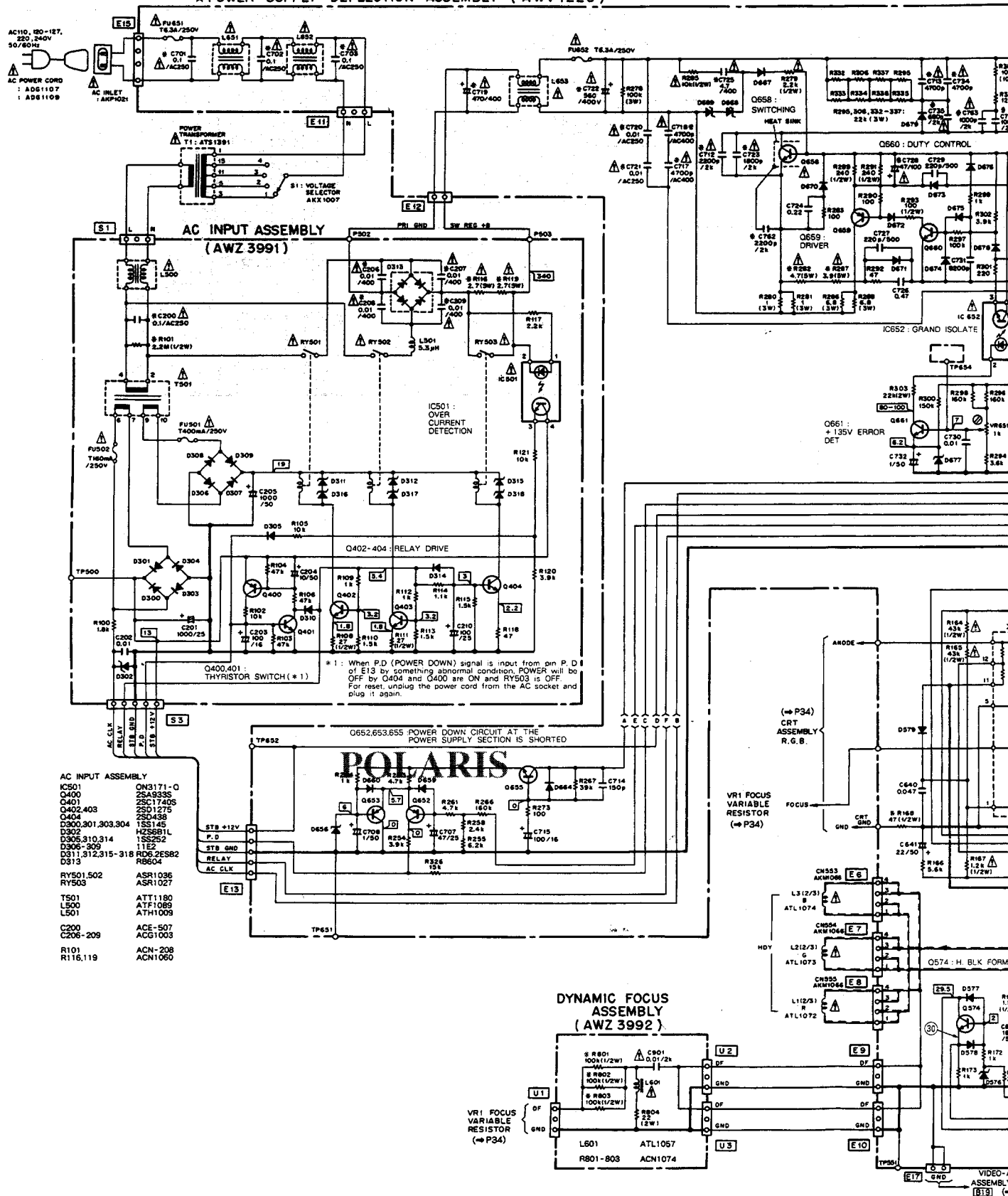
Pin	System	PAL	SECAM	NTSC4.43	NTSC
10		6	6	0	0
11		6	0	6	0
21		6	6	6	6

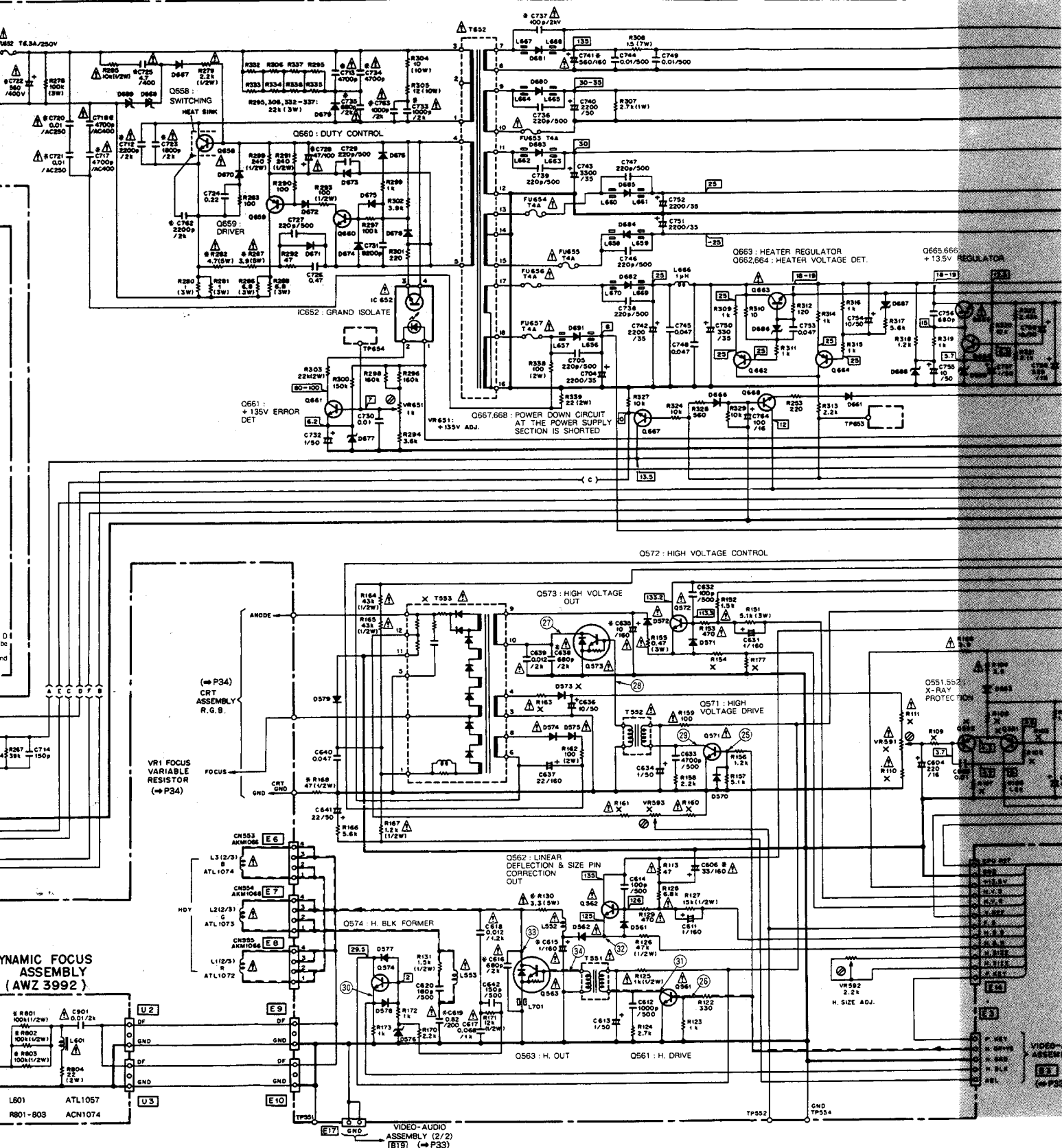
VIDEO-AUDIO ASSEMBLY (2/2) (AWV1227) • VIDEO-DEFLECTION SECTION



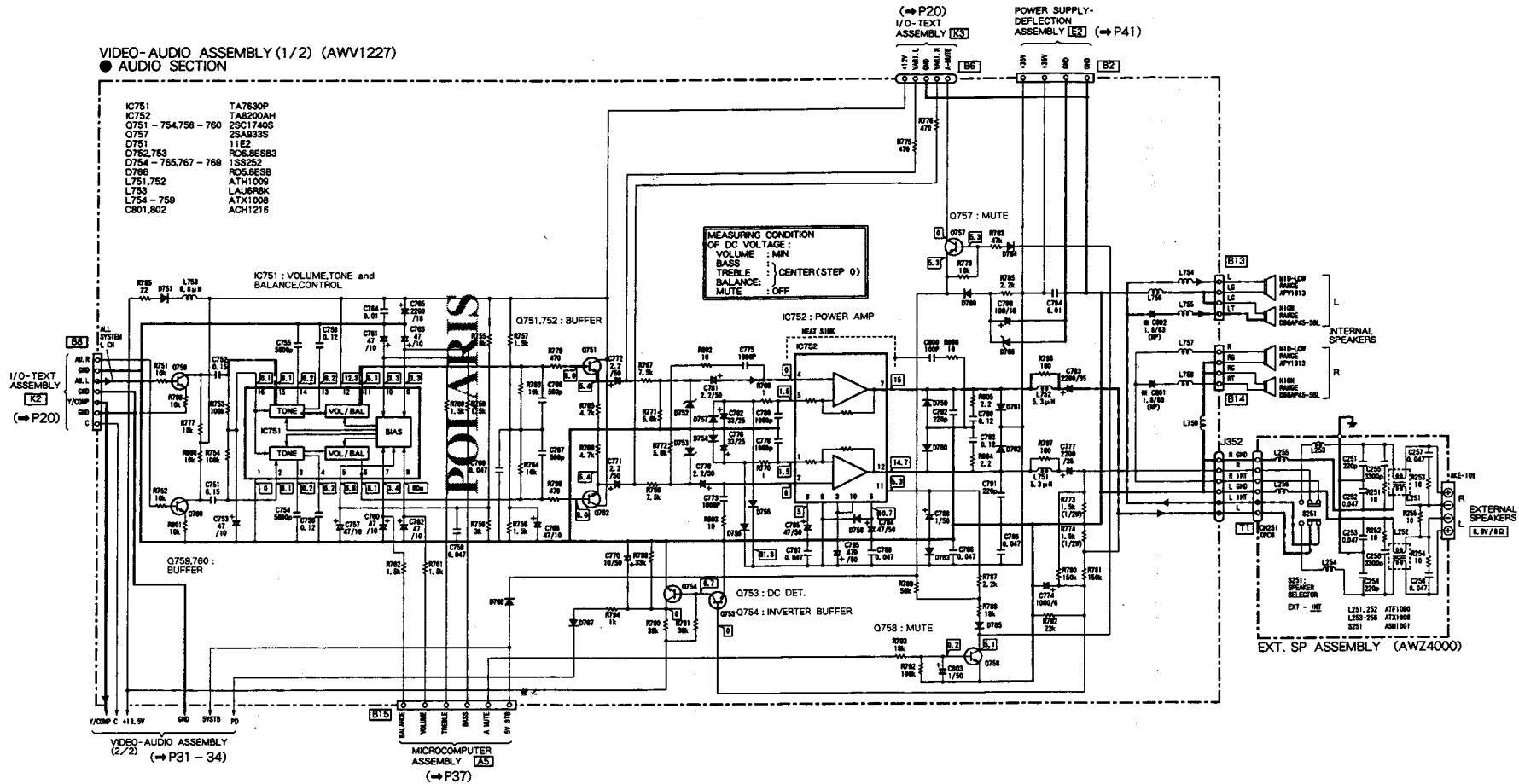


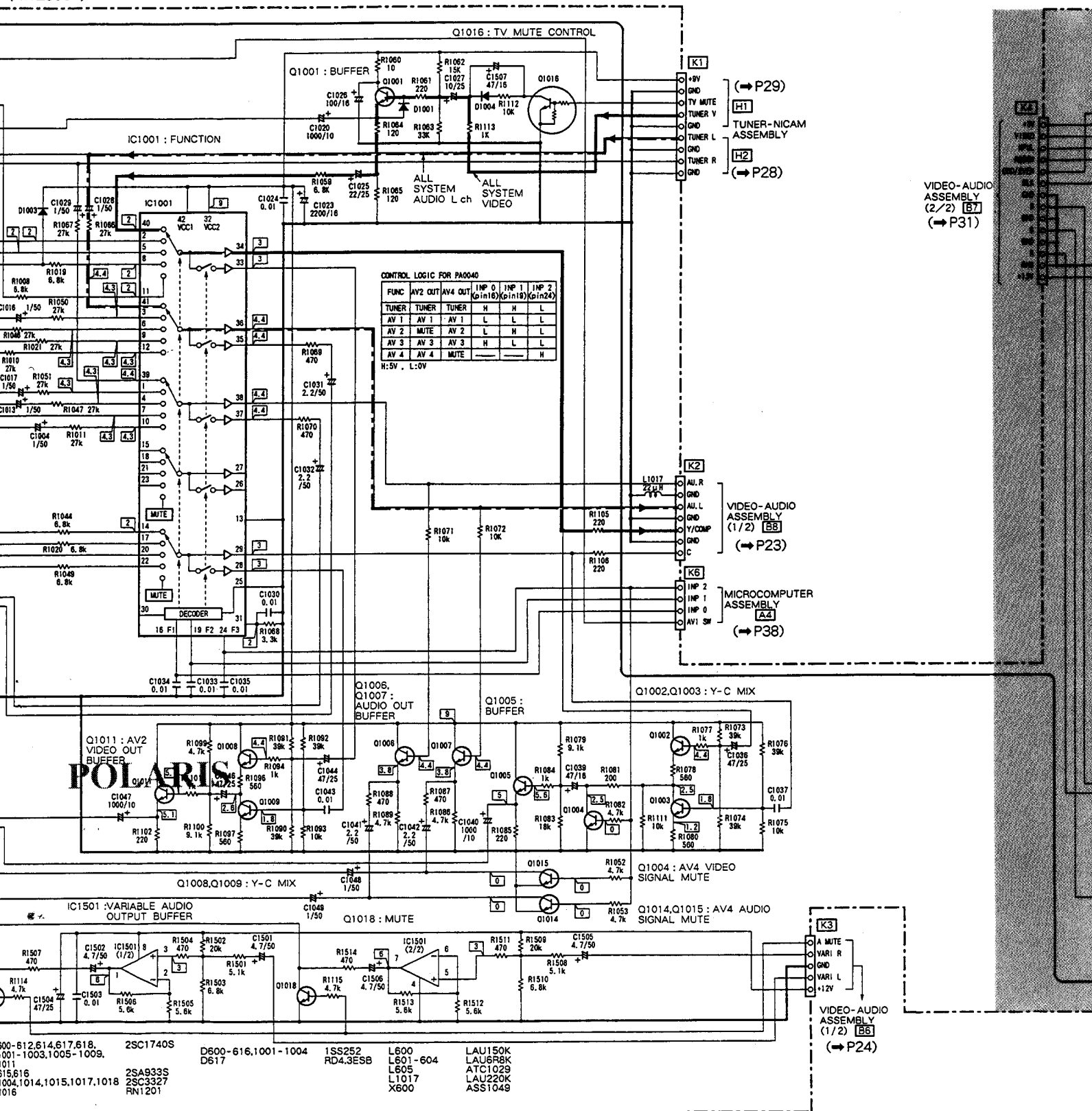
★ POWER SUPPLY - DEFLECTION ASSEMBLY (AWV1225)



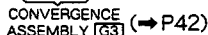


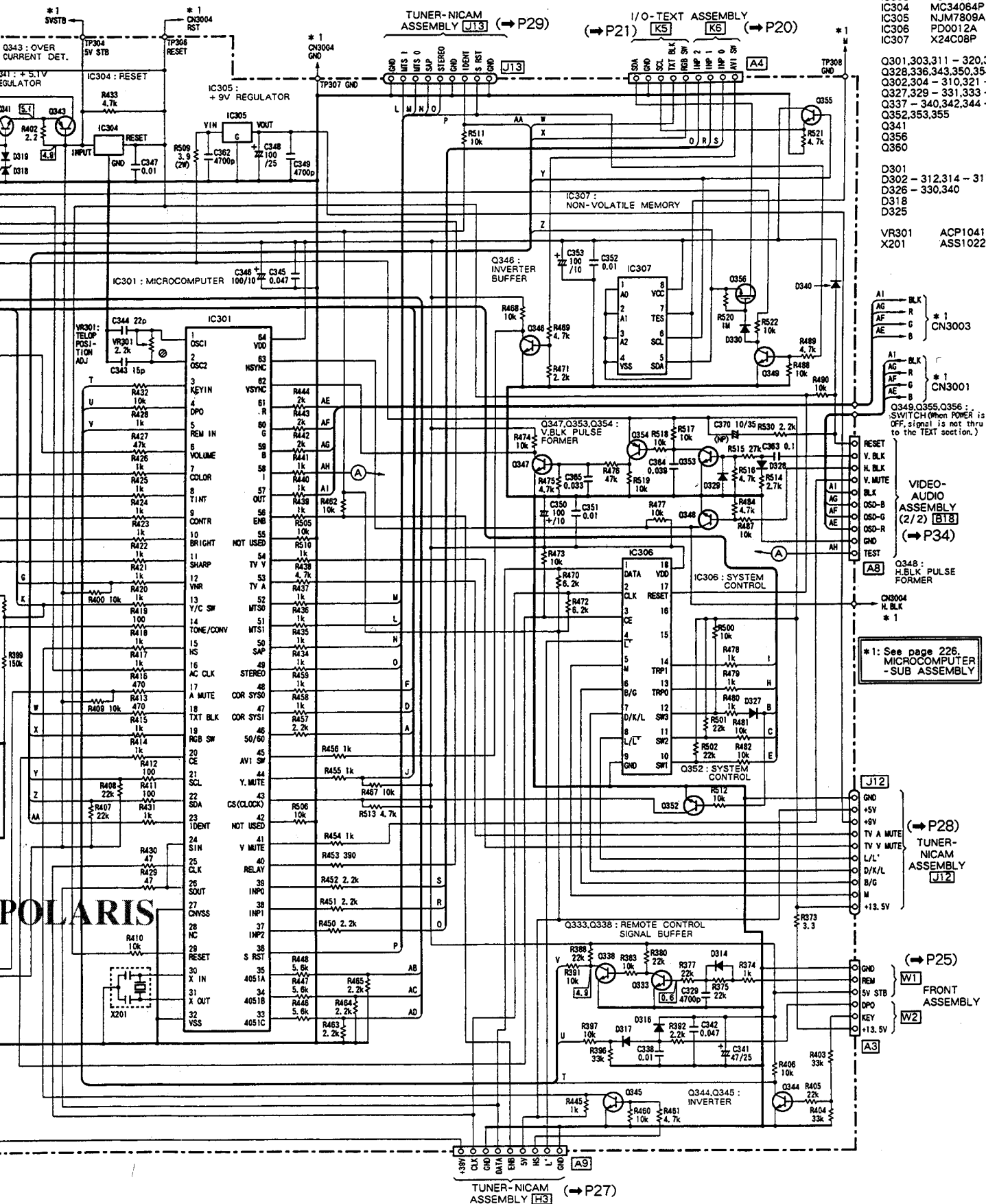
VIDEO-AUDIO ASSEMBLY (1/2 : AUDIO SECTION) AND EXT. SP ASSEMBLY





MICROCOMPUTER ASSEMBLY (AWZ3995)





Q301,303,311 - 320,326, 2SA933S
 Q328,336,343,350,354 2SC1740S
 Q302,304 - 310,321 - 325, A
 Q327,329 - 331,333 - 335,
 Q337 - 340,342,344 - 349,
 Q352,353,355
 Q341 2SD438
 Q356 2SJ103
 Q360 RN1203

D301 RD5.6ESB3
 D302 - 312,314 - 317,319, 1SS252
 D326 - 330,340
 D318 RD5.1ESB2
 D325 RD5.1ESB3

VR301 ACP1041
 X201 ASS1022

AI BLK
 AG R
 AF G
 AE B
 *1 CN3003

AI BLK
 AG R
 AF G
 AE B
 *1 CN3001

Q349,Q355,Q356 :
 SWITCH (When POWER is
 OFF, signal is not thru
 to the TEXT section.)

RESET
 Y, BLK
 N, BLK
 Y, MUTE
 BLK
 OSD-B
 OSD-G
 OSD-R
 GND
 TEST
 *1 CN3004
 H, BLK

Q348 :
 H, BLK PULSE
 FORMER

*1: See page 226.
 MICROCOMPUTER
 - SUB ASSEMBLY

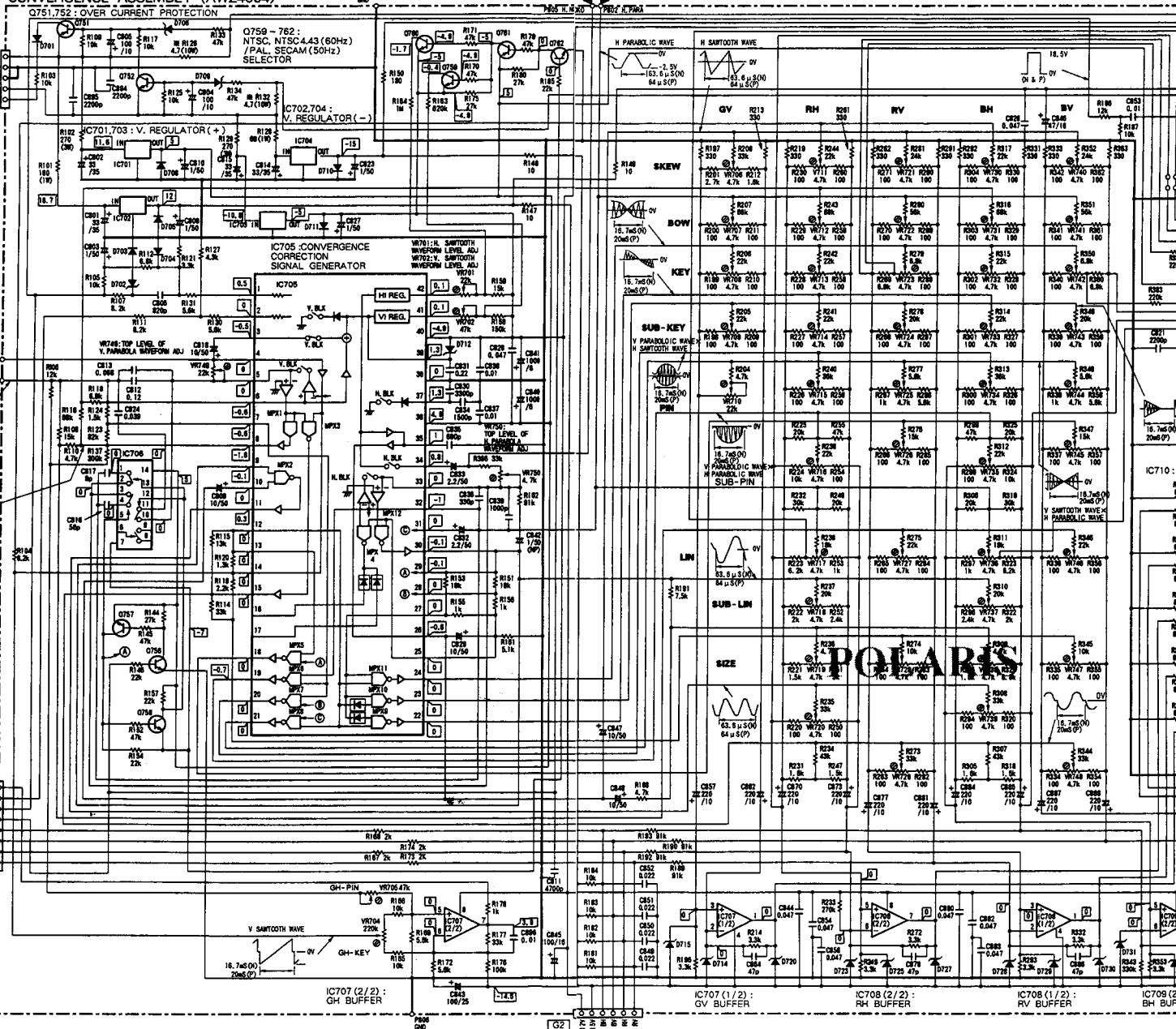
J12
 GND
 +5V
 +9V
 TV A MUTE
 TV V MUTE
 L/L'
 D/K/L
 B/G
 W
 +13.5V

(P28)
 TUNER-NICAM
 ASSEMBLY
 J12

(P25)
 FRONT
 ASSEMBLY
 W1
 W2
 A3

TUNER-NICAM
 ASSEMBLY H3 (P27)

CONVERGENCE ASSEMBLY



POWER SUPPLY
- DEFLECTION
ASSEMBLY
E4

(→ P41)

{ +25V
Y. GND
-24V
P. D.

IC706,Q756 - 758 :
NTSC, NTSC4.43 (60Hz)
/PAL, SECAM (50Hz)
SELECTOR

(⇒ P33)

VIDEO-AUDIO
ASSEMBLY
(2/2) **B5**

MICROCOMPUTER
ASSEMBLY
A2

(⇒ P37)

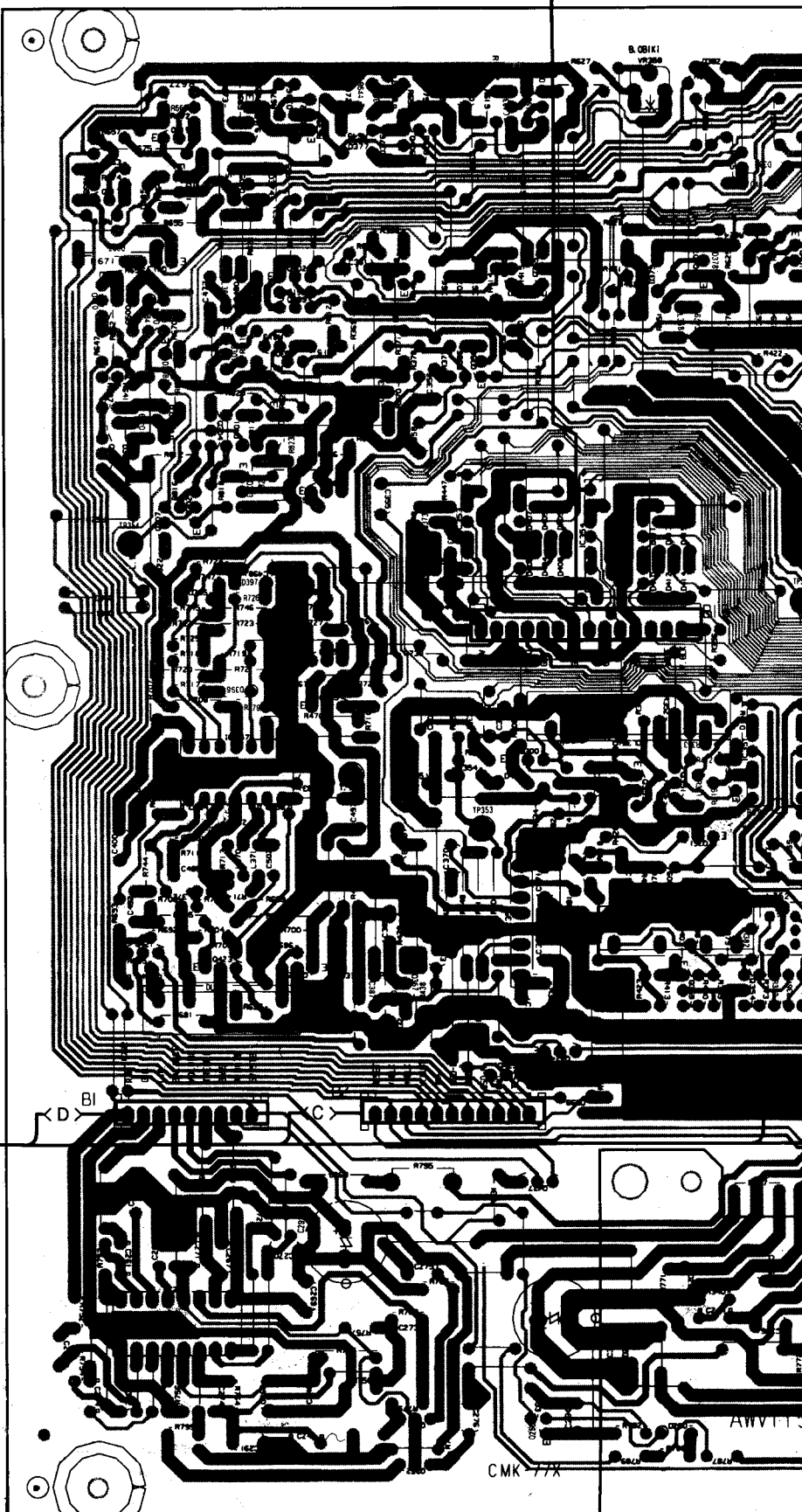
G3

P. KEY
Y. BLK
H. BLK
55/60
SBH
SBY
SRH
SRV

①

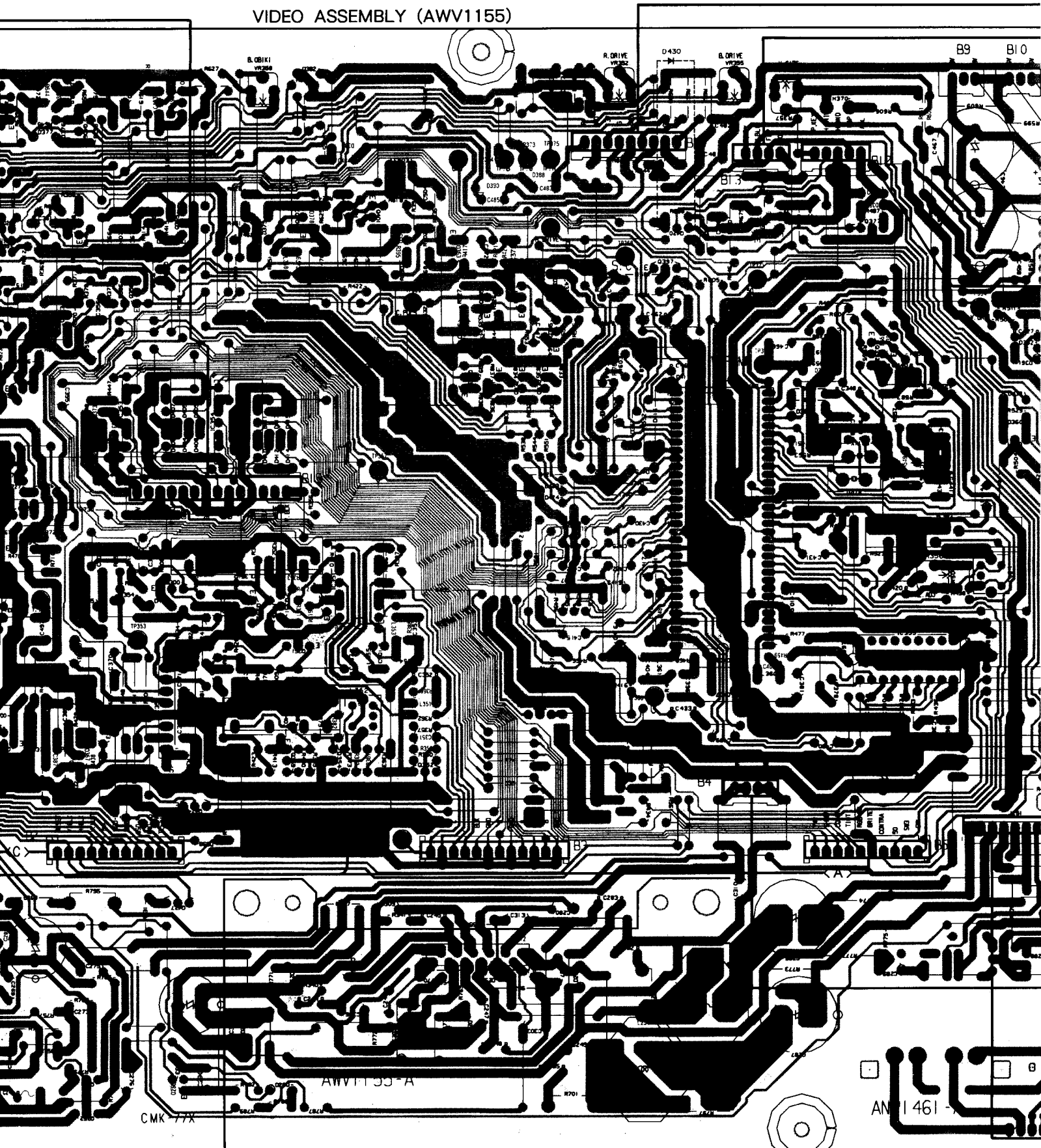
Q403 Q400
Q406
Q405
Q410-Q417
Q401
Q404
Q360 Q365 Q407
Q358 Q418
Q402 Q419 Q377
Q399 Q363 Q420 Q386
Q357 Q397 Q383
Q301 Q428
Q356
Q353 Q385 Q398 Q394
Q391 Q392
Q409 Q302-Q308
Q408 Q395
Q430-Q433
IC353 IC354
Q373
Q381 Q380
Q388
Q382
Q426
Q425 IC356
Q375 Q351
IC357 IC351
Q355 Q300 Q364
Q387
IC355
Q366 Q361
Q362
IC352
Q367 Q354
Q421-Q423 Q359 Q352
Q424
Q429 Q396
Q427
Q257
IC252 Q258
IC251
Q251
Q256
Q252

VR352 VR355
VR358 VR357
TP377
TP372-TP375
TP368
TP371
TP365 TP364
TP376 TP369
TP366
TP354
TP357
TP362 VR356
TP353
TP356
TP363
TP359-TP361
TP352



②

VIDEO ASSEMBLY (AWV1155)



AWV1155-A

CMK 77X

AWV1155-A

P. C. BOARDS PATTERN

EURO AV1 1

S-VIDEO

AV3 3

TUNER • T

Q1006
Q1007
Q1003
Q1002
Q1005
Q1004
Q1008
Q1010

IC1001

IC1000

Q1009

Q211 Q204
Q206 Q216
IC 201
Q221 Q248

Q232
Q247

IC201
Q225

Q218 Q241
Q208 Q240
Q238
Q249

Q239
Q210

Q220
Q230 Q227
Q228 Q233

Q217 Q207
Q209 Q219

TP210

TP204

TP205

TP201

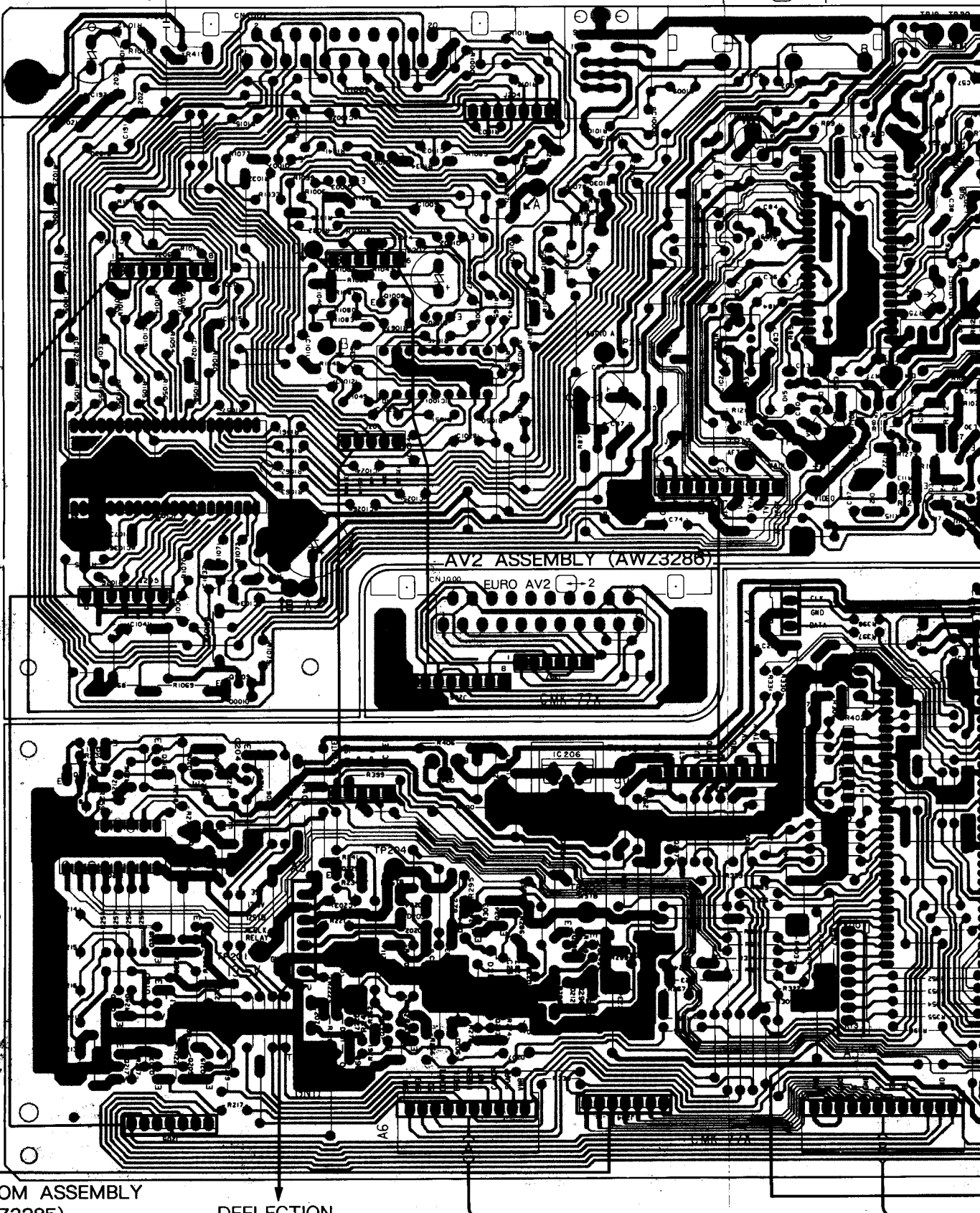
TP207

U-COM ASSEMBLY
(AWZ3285)

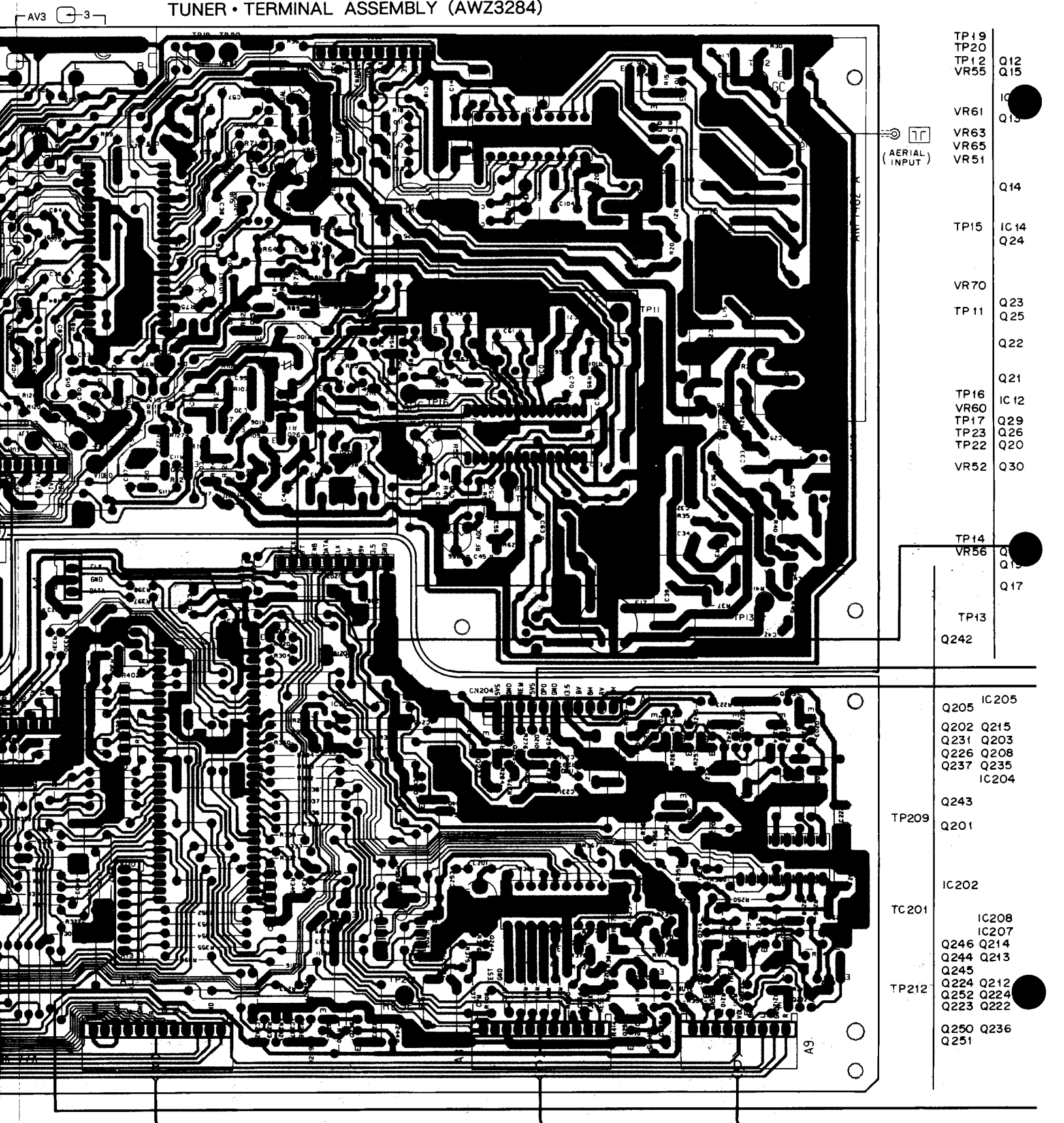
DEFLECTION
ASSEMBLY [E1]

AV2 ASSEMBLY (AWZ3286)

EURO AV2 2



TUNER • TERMINAL ASSEMBLY (AWZ3284)



TP19
TP20
TP12
VR55

Q12
Q15

VR61
VR63
VR65
VR51

Q13

(AERIAL INPUT)

Q14

TP15
IC 14
Q24

VR70
TP 11
Q23
Q25

Q22

Q21

TP16
VR60
TP17
TP23
TP22
VR52

IC 12
Q29
Q26
Q20
Q30

TP14
VR56

Q16
Q17

TP13
Q242

Q205 IC205
Q202 Q215
Q231 Q203
Q226 Q208
Q237 Q235
IC204

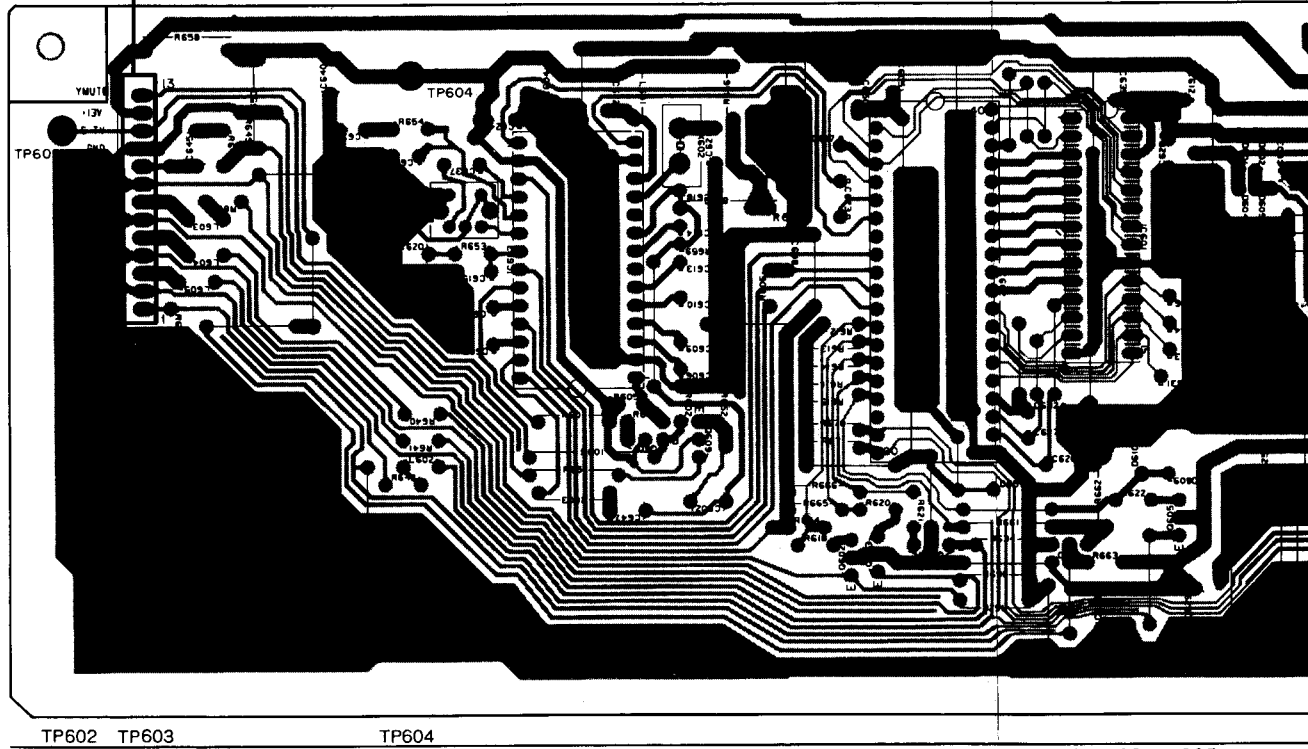
Q243
Q201

IC202

TC201
IC208
IC207
Q246 Q214
Q244 Q213
Q245
Q224 Q212
Q252 Q224
Q223 Q222

Q250 Q236
Q251

TEXT ASSEMBLY (AWZ3287)

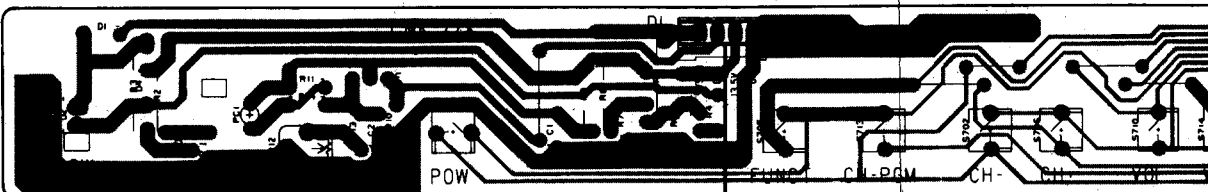


TP602 TP603

TP604

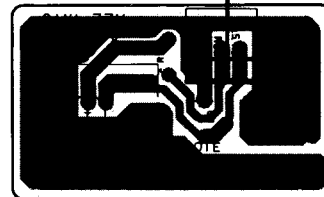
IC603 Q601 Q609

Q602-Q604 IC602 Q610 IC601 Q605



FRONT ASSEMBLY (AWZ3290)

CONVERGENCE
ASSEMBLY
G3



LED ASSEMBLY (AWZ3291)

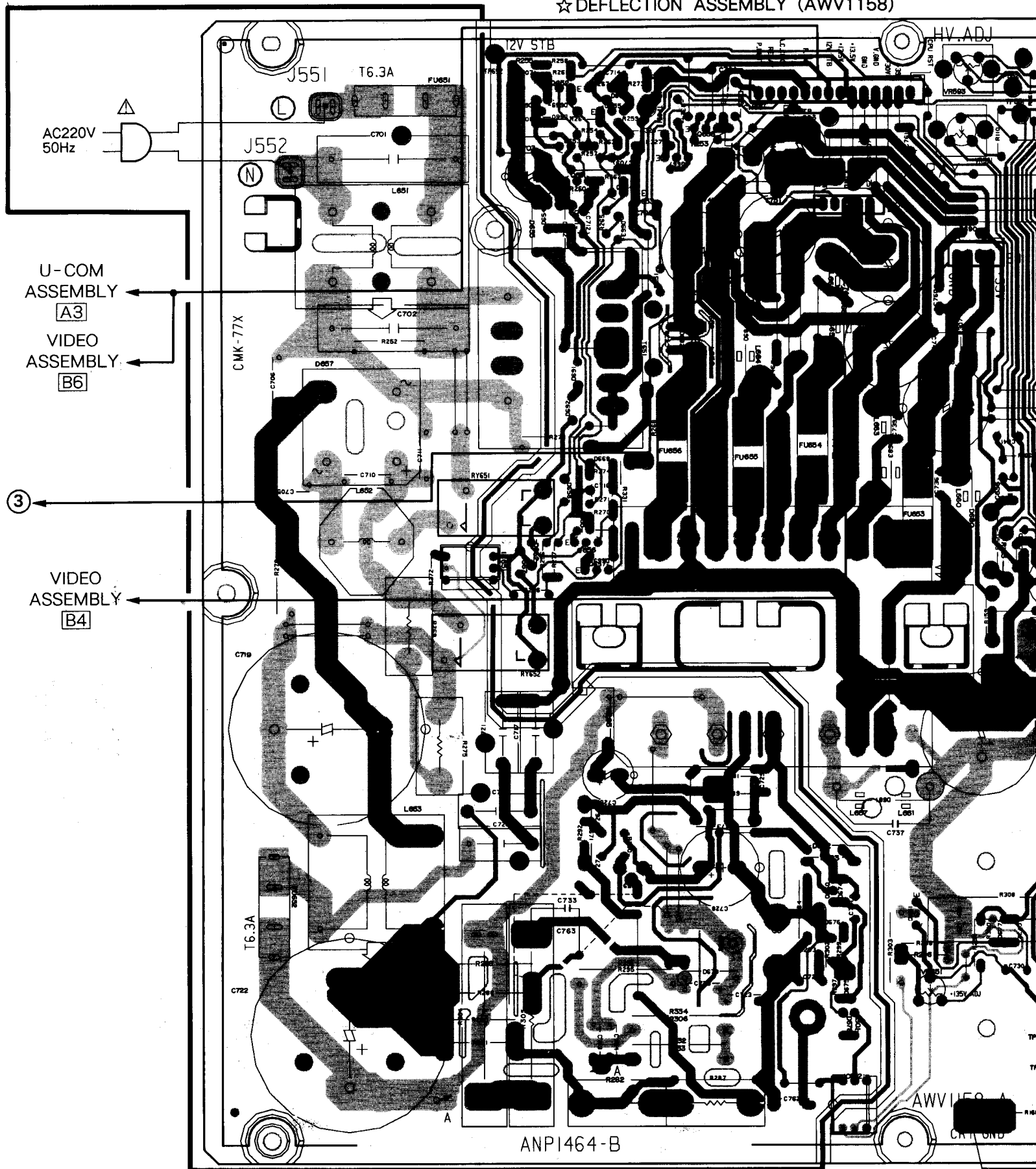
NOTE

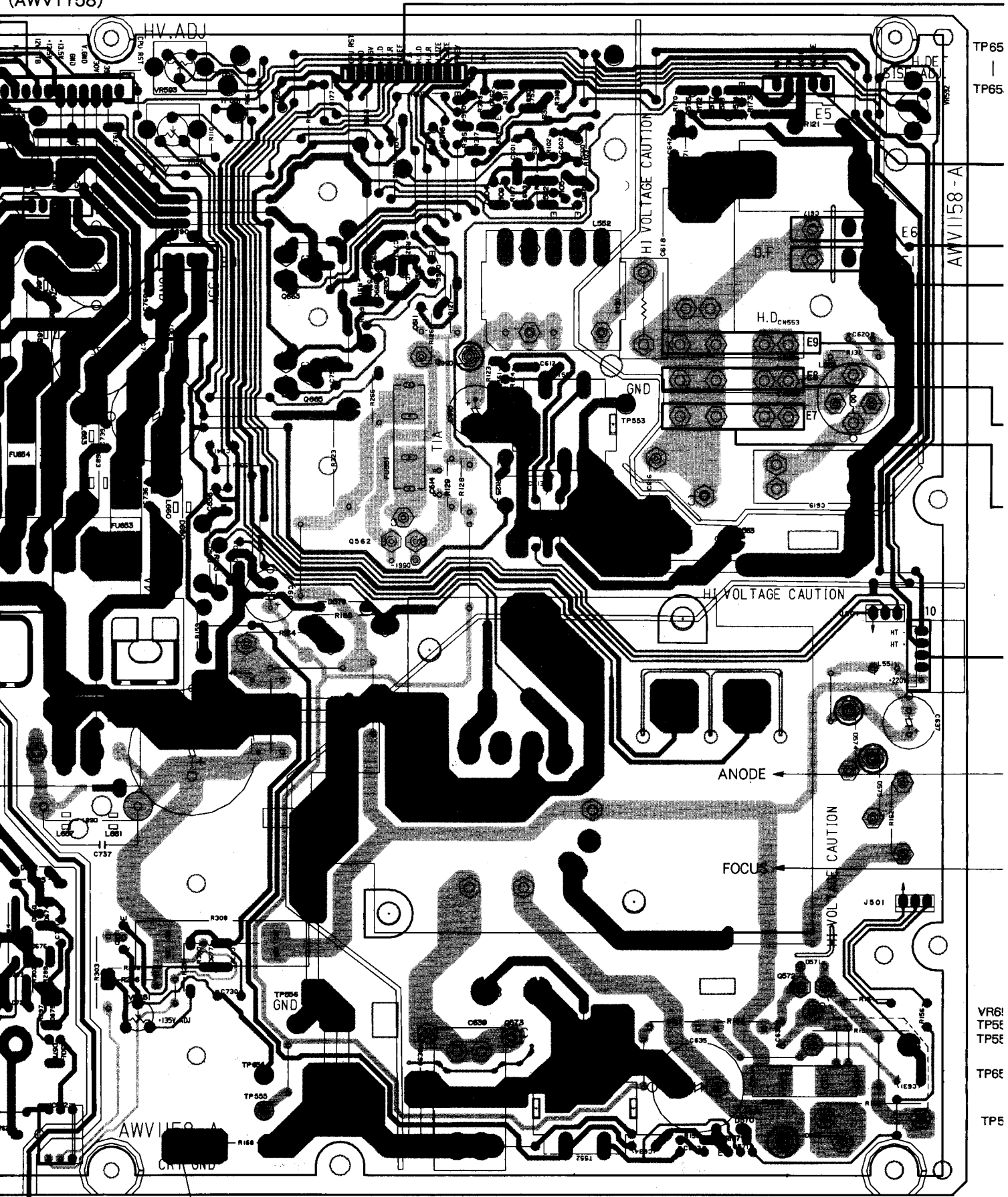
1. This P.C.B. connection diagram is v
2. The parts which have been moun with the corresponding wiring sym

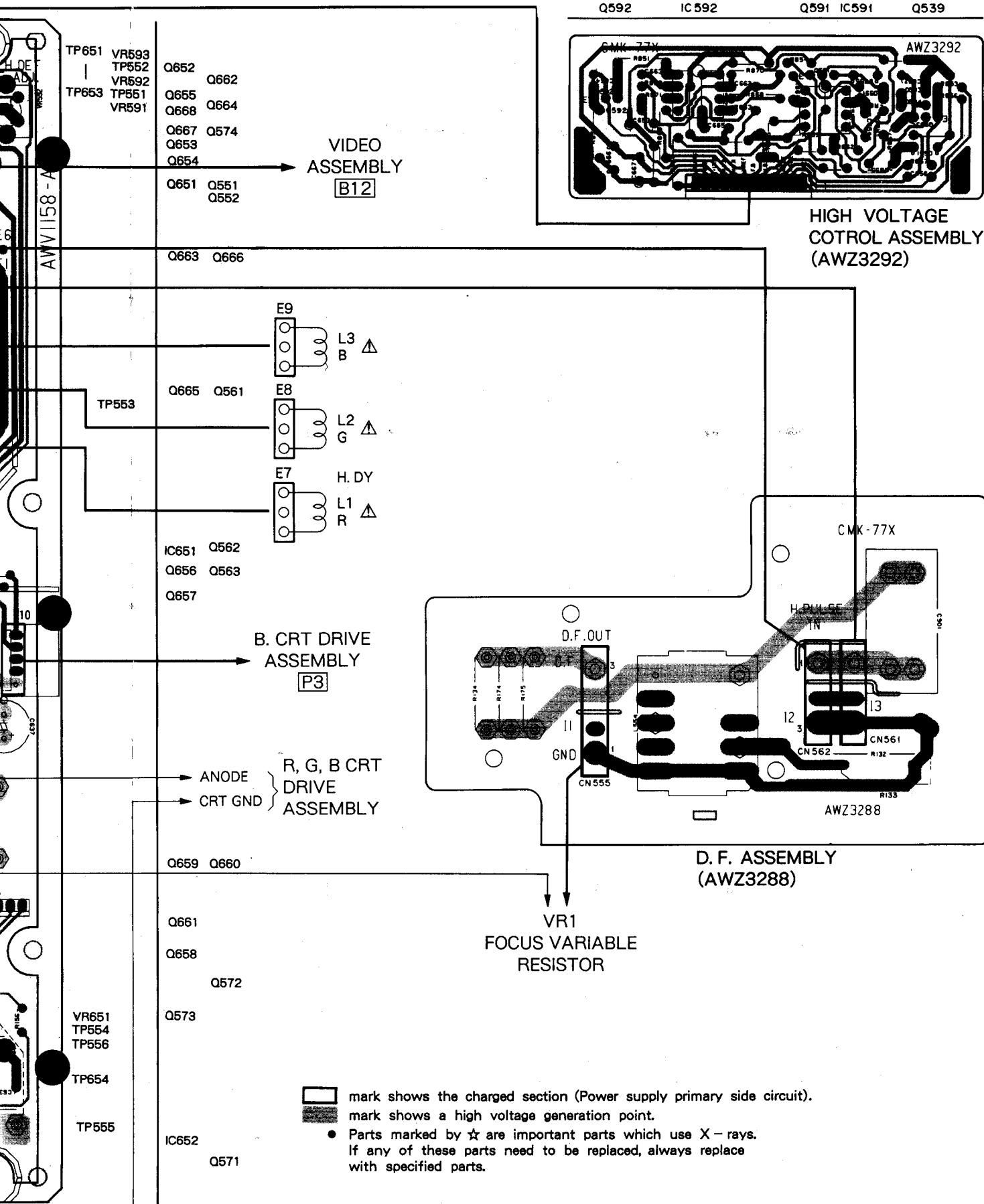
P.C.B. pattern diagram indication

Q504	EO
Q215	EO
D203	
R237	
C513	
C518	

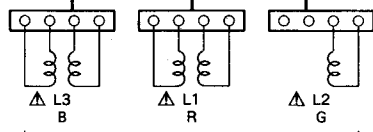
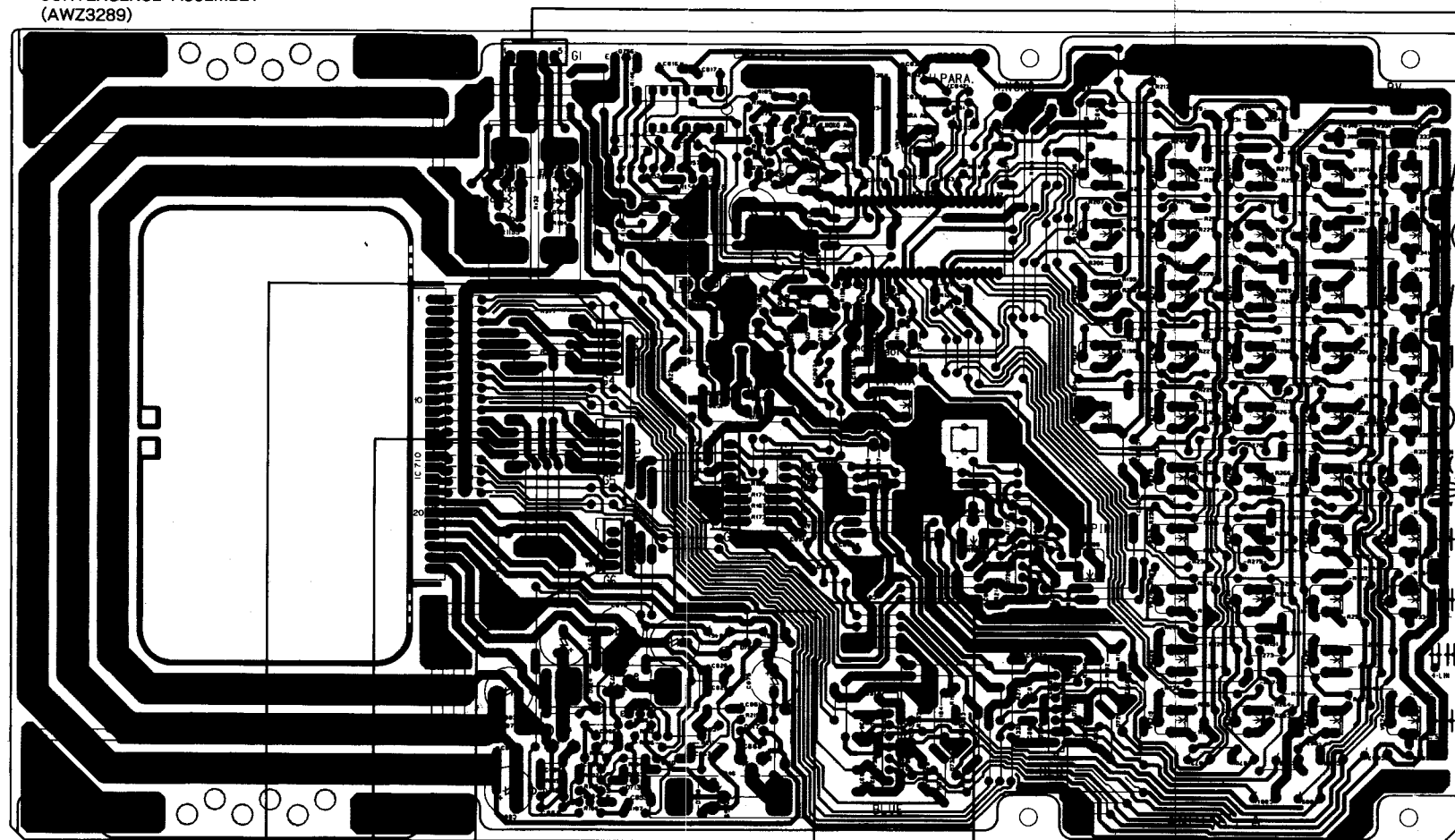
☆ DEFLECTION ASSEMBLY (AWV1158)







CONVERGENCE ASSEMBLY
(AWZ3289)



CONVERGENCE YOKE

VIDEO
ASSEMBLY
[B13]

U-COM
ASSEMBLY
[A1]

TP802	Q756
TP804	Q762
TP805	Q759 IC706
	Q761
VR750	Q760 Q751
VR702	Q757 Q752
VR701	Q758
	IC705
	IC703
VR706	
VR715	
VR721	
VR725	IC701
VR730	
VR734	
VR740	TP803
VR744	TP801
	IC704
	IC702
VR749	
	IC710
VR704	TP806
VR705	
VR716	IC707
VR720	
VR726	
VR729	
VR735	
VR739	
VR746	Q768
VR748	
	Q765 IC708
	Q766
	IC709
	Q763
	Q767
	Q764
	Q769

OVERALL WIRING DIAGRAM

