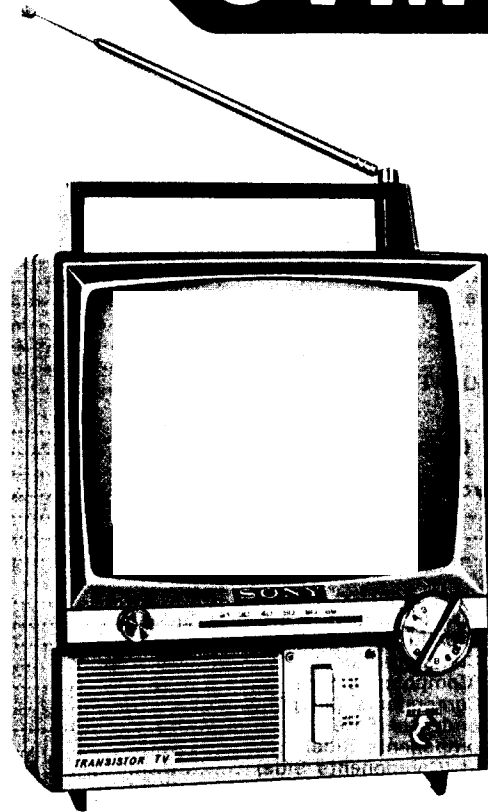


CVM-306UBP



VIDEO MONITOR

Specifications

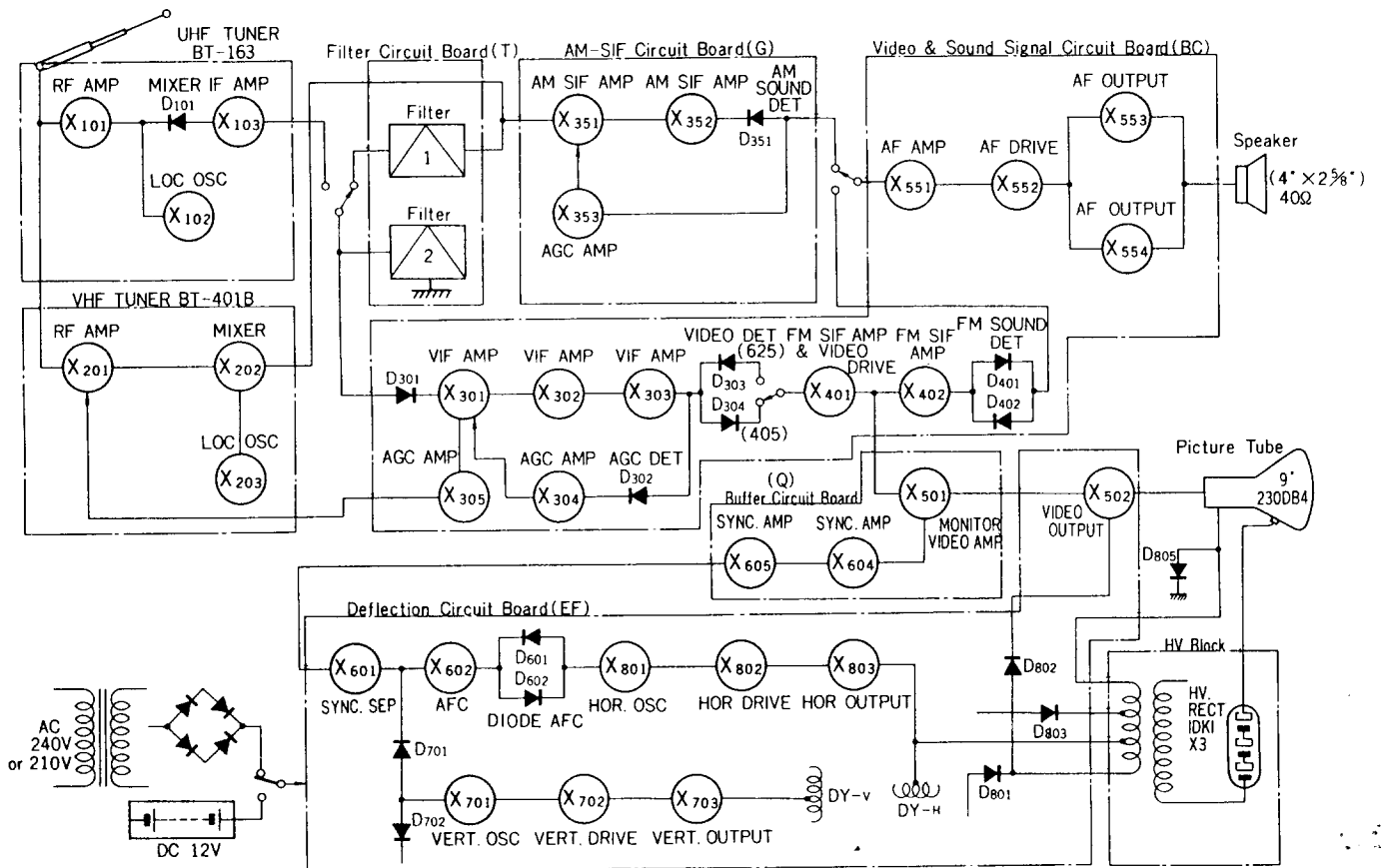
Picture Tube:	9", 90° Deflection, 20 mm Neck Dia., Aluminized Screen; 230-DB4	Video Signal Input:	Composite Video Signal 1.4Vpp, 75Ω Unbalanced
Transistor:	32	Video Signal Output:	Composite Video Signal 1.4Vpp, 75Ω Unbalanced
Diode:	16	Audio Signal Input:	0 dB, 5KΩ Unbalanced
Channel Coverage:	British VHF Channels 1~13 British UHF Channels 21~69	Audio Signal Output:	-20 dB, 10KΩ Unbalanced
IF Circuit:	* VHF (405 Lines) 3 Stages With 4 Stagger Tuned Elements Video Bandwidth: 2.5 Mc/-3dB Video IF: 34.65 Mc, Sound IF: 38.15 Mc * UHF (625 Lines) 4 Stages With 4 Staggers Tuned Elements Video Bandwidth: 3.2 Mc/-3dB Video IF: 39.5 Mc, Sound IF: 33.5 Mc		
Sound System:	* VHF (405 Lines) Separate Carrier System (AM) * UHF (625 Lines) 6.0 Mc Inter-carrier System (FM) Power Output Stage: OTL System, 300 mW Speaker: 2-5/8" x 4", Impedance: 40Ω		
Automatic Control:	Diode AGC, Diode AFC		
Power Requirement:	AC 240V, 210V, 50 or 60 Hz, DC 12V		
Power Consumption:	AC 23W, DC 15W		
Dimensions:	10-1/4" (H) x 8-5/8" (W) x 7-5/8" (D)"		
Weight:	12 lb.		
Glare Proofing:	Smoked Filter, 70% Transparency		

SONY[®]
SERVICE MANUAL

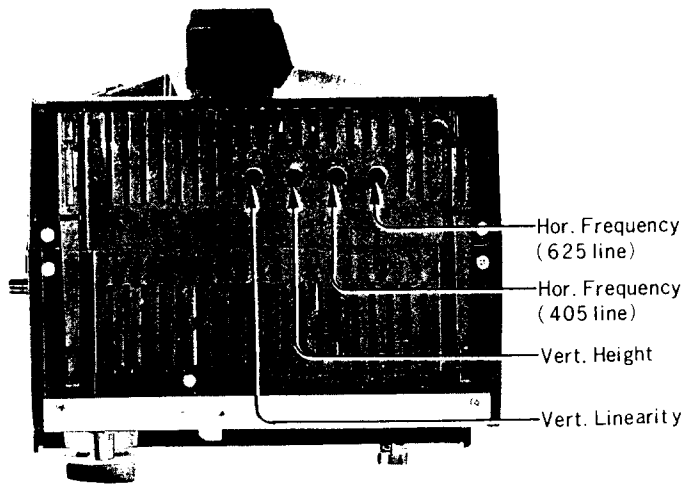
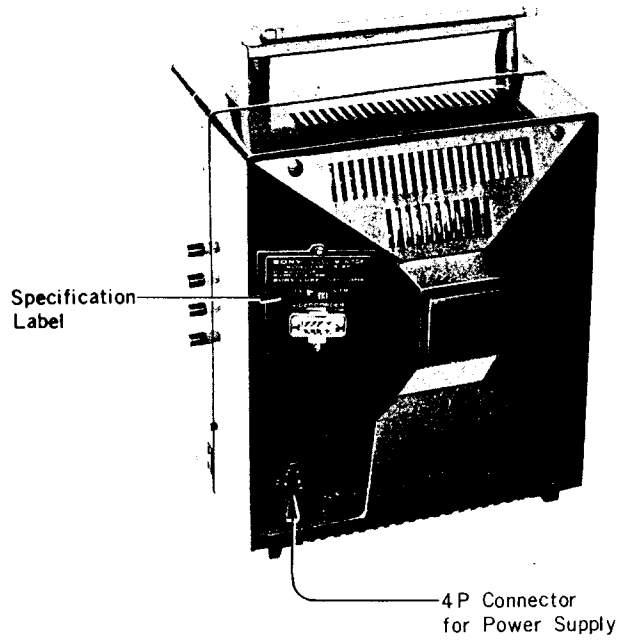
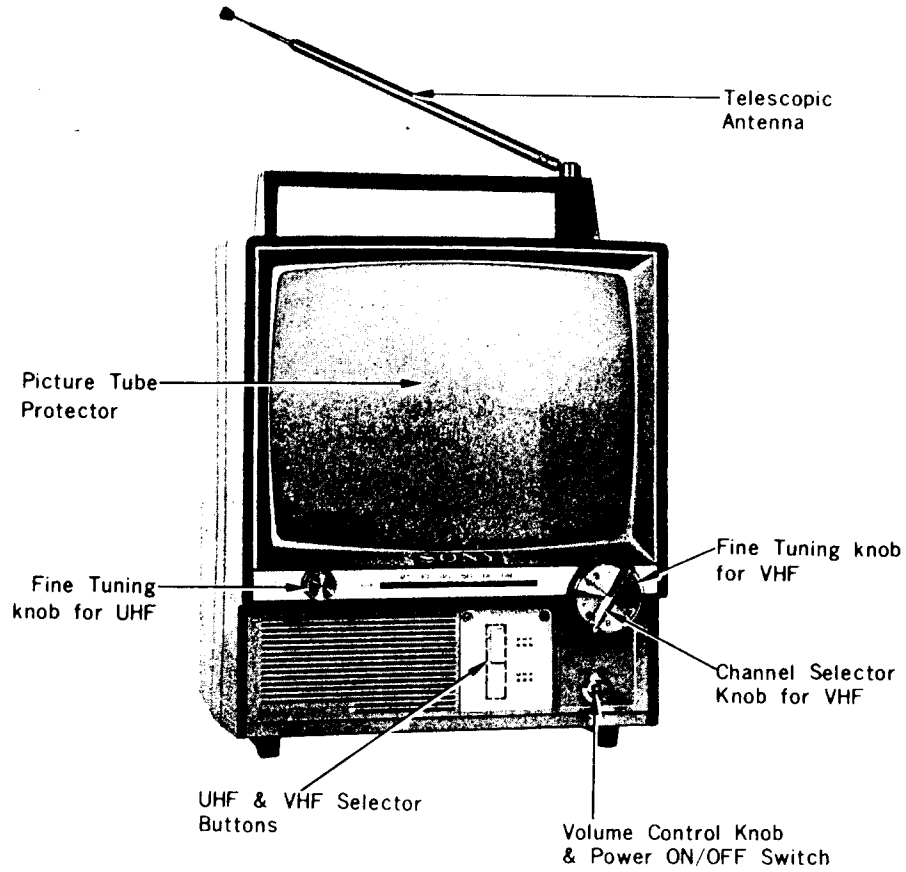
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Block Diagram

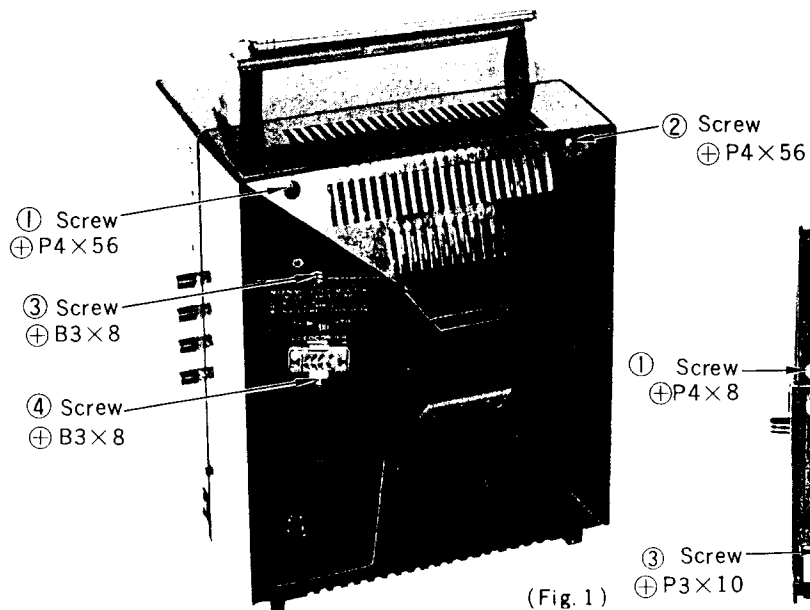


External View

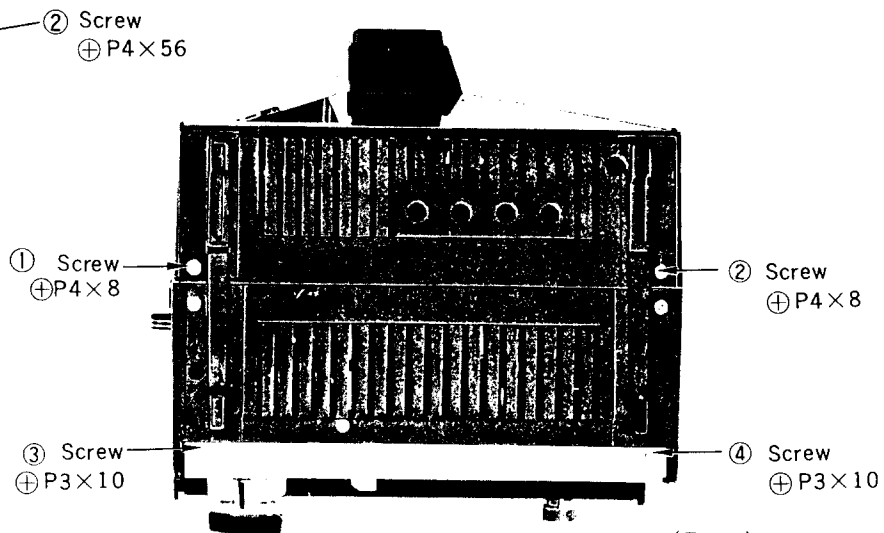


Method of Disassembling the Set**To Remove the Rear Cabinet**

- (1) Remove the four screws (①, ②, ③ and ④ in Fig. 1).
- (2) Remove the two screws (① and ② in Fig. 2).
- (3) Lift a Rear Cabinet straight up.



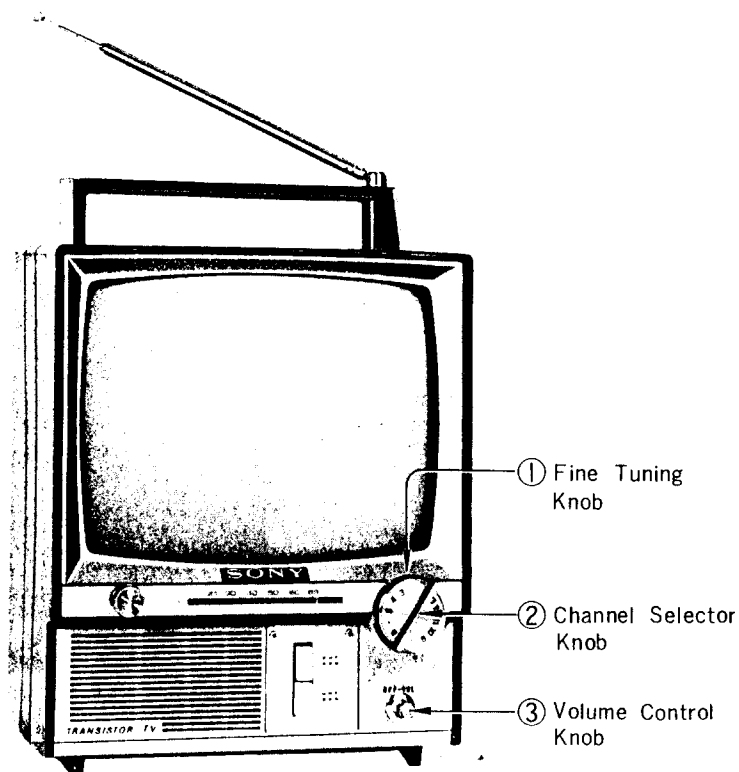
(Fig. 1)



(Fig. 2)

To Remove the Speaker Grille

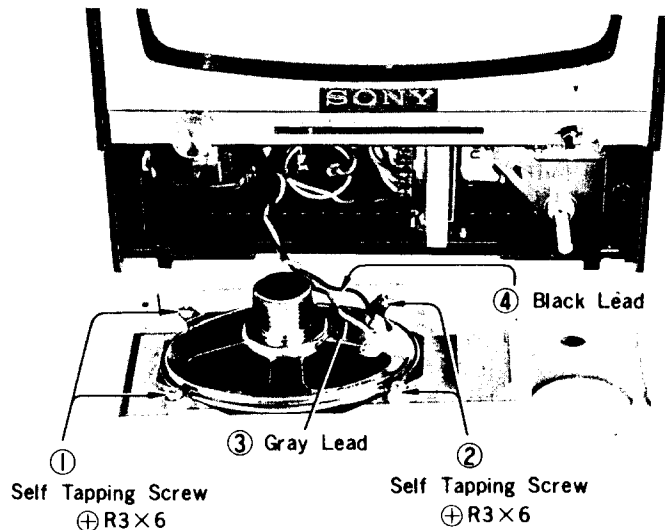
- (1) Pull out the Volume Control knob (③ in Fig. 3), the Channel Selector knob and the Fine Tuning knob (① and ② in Fig. 3).
- (2) Remove the two screws (③ and ④ in Fig. 2).



(Fig. 3)

To Remove the Speaker

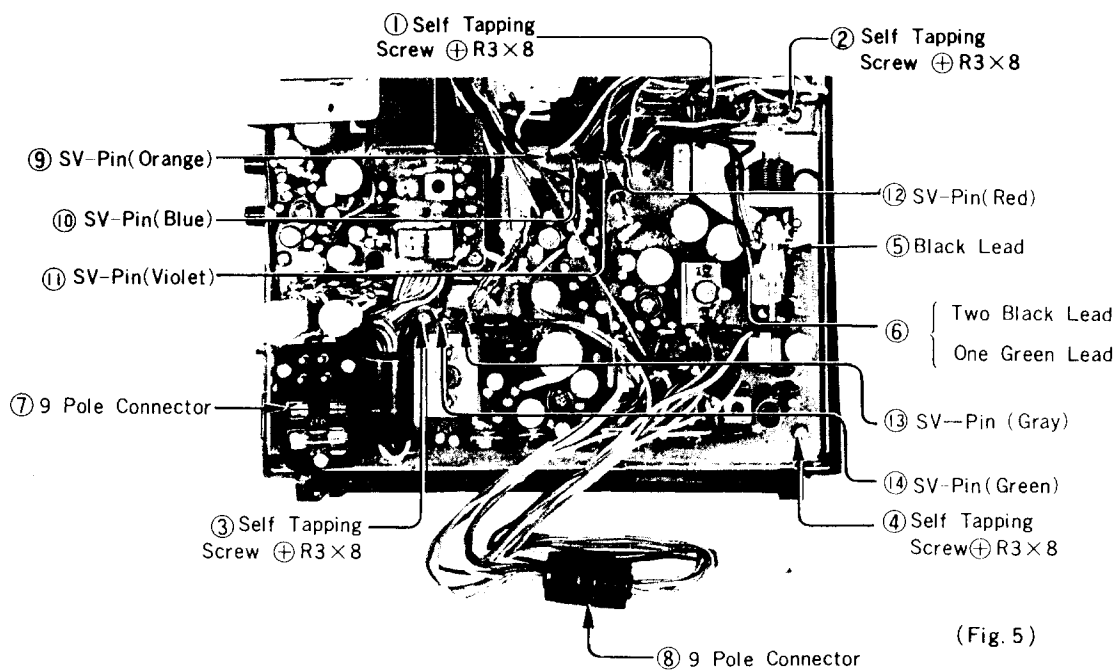
- (1) Remove the Speaker Grille.
- (2) Remove the four screws (① and ② in Fig. 4).
- (3) Unsolder the Gray lead and the Black lead (③ and ④ in Fig. 4).



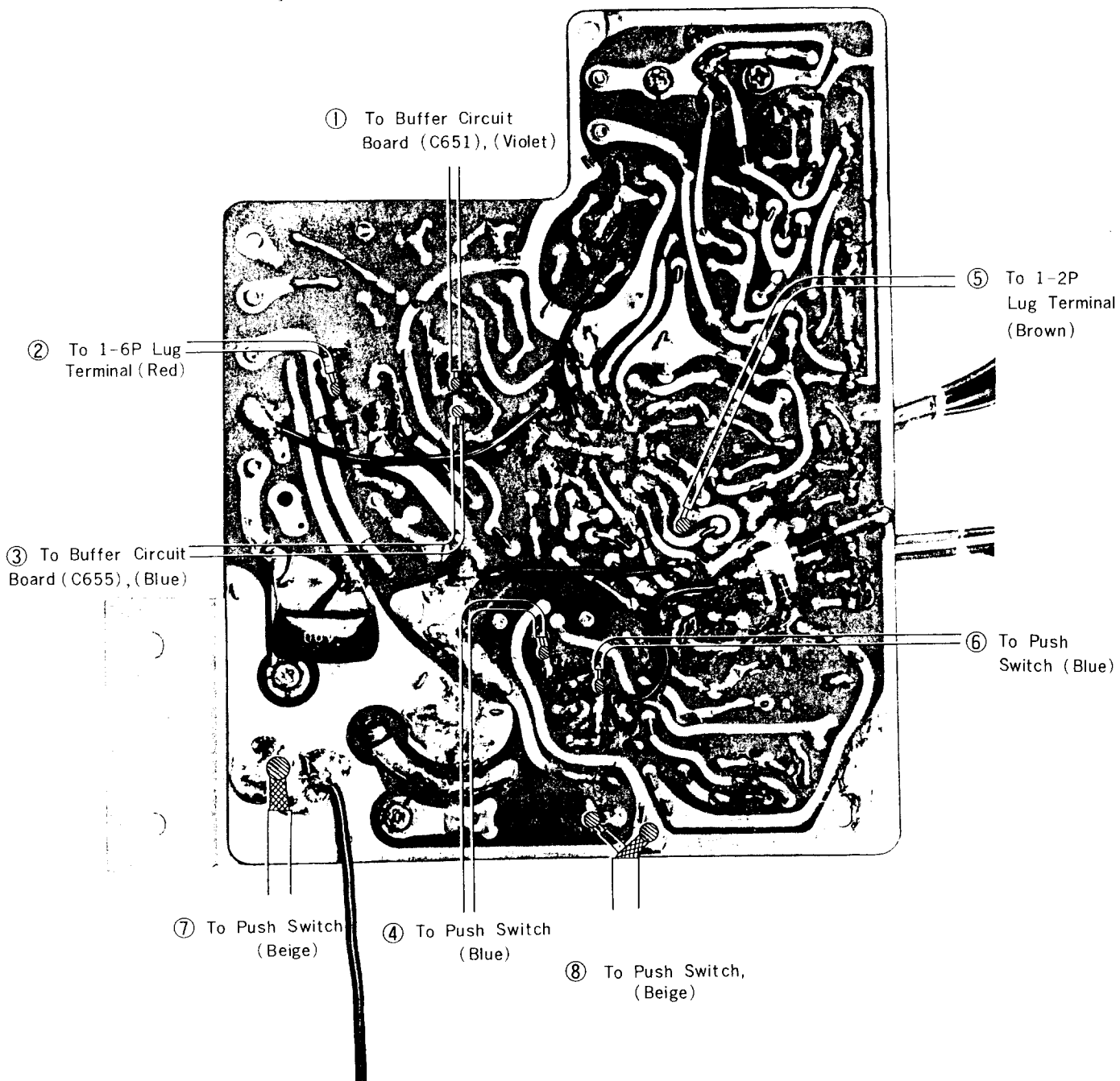
(Fig. 4)

To Remove the Deflection Circuit Board

- (1) Unsolder the four leads of the Width Control Coil (⑤ and ⑥ in Fig. 5).
- (2) Remove the four screws (①, ②, ③ and ④ in Fig. 5).
- (3) Pull out the two 9 Pole Connectors (⑦ and ⑧ in Fig. 5) and the Six SV-Pins (Circuit Connecting Pin) (⑨, ⑩, ⑪, ⑫, ⑬ and ⑭ in Fig. 5).
- (4) Unsolder the six leads (①, ②, ③, ④, ⑤ and ⑥ in Fig. 6) and the two shielded wires (⑦ and ⑧ in Fig. 6).



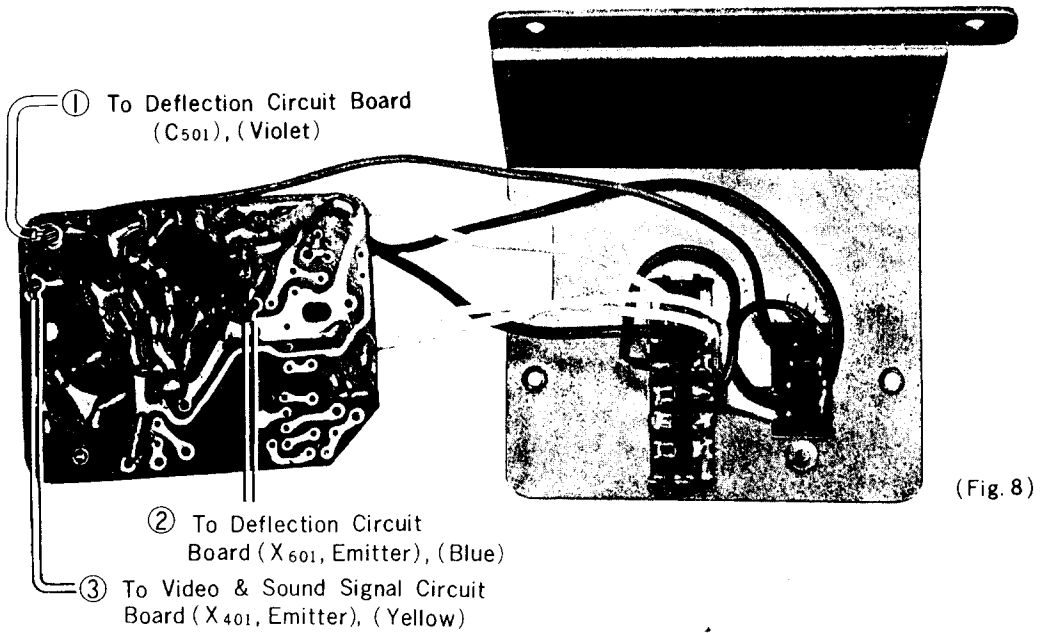
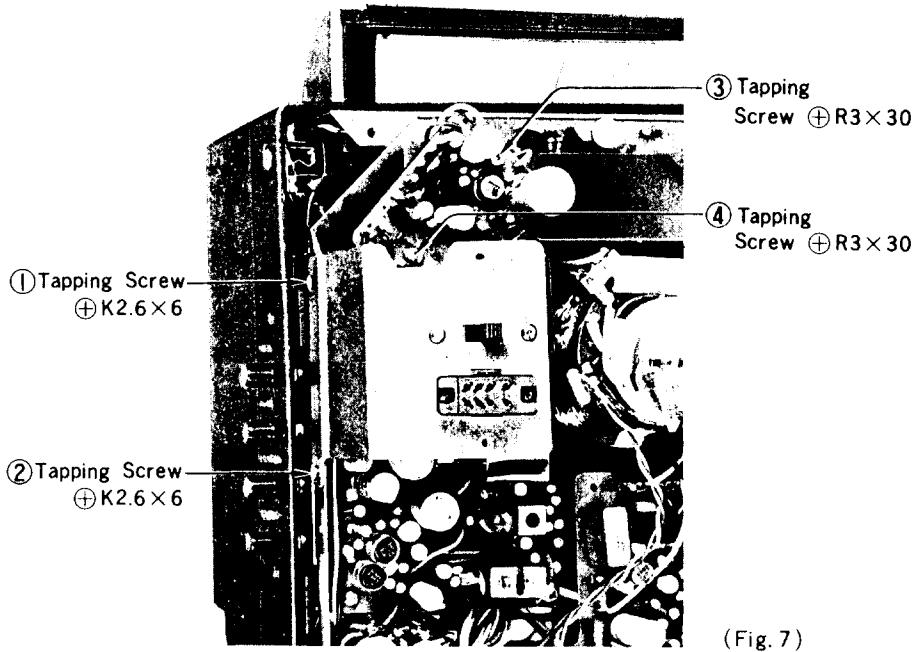
(Fig. 5)



(Fig. 6)

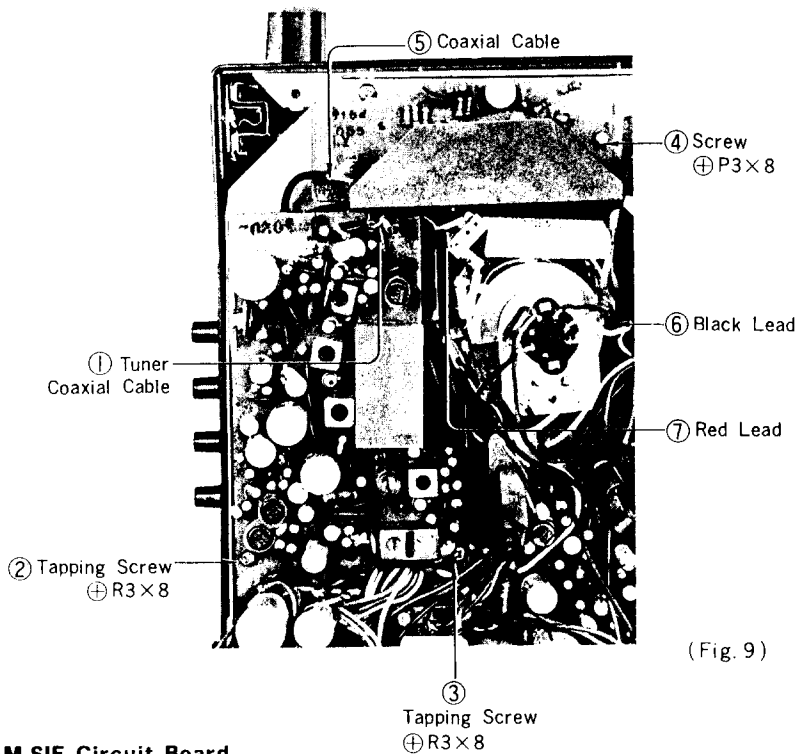
To Remove the Buffer Circuit Board

- (1) Remove the four screws (①, ②, ③ and ④ in Fig. 7).
- (2) Unsolder the three leads (Violet, Blue & Yellow) (①, ② and ③ in Fig. 8).

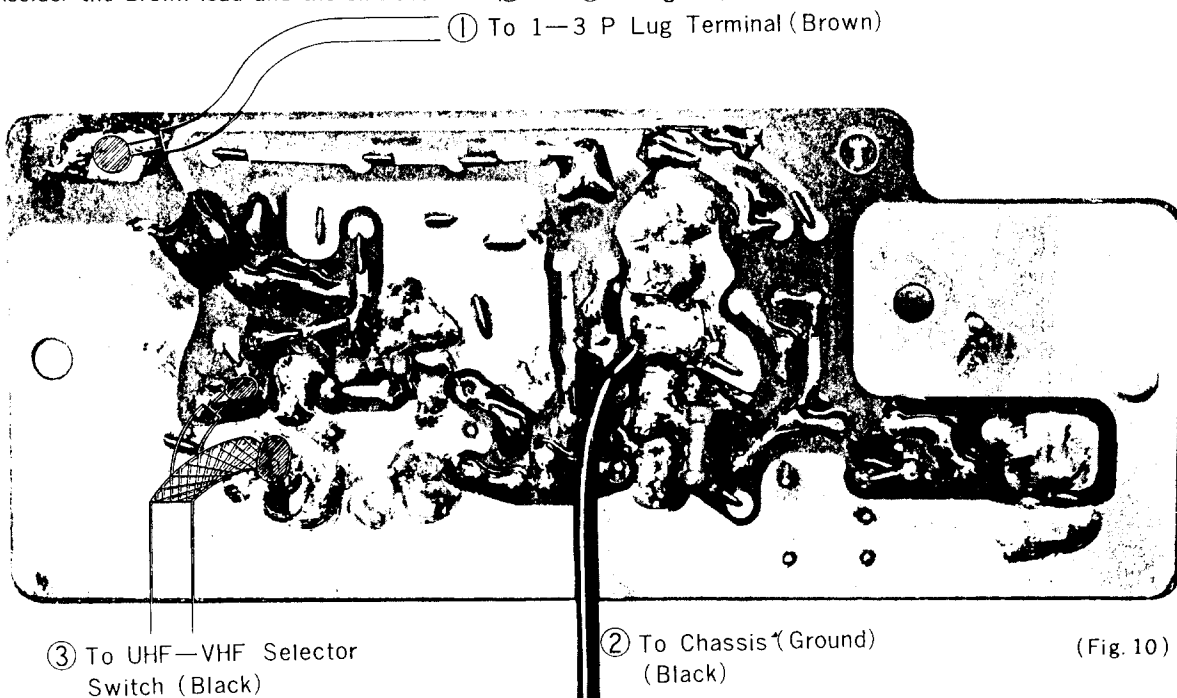


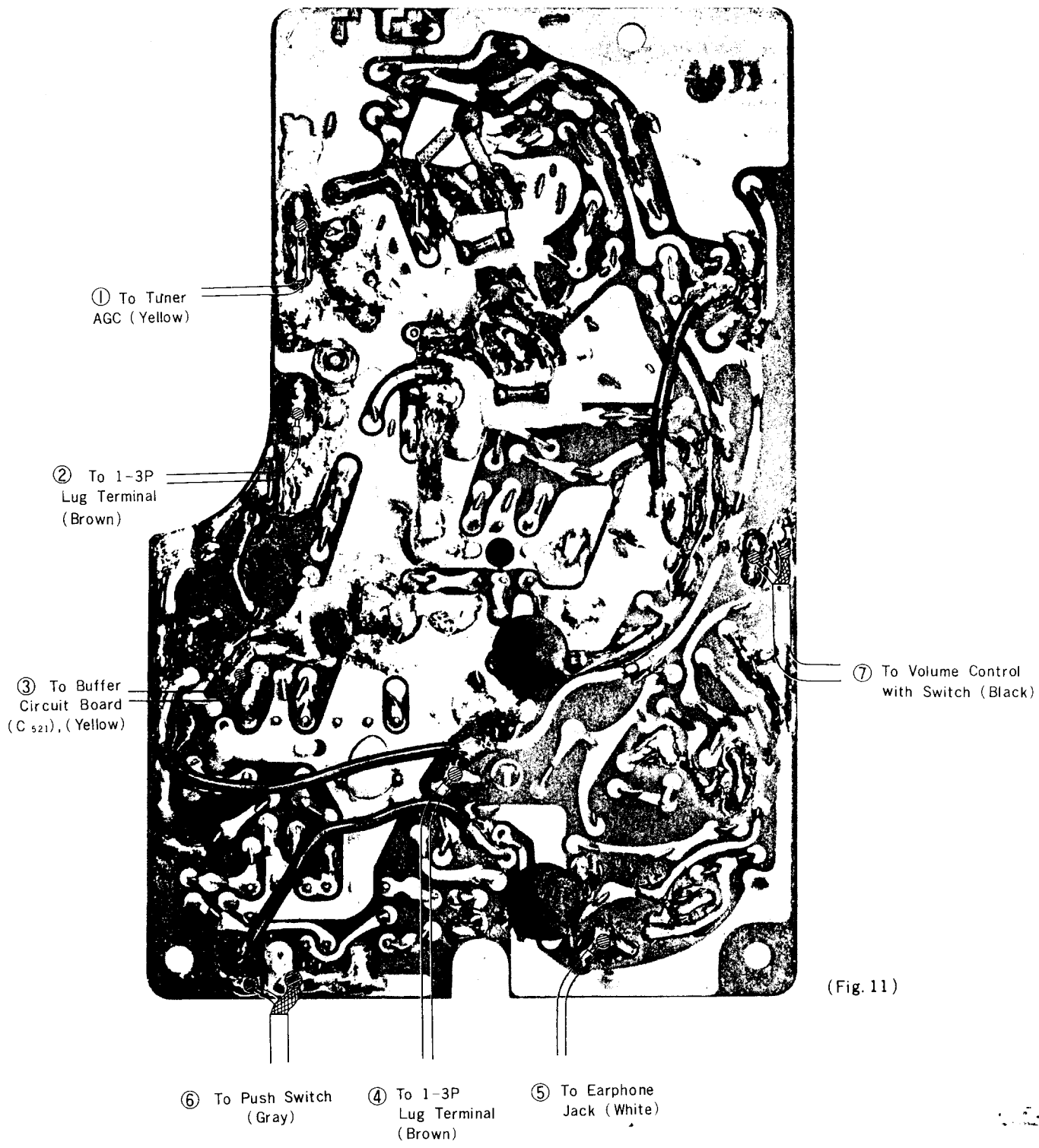
To Remove the Video & Sound Signal Circuit Board

- (1) Remove the Buffer Circuit Board.
- (2) Disconnect the Tuner Coaxial Cable (① in Fig. 9).
- (3) Remove the two screws (② and ③ in Fig. 9).
- (4) Remove the shield Plate "B" (see exploded diagram (1)).
- (5) Unsolder the five leads (①, ②, ③, ④ and ⑤ in Fig. 11) and the two shielded wires (⑥ and ⑦ in Fig. 11).

**To Remove the AM-SIF Circuit Board**

- (1) Remove the Buffer Circuit Board.
- (2) Disconnect the Co-axial Cable (⑤ in Fig. 9).
- (3) Remove the Screw (④ in Fig. 9).
- (4) Unsolder the Black lead on the part of the chassis (② in Fig. 10).
- (5) Unsolder the Brown lead and the shielded wire (① and ③ in Fig. 10).

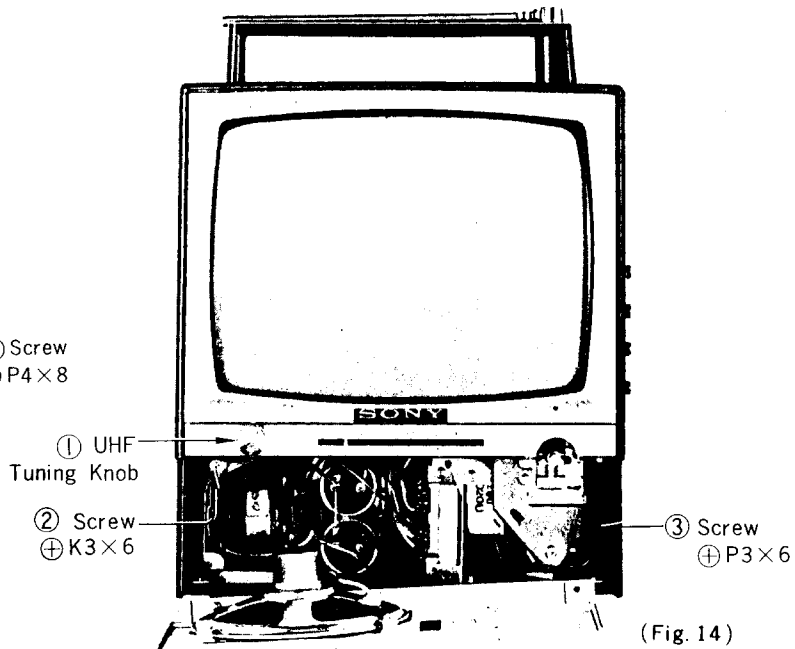
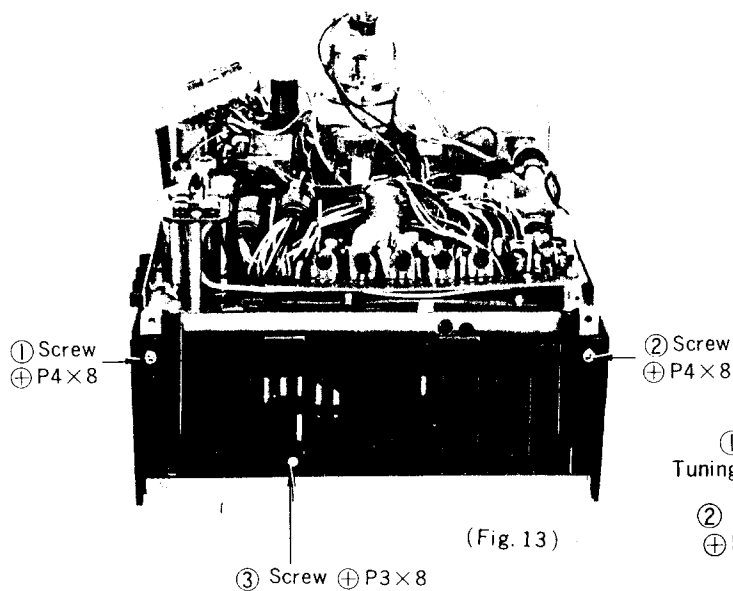
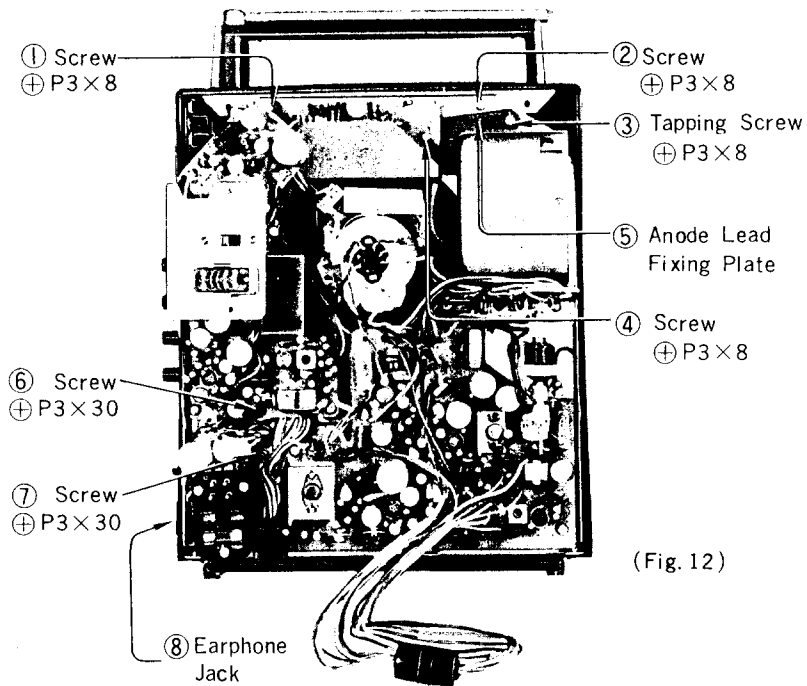




(Fig. 11)

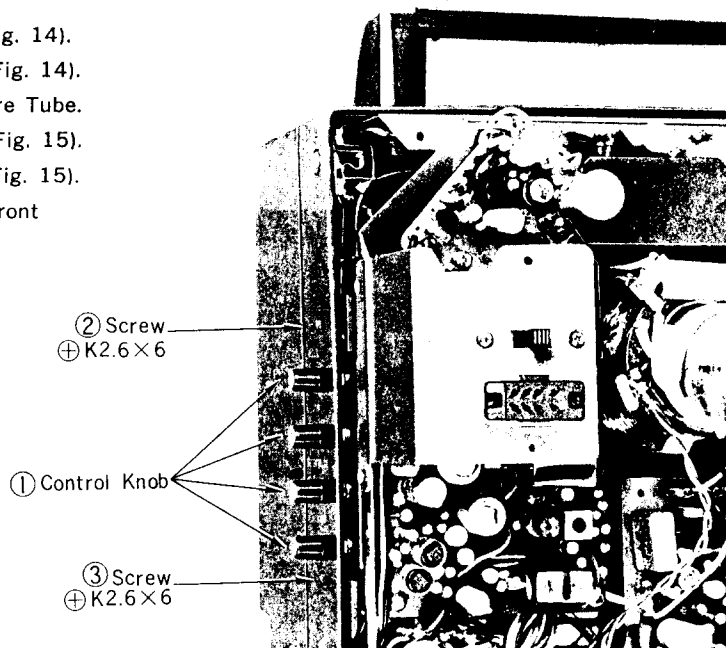
To Remove the High Voltage Block

- (1) Remove the two Screws (① and ② in Fig. 12).
- (2) Remove the three Screws (①, ② and ③ in Fig. 13).
- (3) Remove the Speaker Grille.
- (4) Pull out the UHF Tuning Knob (① in Fig. 14).
- (5) Remove the two Screws (② and ③ in Fig. 14).
- (6) Remove the Anode Cap from the Picture Tube.
- (7) Remove the two Screws (③ and ④ in Fig. 12).
- (8) Remove the Anode Lead Fixing Plate (⑤ in Fig. 12).
- (9) Unsolder the Red lead on the SV-pin (⑨ in Fig. 5).
- (10) Unsolder the shielded wire and the black lead on the Lug Terminal (1-6P).
- (11) Pull out the three SV-Pins (Circuit Connecting Pin) (⑨, ⑩ and ⑪ in Fig. 5).



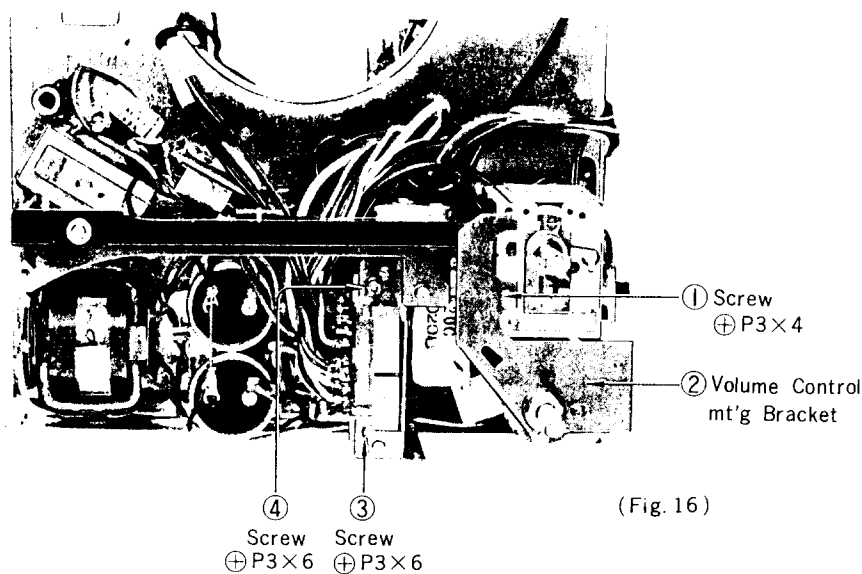
To Remove the Front Cabinet from the Chassis

- (1) Remove the two screws ① and ② in Fig. 12).
- (2) Remove the three screws ① ② and ③ in Fig. 13).
- (3) Remove the Speaker Grille.
- (4) Pull out the UHF Tuning knob ① in Fig. 14).
- (5) Remove the two screws ② and ③ in Fig. 14).
- (6) Remove the Anode Cap from the Picture Tube.
- (7) Pull out the four Control knobs ① in Fig. 15).
- (8) Remove the two screws ② and ③ in Fig. 15).
- (9) Pull out the Earphone Jack from the Front Cabinet ⑧ in Fig.12).



To Remove the VHF Tuner

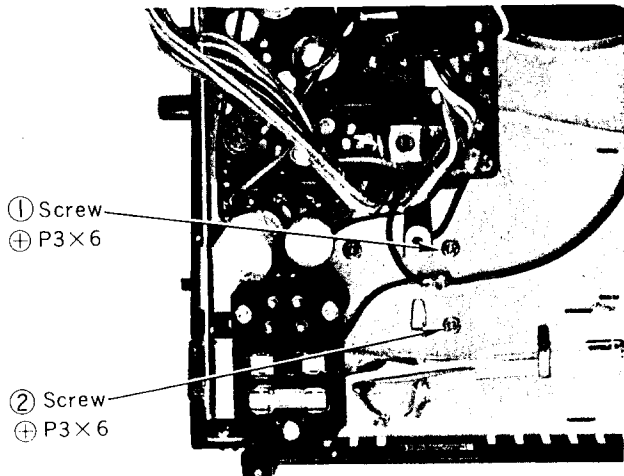
- (1) Remove the Rear Cabinet and the Front Cabinet. (Fig. 15)
- (2) Remove the Speaker.
- (3) Remove the two Screws ⑥ and ⑦ in Fig. 12).
- (4) Unsolder the DY leads (Black & Red leads) ⑥ and ⑦ in Fig. 9).
- (5) Unsolder the green lead from VCH ⑩ in Fig. 5).
- (6) Pull out the two SV-Pins (Circuit Connecting Pin) ⑬ and ⑭ in Fig. 5).
- (7) Unsolder the two Black leads on the Ground spring. (see Exploded diagram (2)).
- (8) Remove the Screw ① in Fig. 16) and remove the Volume Control Mounting Bracket from the Tuner (② in Fig. 16).
- (9) Unsolder the Tuner output lead (Co-axial Cable 1.7C-2V) on the Filter Circuit Board (T Board).
- (10) Unsolder the Tuner input lead (Co-axial Cable 0.8D-2V) on the UHF-VHF Selector Switch.
- (11) Unsolder the two leads (Yellow and Brown leads) on the Feed-Through Capacitor of the VHF-Tuner.



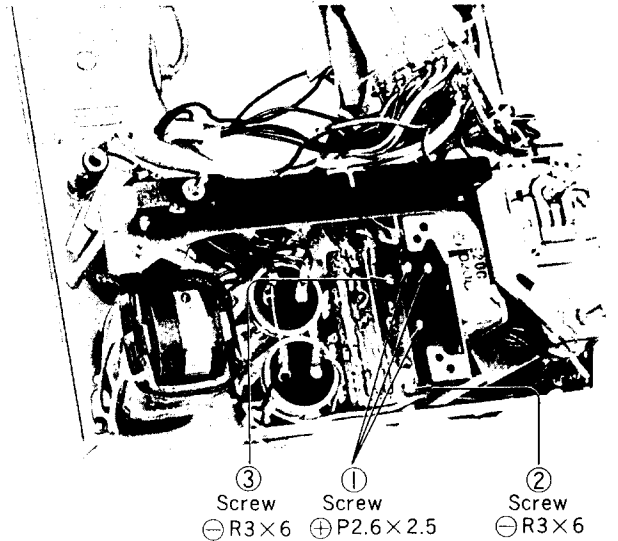
(Fig. 16)

To Remove the UHF Tuner

- (1) Remove the Rear Cabinet and the Front Cabinet.
- (2) Remove the Deflection Circuit Board.
- (3) Remove the two screws (① and ② in Fig.17).
- (4) Remove the two screws (③ and ④ in Fig. 16).
- (5) Remove the three screws (① in Fig. 18).
- (6) Unsolder the UHF-Tuner Input Cable (Co-axial Cable 1.7C-2V) on the Ext. ANT. Jack.
- (7) Unsolder the two UHF-Tuner Output Cable (Co-axial Cable 0.8D-2V) on the UHF-VHF Selector Switch and the Filter Circuit Board.



(Fig. 17)

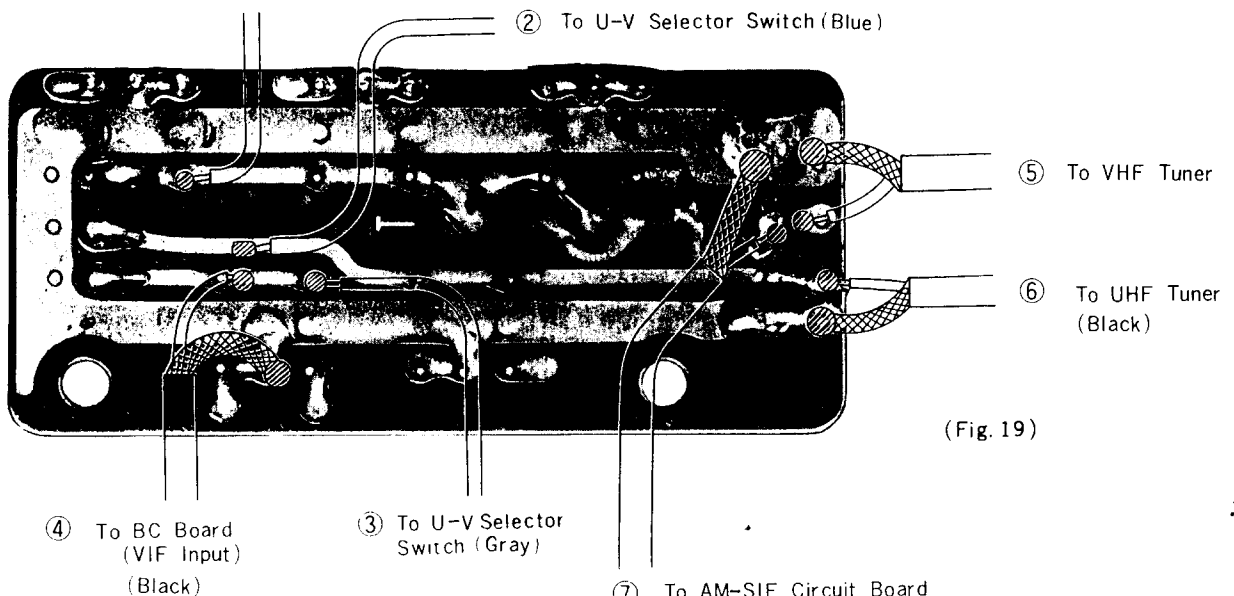


(Fig. 18)

To Remove the Filter Circuit Board

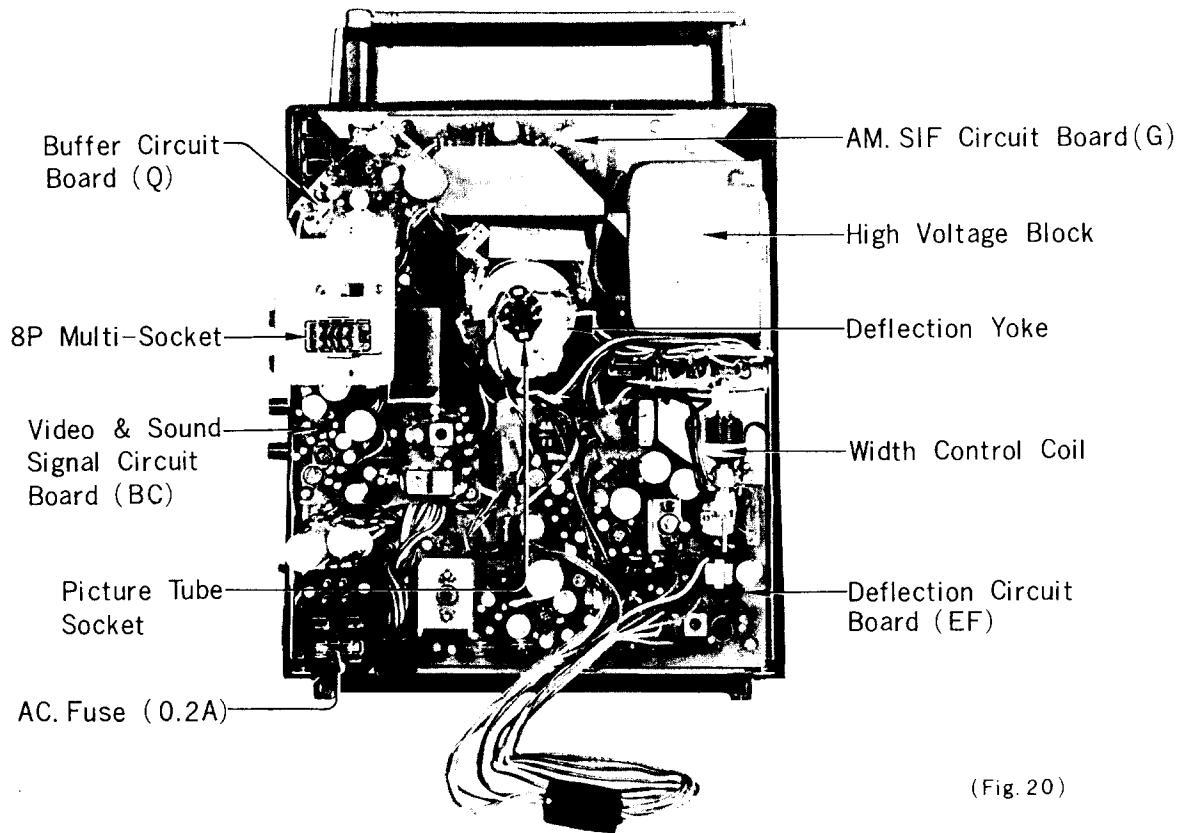
- (1) Remove the Rear Cabinet and the Front Cabinet.
- (2) Remove the two screws (③ and ④ in Fig. 16).
- (3) Unsolder the three leads (Yellow, Blue and Gray) (①, ② and ③ in Fig. 19) and the four Co-axial Cables ④, ⑤, ⑥ and ⑦ in Fig. 19).
- (4) Remove the two screws (② and ③ in Fig. 18).

① To U-V Selector Switch (Yellow)



(Fig. 19)

Electrical Major Parts Location



(Fig. 20)

Adjustment and Alignment

There are five Circuit Boards in the CVM-306UBP, that is, Filter Circuit Board, Video & Sound Signal Circuit Board, AM SIF Circuit Board, Deflection Circuit Board and Buffer Circuit Board.

When it is necessary to make adjustments for Video & Sound Signal Circuit Board, never fail to adjust Filter Circuit Board first.

■ Filter Circuit Board

Adjustment of Filter Circuit

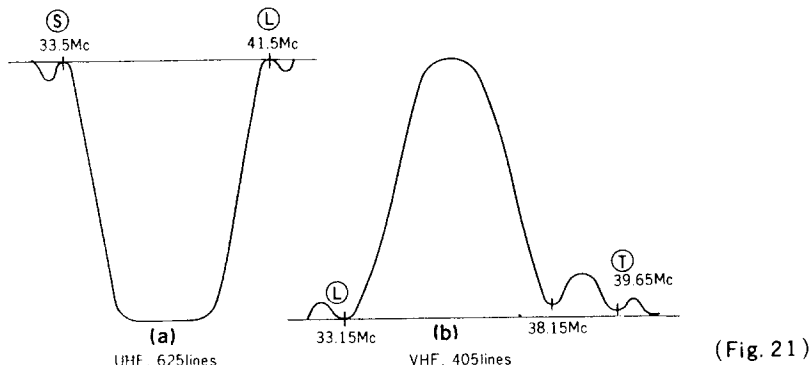
- (1) Connect a Sweep Generator and a Marker Generator to the Test Point of Tuner through a $0.02\mu\text{F}$ capacitor.
- (2) Set the Selector Switch to UHF.

Step	Marker Gen. Freq.	Adjust	Correct Marker position on the response curve
1.	33.5 Mc	TRAP-5	Ⓢ in Fig. 21 (a)
2.	41.5 Mc	TRAP-6	Ⓣ in Fig. 21 (a)

(3) Change the setting to VHF.

Step	Marker Gen. Freq.	Adjust	Correct Marker position on the response curve
3.	33.15 Mc	TRAP-4	Ⓐ in Fig. 21 (b)
4.	39.65 Mc	TRAP-3	Ⓑ in Fig. 21 (b)
5.	38.15 Mc	TRAP-2 & TRAP-3	Ⓒ in Fig. 21 (b)

Repeat the above steps 1 to 5 until a proper marker position on the response curve similar to Fig. 21 is obtained.



Video and Sound Signal Circuit Board

Adjustment of VIF Circuit

The VIF Adjustment must be performed after Filter Circuit Adjustment.

(1) Remove the Tuner Output Cable from the Filter Circuit Board.

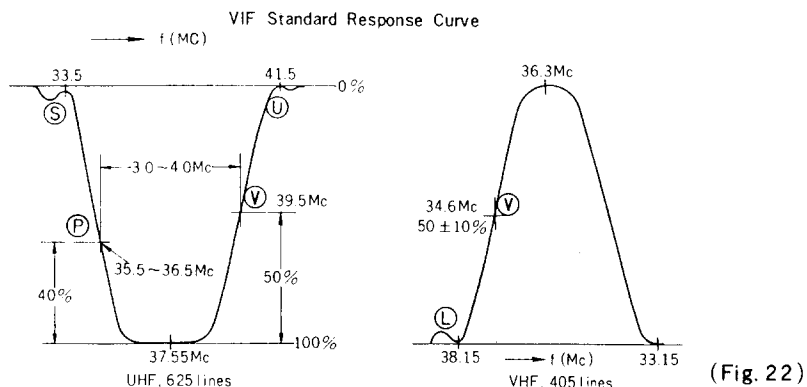
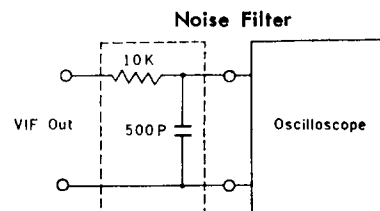
Connect a Voltmeter across R_{307} (270 Ω) and set the Adjustable Resistor (VR_{301} , 5 K Ω , for AGC Bias) so that the Voltmeter reads between 0.27 V and 0.3 V. Connect the Tuner Output Cable to the Filter Circuit Board as before.

(2) Connect a Sweep Generator and a Marker Generator to the Test Point of the Tuner through a 0.02 μ F capacitor.

(3) Connect an Oscilloscope across R_{321} (VIF DET OUT) through a Noise Filter shown below.

(4) Set the Selector Switch to UHF.

Step	Marker Gen. Freq.	Adjust	Correct Marker position on the response curve
1.	38 Mc	VIFT-4	Peak point in Fig. 22
2.	35.5~36.5 Mc	VIFT-2	40% point, Ⓐ in Fig. 22
3.	39.5 Mc	VIFT-3	50% point, Ⓑ in Fig. 22



Repeat the above adjustments until the ideal response curve (peak point: 1 Vpp) shown in Fig. 22 is obtained.

If the curve cannot be obtained, try to change the value of adjustment resistors, R_{308} and R_{315} on the Signal Circuit Board. After the adjustment for UHF, change the setting of the TV from UHF to VHF. Usually the same response curve shown in Fig. 22, will be obtained without further adjustment.

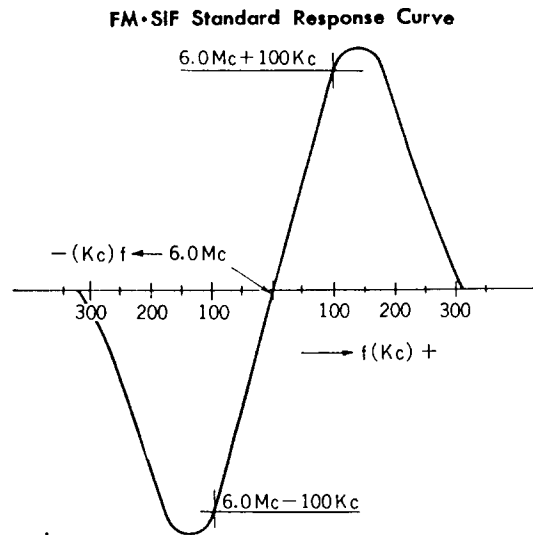
Apply a 34.6 Mc signal from the Marker Generator and check that the marker is at $50 \pm 10\%$. (Ⓥ in Fig. 22) If the marker is out of the range, try to change the value of C_{321} (3~10 μ F) until a satisfactory curve is obtained.

Make sure that the output level does not vary. (0.05 V across R_{307})

After the VHF Adjustment, readjust the UHF VIF Response Curve again.

Adjustment of FM-SIF Circuit

Step	Preparation	Adjust
1.	1) Set the Brightness Control to the optimum and the Contrast Control to the maximum position. 2) Disconnect the Tuner Output Cable. 3) Set the Selector Switch to UHF. 4) Connect a Standard Signal Generator to the Video DET Output (across R ₃₂₁) and apply a 6 Mc signal. The 6 Mc stripes will appear on the Picture Tube.	TRAP-7 so that the 6 Mc stripes disappear from the Picture Tube.
2.	1) Disconnect the Tuner Output Cable. 2) Connect the Standard Signal Generator to the Video Detector Output Terminals. 3) Connect a Voltmeter between the junction of R ₄₀₉ -C ₄₁₁ and ground. 4) Apply a 6 Mc signal from the Signal Generator.	FM SIFT-1 and primary winding of FM SIFT-2 (pink) for maximum reading on the Voltmeter.
3.	1) Connect a Sweep Generator and a Standard Signal Generator across R ₃₂₁ through a 1.5 KΩ Resistor. 2) Connect an Oscilloscope in parallel with Capacitor (C ₄₁₂) 3) Apply a 6 Mc (AM, MOD) Signal from the Signal Generator. 4) Set the Sweep Generator on. S curve will appear on the Oscilloscope. (Fig. 23)	Secondary winding of FM SIFT-2 (blue) to obtain minimum modulated waveform.



(Fig. 23)

AM-SIF Circuit Board

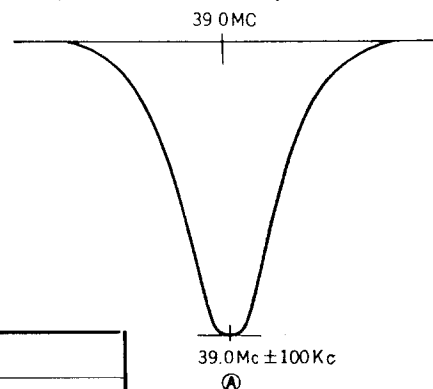
Adjustment of AM-SIF Circuit

- 1) Disconnect the Tuner Output Cable and AM SIF Output Cable.
- 2) Connect a Sweep Generator and a Marker Generator to the AM-SIF Input Connector.
- 3) Connect an Oscilloscope in parallel with the Capacitor (C₃₆₇).
- 4) Apply a 39.0 Mc signal from the Marker Generator.

Step	Adjust
1.	TRAP-1 to position the marker on the top \textcircled{A} of the curve shown in Fig. 24.
2.	AMSIFT-1 and AMSIFT-2 for maximum curve while keeping the marker position to \textcircled{A} .

Repeat the above steps 1 and 2 until a satisfactory AM SIF curve is obtained.

AM-SIF Standard Response Curve



(Fig. 24)

Deflection Circuit Board

Adjustment of Deflection Circuit

British TV Standard

	VHF	UHF
Line Frequency (Horizontal)	10.125 Kc	15.625 Kc
Field Frequency (Vertical)	50 c/s	50 c/s
Number of Lines per Picture	405	625

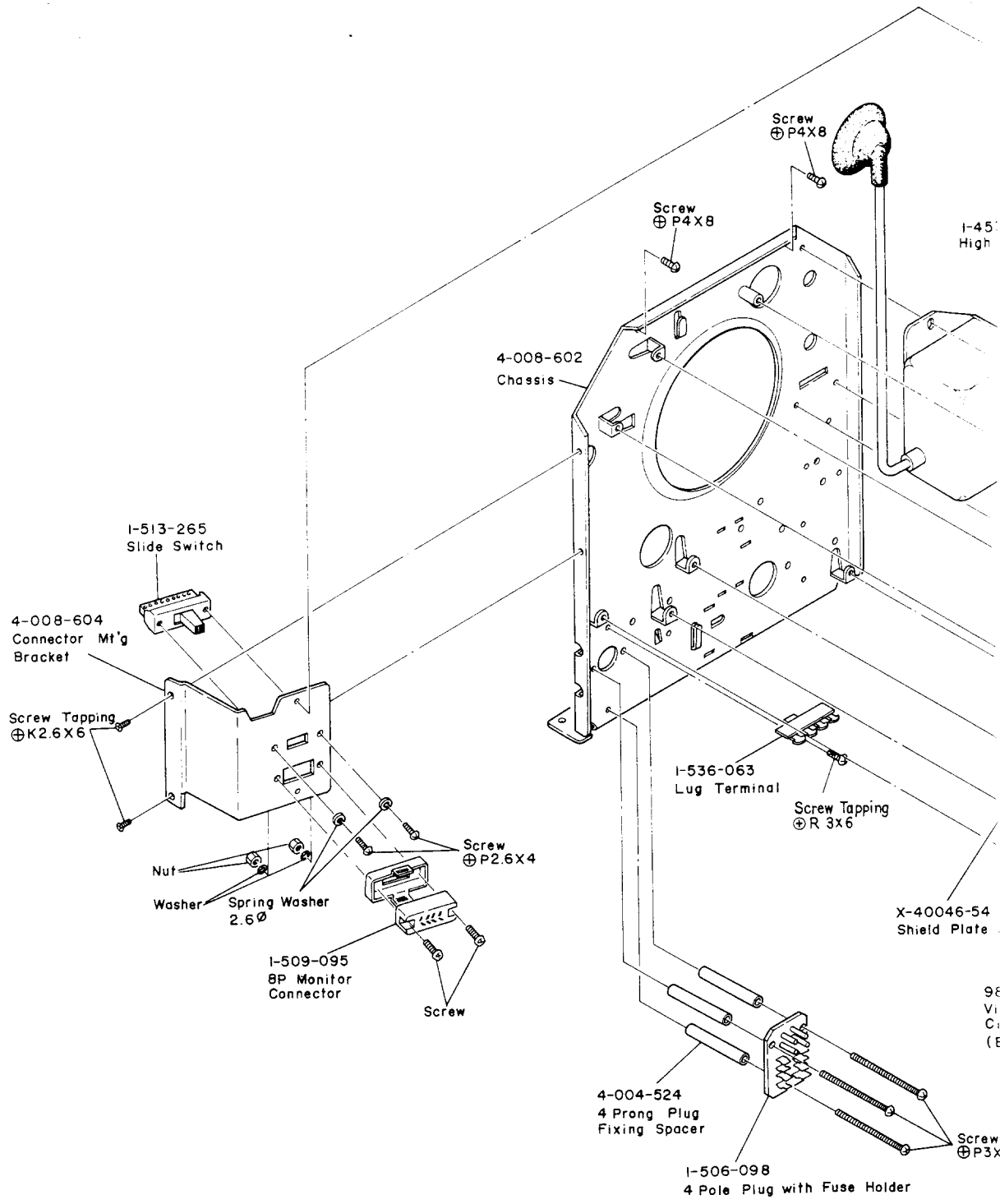
CVM-306UBP

Adjustment of Deflection Circuit

Step	Adjustment for	Preliminary Instruction	Equipment	Connection	Adjust	
1.	Collector Current of X ₅₀₂ (VD OUT)	1) Set to the free channel. 2) Check 12V and 80V Power Supply.	Voltmeter	Across R ₅₀₆	R ₅₀₁ (12 KΩ) (15 KΩ)	for 32.8~36.9 V reading.
2.	Collector Current of X ₇₀₃ (Vert. OUT)	1) Lock in Sync. 2) Check 12V Power Supply. 3) Set the Selector Switch to VHF.	Voltmeter	Across R ₇₁₂	VR ₇₀₃ (Vert. Bias)	for 0.26~0.28 V reading.
3.	Vert. Height and Linearity	1) Receive a Test Pattern for VHF. 2) Check 12V Power Supply. 3) Set the Selector Switch to VHF.			VR ₇₀₁ & VR ₇₀₂ (V. Height) (V. Lin.)	for optimum Vertical Height and Linearity on the pattern.
4.	Pulse Width	1) Lock in Sync. 2) Short Circuit the Horizontal Stabilizer Coil. 3) Set the Selector Switch to UHF.	Oscilloscope	Emitter of X ₆₀₁	C ₈₀₆ (0.015~0.047μF)	for Pulse width of 12.5~13.5μs.
5.	H. S. C.	1) Lock in Sync. 2) Receive a Test Pattern (UHF). 3) Set the Selector Switch to UHF.			H. S. C.	Open the HSC terminals. (normal) Turn the slug of the HSC for most stable Picture in either case where HSC is shorted or normal.
6.	Collector Current for X ₃₀₂ (Hor. Drive)	2) Lock in Sync. 2) Set the Selector Switch to VHF.	Ammeter	Collector of X ₃₀₂	R ₃₀₅ (1~18 ohm)	for 80~90 mA reading.
7.	Horizontal Frequency (VHF)	1) Set the Contrast & the Brightness Control Knobs to the optimum positions. 2) Set the Selector Switch to VHF. 3) Receive a Test Pattern (VHF).			VR-601	Adjust VR ₆₀₁ so that the number of diagonal bars are almost same for both extreme clockwise and counter-clockwise settings of VR-4.
8.	Horizontal Frequency (UHF)	1) Set the Contrast & the Brightness Control Knobs to the optimum positions. 2) Set the Selector Switch to UHF. 3) Receive a Test Pattern (UHF).			VR-602	Adjust VR ₆₀₂ so that the number of diagonal bars are almost same for both extreme clockwise and counter-clockwise settings of VR-4.
9.	Focus	1) Lock in Sync. 2) Set the Contrast & the Brightness Control Knobs to the optimum position.				Connect by soldering a white lead from the Picture Tube socket to either terminal of the two on the 1-6P Lug Terminal (to which a black and a red leads are soldered respectively), whichever gives best focus.

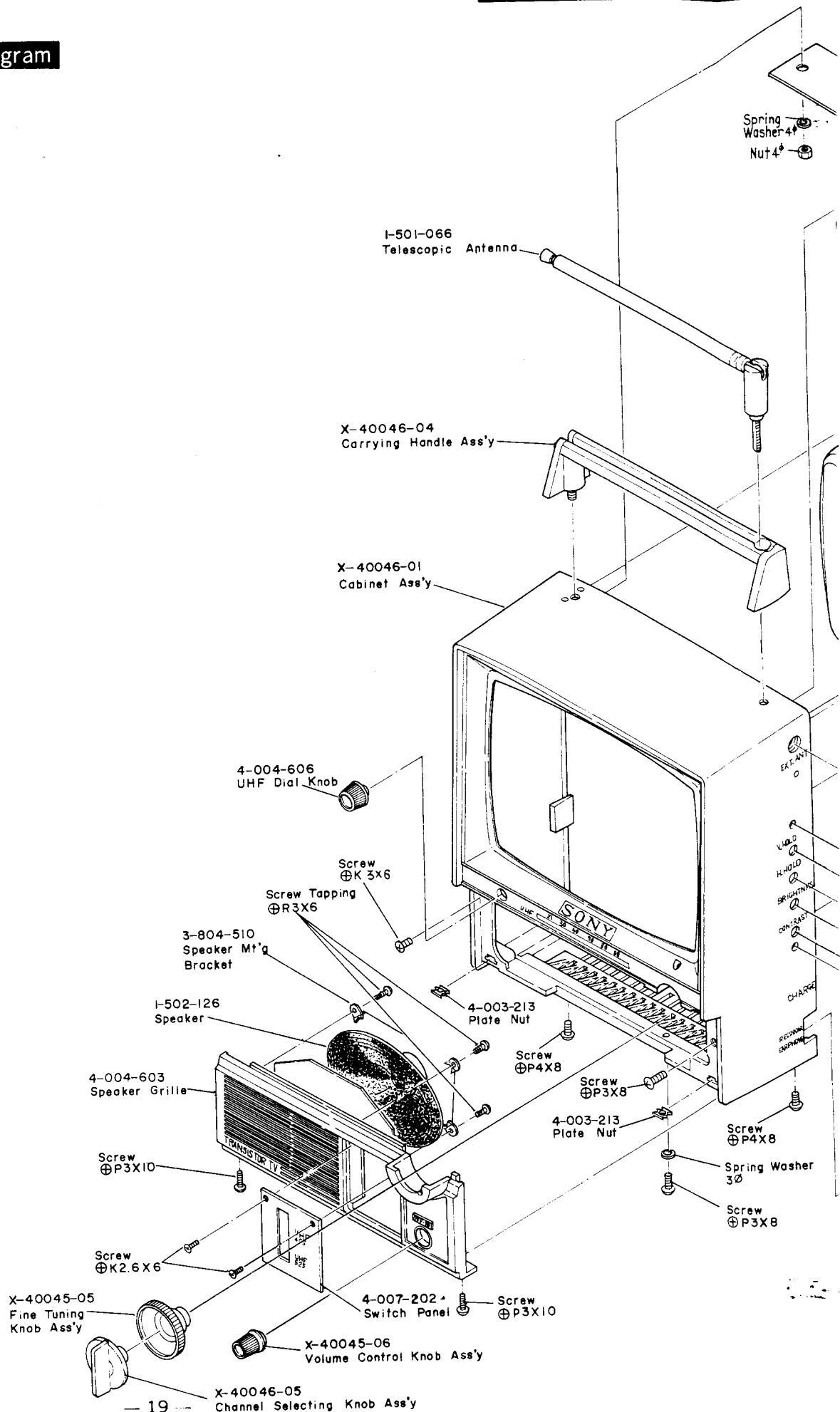
As the above adjustment steps 4 and 5, have influence on each other, they must be performed by turns repeatedly for

Exploded Diagram

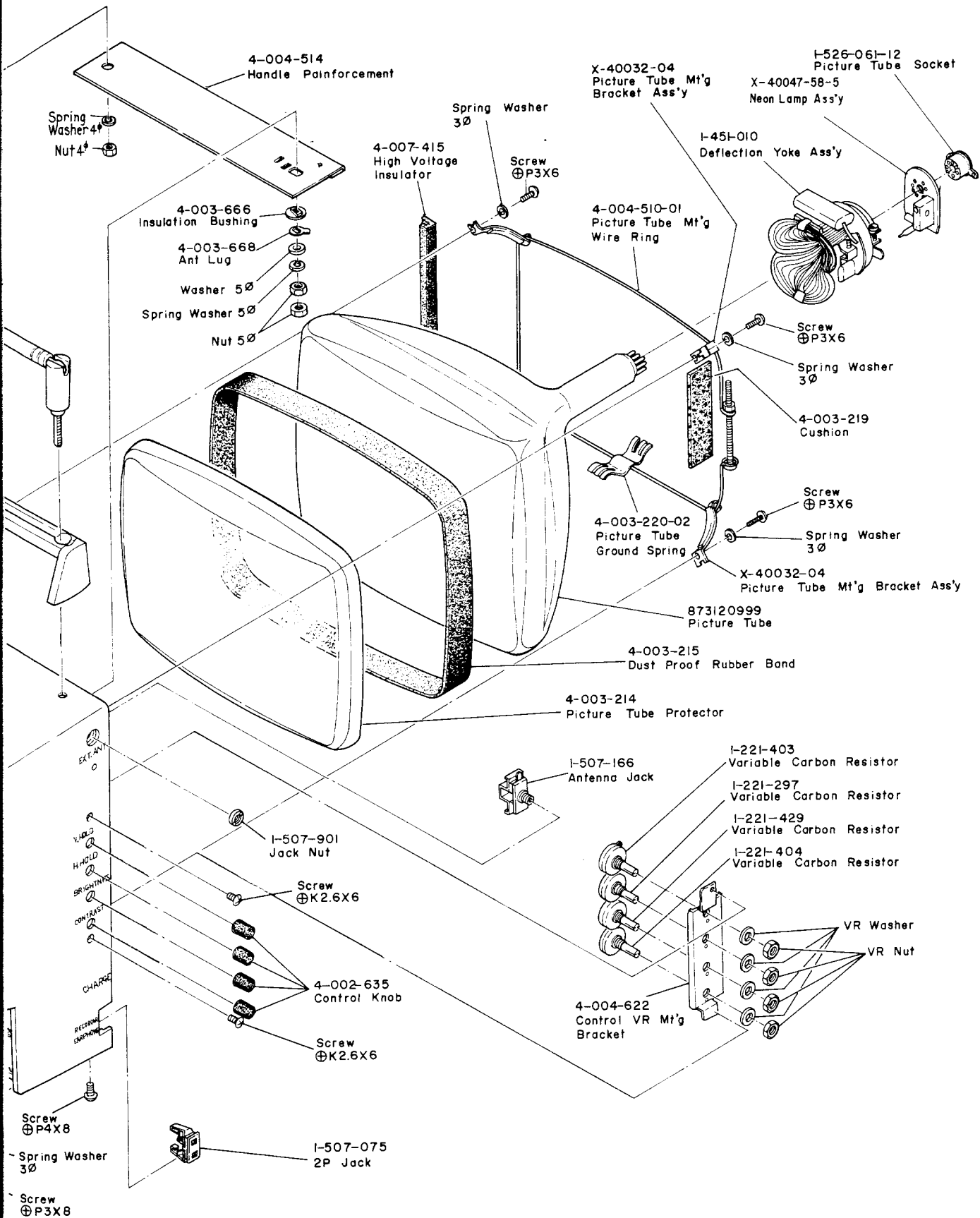


Exploded Diagram

(2)

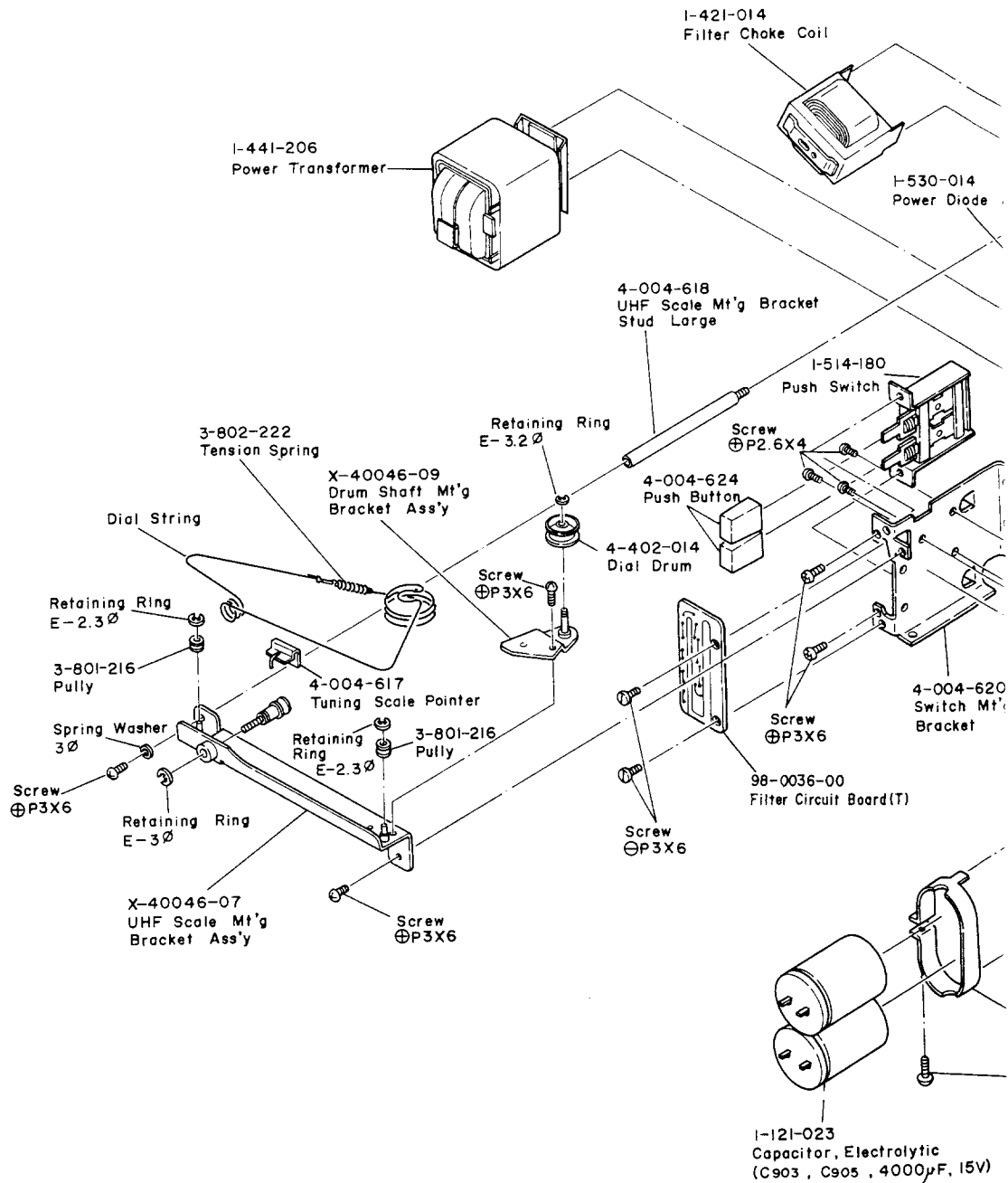


CVM-306UBP



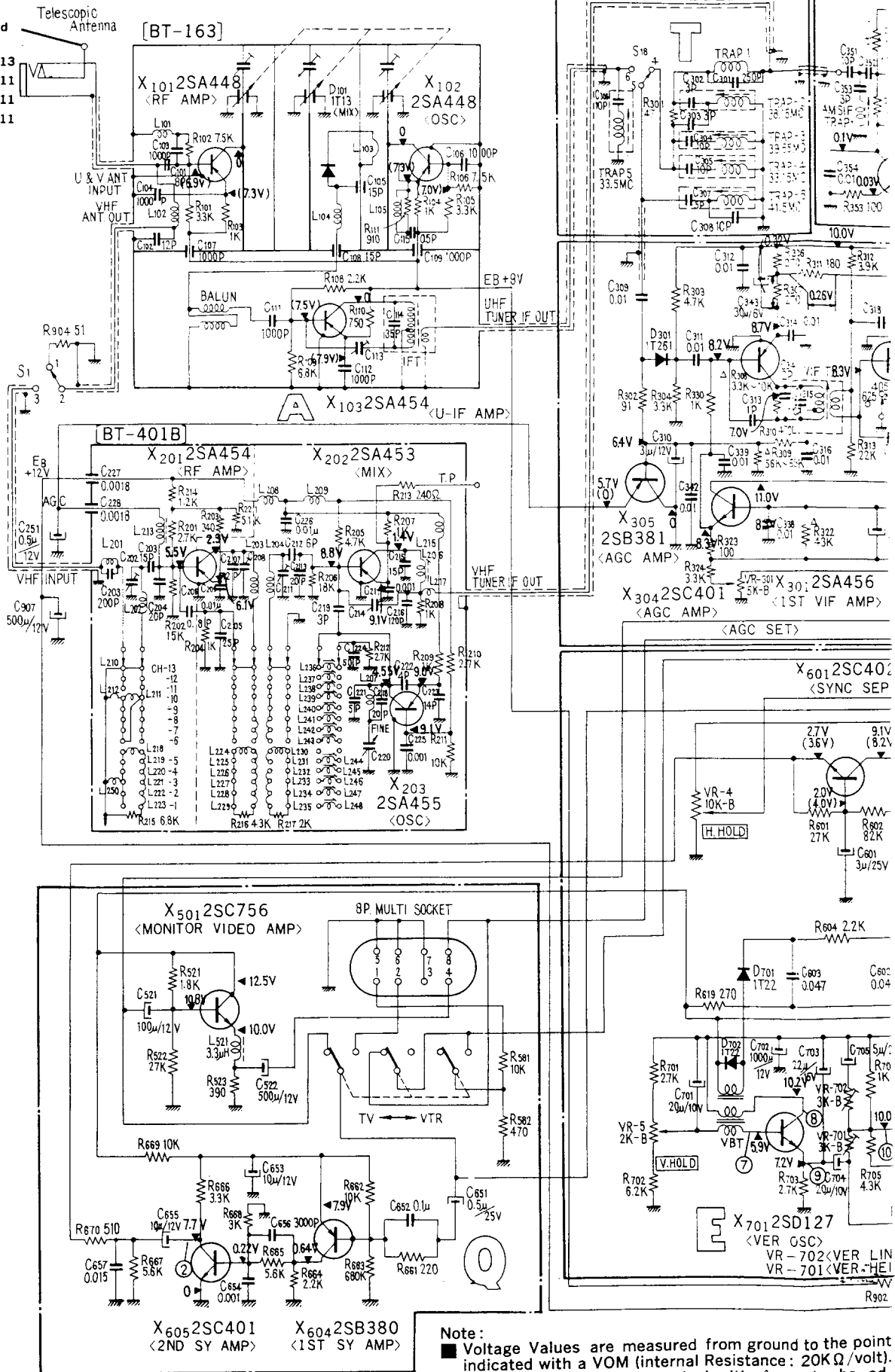
Exploded Diagram

(3)



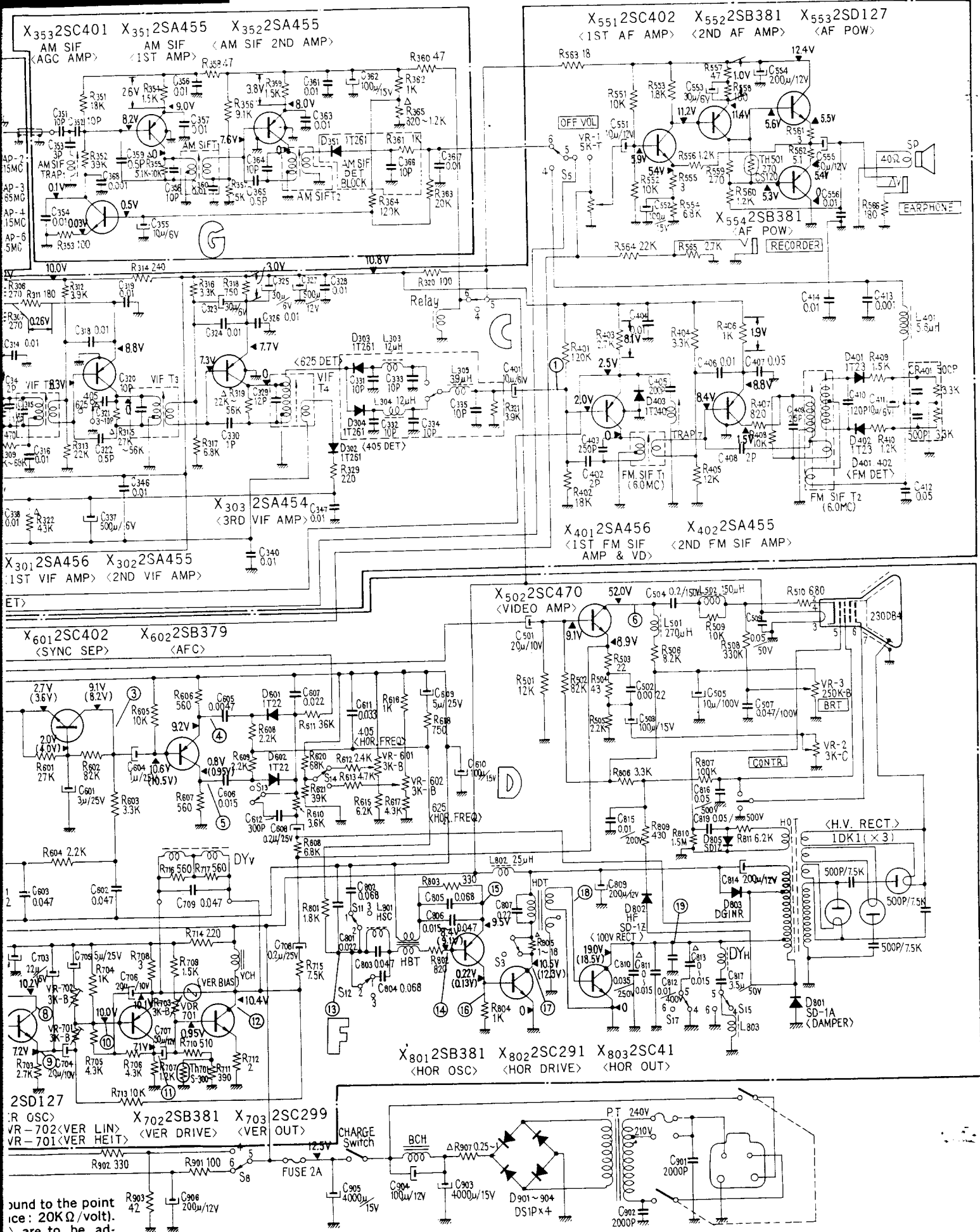
Circuit Schematic

- Circuit Board No.**
Video and Sound Signal Circuit Board 1-538-301-12
Deflection Circuit Board 1-538-304-13
AM-SIF Circuit Board 1-538-302-11
Filter Circuit Board 1-538-303-11
Buffer Circuit Board 1-538-735-11



Note:
 ■ Voltage Values are measured from ground to the point indicated with a VOM (internal Resistance: 20KΩ/volt).
 ■ Resistor and Capacitor marked with Δ are to be adjusted.
 ■ Voltage Values in the Parentheses are for 625 Lines.

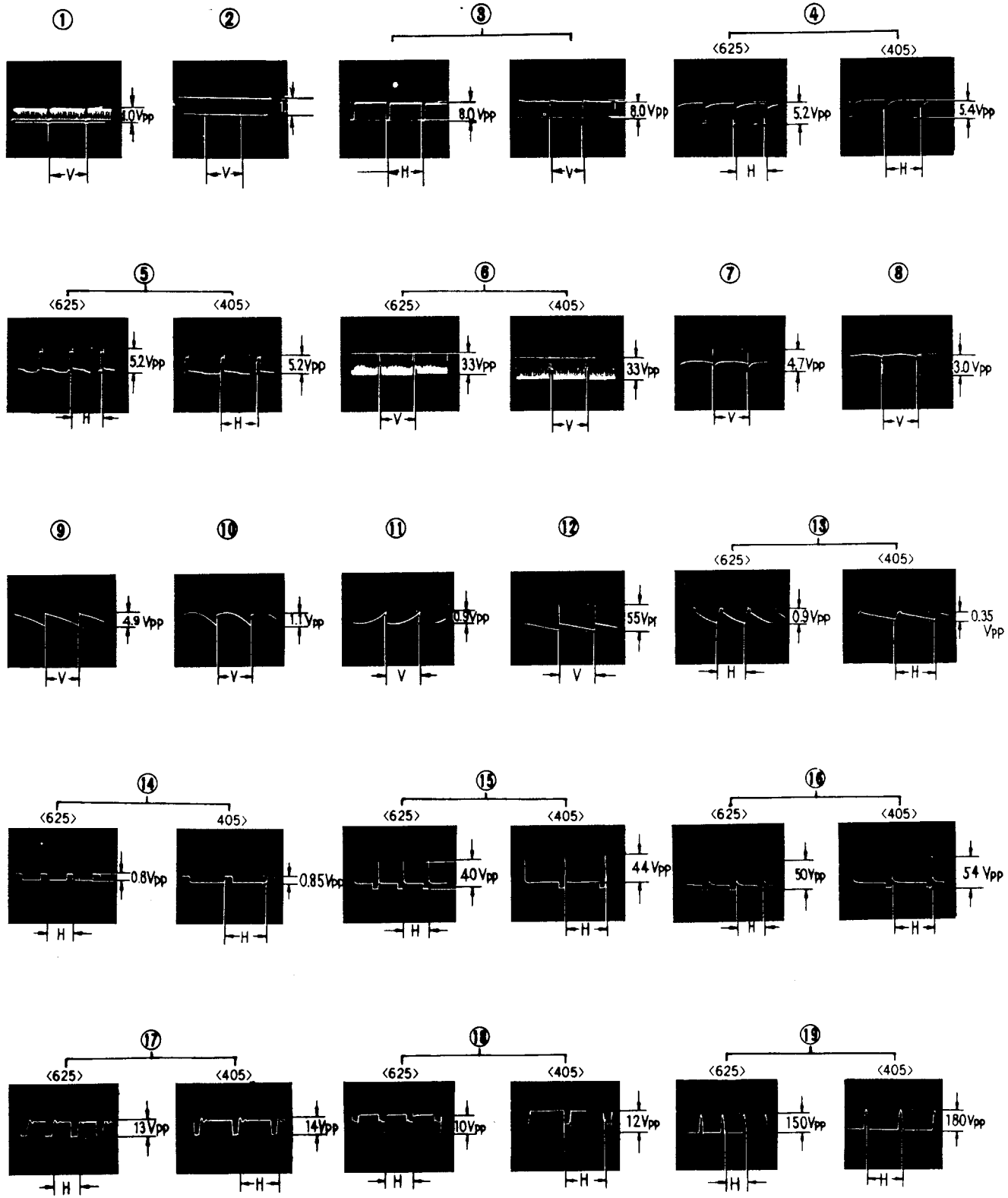
CVM-306UBP



Sound to the point
 (ice: 20KΩ/volt).
 are to be ad-

for 625 Lines.

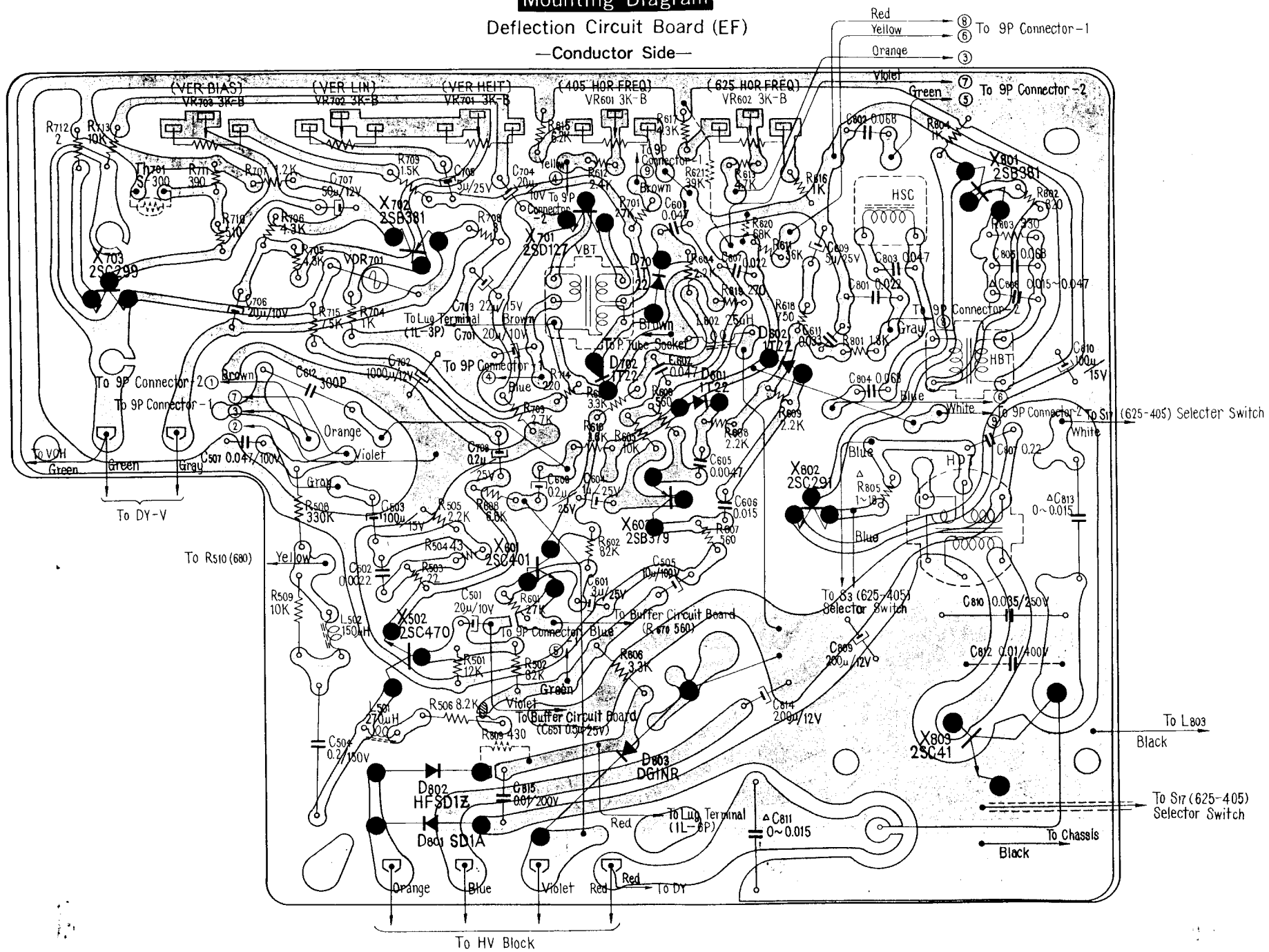
Waveforms



Mounting Diagram

Deflection Circuit Board (EF)

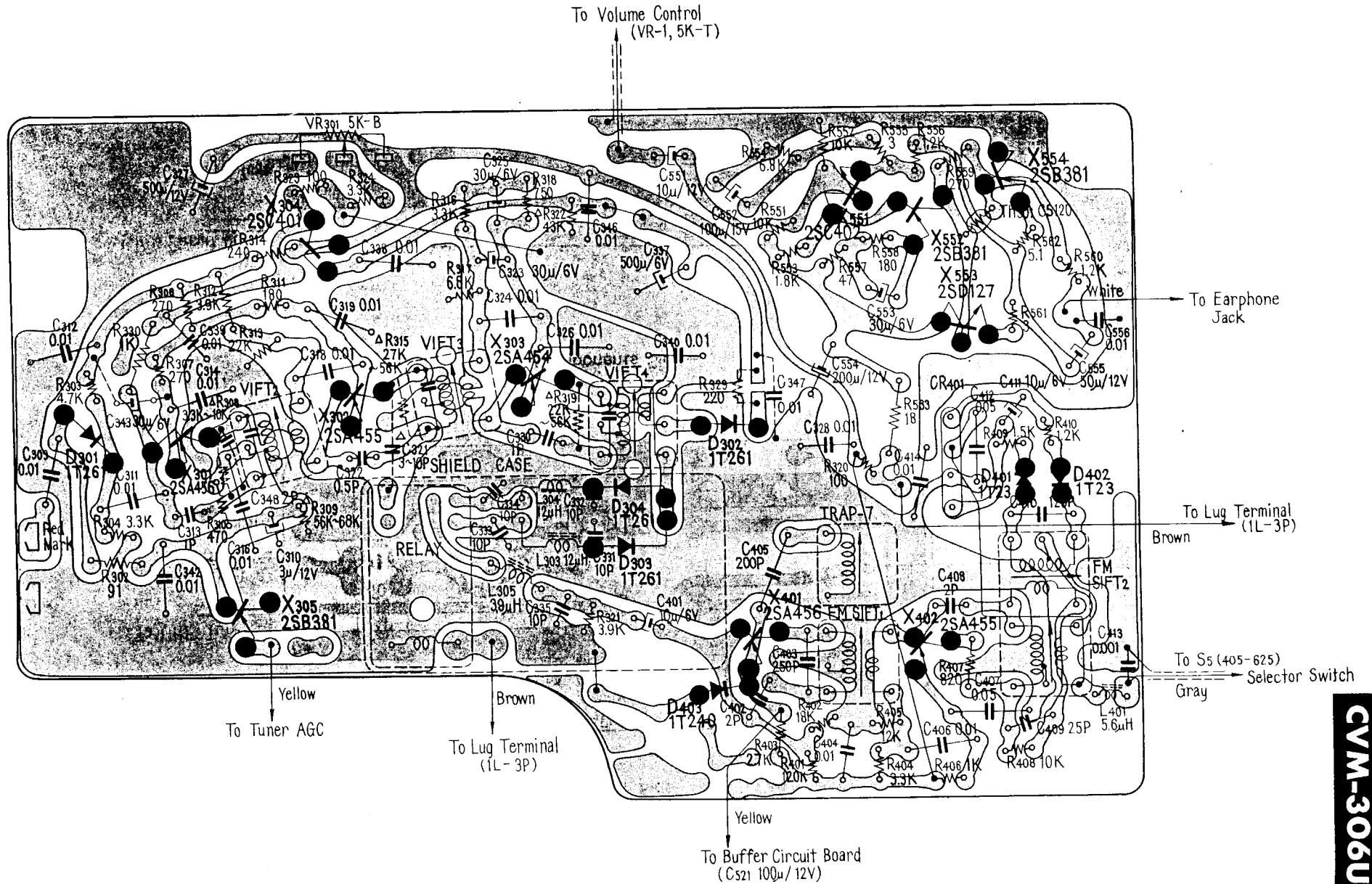
—Conductor Side—



Mounting Diagram

Video & Sound Signal Circuit Board (BC)

—Conductor Side—



Mounting Diagram

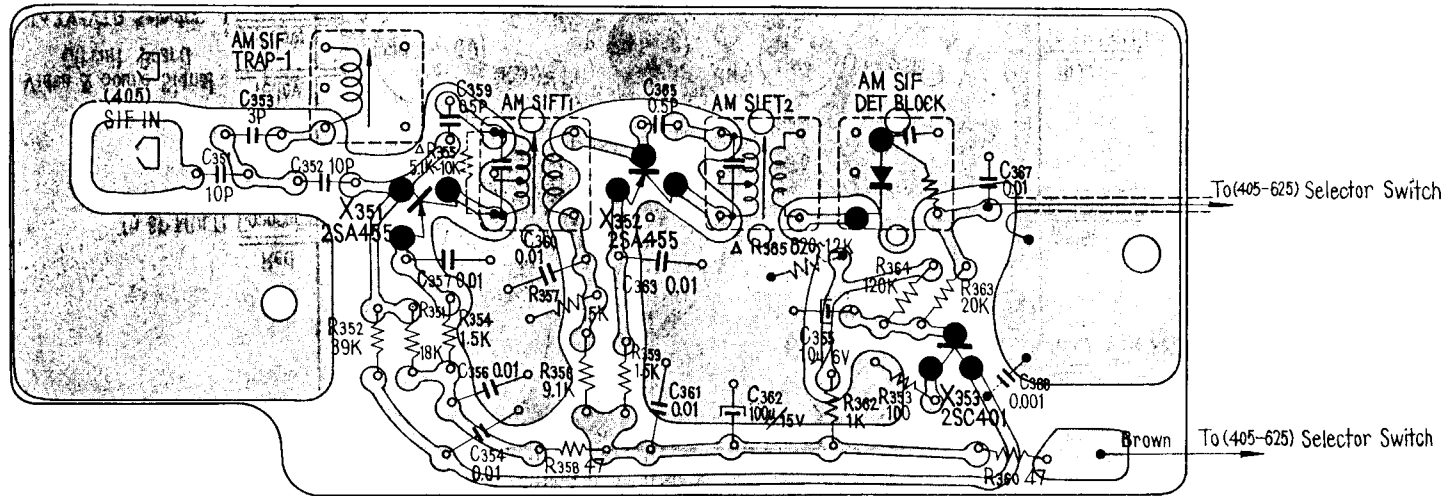
AM-SIF Circuit Board (G)

CVM-306UBP CV

Mounting Diagram

AM-SIF Circuit Board (G)

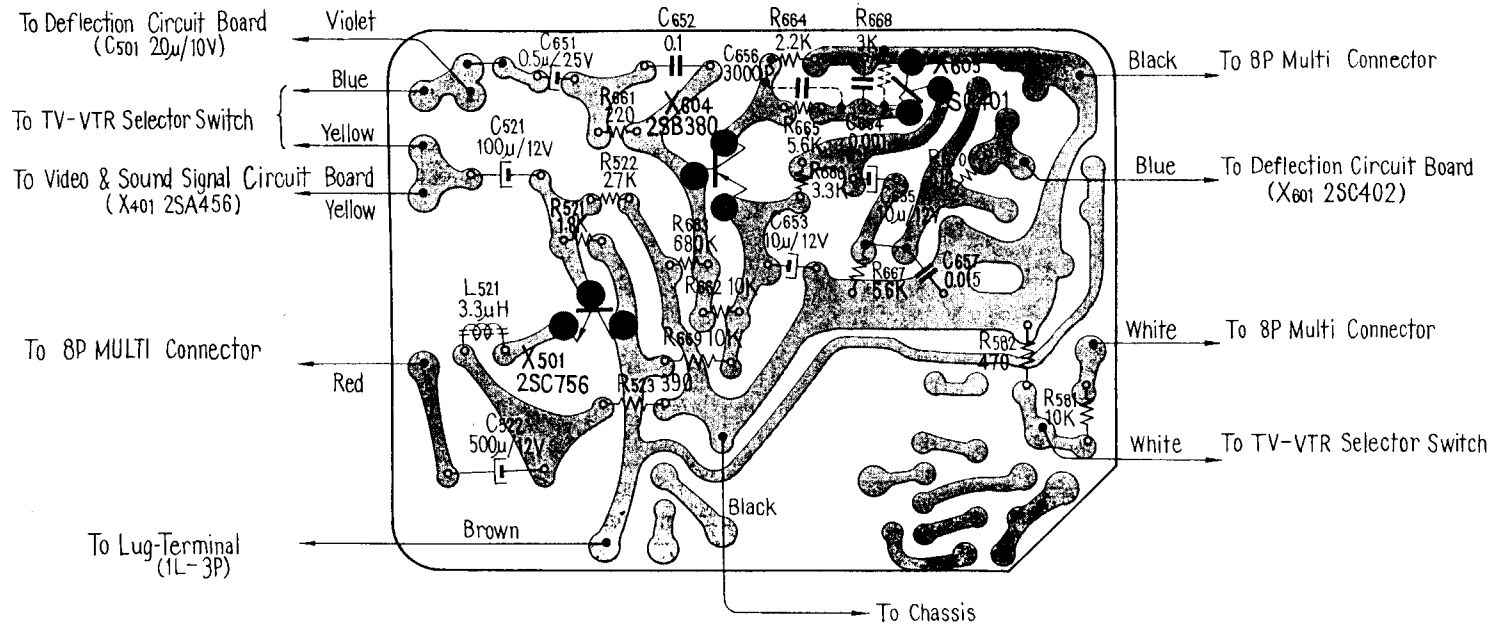
—Conductor Side—



Mounting Diagram

Buffer Circuit Board (Q)

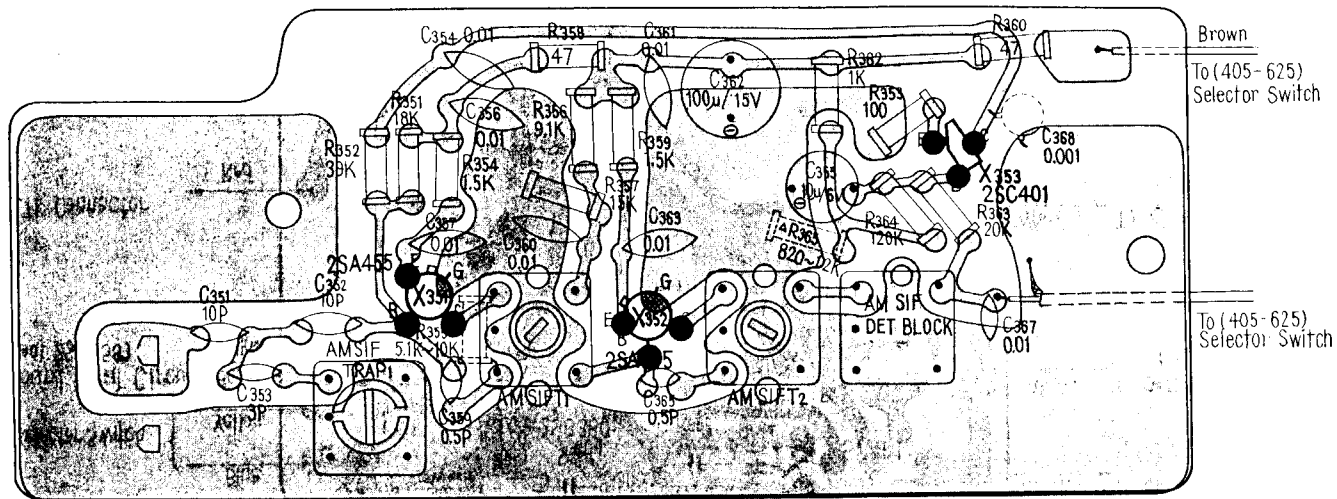
—Conductor Side—



Mounting Diagram

AM-SIF Circuit Board (G)

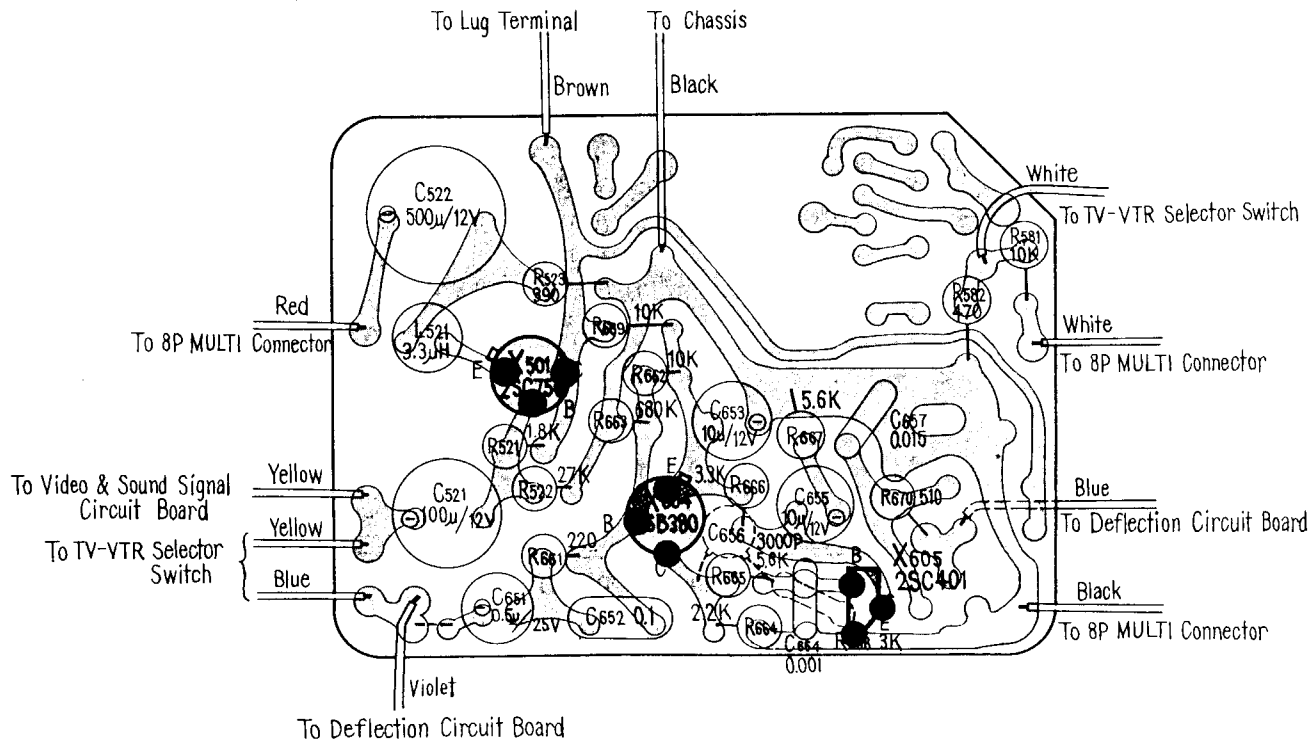
—Components Side—

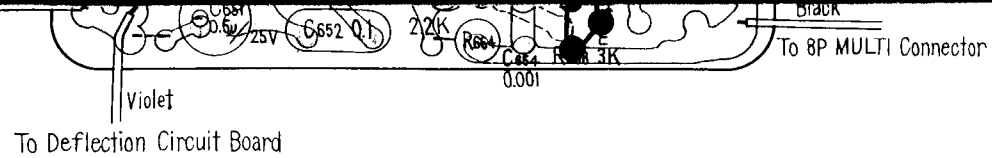


Mounting Diagram

Buffer Circuit Board (Q)

—Components Side—

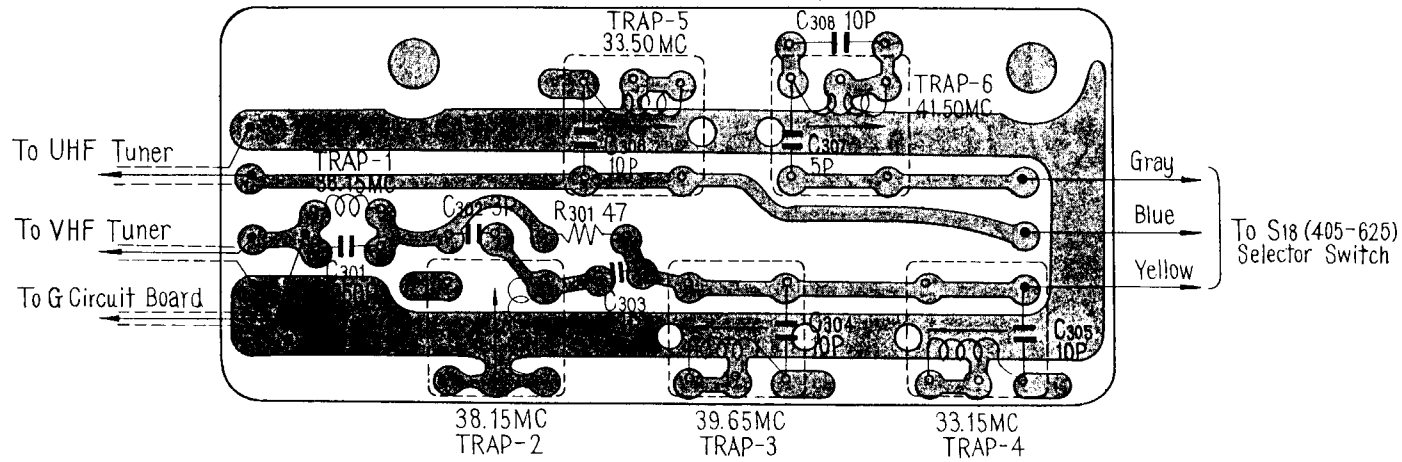




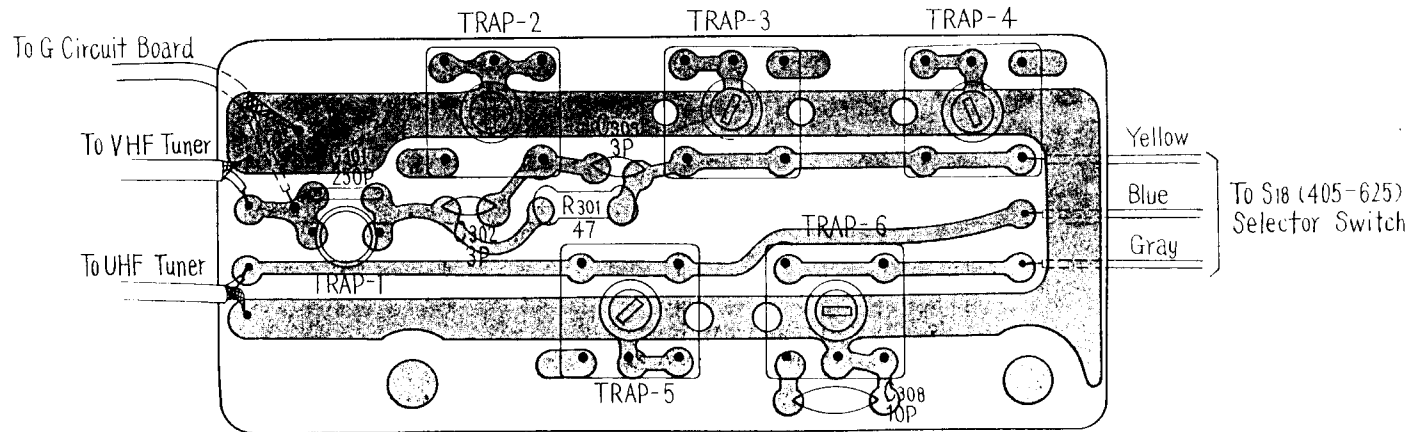
Mounting Diagram

Filter Circuit Board(T)

—Conductor Side—



—Components Side—

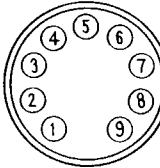


Mounting Diagram

Deflection Circuit Board (EF)

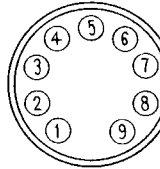
—Components Side—

9P CONNECTOR-1



(Female)

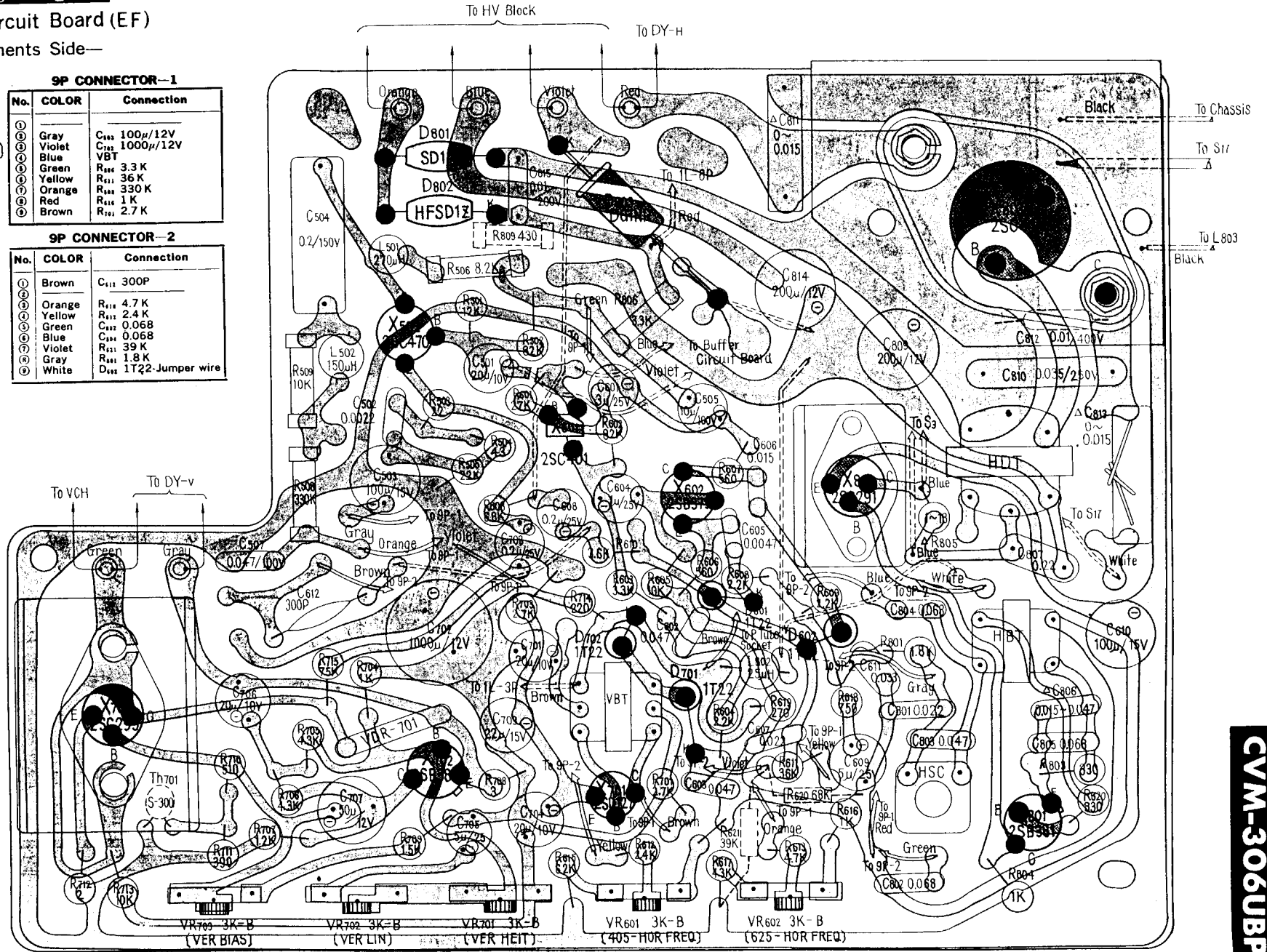
9P CONNECTOR-2



(Male)

9P CONNECTOR-1		
No.	COLOR	Connection
①	Gray	C ₅₅₃ 100μ/12V
②	Violet	C ₅₅₂ 1000μ/12V
③	Blue	VBT
④	Green	R ₅₁₁ 3.3 K
⑤	Yellow	R ₅₁₂ 36 K
⑥	Orange	R ₅₁₃ 330 K
⑦	Red	R ₅₁₄ 1 K
⑧	Brown	R ₅₁₅ 2.7 K

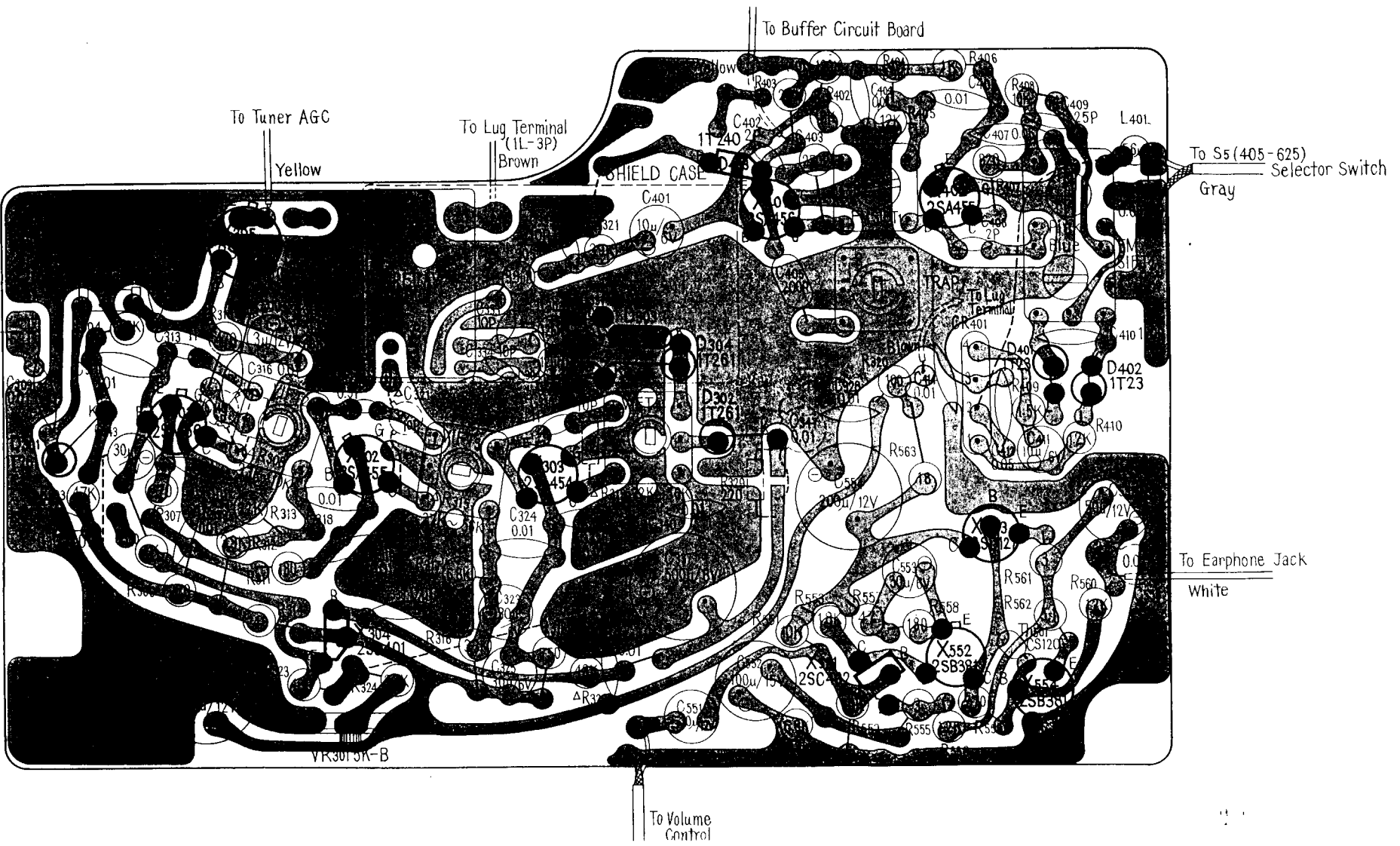
9P CONNECTOR-2		
No.	COLOR	Connection
①	Brown	C ₅₁₁ 300P
②	Orange	R ₅₁₁ 4.7 K
③	Yellow	R ₅₁₂ 2.4 K
④	Green	C ₅₅₂ 0.068
⑤	Blue	C ₅₅₃ 0.068
⑥	Violet	R ₅₁₃ 39 K
⑦	Gray	R ₅₁₄ 1.8 K
⑧	White	D ₅₁₂ 1T22-Jumper wire



Mounting Diagram

Video & Sound Signal Circuit Board (BC)

—Components Side—



9-962-174-01

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