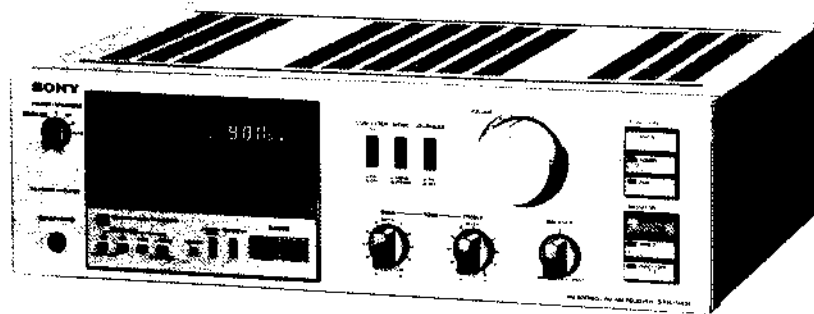


# STR-V45L

AEP Model  
UK Model



## FM STEREO/FM-AM RECEIVER

### SPECIFICATIONS

#### GENERAL

- Power Requirements:** 220 V ac, 50/60 Hz (AEP model)  
240 V ac, 50/60 Hz (UK model)
- Power Consumption:** 180 W (AEP model)  
210 W (UK model)
- Dimensions:** Approx. 430 (w) x 135 (h) x 380 (d) mm  
17 (w) x 5 1/4 (h) x 14 7/8 (d) inches  
including projecting parts and controls
- Weight:** Approx. 8.5 kg, 18 lb 12 oz (net)  
9.7 kg, 21 lb 7 oz (in shipping carton)

#### Intermodulation (IM)

- Distortion:** Less than 0.04 % at rated output  
(60Hz : 7kHz = 4 : 1)
- Damping Factor:** 50 at 1 kHz, 8  $\Omega$
- Dynamic Headroom:** 1.4 dB
- Residual Noise:** Less than 0.23 mV at 8  $\Omega$

#### AMPLIFIER SECTION

- Continuous RMS Power Output:** At 1 kHz  
40 + 40 W (8  $\Omega$ )  
At 20 Hz – 20 kHz  
40 + 40 W (8  $\Omega$ )  
According to DIN 45500  
40 + 40 W (8  $\Omega$ )
- Power Bandwidth (IHF):** 5 Hz – 35 kHz
- Harmonic Distortion:** Less than 0.04 % at rated output

#### Inputs:

	Sensitivity	Impedance	S/N	Weighting network
PHONO	2.5 mV (-50 dB)	50 k $\Omega$	80 dB 77 dB*	A
TAPE 1, 2	150 mV (-13.5 dB)	50 k $\Omega$	97 dB 74 dB*	A
AUX	150 mV (-13.5 dB)	50 k $\Omega$	97 dB 74 dB*	A

\* '78 IHF, Measured with rated output power into 8  $\Omega$  loads  
(both channels driven simultaneously) at 1 kHz.

— Continued on page 2 —

SAFETY RELATED COMPONENT WARNING!!  
COMPONENTS IDENTIFIED BY SHADING AND MARK  
ON THE SCHEMATIC DIAGRAMS, EXPLODED  
VIEWS AND IN THE PARTS LIST ARE CRITICAL TO  
SAFE OPERATION. REPLACE THESE COMPONENTS  
WITH SONY PARTS WHOSE PART NUMBERS APPEAR  
AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS  
PUBLISHED BY SONY.

# SONY

## SERVICE MANUAL

# STR-V45L

## Outputs:

REC OUT 1, 2	Voltage 150 mV (-13.5 dB), Impedance 10 kΩ
HEADPHONES	Accepts low-impedance headphones
SPEAKERS	8 - 16 Ω speakers are suitable

Measured with rated input, FM 30 % modulation

**Frequency Response:** PHONO: RIAA equalization curve  $\pm 0.5$  dB  
 AUX, TAPE 1, 2: 5 Hz - 50 kHz  $\begin{matrix} +0 \\ -1 \end{matrix}$  dB

**Tone Controls:** BASS:  $\pm 10$  dB at 50 Hz  
 TREBLE:  $\pm 10$  dB at 20 kHz

**Loudness Control:** +10 dB at 50 Hz, +3 dB at 10 kHz  
 (att. 30dB)

**Filter:** LOW: 12 dB/octave attenuation below 15 Hz

## FM TUNER SECTION

**Tuning Range:** 87.5 - 108.0 MHz  
**Antenna Terminals:** 300 Ω balanced, 75 Ω unbalanced  
**Intermediate Frequency:** 10.7 MHz

	(at 40 kHz deviation)
<b>Sensitivity:</b>	at 46 dB quieting 18.3 dBf, 4.5 μV (13 dB) (mono) 38.3 dBf, 45 μV (33 dB) (stereo)
<b>Usable Sensitivity:</b>	11.2 dBf, 2.0 μV (6 dB) (IHF) 9.8 dBf, 1.7 μV (4.5 dB) (S/N 26 dB)
<b>Signal-to-noise Ratio:</b>	72 dB (mono), 66 dB (stereo)
<b>Harmonic Distortion:</b>	at 100 Hz 0.1 % (mono), 0.25 % (stereo) at 1 kHz 0.1 % (mono), 0.2 % (stereo) at 6 kHz 0.15 % (mono), 0.2 % (stereo)

**Separation:** 40 dB at 100 Hz, 50 dB at 1 kHz,  
 35 dB at 10 kHz

**Frequency Response:** 40 Hz - 12.5 kHz  $\pm 0.3$  dB  
 30 Hz - 15 kHz  $\begin{matrix} +0.5 \\ -1.5 \end{matrix}$  dB

**Selectivity:** 80 dB (300 kHz)

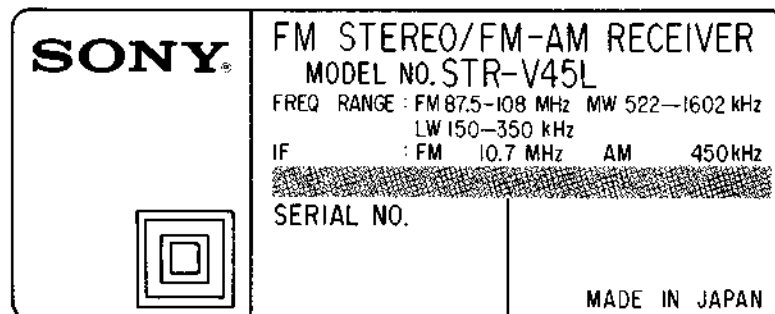
**Capture Ratio:** 1.5 dB  
**AM Suppression Ratio:** 60 dB  
**Image Response Ratio:** 85 dB  
**IF Response Ratio:** 100 dB  
**Spurious Response Ratio:** 95 dB  
**RF Intermodulation:** 78 dB (IHF), 93 dB (2.4 MHz)  
**Sub-carrier Product Ratio:** 55 dB  
**Muting Threshold:** Approx. 25.2 dBf, 10 μV (20 dB)  
**Auto Tuning Level:** LOW: 30 dBf, MID: 40 dBf, HIGH: 55 dBf

## AM TUNER SECTION

	MW	LW
<b>Tuning Range:</b>	522 kHz - 1,602 kHz (9 kHz steps)	155 kHz - 344 kHz (1 kHz steps)
<b>Antenna:</b>		
built-in antenna	provided	provided
external antenna terminal	provided	provided
<b>Intermediate Frequency:</b>	450 kHz	450 kHz
<b>Usable Sensitivity:</b>		
built-in antenna	250 μV/m (48 dB/m) (1,000 kHz)	500 μV/m (54 dB/m) (254 kHz)
external antenna	100 μV (40 dB) (1,000 kHz)	150 μV (43.5 dB) (254 kHz)
<b>Signal-to-noise Ratio:</b> (at 50 mV/m (34 dB/m))	52 dB	52 dB
<b>Harmonic Distortion:</b> (at 50 mV/m (34 dB/m), 400 Hz)	0.5 %	0.5 %
<b>Selectivity:</b>	40 dB (9 kHz)	40 dB (9 kHz)

## MODEL IDENTIFICATION

- Specification Label -



AEP MODEL AC 220V~ 50/60Hz 180W  
 UK MODEL AC 240V~ 50/60Hz 210W

SERVICING NOTES

INSTALLATION PRECAUTION

The epoxy resin used in a luminous diode is a kind of thermosetting resin, but as a diode must let the light pass through, its heat resistance cannot be raised by mixing silica or glass fiber.

Thus, the resin used in the luminous diodes is usually weak against heat. As the tensile strength is not so strong while it is heated, note the following precautions during soldering.

- 1) Perform the soldering within 5 seconds with a soldering iron below 25W. The clearance between the tube and the board should be more than 3 mm (Fig. 1).
- 2) When changing the position of the luminous diode, do not move it right after soldering, but move it after it naturally cools off.
- 3) When bending the lead terminals, be sure to bend the point 2 mm farther from the tube. At this time, fix the foot of the terminal with a round nose plier and be sure that no force is applied to the tube. If not, a crack may occur (Fig. 2).

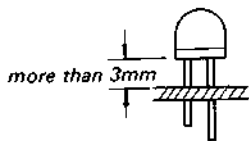


Fig. 1

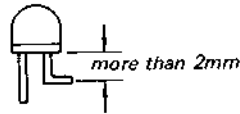


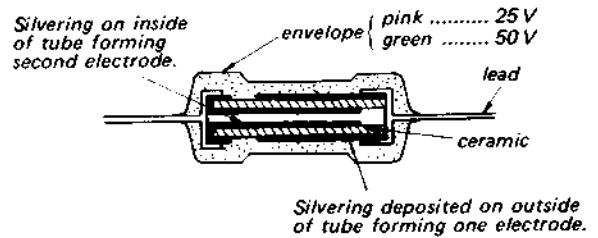
Fig. 2

THE CERAMIC CAPACITORS

This set uses tube-type ceramic capacitors whose shape is identical with the carbon resistors. Be careful not to use resistors instead of capacitors in repairing.

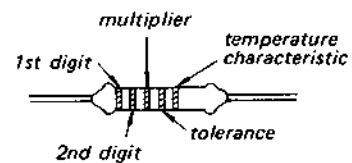
Disc-type ceramic capacitors can be used for replacing those originally used in the set.

Two kinds of drilled holes are provided in some patterns for mounting the tube-type and disc-type ceramic capacitors. Use appropriate holes where applicable.

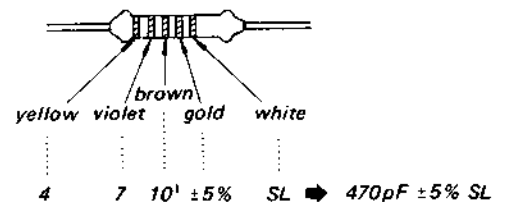


COLOR CODE (in pF)

Color	1st or 2nd Digit	Multiplier	Tolerance	Temperature characteristic
brown	1	10 <sup>1</sup>		Y
red	2	10 <sup>2</sup>		D
orange	3	10 <sup>3</sup>		
yellow	4	10 <sup>4</sup>		RH
green	5			
blue	6			
violet	7			UJ
gray	8		± 30%	X
white	9			SL
black	0	10 <sup>0</sup>	± 20%	CH
gold		10 <sup>-1</sup>	± 5%	V
silver		10 <sup>-2</sup>	± 10%	B



Example:



**Handling Precautions for MOS ICs**

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

**Precautions in Replacing MOS ICs**

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential. (The ICs should be stored in that manner until mounted on the circuit board.)

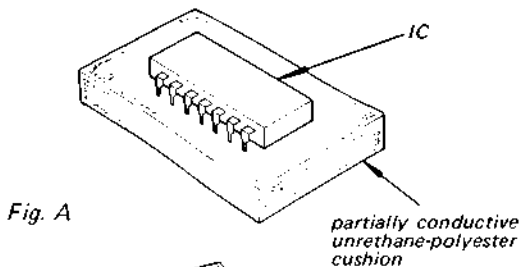


Fig. A

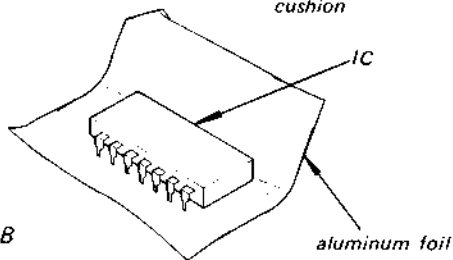


Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

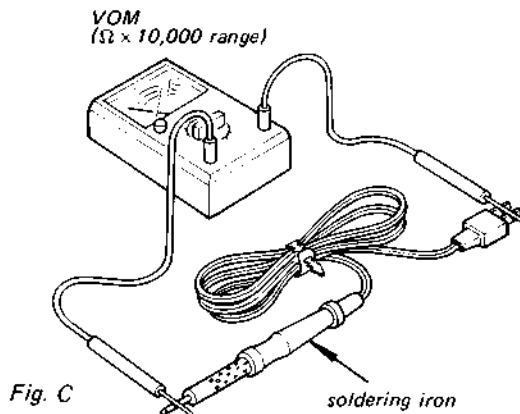


Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
  - Use a paper clip modified by soldering in a wire braid insert.

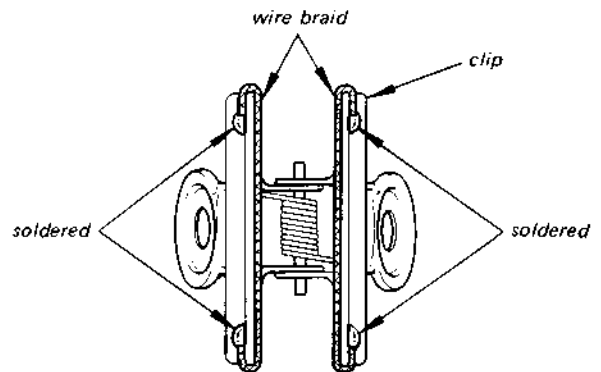


Fig. D

Make sure that there is no solder on the inside.

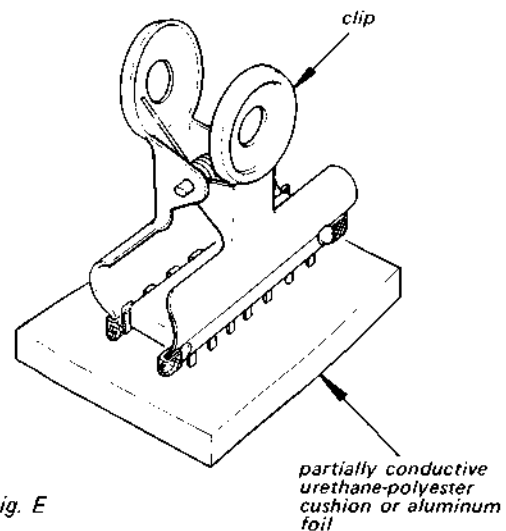


Fig. E

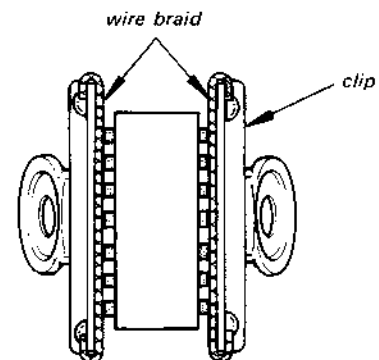
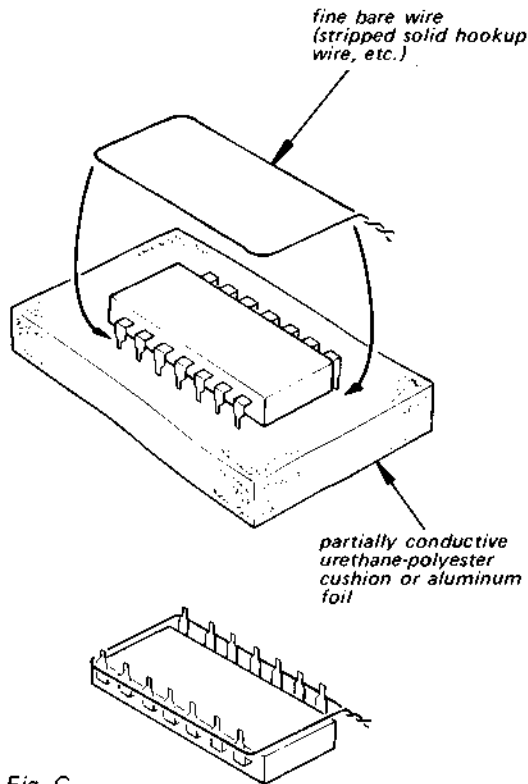


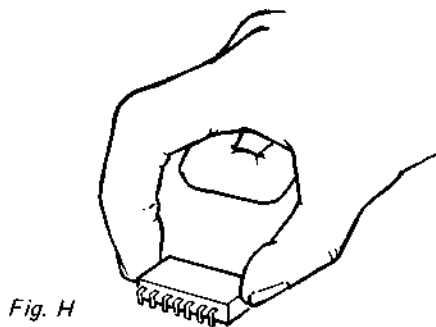
Fig. F

Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).

- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.



- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.



#### 5. Method of Mounting

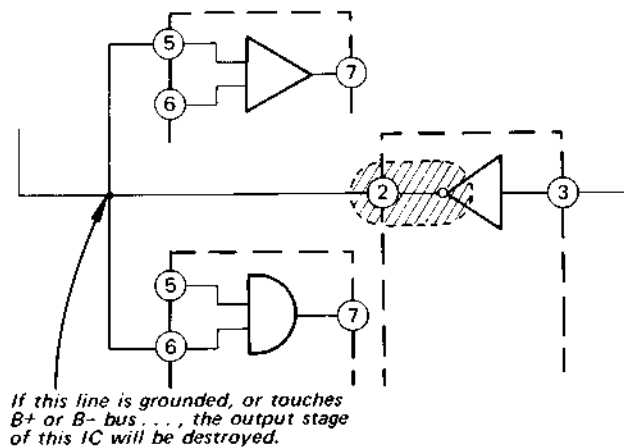
Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

#### Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B- voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

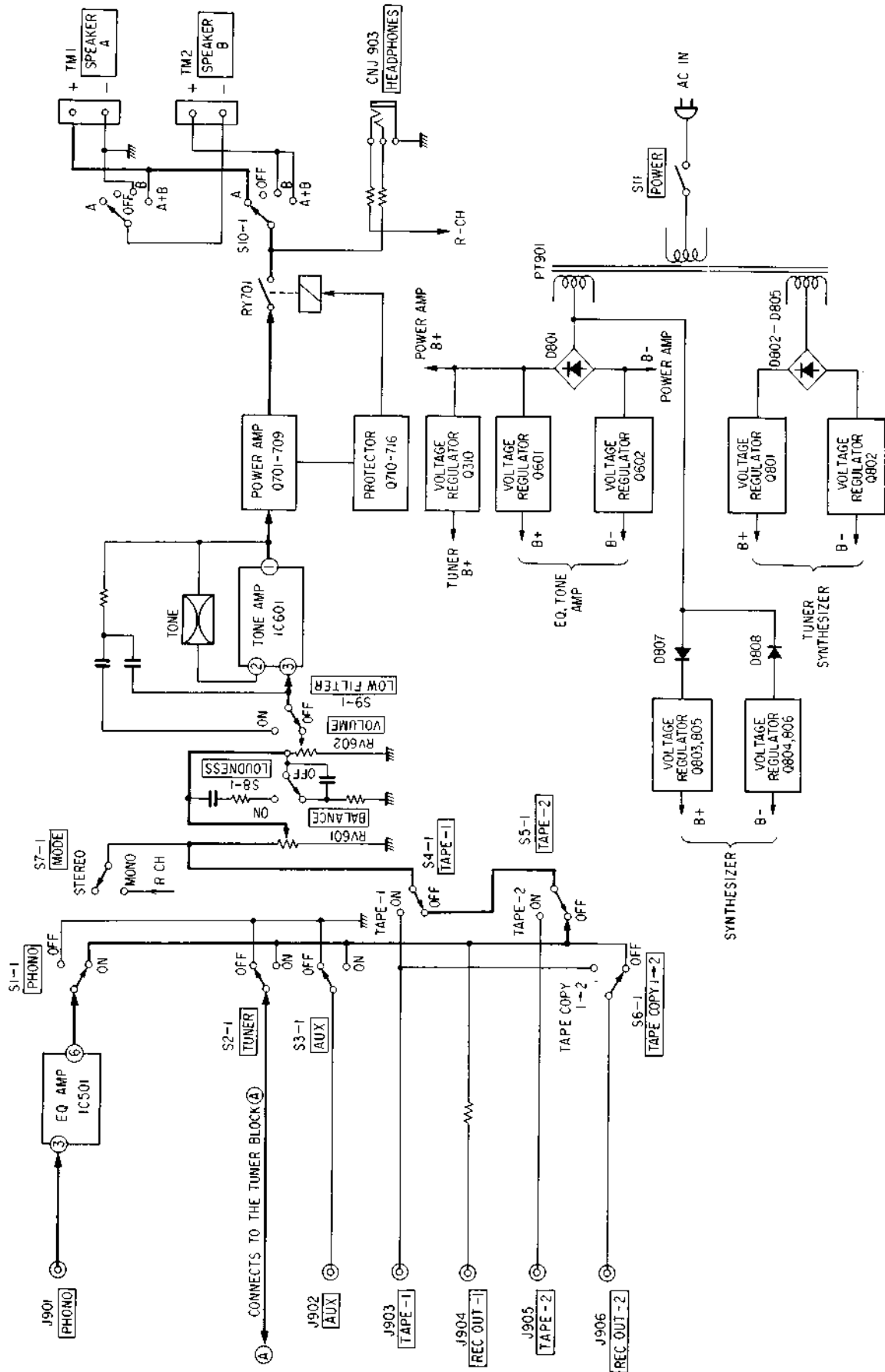
#### Example:



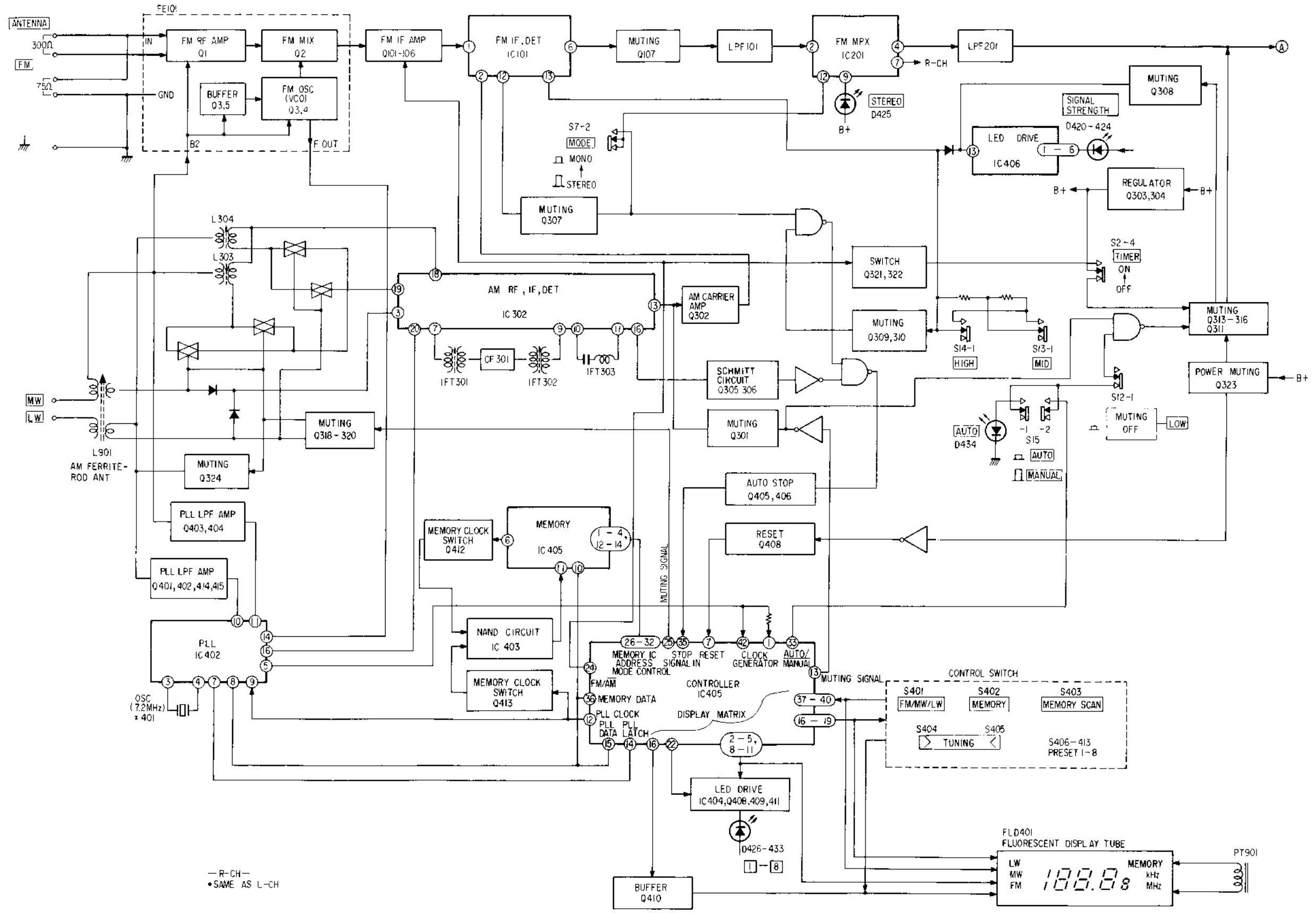
SECTION 1  
OUTLINE

1-1. BLOCK DIAGRAM

— Audio Amp and Power Supply Sections —



- Tuner Section -



- R-CH -  
• SAME AS L-CH

**Outline of  $\mu$ PD553C-065 (IC401):**

This is a four-bit control microcomputer composed of ALU, ROM, RAM, I/O Ports and control circuit all of which are processed in four-bit parallel manner and are included on a small single chip.

**P-channel MOS**

**ROM (1000 x 8-bits)**

**RAM (64 x 4-bits)**

**Input Ports**

A and B

**Input/output Ports**

C and D

four-bits each except for Port I which is three bits

**Output Ports**

E, F, G, H and I

**Clock Frequency: 360 kHz**

Input signal is obtained from terminal 5 of the divider output in PLL CX778.

**42-pin Plastic Dual-in-Line Package**

**I/O Ports:**

**Table 1**

Port	Terminal	Function
PA <sub>0</sub>	33	AUTO/MANUAL
PA <sub>1</sub>	34	N/A
PA <sub>2</sub>	35	Input for AUTO TUNING stop signal
PA <sub>3</sub>	36	Input for memory IC's data
PB <sub>0-3</sub>	37 - 40	Refer to Fig. 1.
PC <sub>0-3</sub>	2 - 5	
PD <sub>0-3</sub>	8 - 11	
PF <sub>0-3</sub>	16 - 19	
PG <sub>0</sub>	22	
PG <sub>1</sub>	23	N/A
PG <sub>2</sub>	24	FM/AM
PG <sub>3</sub>	25	Output for muting pulse
PE <sub>0</sub>	12	Clock output for PLL memory IC
PE <sub>1</sub>	13	Output for muting pulse
PE <sub>2</sub>	14	Output for PLL
PE <sub>3</sub>	15	Output for PLL and memory IC
PH <sub>0</sub>	26	Outputs for memory IC address
PH <sub>1</sub>	27	
PH <sub>2</sub>	28	
PH <sub>3</sub>	29	
PI <sub>0</sub>	30	→ C1
PI <sub>1</sub>	31	→ C2
PI <sub>2</sub>	32	→ C3

Outputs for memory IC mode control

**MEMORY IC CX761A (IC405)**

**Outline of CX761A:**

- (a) This is a non-volatile memory IC. Has 228 (14 words x 16 bits + 4 bits) non-volatile memory transistors built in, and works for reading, erasure and writing the data word.
- (b) Because of being a non-volatile type memory, this IC maintains the memorized informations for a long time without a battery back-up after the power switch is turned off.
- (c) Word address is done by the BCD inputs.
- (d) Silicon-type P-channel enhancement MNOS IC construction.
- (e) 14-pin molded DIP casing.

Refer to the schematic diagram for the block diagram.

**Table 2. Function of Terminals:**

Terminal	IN or OUT	Function
1	IN	Word address D
2	IN	Word address C
3	IN	Word address B
4	IN	Word address A
5	IN	Power supply input
6	IN/OUT	Writing and erasure control inputs/memory-BUSY output
7	IN	Power supply input
8	IN/OUT	Inputs and outputs for test checkout
9	IN	Test signal
10	IN/OUT	Combined data inputs and data outputs
11	IN	Input for synchronous clock
12	IN	Input for mode control C3
13	IN	Input for mode control C2
14	IN	Input for mode control C1



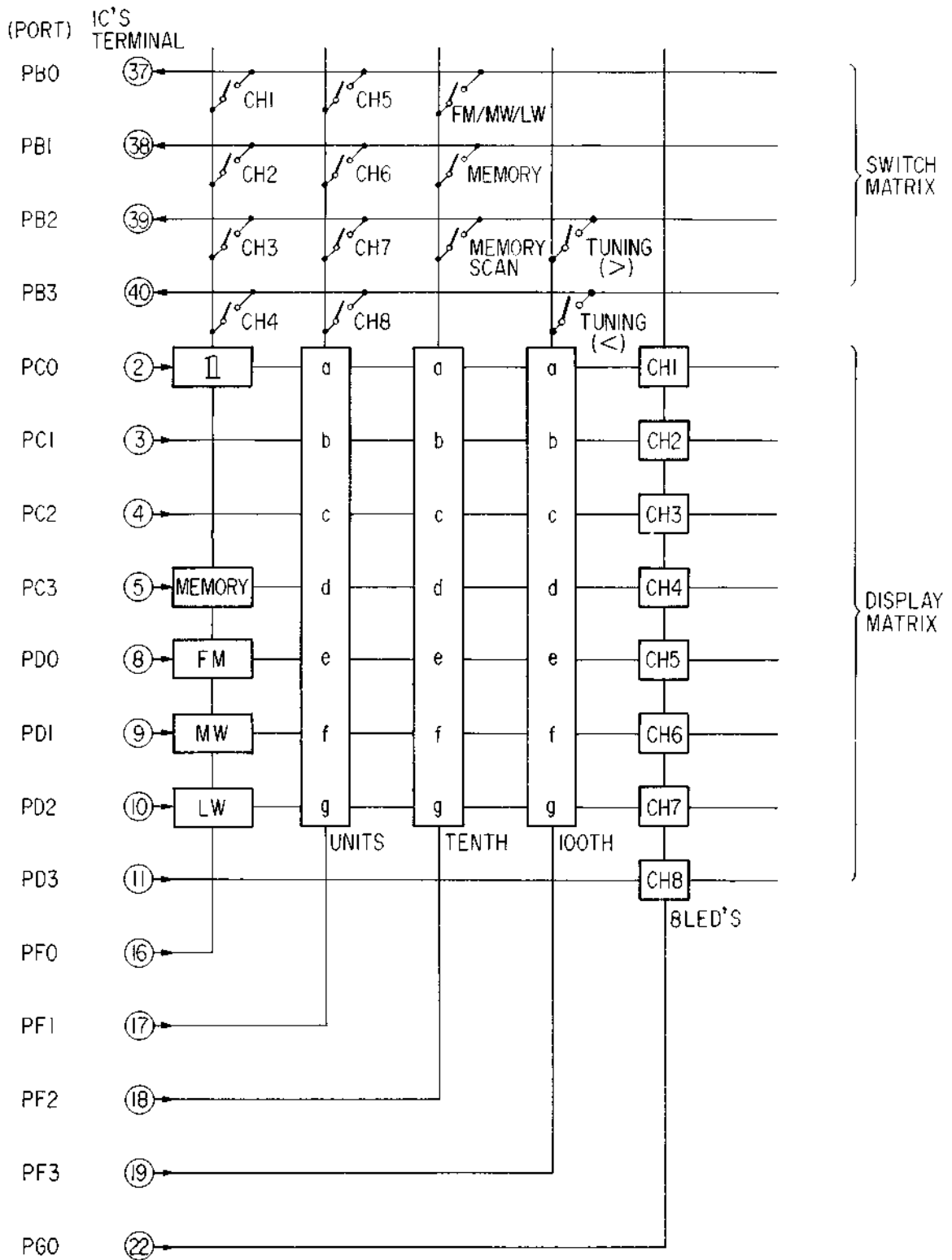


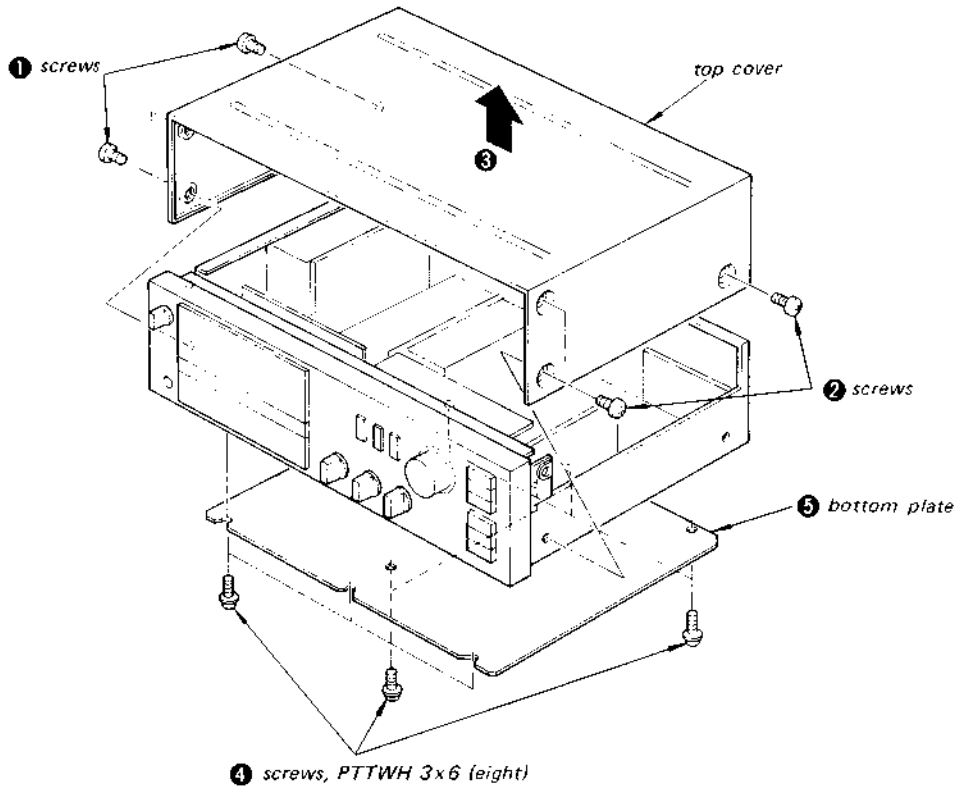
Fig. 1

## SECTION 2 DISASSEMBLY

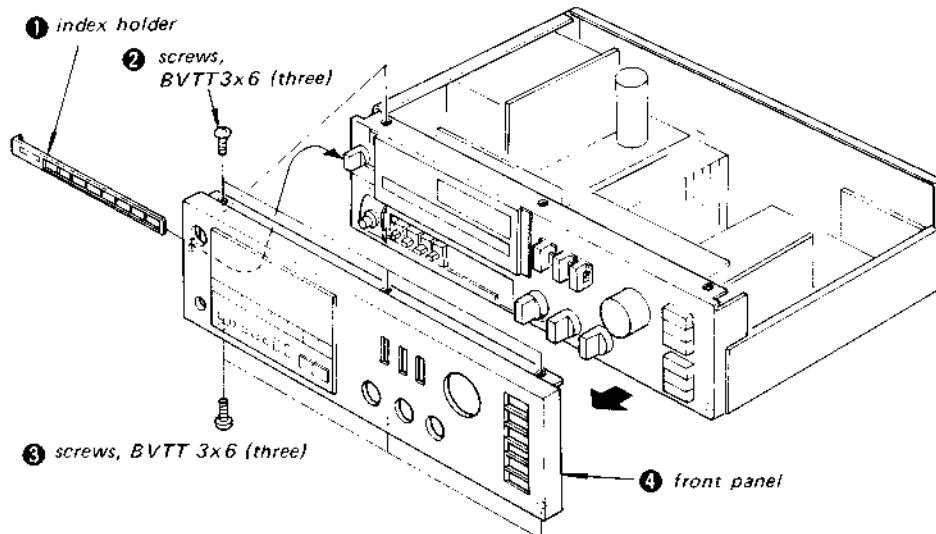
Note: Follow the disassembly procedure in the numerical order given.

### TOP COVER AND BOTTOM PLATE REMOVAL

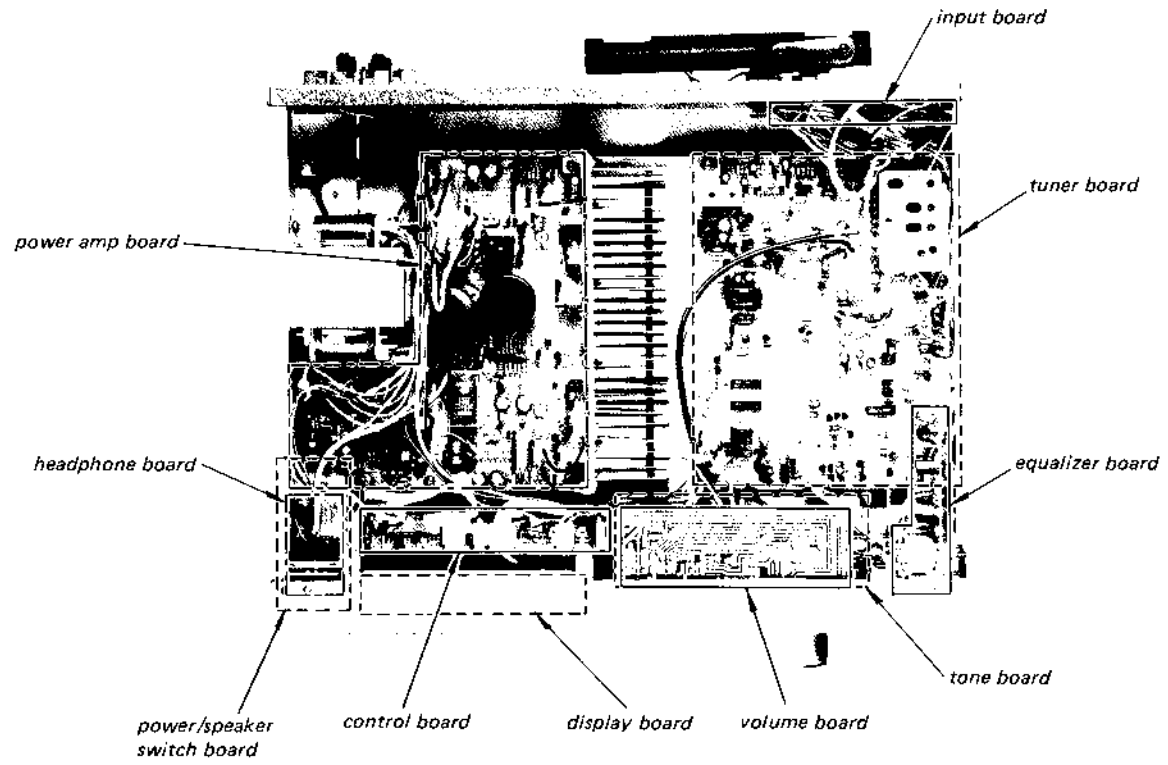
Note: Circuit-board checkouts and adjustments can be made after this removal.



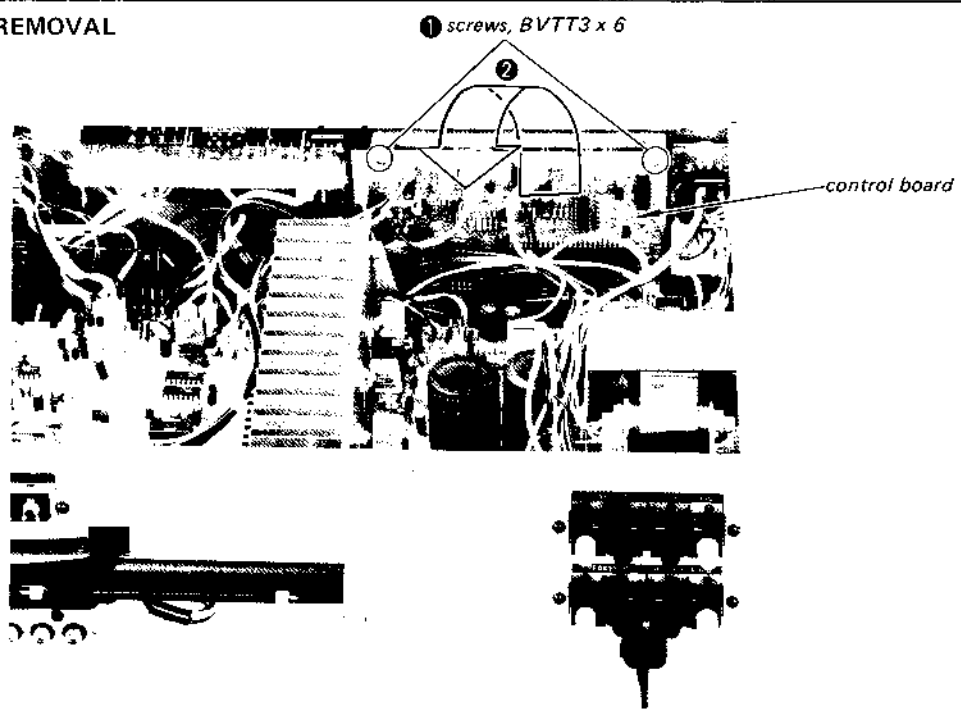
### FRONT PANEL REMOVAL



**CIRCUIT BOARDS LAYOUT**



**CONTROL BOARD REMOVAL**



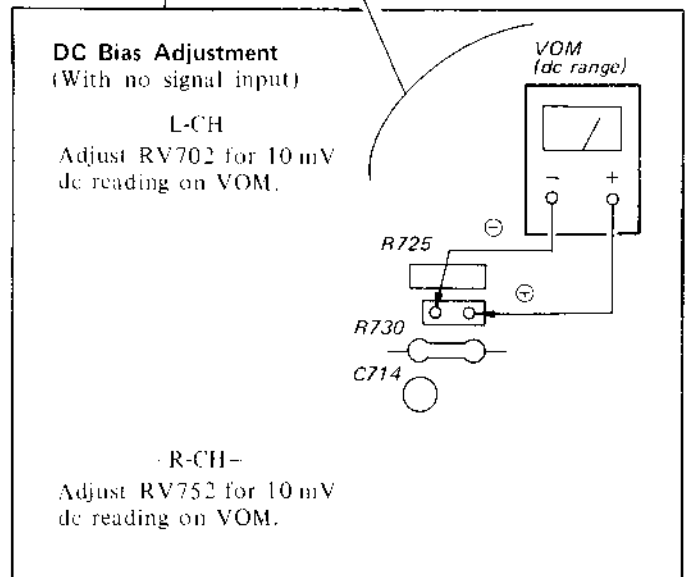
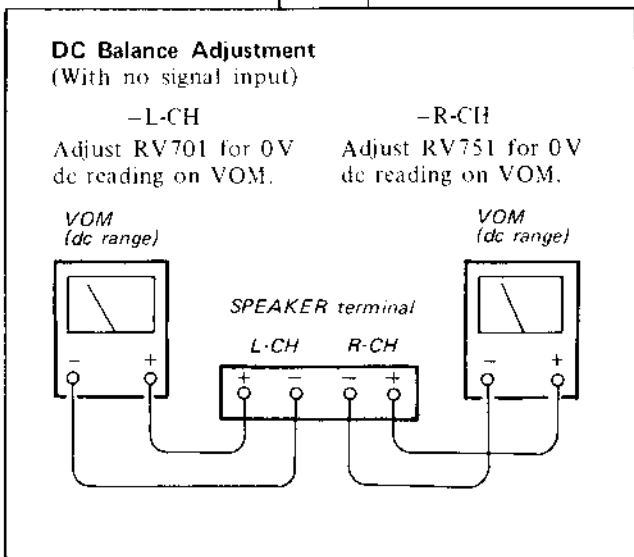
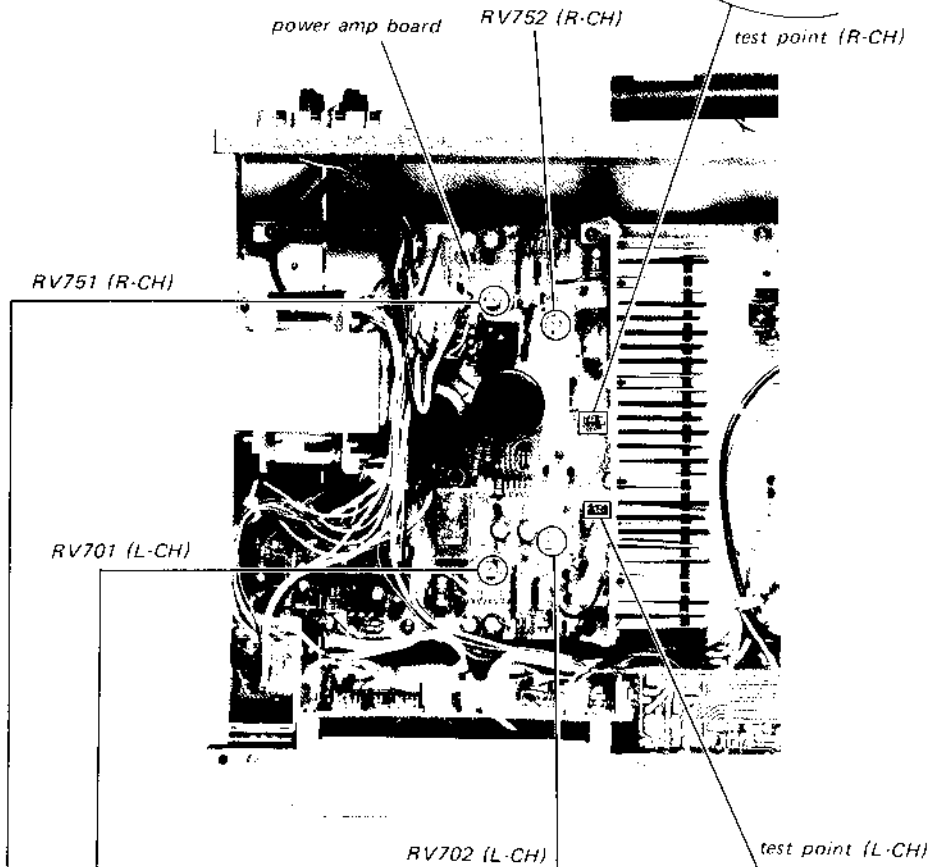
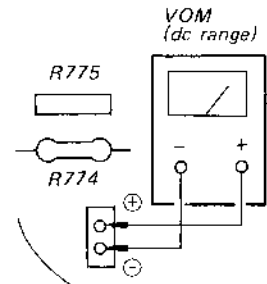
**SECTION 3  
ADJUSTMENTS**

**3-1. AMP SECTION**

**Note:**

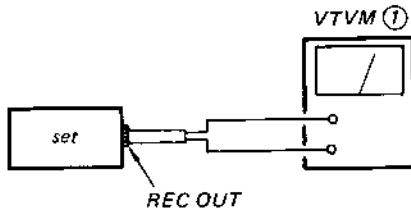
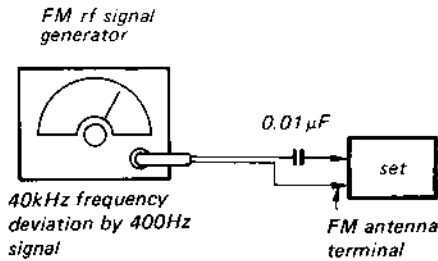
1. DC bias and DC balance adjustments should be made several minutes later after the POWER switch is turned on (POWER ON).
2. Make DC bias adjustment first.
3. Repeat DC bias and DC balance adjustments two or three times.
4. After replacing the power transistors, DC bias and DC balance adjustments should be made.

*DC Bias Adjustment*

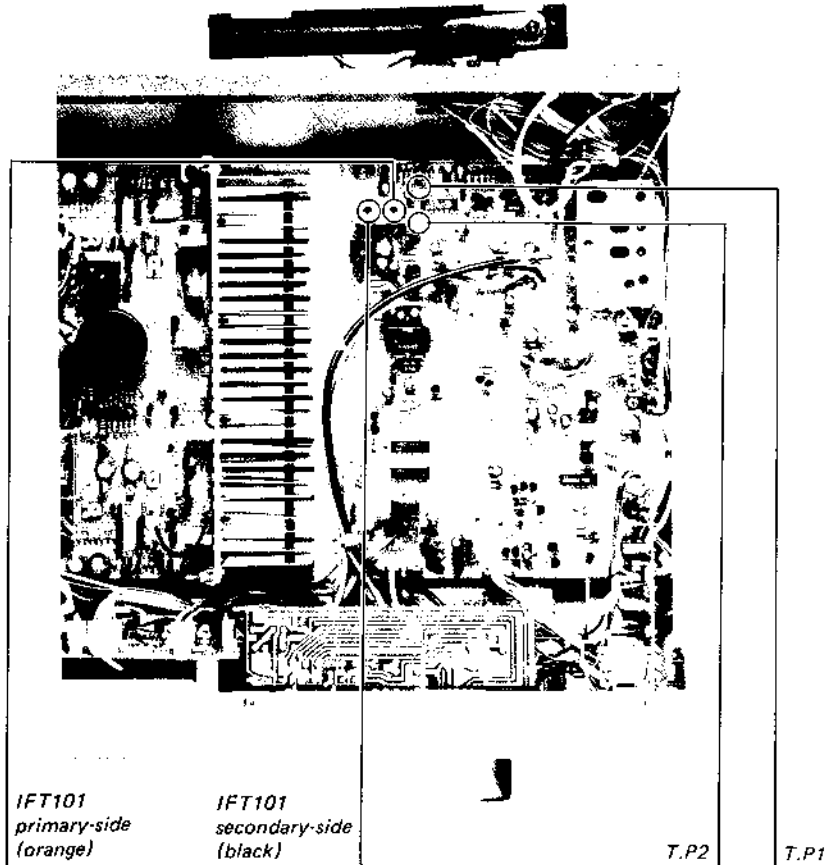


## 3-2. FM SECTION

FM stereo standard signal	FM monaural standard signal
Carrier frequency: 98 MHz	Carrier frequency: 98 MHz
Modulation: Audio 400Hz	Modulation: 400 Hz,
16.25kHz deviation	40kHz deviation (100%)
Sub channel 38kHz,	
16.25kHz deviation	
Pilot signal 19kHz,	
7.5kHz deviation	



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

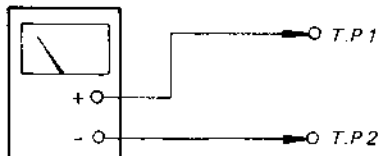


### FM DISCRIMINATOR (IFT101) ALIGNMENT 1 (PRIMARY-SIDE)

Setting:

FUNCTION switch: TUNER  
 FM/MW/LW switch: FM  
 MODE switch: MONO  
 TUNING switch: Detuned position

VOM  
 (range: 5V dc)



Procedure:

- Tune the set to 98MHz.
- Adjust the orange core (primary-side) of IFT101 for 0V reading on VOM.

**Note:** When replacing the ceramic filters (CF101-CF104), perform this alignment.

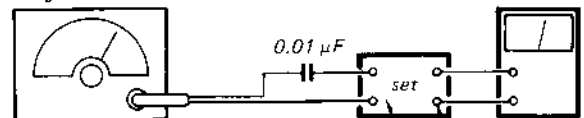
### FM DISCRIMINATOR (IFT101) ALIGNMENT 2 (SECONDARY-SIDE)

Setting:

FUNCTION switch: TUNER  
 FM/MW/LW switch: FM  
 MODE switch: MONO

FM rf signal generator

distortion meter



FM monaural standard signal

75  $\Omega$

Carrier frequency: 98MHz  
 Output level: 1mV (60dB)  
 Modulation: 400Hz, 40kHz deviation (100%)

Procedure:

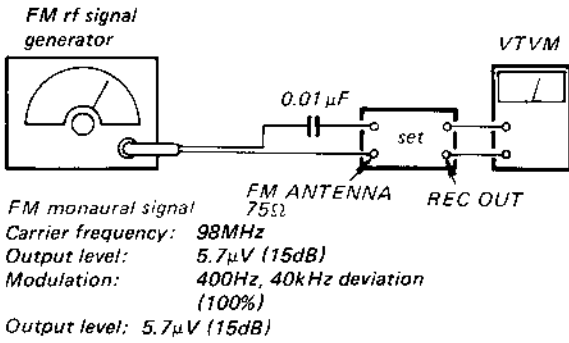
- Tune the set to 98MHz.
- Adjust the black core (secondary-side) of IFT101 for minimum distortion.

**Note:** Repeat the primary-side and secondary-side alignments several times.

**FM MUTING LEVEL ADJUSTMENT**

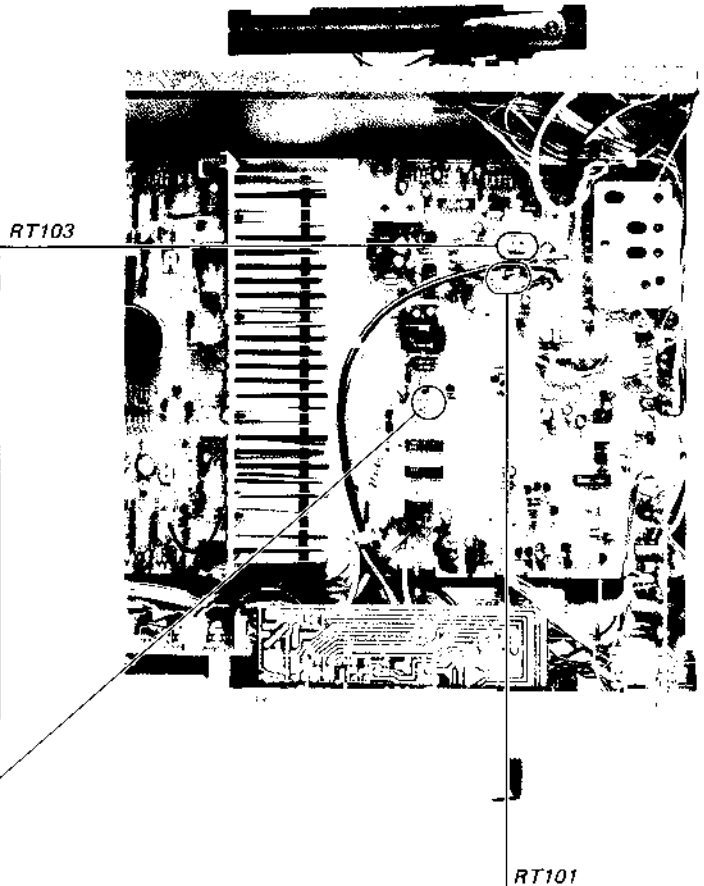
Setting:

TUNING LEVEL-LOW switch: ON



Procedure:

1. Push TUNING switches and tune the set to 98 MHz.
2. Turn RT103 and set it at the point just when the VTVM indication drops to 0 V.



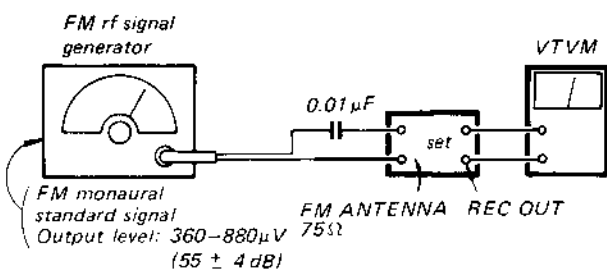
RT102

RT101

**FM TUNING LEVEL ADJUSTMENT**

Setting:

TUNING LEVEL-HIGH switch: ON

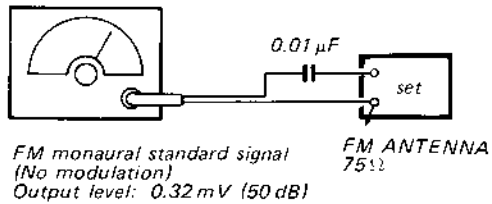


Procedure:

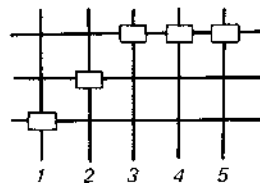
By varying the output level of the FM signal generator from 360 $\mu$ V (51 dB) to 880 $\mu$ V (59 dB), adjust RT102 so that the frequency scanning stops (observing the frequency counter of the set).

**SIGNAL INDICATOR ADJUSTMENT**

FM rf signal generator



SIGNAL STRENGTH



Procedure:

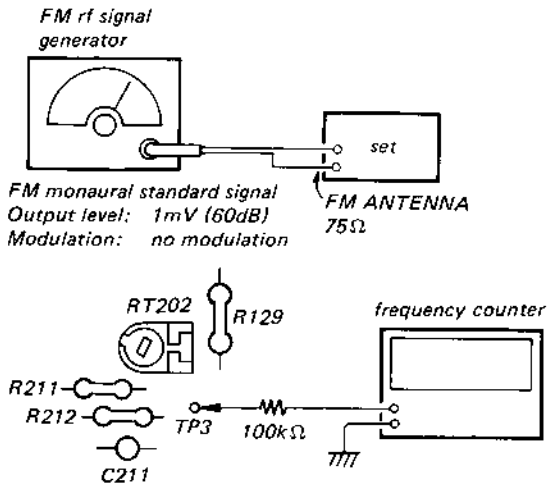
1. Tune the set to 98 MHz.
2. Adjust RT101 for all five LEDs of SIGNAL STRENGTH indicator lighting.

## VCO ADJUSTMENT

### Setting:

FUNCTION switch: TUNER  
 FM/MW/LW switch: FM  
 MODE switch: MONO

### A) Regular Method



### Procedure:

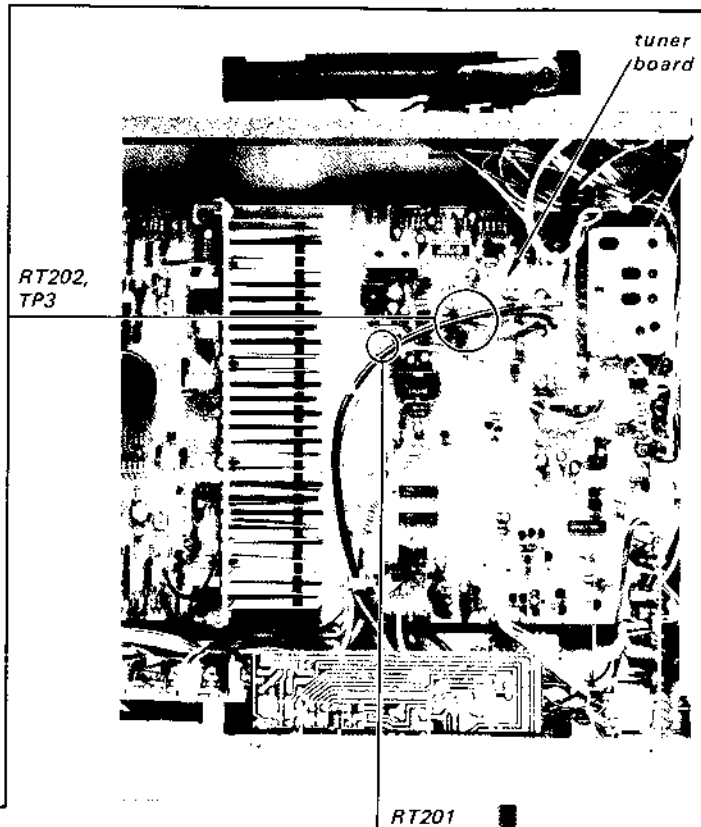
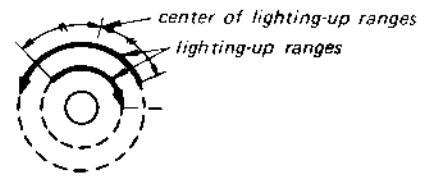
1. Tune the set to 98MHz.
2. Adjust RT202 for 76kHz  $\pm$ 100Hz reading on the frequency counter.

### B) Simple Method

#### Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RT202 clockwise or counterclockwise and memorize the lighting-up ranges of STEREO lamp.

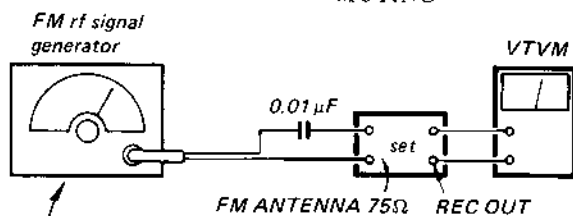
3. Secure RT202 at the center of the lighting-up range of both turns as shown below.



## FM STEREO SEPARATION ADJUSTMENT

### Setting:

FUNCTION switch: TUNER  
 FM/MW/LW switch: FM  
 MODE switch: STEREO/FM-AM MUTING



Carrier frequency: 98MHz  
 Output level: 1mV (60dB)  
 Modulation:  
 Audio (400Hz): 16.25kHz deviation  
 Pilot (19kHz): 7.5kHz deviation  
 Sub channel (38kHz): 16.25kHz deviation

### Procedure:

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	(A)
R-CH	L-CH	(B) Adjust RT301 resistor for minimum reading.
R-CH	R-CH	(C)
L-CH	R-CH	(D) Adjust RT301 resistor for minimum reading.

L-CH Stereo Separation: (A) -- (B)  
 R-CH Stereo Separation: (C) (D)

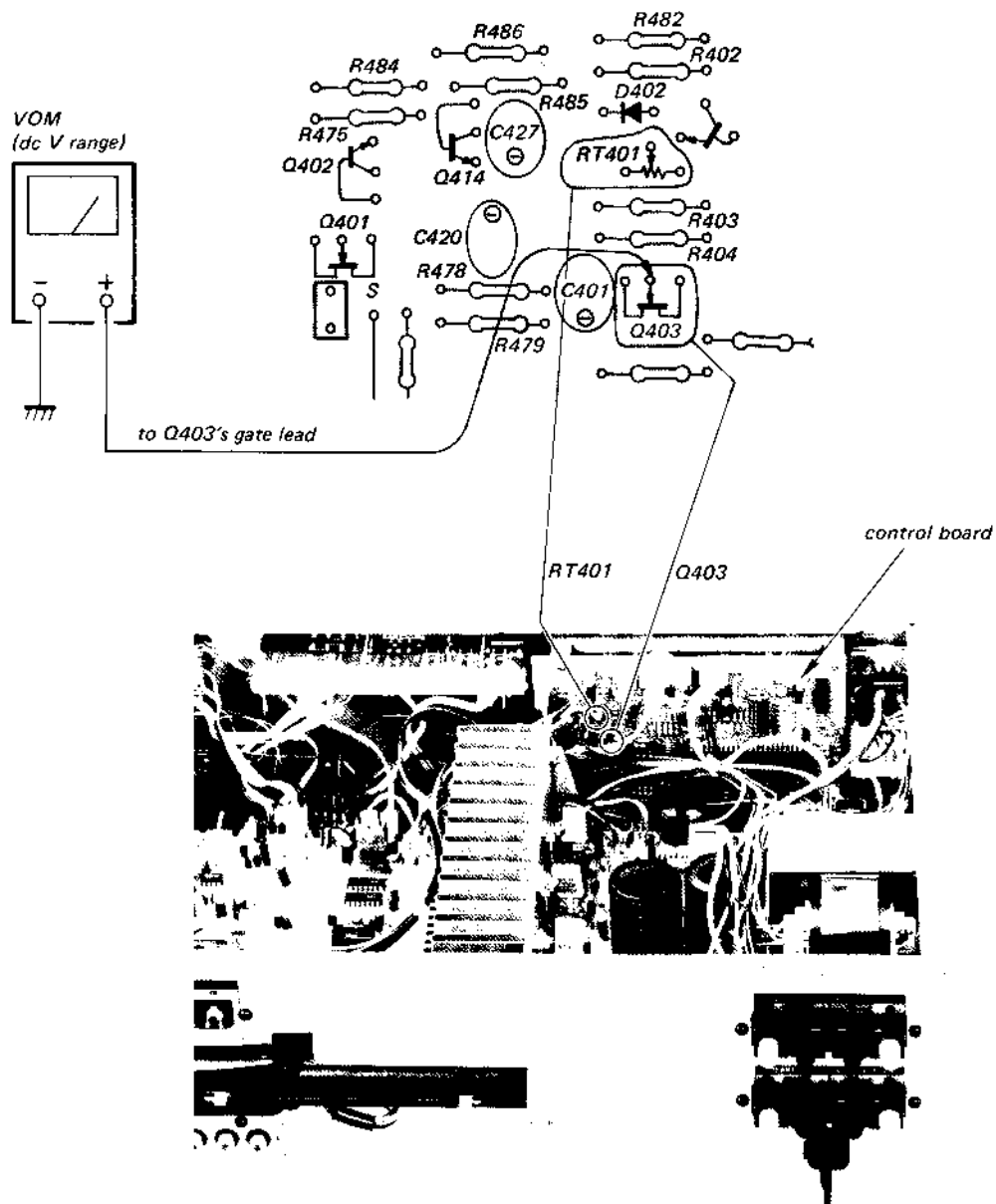
The separations of both channels should be equal.

## PLL ADJUSTMENT

## Setting:

FM/MW/LW switch: FM

## Setting Up and Adjustment Location:



## Procedure:

1. Tune the set to 98MHz.
2. Turn RT401 to its clockwise stop.
3. Turn RT401 counterclockwise to obtain 1.8V dc at the gate lead of Q403.



## 3-3. AM SECTION

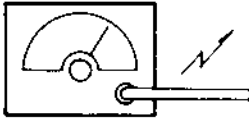
### MW Section

Setting:

FUNCTION switch TUNER

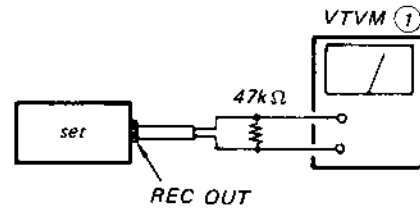
FM/MW/LW switch: MW

AM rf signal generator



Put the lead-wire antenna close to the set.

Modulation: 400Hz, 30%



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

### AM I-F ALIGNMENT

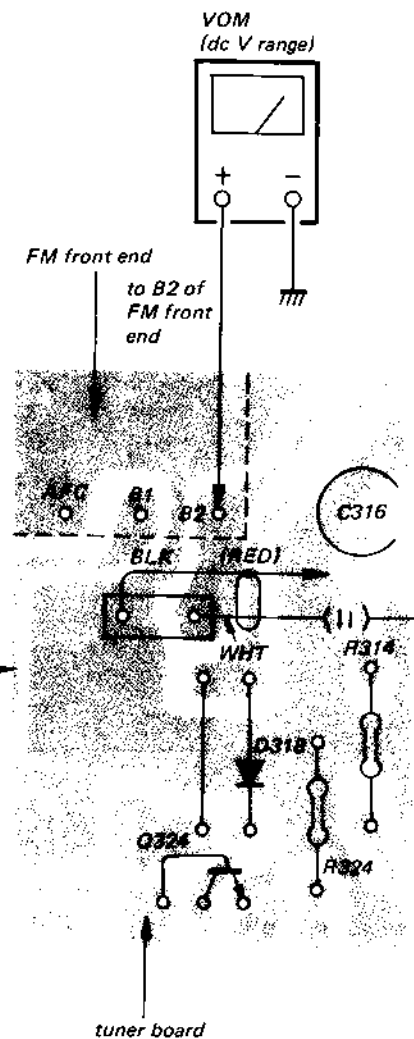
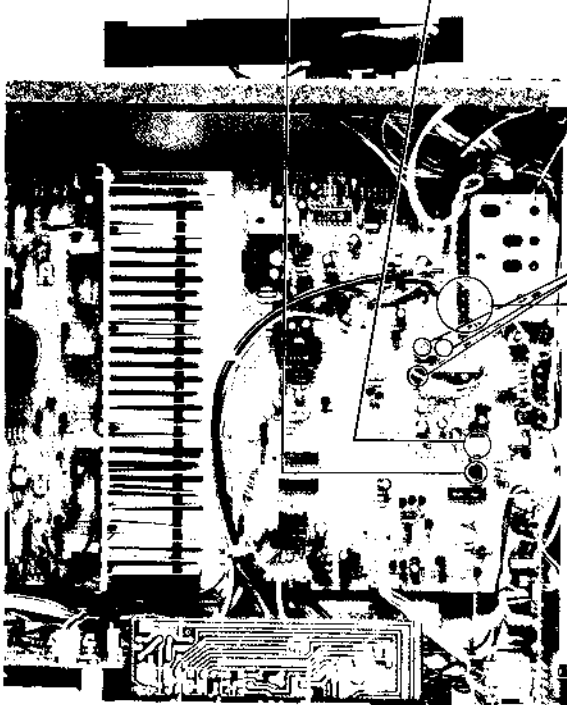
When IFT301 through 303 are replaced, they do not need readjustment since they have been factory-adjusted.

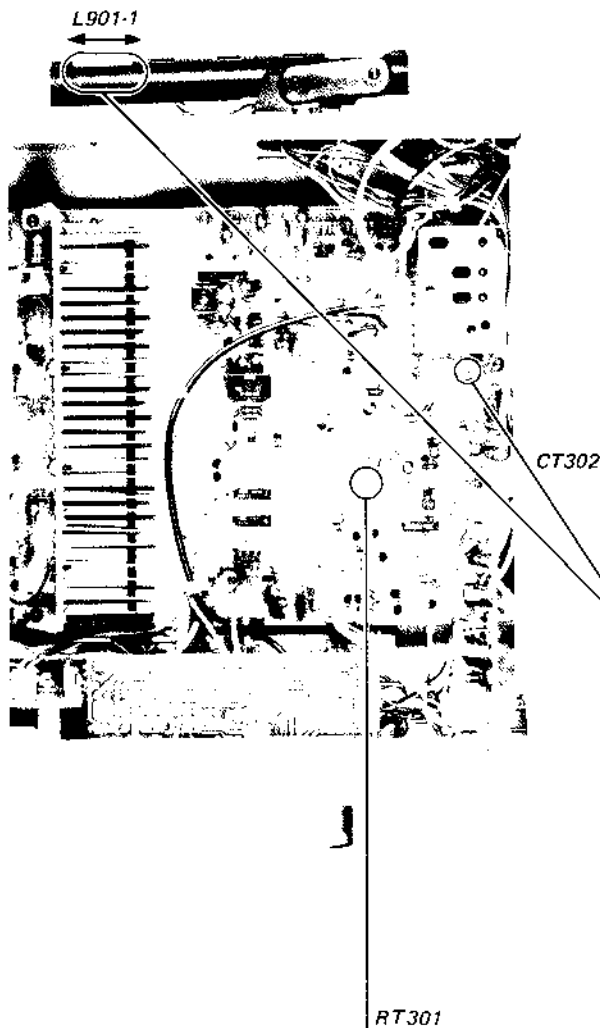
### MW FREQUENCY COVERAGE ADJUSTMENT

Frequency Dial Indication	1,602kHz	522kHz
VOM reading	22V	1.5V
Adjust	CT304	L303

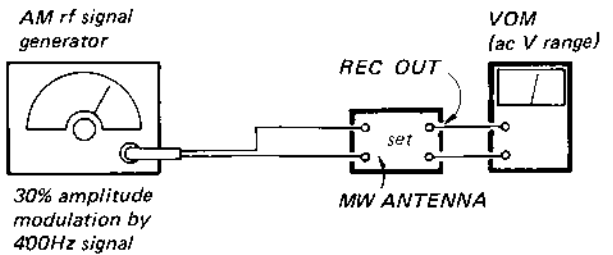
CT304

L303





**MW TRACKING ADJUSTMENT**



Output level: 30 – 100 $\mu$ V (30 – 40dB)  
 Carrier frequency: 603kHz or 1,404kHz

**Procedure:**

Tune the set to the frequency of AM rf signal generator and adjust L901-1 and CT302 for maximum reading on the VOM.

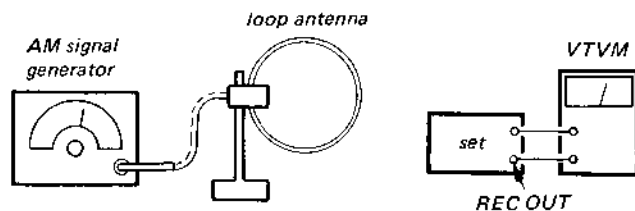
	AM Rf Signal Generator Frequency	Adjust	VOM Reading
1	603kHz	L901-1	maximum
2	1,404kHz	CT302	

**Note:** Repeat the above adjustment several times ending with CT302.

**TUNING LEVEL ADJUSTMENT**

**Setting:**

TUNING LEVEL LOW switch: ON



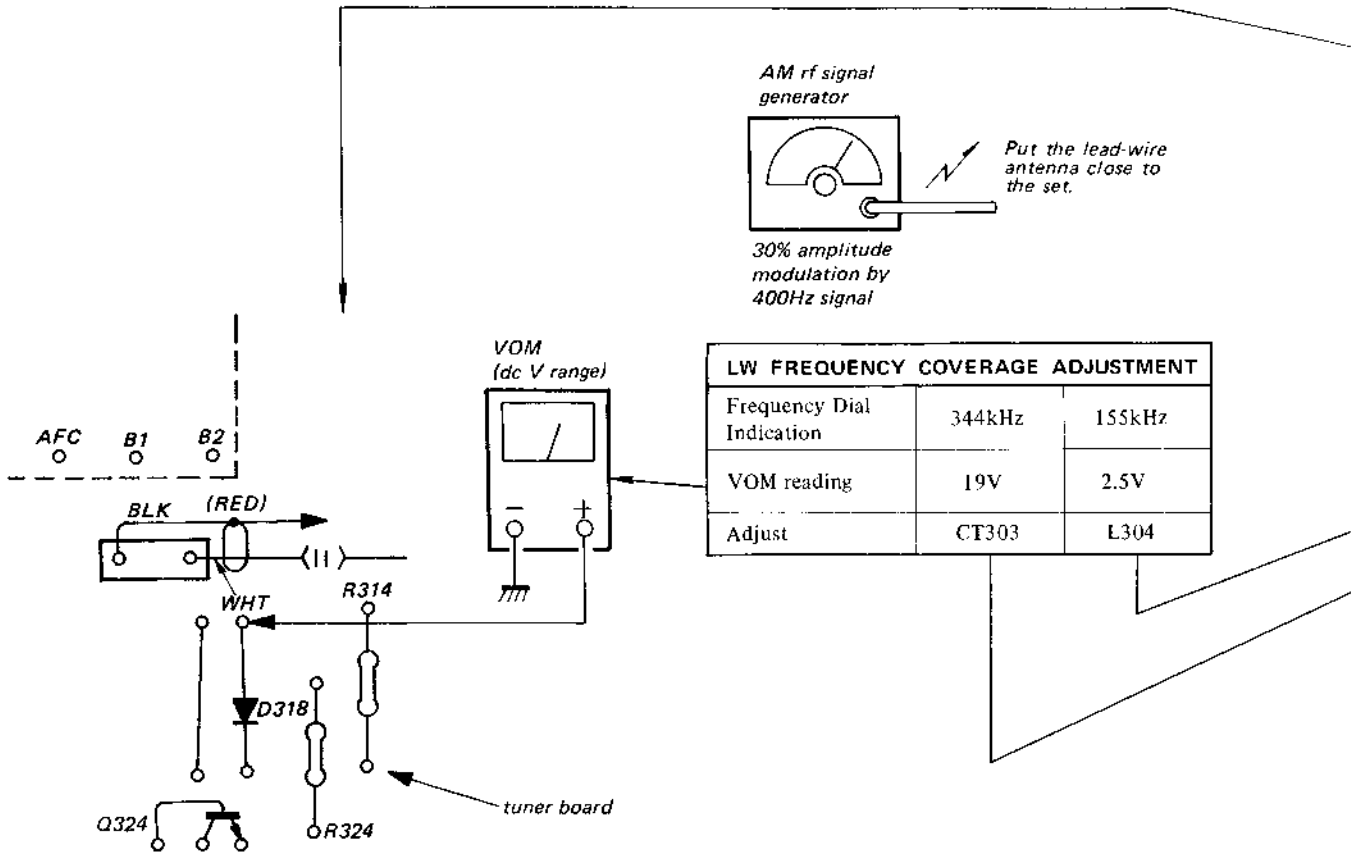
Carrier frequency: 1,000kHz  
 Output level: 0.02V (86dB)  
 Modulation: 400Hz, 30%

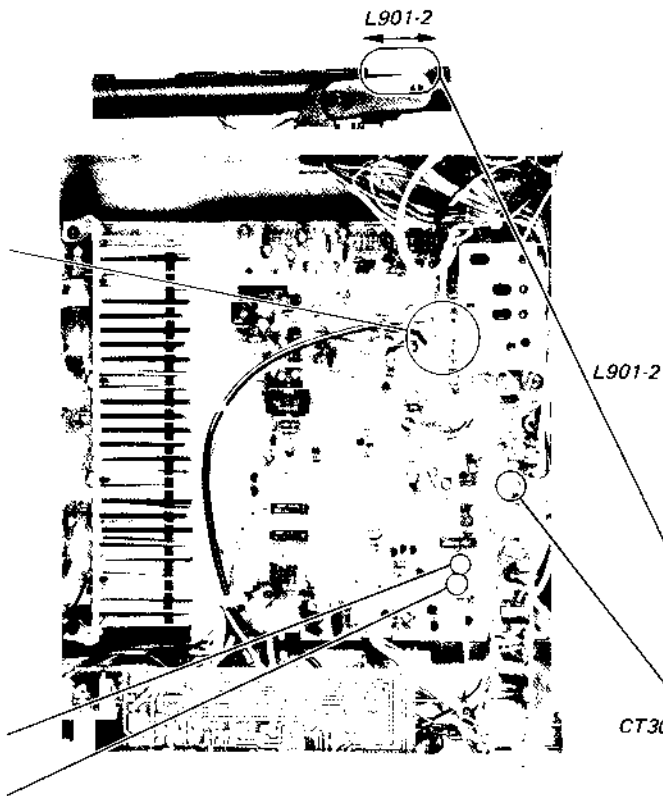
**Procedure:**

1. Place the loop antenna at a distance of 60cm (23 $\frac{3}{8}$ "') away from the ferrite-rod antenna in the set.
2. Turn RT301 until the VTVM indication drops to 0V with the output level of AM signal generator of 86  $\pm$  4dB.

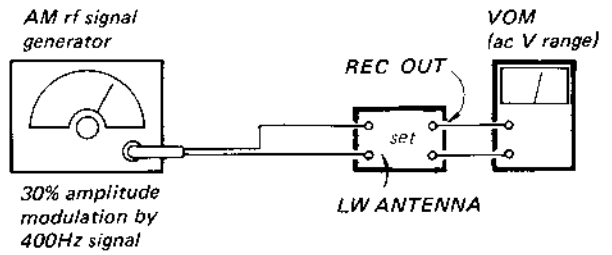
# STR-V45L

## LW Section





**LW TRACKING ADJUSTMENT**



30% amplitude modulation by 400Hz signal

Output level: 30 – 100 $\mu$ V (30 – 40dB)  
Carrier frequency: 173kHz or 308kHz

**Procedure:**

Tune the set to the frequency of AM rf signal generator and adjust L901-2 and CT301 for maximum reading on the VOM.

	AM Rf Signal Generator Frequency	Adjust	VOM Reading
1	173kHz	L901-2	maximum
2	308kHz	CT301	

**Note:** Repeat the above adjustment several times ending with CT301.



A B C D E F G H

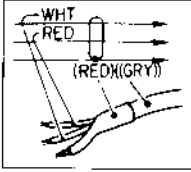
1

[DISPLAY BOARD]

[CONTROL BOARD]

Note:

- Color code of sleeving over the end of the jacket.



- [ ] : indicates side identified with part number.
- [ ] : B + pattern

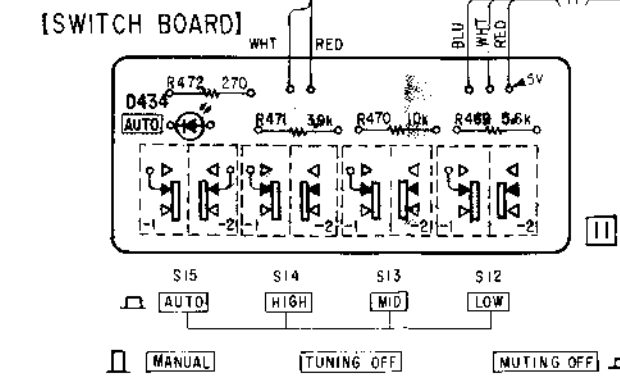
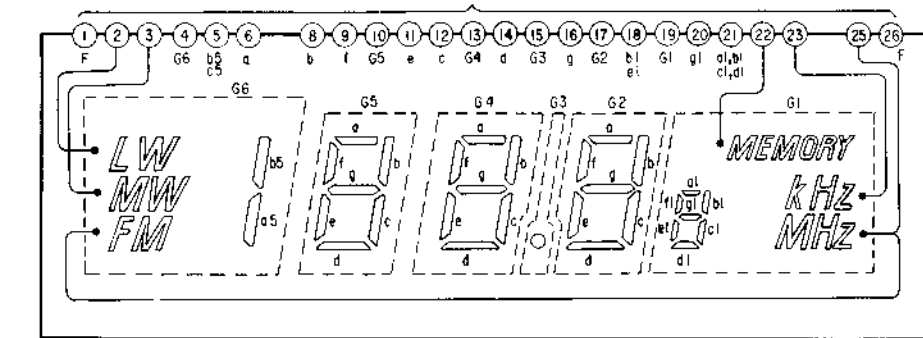
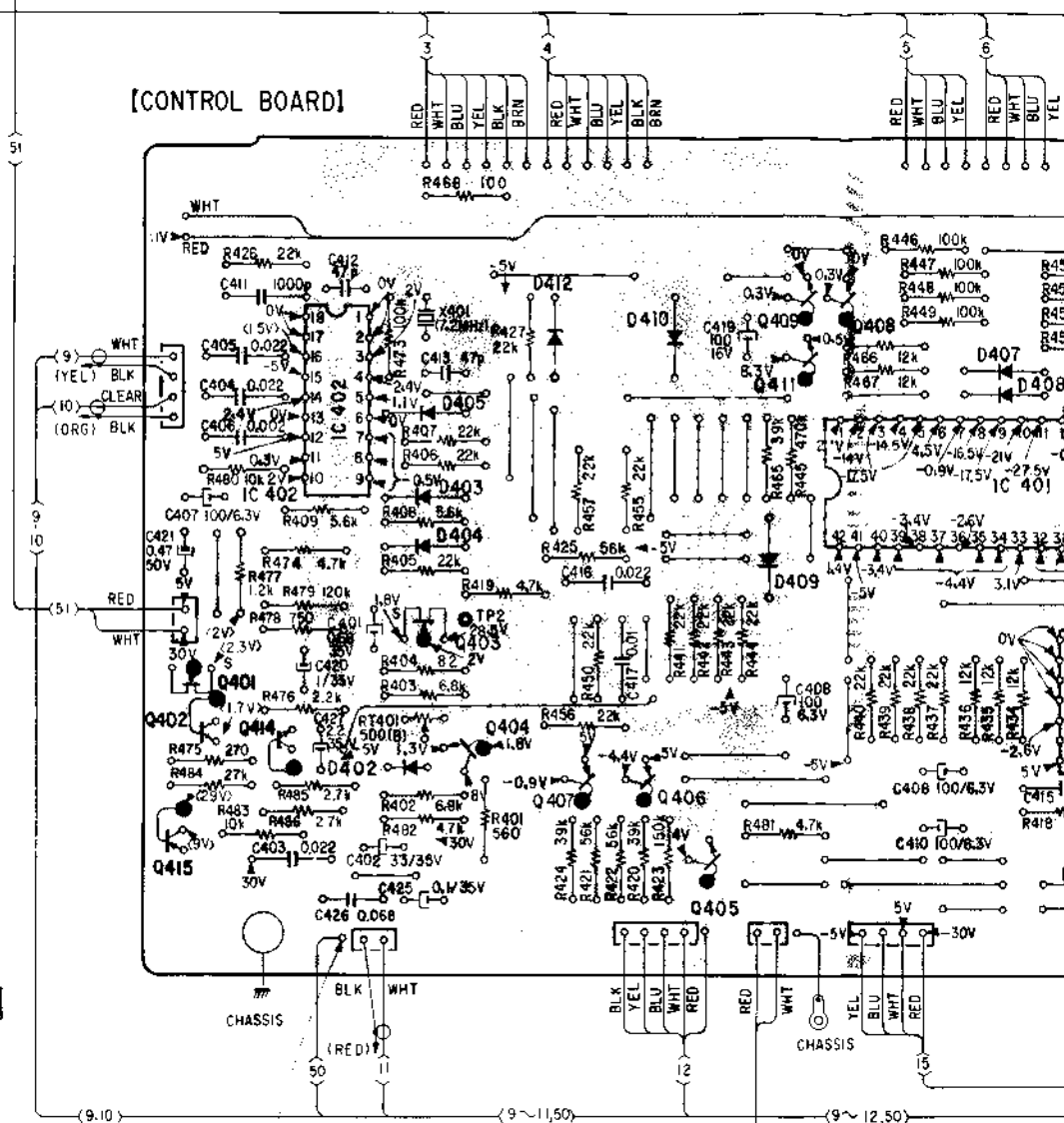
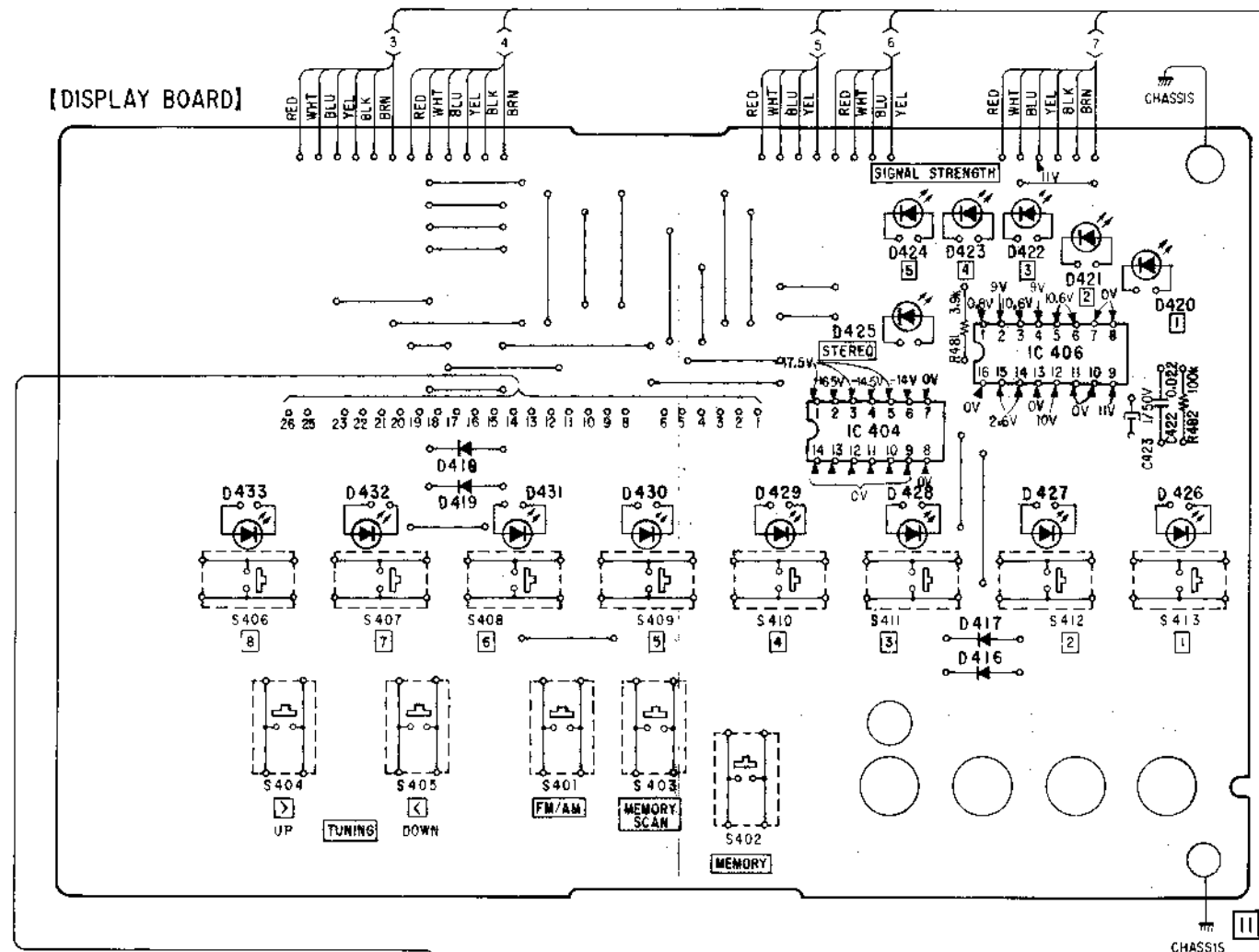
- [ ] : signal path
- [ ] : L-CH signal path
- [ ] : R-CH signal path

2

3

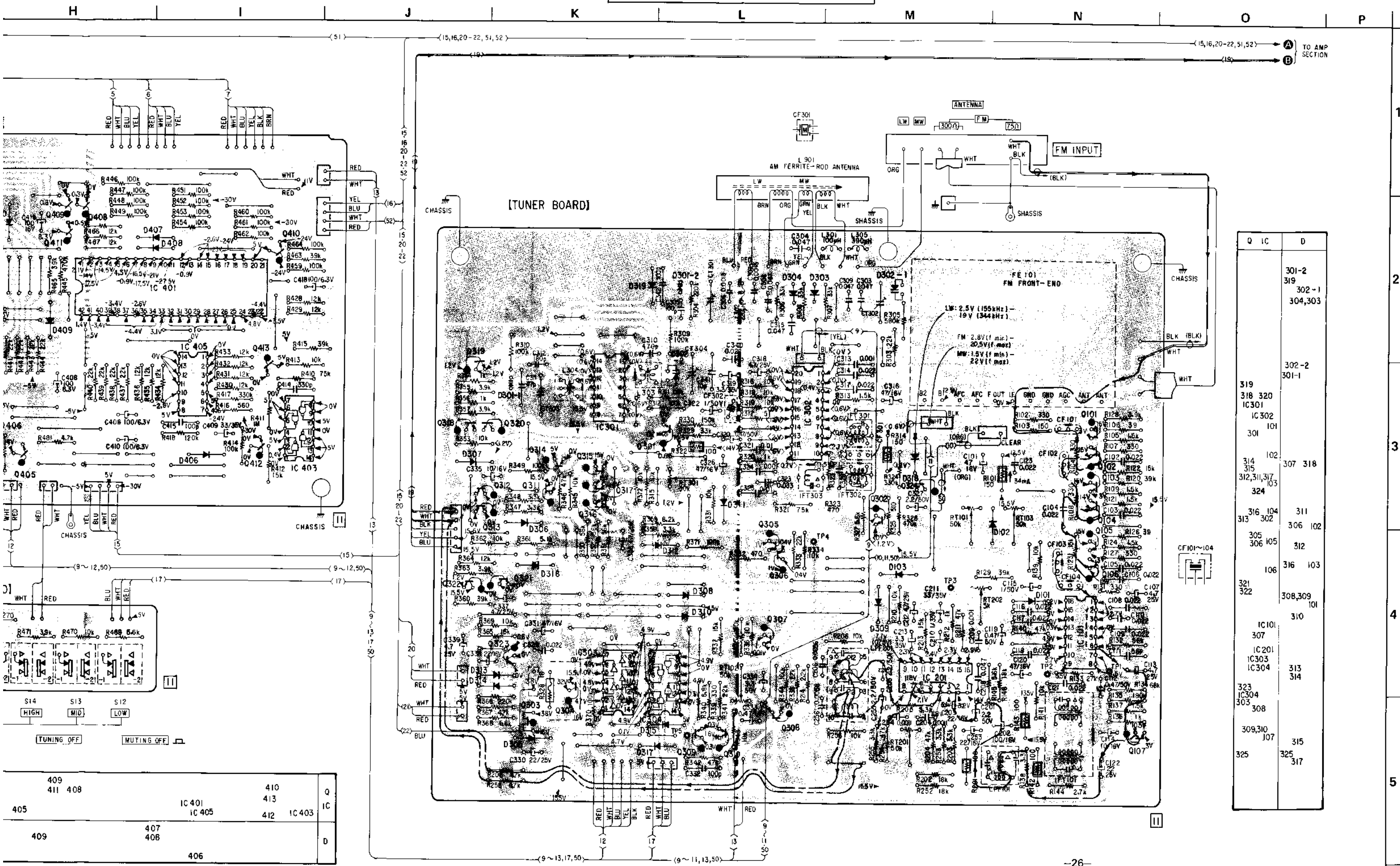
4

5



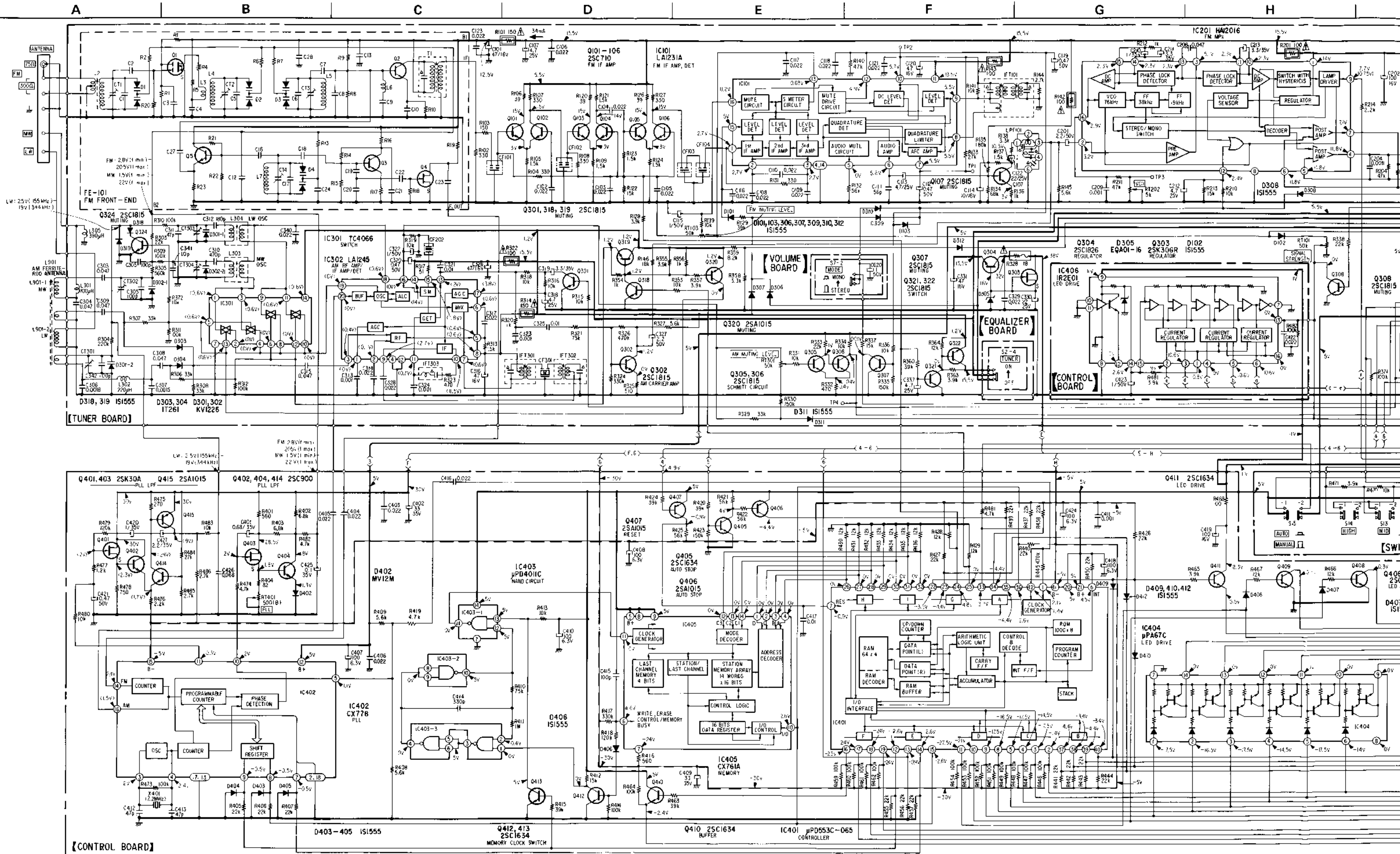
Q											IC404	IC 406				IC 402				409																									
IC																401				403				407				406				405													
																402				404				408				409				408													
D											433	432		418 431		430		429		424		423		424		421		420										407				408			

# STR-V45L STR-V45L

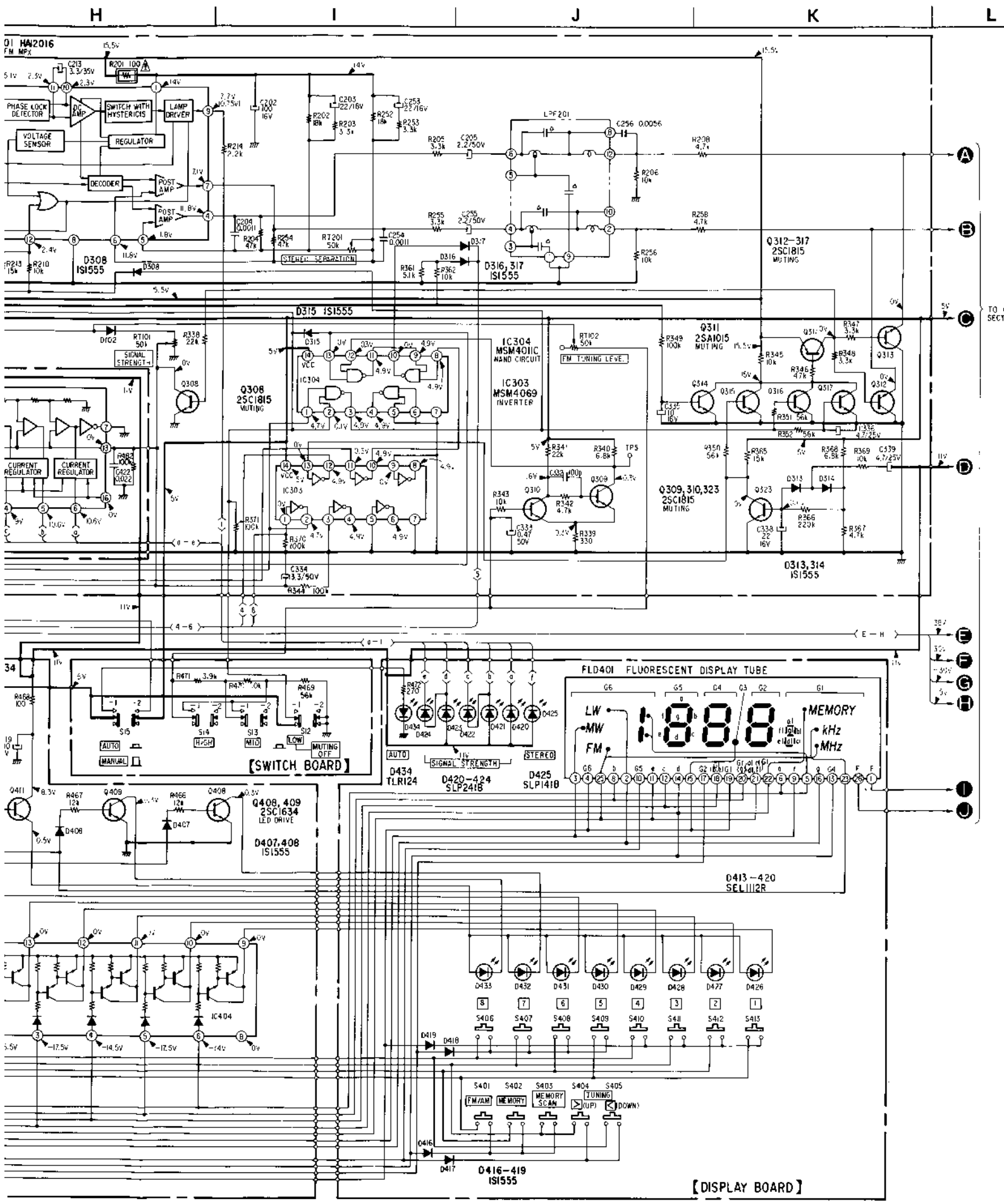


Q	IC	D
		301-2
		319
		302-1
		304,303
		302-2
		301-1
319		
318	320	
	IC 301	
	301	
	101	
	102	
314		307 318
315		
312,311,317		
	103	
	324	
	316 104	311
313	302	306 102
	305	
	306 105	312
	106	316 103
321		
322		308,309
		101
	IC 101	
	307	
	IC 201	
	IC 303	
	IC 304	313
		314
323		
IC 304		
303		308
		309,310
		107
		315
325		325
		317

409		410	Q
411	408	413	IC
405	IC 401	412	IC 403
	IC 405		
409	407		D
	406		
	406		







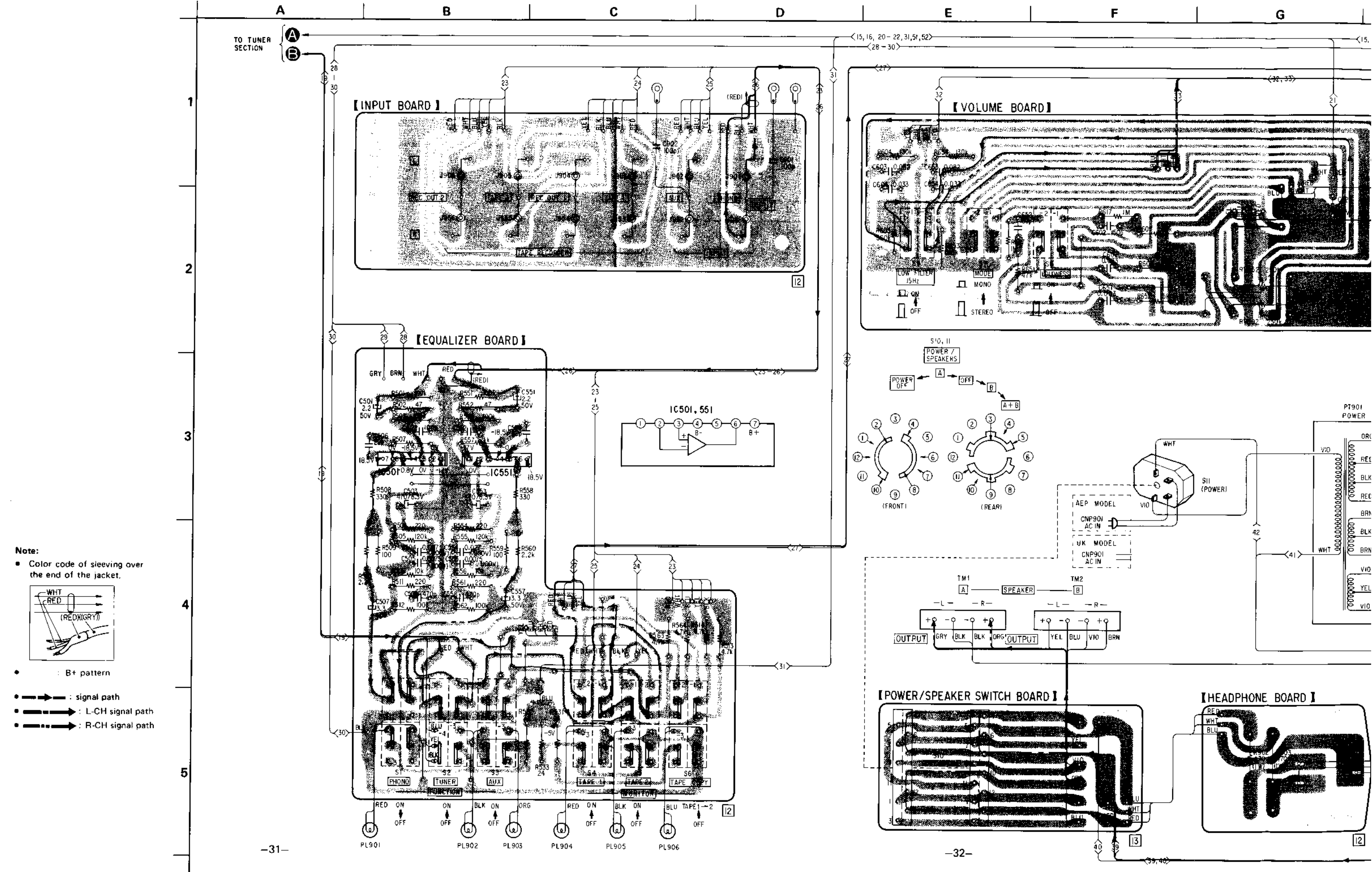
Note:

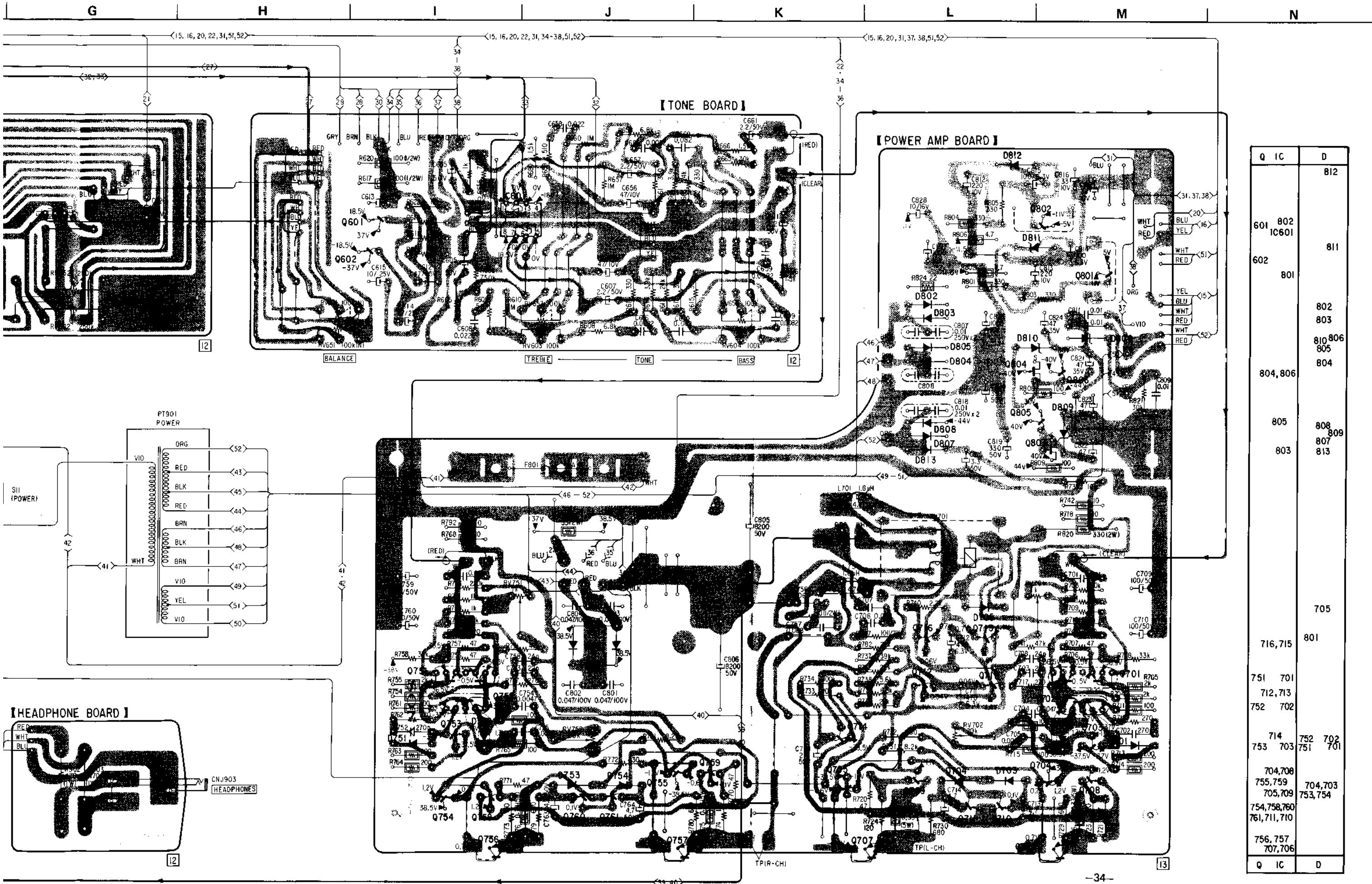
- All capacitors are in  $\mu\text{F}$  unless otherwise noted.  $\text{pF} : \mu\text{F}$  50WV or less are not indicated except for electrolytics.
- All resistors are in ohms,  $\frac{1}{4}\text{W}$  unless otherwise noted.  $\text{k}\Omega : 1000\Omega$ ,  $\text{M}\Omega : 1000\text{k}\Omega$ .
- $\Delta$  : internal component.
- $\square$  : panel designation.
- $\square$  : adjustment for repair.
- $\text{---}$  : B+ bus.
- $\text{---}$  : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Readings are taken under no-signal (detuned) conditions with a VOM (20  $\text{k}\Omega/\text{V}$ ).
- $\square$  : FM STEREO
- $\square$  : AM
- $\square$  : no mark - FM
- $\square$  : signal path

Semiconductor Lead Layouts:

<p><b>2SA1015</b></p>	<p><b>2SK30-GR</b> <b>2SK30A</b> <b>2SK30A-GR3</b></p>	<p><b>MB84069B</b> <b>MSM4011C</b> <b>MSM4069</b> <b><math>\mu\text{PD4011C}</math></b></p>	<p><b>MV12N</b></p>
<p><b>2SC710</b> <b>2SC710-14</b></p>	<p><b>CX761A</b> <b><math>\mu\text{PD553C065}</math></b></p>	<p><b>TC4066</b> <b><math>\mu\text{PA67C}</math></b> <b><math>\mu\text{PD4066C}</math></b></p>	<p><b>TLR124</b></p>
<p><b>2SC900</b> <b>2SC1362</b> <b>2SC1364</b> <b>2SC1634</b> <b>2SC1815</b></p>	<p><b>CX778</b></p>	<p><b>EQA01-16</b> <b>EQB01-16</b></p>	<p><b>KV1226</b></p>
<p><b>2SC1826</b></p>	<p><b>HA12016</b></p>	<p><b>1S1555</b> <b>1T26</b> <b>1T261</b></p>	<p><b>SEL1112R</b></p>
<p><b>2SC1986</b></p>	<p><b>IR2E01</b> <b>LA1231</b> <b>LA1231A</b> <b>LA1245</b></p>	<p><b>SLP141B</b> <b>SLP241B</b></p>	

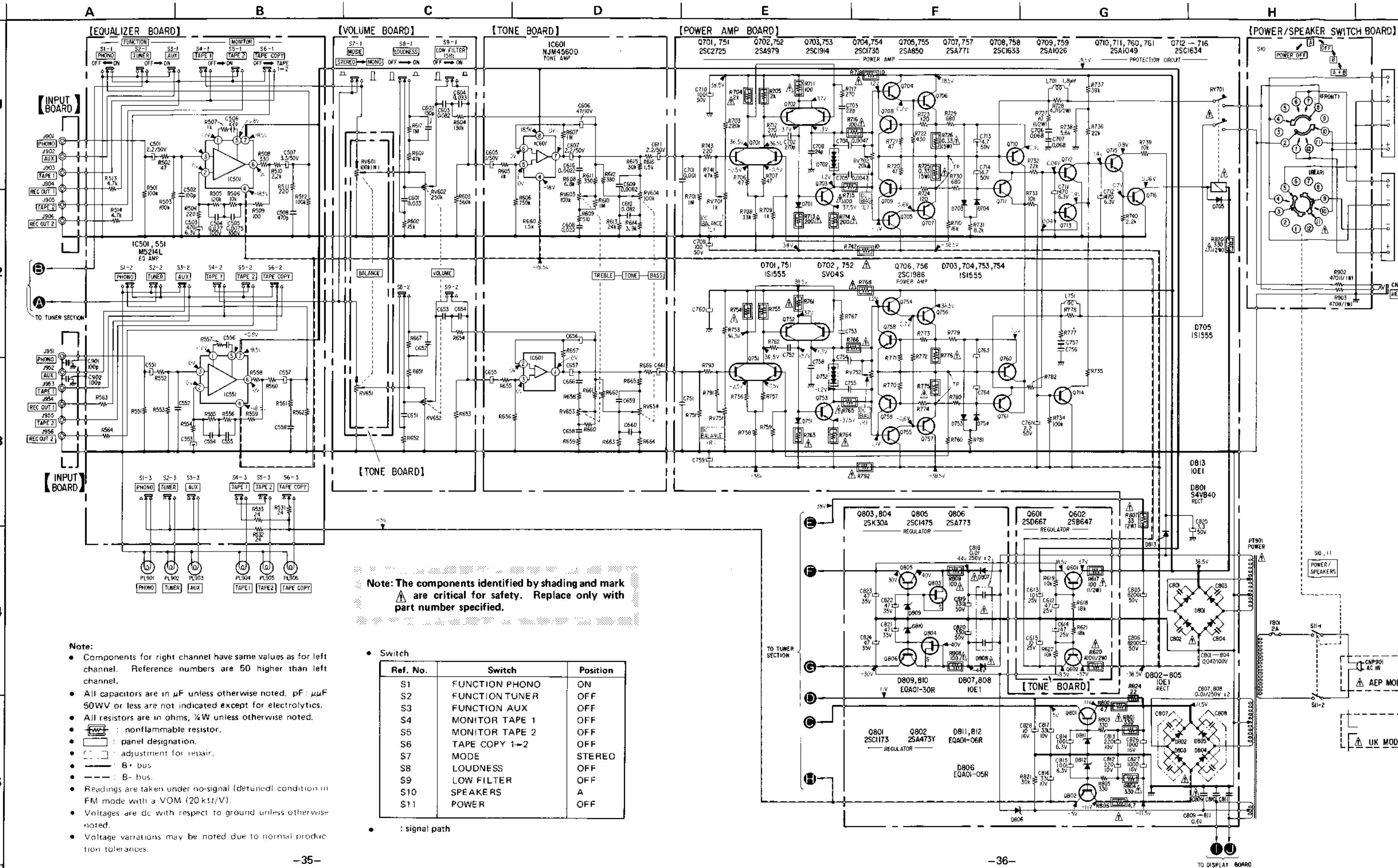
Note: The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

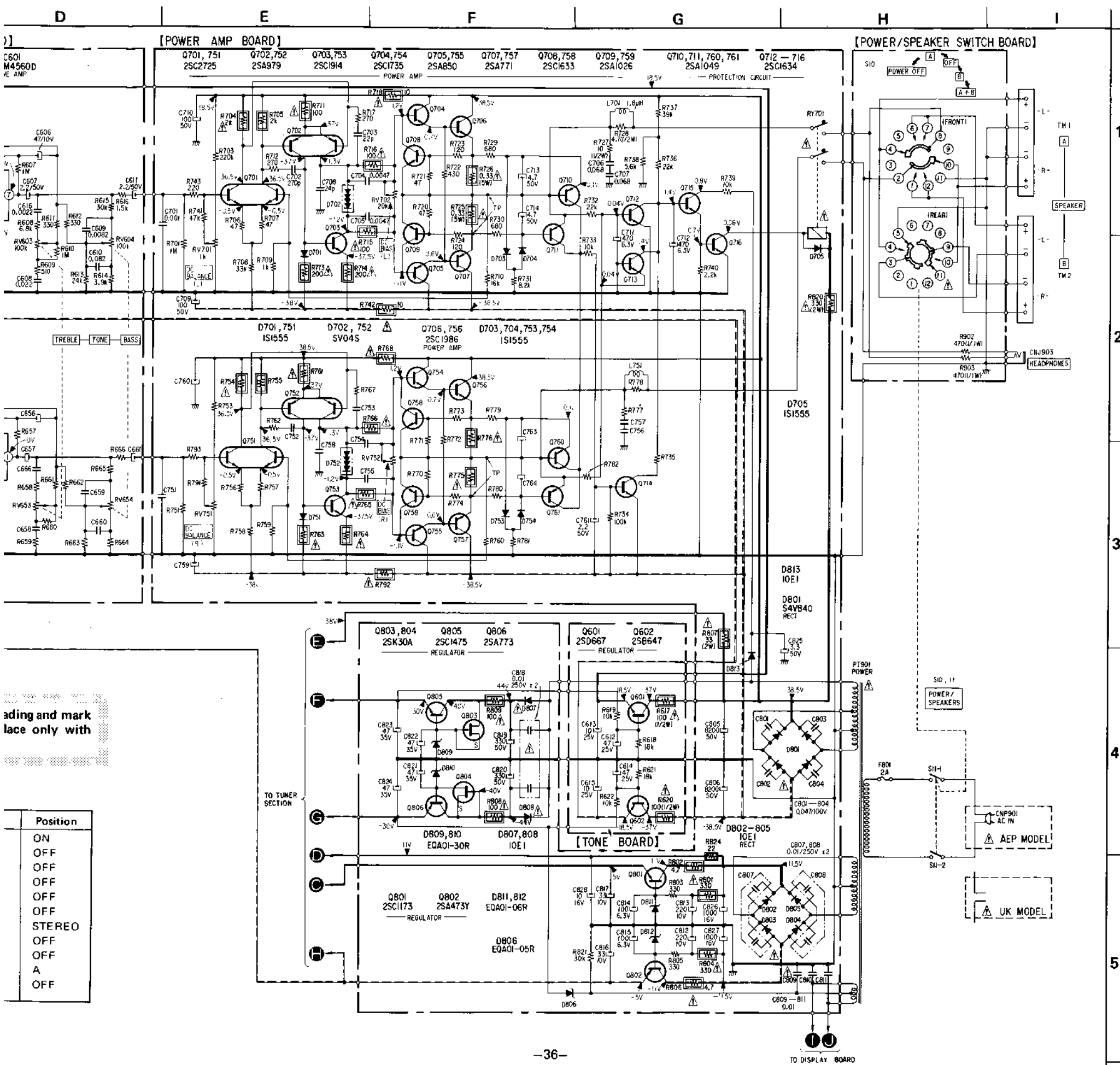




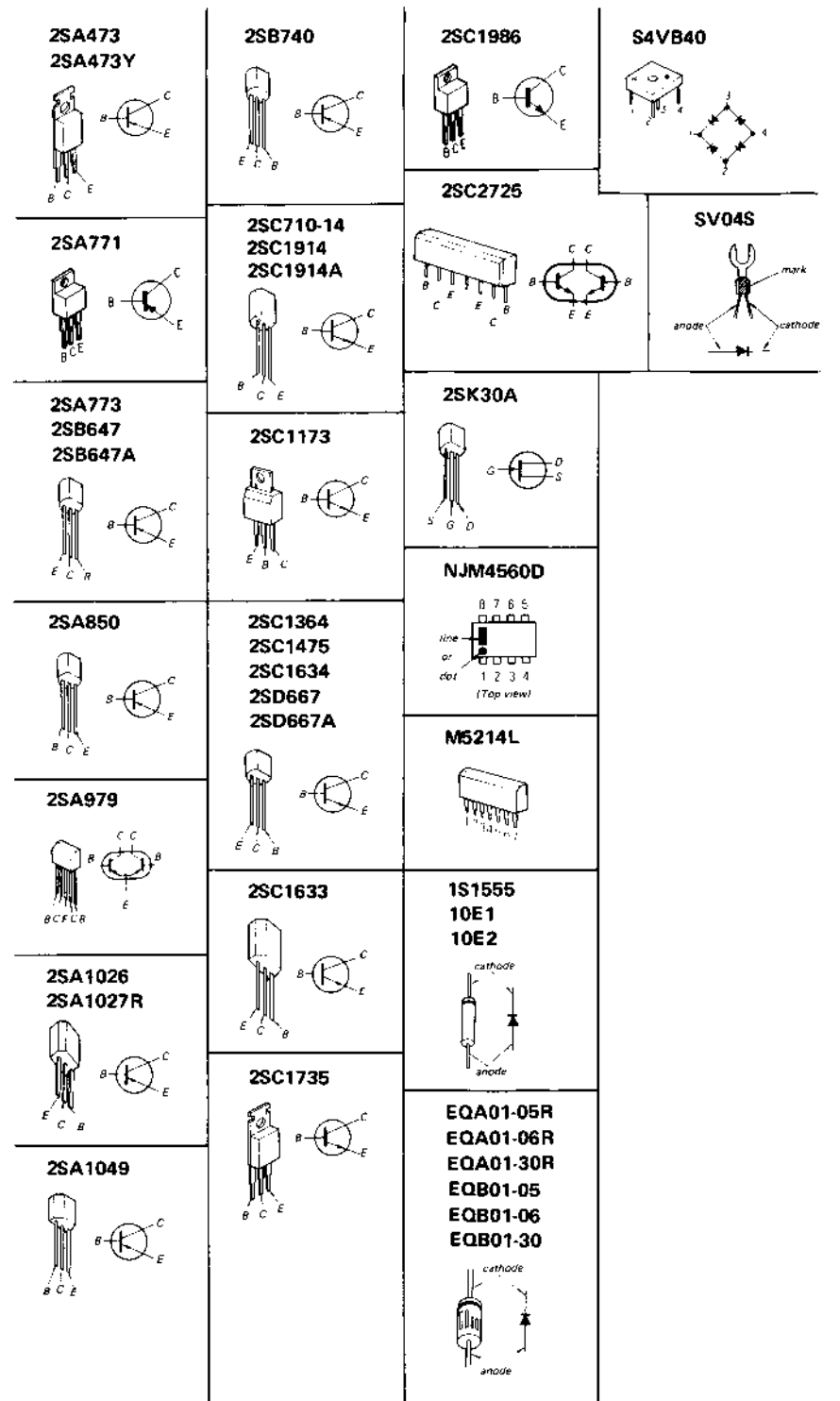
Q	IC	D
		812
601	802	
	IC601	
602		811
	801	
		802
		803
		810, 806
		805
		804
804, 806		
		808
805		809
		807
803		813
		705
		801
716, 715		
751	701	
712, 713		
752	702	
		702
714	752	702
753	703	751
		701
704, 708		
755, 759		704, 703
705, 709		753, 754
754, 758, 760		
761, 711, 710		
756, 757		
707, 706		
Q	IC	D

4-4. SCHEMATIC DIAGRAM — Amp Section —





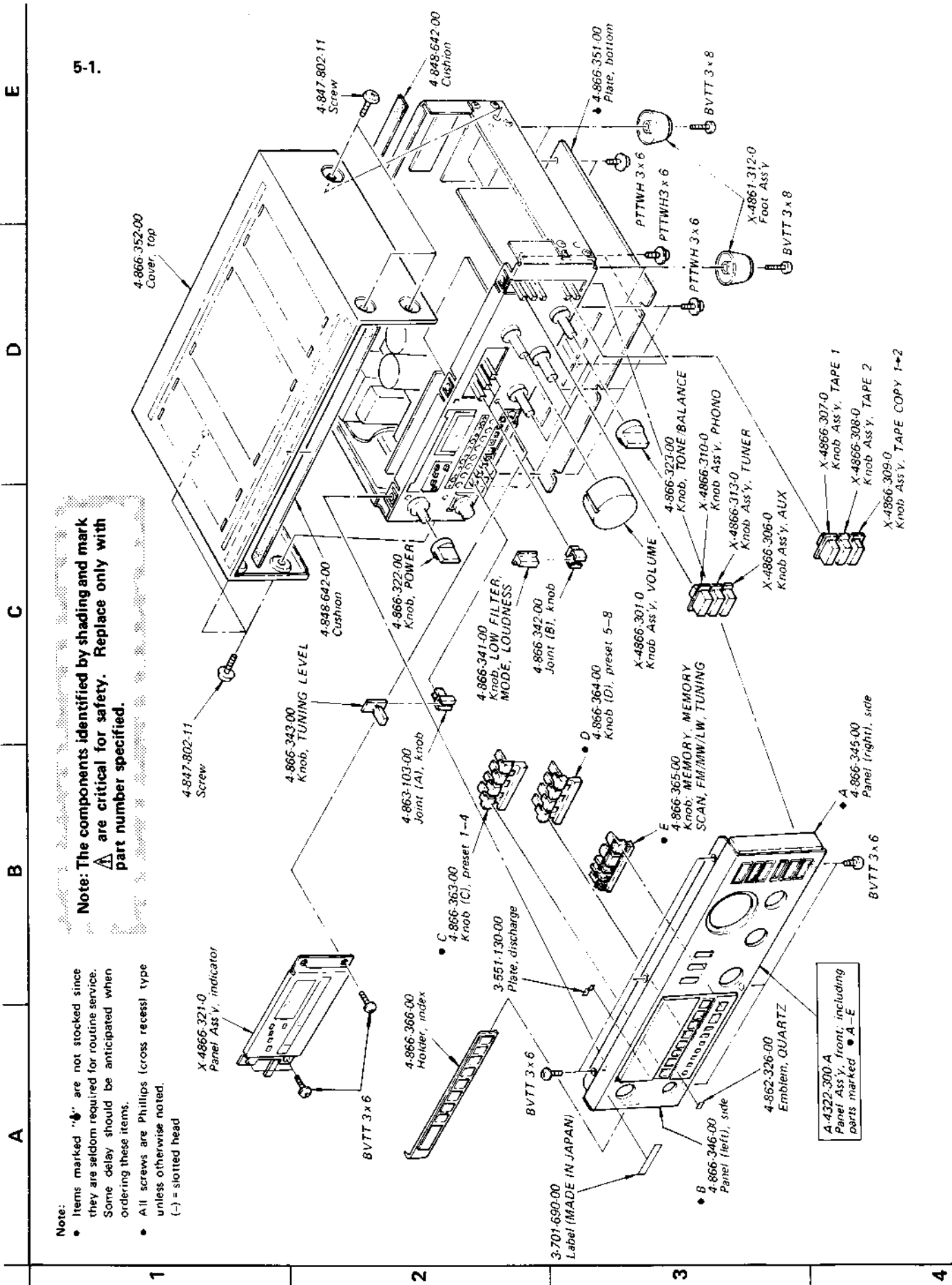
Semiconductor Lead Layouts:



adding and mark  
face only with

Position
ON
OFF
OFF
OFF
OFF
OFF
STEREO
OFF
OFF
A
OFF

SECTION 5  
EXPLODED VIEWS



Note: The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

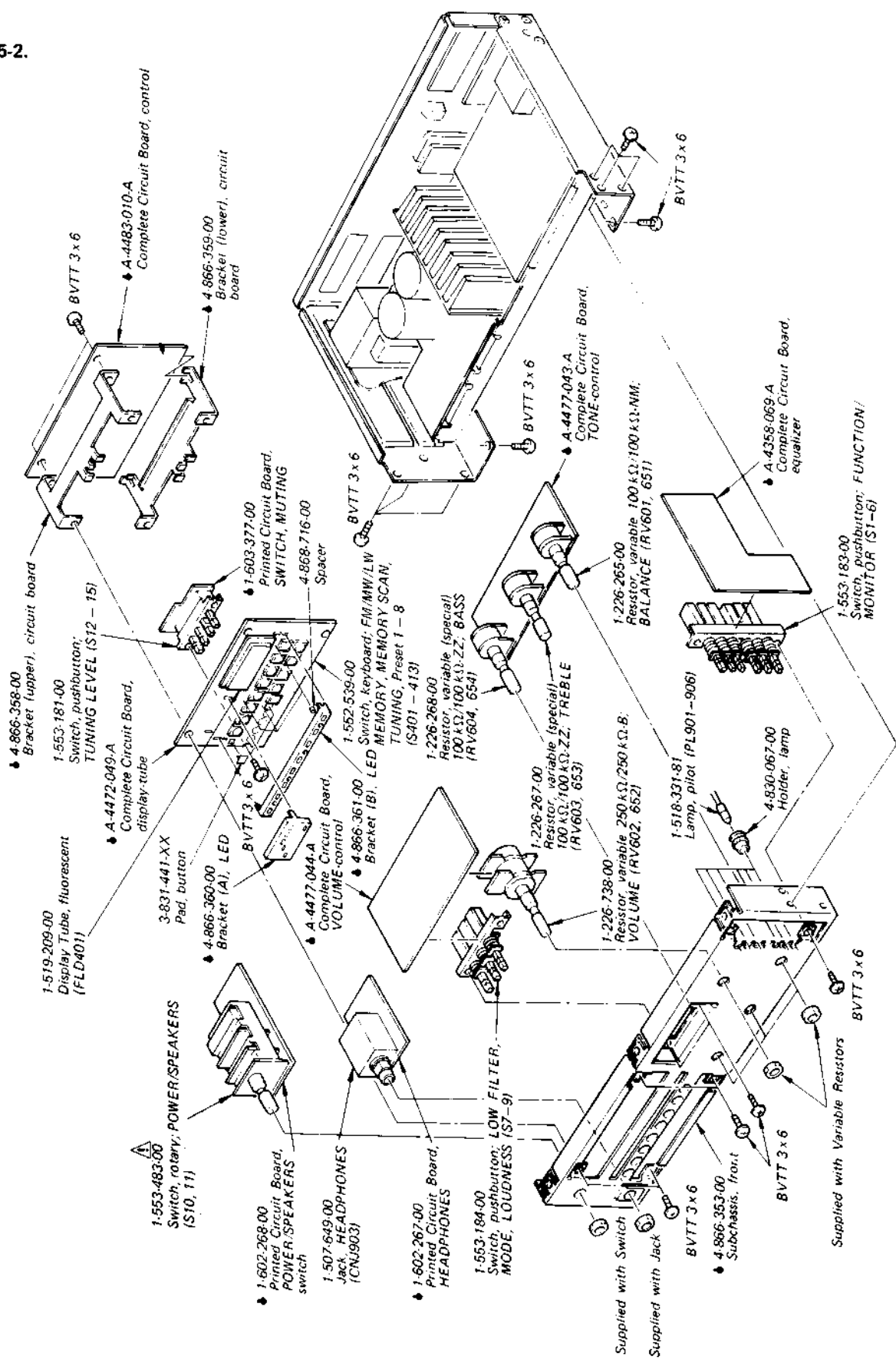
Note:

- Items marked "H" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

A-4322-300 A  
Panel Ass'y, front; including parts marked A-E

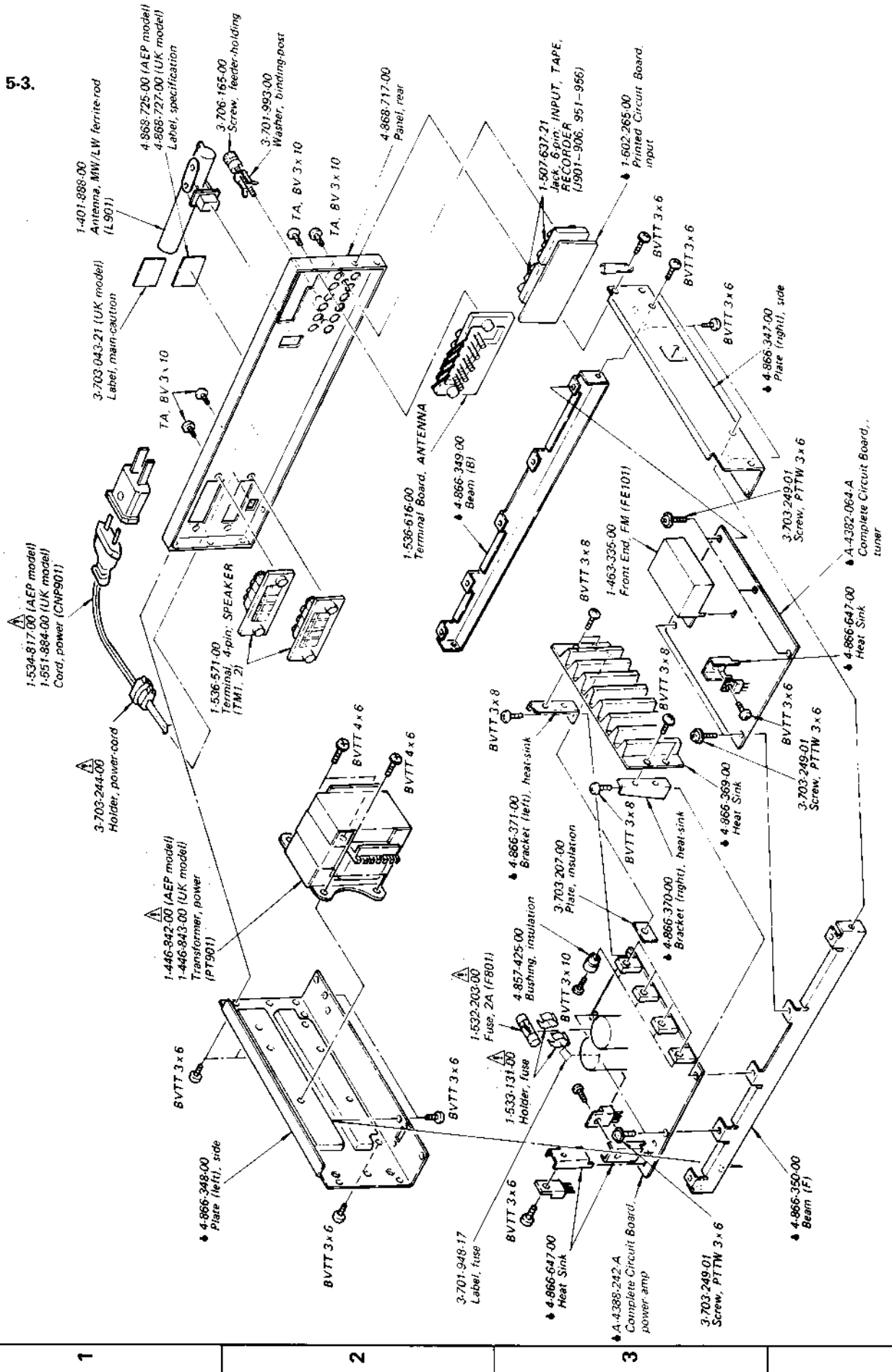
5-2.

A B C D E



53.

A B C D E





**SECTION 6  
ELECTRICAL PARTS LIST**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
<b>SEMICONDUCTORS</b>			<b>ICs</b>		
<b>Transistors</b>			IC101	8-759-812-31	LA1231
Q101-106	8-729-671-14	2SC710-14	IC201	8-759-320-16	HA12016
Q107	8-729-663-47	2SC1364	IC301	8-759-140-66	μPD4066C
Q301, 302	8-729-663-47	2SC1364	IC302	8-759-812-45	LA1245
Q303	8-729-203-04	2SK30A	IC303	8-759-984-69	MB84069B
Q304	8-729-398-62	2SC1986	IC304	8-759-140-11	μPD4011C
Q305-310	8-729-663-47	2SC1364	IC401	8-759-153-65	μPD553C065
Q311	8-729-201-52	2SA1015	IC402	8-759-607-78	CX778
Q312-319	8-729-634-47	2SC1364	IC403	8-759-140-11	μPD4011C
Q320	8-729-201-52	2SA1015	IC404	8-759-100-67	UPA67C
Q321-324	8-729-634-47	2SC1364	IC405	8-757-611-00	CX761A
Q401	8-729-203-05	2SK30A-GR3	IC406	8-759-920-10	IR2E01
Q402	8-729-665-47	2SC1362	IC501, 551	8-759-652-14	M5214L
Q403	8-729-203-05	2SK30A-GR3	IC601	8-759-745-60	NJM4560D
Q404	8-729-665-47	2SC1362	<b>Diodes</b>		
Q405	8-729-663-47	2SC1364	D101-103	8-719-815-55	1S1555
Q406, 407	8-729-201-52	2SA1015	D301, 302	8-719-912-27	KV1226
Q408-413	8-729-663-47	2SC1364	D303, 304	8-712-600-00	1T26
Q414	8-729-665-47	2SC1362	D305	8-719-931-16	EQB01-16
Q601	8-729-906-72	2SD667A	D306-319	8-719-815-55	1S1555
Q602	8-729-300-72	2SB647A	D402	8-719-912-00	MV-12N
Q701, 751	8-729-672-52	2SC2725	D403-412	8-719-815-55	1S1555
Q702, 752	8-729-697-92	2SA979	D416-419	8-719-815-55	1S1555
Q703, 753	8-729-601-42	2SC1914A	D420-424	8-719-922-41	SLP241B
Q704, 754	8-729-673-53	2SC1735	D425	8-719-900-41	SLP141B
Q705, 755	8-729-685-03	2SA850	D426-433	8-719-311-12	SEL1112R
Q706, 756	8-729-398-62	2SC1986	D434	8-719-812-41	TLR124
Q707, 757	8-729-377-12	2SA771	D701, 751	8-719-815-55	1S1555
Q708, 758	8-729-663-47	2SC1364	D703, 753		
Q709, 759	8-729-612-77	2SA1027R	D704, 754		
Q710, 760 Q711, 761	8-729-204-91	2SA1049	D705		
Q801	8-729-217-33	2SC1173	D702, 752	8-719-300-11	SV04S
Q802	8-729-247-33	2SA473	D801	▲8-719-504-40	S4VB40
Q803, 804	8-729-203-04	2SK30A	D802-805	▲8-719-200-02	10E2
Q805	8-760-413-10	2SC1475	D806	8-719-931-05	EQB01-05
Q806	8-729-374-02	2SB740	D807, 808	▲8-719-200-02	10E2

• Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.**

# STR-V45L

Ref. No.	Part No.	Description
D809, 810	8-719-931-30	EQB01-30
D811, 812	8-719-931-06	EQB01-06

## CAPACITORS

All capacitors are in  $\mu$ F. Common capacitors are omitted.  
Refer to the lists on pages 44 and 45 for their part numbers.

C801-804	$\Delta$ 1-108-385-00	0.047	100V	mylar
C807, 808 C818	$\Delta$ 1-102-394-00	0.01	250V	ceramic
C809-811	$\Delta$ 1-161-330-51	0.01	25V	film
C819, 820	$\Delta$ 1-123-515-00	330	50V	electrolytic
CT301, 302	1-141-180-00			Trimmer
CT303, 304	1-141-171-00			Trimmer

## RESISTORS

All resistors are in ohms. Common  $\frac{1}{4}$ W carbon resistors are omitted. Refer to the list on page 46 for their part numbers.

R101	$\Delta$ 1-247-107-00	100	$\frac{1}{4}$ W	carbon (nonflammable)
R142, 143	$\Delta$ 1-247-107-00	100	$\frac{1}{4}$ W	carbon (nonflammable)
R201	$\Delta$ 1-247-107-00	100	$\frac{1}{4}$ W	carbon (nonflammable)
R314	$\Delta$ 1-247-111-00	150	$\frac{1}{4}$ W	carbon (nonflammable)
R322	$\Delta$ 1-247-107-00	100	$\frac{1}{4}$ W	carbon (nonflammable)
R328	$\Delta$ 1-212-863-00	18	$\frac{1}{4}$ W	fusible (nonflammable)
R617	$\Delta$ 1-247-216-00	100	$\frac{1}{4}$ W	carbon (nonflammable)
R620	$\Delta$ 1-247-216-00	100	$\frac{1}{4}$ W	carbon (nonflammable)
R704, 754 R705, 755	$\Delta$ 1-247-138-00	2k	$\frac{1}{4}$ W	carbon (nonflammable)

Ref. No.	Part No.	Description
R711, 761 R715, 765 R716, 766 R713, 763 R714, 764	$\Delta$ 1-247-107-00	100 $\frac{1}{4}$ W carbon (nonflammable)
R718, 768	$\Delta$ 1-247-114-00	200 $\frac{1}{4}$ W carbon (nonflammable)
R718, 768	$\Delta$ 1-247-083-00	10 $\frac{1}{4}$ W carbon (nonflammable)
R725, 775 R726, 776	$\Delta$ 1-217-157-00	0.33 5W metal oxide
R727, 777	1-244-825-00	10 $\frac{1}{2}$ W carbon
R728, 778	1-244-817-00	4.7 $\frac{1}{2}$ W carbon
R742, 792	$\Delta$ 1-247-083-00	10 $\frac{1}{4}$ W carbon (nonflammable)
R801	$\Delta$ 1-247-119-00	330 $\frac{1}{4}$ W carbon (nonflammable)
R802	$\Delta$ 1-247-079-00	4.7 $\frac{1}{4}$ W carbon (nonflammable)
R804	$\Delta$ 1-247-119-00	330 $\frac{1}{4}$ W carbon (nonflammable)
R806	$\Delta$ 1-247-079-00	4.7 $\frac{1}{4}$ W carbon (nonflammable)
R807	$\Delta$ 1-206-475-00	33 2W metal oxide (nonflammable)
R808, 809	$\Delta$ 1-247-107-00	100 $\frac{1}{4}$ W carbon (nonflammable)
R820	$\Delta$ 1-206-652-00	330 2W metal oxide (nonflammable)
R824	$\Delta$ 1-247-091-00	22 $\frac{1}{4}$ W carbon (nonflammable)
R902, 903	1-213-139-00	470 1W metal oxide (nonflammable)
RT101-103 RT201, 301	1-226-238-00	50k-B, adjustable; signal meter, FM tuning level, FM muting level, stereo separation, A-M muting level
RT202	1-226-235-00	5k-B, adjustable; VCO
RT401,402	1-226-427-00	500-B, adjustable; PLL
RV601,651	1-226-265-00	100k/100k, variable; BALANCE
RV602, 652	1-226-738-00	250k/250k-B, variable; VOLUME
RV603,653	1-226-267-00	100k/100k, variable; TREBLE
RV604,654	1-226-268-00	100k/100k, variable; BASS

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
RV701,751	1-226-233-00	1k-B, adjustable; dc balance
RV702,752	1-226-237-00	20k-B, adjustable; dc bias

### MISCELLANEOUS

CF101-104	1-527-344-91	Filter, ceramic
CF301	1-527-403-00	Filter, mechanical
CF302	1-527-732-00	Filter, ceramic
CNJ903	1-507-649-00	Jack, HEADPHONES
CNP901	1-534-817-31	Cord, power (AEP model)
	1-551-884-00	Cord, power (UK model)
F801	1-532-203-00	Fuse, 2A
FE101	1-463-335-00	Front End
FLD401	1-519-209-00	Tube, fluorescent-display
IFT101	1-404-258-00	Transformer, discriminator
IFT301	1-409-323-00	Coil, mechanical-filter (PRI)
IFT302	1-409-324-00	Coil, mechanical-filter (SEC)
IFT303	1-404-266-00	Transformer, a-m IF
J901-906 J951-956	1-507-637-21	Jack, phono; 6-unit
L301	1-407-169-XX	100 $\mu$ H, microinductor
L302	1-407-173-XX	220 $\mu$ H, microinductor
L303	1-405-927-00	Coil, MW OSC
L304	1-405-914-00	Coil, LW OSC
L305	1-407-176-XX	390 $\mu$ H, microinductor
L701, 751	1-420-838-00	Coil, air-wound
L901	1-401-888-00	Antenna, LW/MW ferrite-rod
LPF101	1-231-729-00	Filter, lowpass
LPF201	1-231-574-00	Filter, lowpass
PL901-906	1-518-331-81	Lamp, pilot; 6V 35mA
RY701	1-553-227-00	Relay
S7-9	1-553-184-00	Switch, pushbutton; LOW FILTER, MODE, LOUDNESS
S10, 11	1-553-483-00	Switch, rotary; POWER/SPEAKERS
S12-15	1-553-181-00	Switch, pushbutton; TUNING LEVEL
S401-413	1-552-539-00	Switch, keyboard; FM/MW/LW, MEMORY, MEMORY SCAN, TUNING, preset 1-8
TP901	1-446-842-00	Transformer, power (AEP model)
	1-446-843-00	Transformer, power (UK model)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
X401	1-527-731-00	Crystal, quartz
	1-533-131-00	Holder, fuse

### COMPLETE CIRCUIT BOARDS

A-4358-069-A	Equalizer
A-4382-064-A	Tuner
A-4388-242-A	Power Amp
A-4472-049-A	Display
A-4477-043-A	Tone-Control
A-4477-044-A	VOLUME-Control
A-4483-010-A	Control

### PRINTED CIRCUIT BOARDS

1-602-265-00	Input
1-602-267-00	Headphone
1-602-268-00	POWER/SPEAKERS Switch
1-603-377-00	Switch, Muting

### ACCESSORIES AND PACKING MATERIALS

<u>Part No.</u>	<u>Description</u>
1-501-161-00	Antenna, FM-feeder
3-701-630-00	Bag, plastic
3-783-168-11	Manual, instruction
3-795-036-11	Manual, instruction (Dutch and Swedish)
4-809-251-00	Bag, plastic
4-866-398-00	Cushion, top (front)
4-866-399-00	Cushion, bottom (left)
4-868-730-00	Carton
4-868-713-00	Cushion, top (back)
4-868-714-00	Cushion, bottom (right)

## SONY-STANDARD CAPACITORS AND RESISTORS

### ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47						
1.0						I-121-726-00
2.2						I-121-391-00
3.3						I-121-450-00
4.7	→	→	→	I-121-392-00	→	I-121-393-00
	→	→	→	I-121-395-00	→	I-121-396-00
10	→	→	I-121-651-00	I-121-398-00	→	I-121-738-00
22	→	→	I-121-479-00	I-121-480-00	I-121-662-00	I-121-152-00
33	→	→	I-121-403-00	I-121-404-00	I-121-652-00	I-121-405-00
47	→	I-121-352-00	I-121-409-00	I-121-410-00	I-121-653-00	I-121-411-00
100	→	I-121-414-00	I-121-415-00	I-121-416-00	I-121-357-00	I-121-417-00
220	I-121-415-00	I-121-420-00	I-121-421-00	I-121-422-00	I-121-261-00	I-121-423-00
330	I-121-751-00	I-121-805-00	I-121-521-00	I-121-654-00	I-121-655-00	I-121-656-00
470	I-121-424-00	I-121-425-00	I-121-426-00	I-121-733-00	I-121-361-00	I-121-810-00
1000		I-121-736-00	I-121-245-00	I-121-657-00	I-121-388-00	I-123-061-00
2200	I-121-658-00	I-121-659-00	I-121-660-00	I-123-067-00	I-121-984-00	
3300	I-121-661-00	I-123-075-00	I-123-071-00			

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47				
1.0	I-123-249-00	I-123-252-00	I-123-003-00	I-121-168-00
2.2	I-123-250-00	I-123-026-00		I-123-028-00
3.3	I-121-995-00		I-123-004-00	I-123-006-00
4.7	I-123-255-00	I-121-246-00	I-121-759-00	I-123-007-00
10	I-121-126-00	I-121-999-00	I-123-254-00	I-123-008-00
22	I-121-996-00	I-123-253-00	I-123-005-00	I-123-022-00
33	I-121-997-00	I-121-757-00		
47	I-123-251-00	I-121-919-00		
100	I-123-084-00			

### CERAMIC CAPACITORS

CAP. (pF)	RATING							
	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.	
	PART No.		PART No.		PART No.		PART No.	
0.5	I-101-837-00	22	I-102-959-00	150	I-101-361-00	0.001	I-102-074-00	
0.75	I-101-586-00	24	I-102-960-00	160	I-101-367-00	0.0012	I-102-118-00	
1.0	I-102-934-00	27	I-102-961-00	180	I-102-976-00	0.0015	I-102-119-00	
1.5	I-101-576-00	30	I-102-962-00	200	I-102-977-00	0.0018	I-102-120-00	
2.0	I-102-935-00	33	I-102-963-00	220	I-102-978-00	0.0022	I-102-121-00	
3	I-102-936-00	36	I-102-964-00	240	I-102-979-00	0.0027	I-102-122-00	
4	I-102-937-00	39	I-102-965-00	270	I-102-980-00	0.0033	I-102-123-00	
5	I-102-942-00	43	I-102-966-00	300	I-102-981-00	0.0039	I-102-124-00	
6	I-102-943-00	47	I-101-880-00	330	I-102-820-00	0.0047	I-102-125-00	
7	I-102-944-00	51	I-101-882-00	360	I-102-821-00	0.0056	I-102-126-00	
8	I-102-945-00	56	I-101-884-00	390	I-102-822-00	0.0068	I-102-127-00	
9	I-102-946-00	62	I-101-886-00	430	I-102-823-00	0.0082	I-102-128-00	
10	I-102-947-00	68	I-101-888-00	470	I-102-824-00	0.01	I-102-129-00	
11	I-102-948-00	75	I-101-890-00	510	I-101-059-00	0.022	I-101-005-00	
12	I-102-949-00	82	I-102-971-00	560	I-102-115-00	0.047	I-101-006-00	
13	I-102-950-00	91	I-102-972-00	680	I-102-116-00			
15	I-102-951-00	100	I-102-973-00	820	I-102-117-00			
16	I-102-952-00	110	I-102-815-00					
18	I-102-953-00	120	I-102-816-00					
20	I-102-958-00	130	I-101-081-00					

0.001μF = 1,000pF

### CERAMIC (SEMICONDUCTOR) CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.	
	PART No.	PART No.		PART No.	PART No.	
0.001	→	I-161-039-00	0.018	I-161-016-00	I-161-054-00	
0.0012	→	I-161-040-00	0.022	I-161-017-00	I-161-055-00	
0.0015	→	I-161-041-00	0.027	I-161-018-00	I-161-056-00	
0.0018	→	I-161-042-00	0.033	I-161-019-00	I-161-057-00	
0.0022	→	I-161-043-00	0.039	I-161-010-00	I-161-058-00	
0.0027	→	I-161-044-00	0.047	I-161-021-00	I-161-059-00	
0.0033	→	I-161-045-00	0.056	→	I-161-060-00	
0.0039	→	I-161-046-00	0.068	→	I-161-061-00	
0.0047	→	I-161-047-00	0.082	I-161-024-00	I-161-062-00	
0.0056	→	I-161-048-00	0.1	I-161-025-00	I-161-063-00	
0.0068	→	I-161-049-00				
0.0082	I-161-012-00	I-161-050-00				
0.01	I-161-013-00	I-161-051-00				
0.012	→	I-161-052-00				
0.015	I-161-015-00	I-161-053-00				

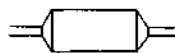
**MYLAR CAPACITORS**

CAP. (μF)	RATING											
	50 VOLT.			CAP. (μF)	100 VOLT.			CAP. (μF)	200 VOLT.			
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.	
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00	
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00	
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00	
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00	
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00	
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-354-00			
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-355-00			
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-356-00			
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-357-00			
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00					
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00					
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00					



**TANTALUM CAPACITORS**

CAP. (μF)	RATING → Use the high voltage rated one.						
	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015					→	→	1-131-397-00
0.022					→	→	1-131-398-00
0.033					→	→	1-131-399-00
0.047					→	→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47					1-131-412-00	→	1-131-406-00
0.68				1-131-415-00	→	1-131-410-00	1-131-407-00
1.0			1-131-418-00		1-131-413-00	→	1-131-408-00
1.5		1-131-421-00		1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00		1-131-419-00		1-131-414-00	1-131-355-00	1-131-349-00
3.3		1-131-422-00		1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00		1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8		1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00				
68	1-131-394-00	1-131-388-00					
100	1-131-395-00						



**TANTALUM CAPACITORS**

CAP. (μF)	RATING						
	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.	
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	
0.033						1-131-273-00	
0.047						1-131-274-00	
0.068						1-131-275-00	
0.1						1-131-276-00	
0.15						1-131-277-00	
0.22						1-131-262-00	
0.33						1-131-263-00	
0.47			1-131-169-00			1-131-264-00	
0.68				1-131-258-00		1-131-265-00	
1.0			1-131-254-00			1-131-266-00	
1.5		1-131-250-00				1-131-267-00	
2.2				1-131-259-00		1-131-268-00	
3.3			1-131-255-00			1-131-269-00	
4.7		1-131-251-00	1-131-171-00			1-131-270-00	
6.8				1-131-260-00		1-131-271-00	
10			1-131-256-00			1-131-272-00	
15		1-131-252-00			1-131-261-00		
22			1-131-257-00				
33	1-131-176-00	1-131-253-00	1-131-173-00				
47	1-131-288-00	1-131-174-00					
100	1-131-177-00						

**1/16 WATT CARBON RESISTOR**

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	—	91	1-210-354-00	620	1-210-367-00	4.3k	1-209-772-00	30k	1-210-380-00	200k	1-210-839-00
2.2	—	15	—	100	1-210-355-00	680	1-210-106-00	4.7k	1-209-773-00	33k	1-210-381-00	220k	1-210-840-00
2.4	—	16	—	110	1-210-356-00	750	1-210-107-00	5.1k	1-209-774-00	36k	1-210-384-00	240k	—
2.7	—	18	1-211-688-00	120	1-210-357-00	820	1-210-108-00	5.6k	1-209-775-00	39k	1-210-382-00	270k	1-210-841-00
3.0	—	20	—	130	1-210-358-00	910	1-210-368-00	6.2k	1-209-776-00	43k	1-210-383-00	300k	—
3.3	—	22	—	150	1-210-102-00	1.0k	1-204-122-00	6.8k	1-209-777-00	47k	1-210-384-00	330k	1-210-842-00
3.6	—	24	—	160	1-210-359-00	1.1k	1-210-369-00	7.5k	1-209-778-00	51k	1-210-385-00	360k	—
3.9	—	27	—	180	1-210-360-00	1.2k	1-209-765-00	8.2k	1-209-779-00	56k	1-210-386-00	390k	1-210-843-00
4.3	—	30	1-210-845-00	200	1-210-361-00	1.3k	1-210-370-00	9.1k	1-209-780-00	62k	1-210-387-00	430k	—
4.7	—	33	1-210-846-00	220	1-210-362-00	1.5k	1-209-766-00	10k	1-209-781-00	68k	1-210-388-00	470k	1-210-844-00
5.1	—	36	1-210-847-00	240	1-209-762-00	1.6k	1-210-371-00	11k	1-210-374-00	75k	1-210-389-00	510k	—
5.6	—	39	1-210-848-00	270	1-210-363-00	1.8k	1-209-878-00	12k	1-210-111-00	82k	1-210-390-00	560k	1-211-695-00
6.2	—	43	1-210-849-00	300	1-210-364-00	2.0k	1-209-767-00	13k	1-210-375-00	91k	1-210-391-00	620k	—
6.8	—	47	1-210-395-00	330	1-209-763-00	2.2k	1-209-768-00	15k	1-210-112-00	100k	1-210-115-00	680k	1-211-696-00
7.5	—	51	1-210-101-00	360	1-210-103-00	2.4k	1-209-769-00	16k	1-210-376-00	110k	—	750k	—
8.2	—	56	1-210-351-00	390	1-210-365-00	2.7k	1-209-770-00	18k	1-210-113-00	120k	1-210-836-00	820k	1-211-698-00
9.1	—	62	1-210-352-00	430	1-210-366-00	3.0k	1-210-372-00	20k	1-210-377-00	130k	—	910k	—
10	—	68	1-210-353-00	470	1-209-764-00	3.3k	1-204-123-00	22k	1-210-114-00	150k	1-210-837-00	1 M	—
11	—	75	1-210-392-00	510	1-210-104-00	3.6k	1-210-373-00	24k	1-210-378-00	160k	—	—	—
12	—	82	1-210-393-00	560	1-210-105-00	3.9k	1-209-771-00	27k	1-210-379-00	180k	1-210-838-00	—	—

**1/8 WATT CARBON RESISTOR**

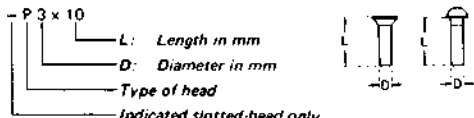
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00	—	—
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00	—	—

**1/4 WATT CARBON RESISTORS**

$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

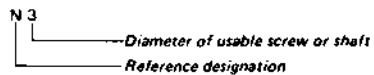
**HARDWARE NOMENCLATURE**

Screw:



Indicated slotted-head only.  
Unless otherwise indicated, it means cross-recessed head (Phillips type).

Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
<b>SCREWS</b>			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-filister-head screw	
RF		filister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
<b>SELF-TAPPING SCREWS</b>			
TA		self-tapping screw	ex. TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
<b>SET SCREWS</b>			
SC		set screw	
SC		hexagon-socket set screw	ex. SC 2.6 x 4, hexagon socket
<b>NUT</b>			
N		nut	
<b>WASHERS</b>			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex. LW3, internal
LW		external-tooth lock washer	ex. LW3, external
<b>RETAINING RINGS</b>			
E		retaining ring	
G		grip-type retaining ring	