

# STR-6036A

USA, Canada and AEP Model



## FM STEREO / FM-AM RECEIVER

### SPECIFICATIONS

#### FM TUNER SECTION

**Frequency range:** 87.5MHz to 108MHz  
**Usable sensitivity:** 2.2  $\mu$ V (IHF)  
1.7  $\mu$ V (S/N = 30 dB)  
**Signal-to-noise ratio:** 68 dB  
**Capture ratio:** 1.5 dB  
**Frequency response:** 30 Hz to 15 kHz  $\pm$ 0.2 dB  
**Stereo separation:** greater than 35 dB at 400 Hz  
**Harmonic distortion:** Mono: 0.3% at 400 Hz, 100% Mod.  
Stereo: 0.8% at 400 Hz, 100% Mod.

#### A-M TUNER SECTION

**Frequency range:** 530 kHz to 1,605 kHz  
**Sensitivity:** 48 dB/m, built-in bar antenna  
30  $\mu$ V, external antenna  
**Signal-to-noise ratio:** 50 dB  
**Harmonic distortion:** 0.8%

#### AUDIO AMP SECTION

**Dynamic power output:** 55 watts total (8 ohms), 70 watts total  
(IHF constant power supply method)  
(4 ohms)

**Continuous RMS power output:** 18 watts (8 ohms), 20 watts (4 ohms)  
per channel, both channels driven  
simultaneously (at 1 kHz)

**Harmonic distortion:** Less than 0.8% at 1 kHz at continuous  
RMS power output  
Less than 0.1% at 1 watt output

**Frequency response:** PHONO: R1AA curve  $\pm$ 2 dB  
MIC: 30 Hz to 10 kHz  $\pm$ 3 dB

TAPE }  
REC/PB } 30 Hz to 40 kHz  $\pm$ 3 dB  
AUX }

#### GENERAL

**Power consumption:** 70 watts (USA Model)  
105 watts (Canada Model)  
160 watts (AEP Model)  
**Power requirements:** 120 volts, 60 Hz ac (USA and Canada Model)  
110, 127, 220, 240 volts, 50/60 Hz (AEP Model)  
**Dimensions:** 434 (w) x 145 (h) x 348 (d) mm  
17 1/8 (w) x 5 11/16 (h) x 13 11/16 (d) inches  
**Net weight:** 8.6 kg (18 lb 15 oz)

**SONY**  
**SERVICE MANUAL**

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## SECTION 1 TECHNICAL DESCRIPTION

### 1-1. SPECIFICATIONS

#### Fm Tuner Section

Frequency range:	87.5 MHz to 108 MHz
Antenna:	300 ohms balanced
Intermediate frequency:	10.7 MHz
Usable sensitivity:	2.2 $\mu$ V (IHF) 1.7 $\mu$ V (S/N = 30 dB)
Signal-to-noise ratio:	68 dB
Capture ratio:	1.5 dB
Selectivity:	60 dB
Image rejection:	55 dB
I-f rejection:	90 dB
Spurious rejection:	78 dB
A-m suppression:	55 dB
Frequency response:	30 Hz to 15 kHz $\pm$ <sub>2</sub> <sup>0</sup> dB
Harmonic distortion:	Mono 0.3% at 400 Hz 100% modulation Stereo 0.8% at 400 Hz 100% modulation
Fm stereo separation:	Greater than 35 dB at 400 Hz 19 kHz, 38 kHz
suppression:	50 dB

#### A-m Tuner Section

Frequency range:	530 kHz to 1,605 kHz
Antenna:	Built-in bar antenna with external antenna provision
Intermediate frequency:	455 kHz
Sensitivity:	48 dB/m, built-in bar antenna 30 $\mu$ V, external antenna
Signal-to-noise ratio:	50 dB
Image rejection:	56 dB at 1,000 kHz
I-f rejection:	40 dB at 1,000 kHz
Harmonic distortion:	0.8%

#### Audio Amplifier Section

Dynamic power output:	55 watts (8 ohms) 70 watts (4 ohms)
(IHF constant power supply method)	
Continuous RMS power output:	20 watts (8 ohms) 25 watts (4 ohms)
	One channel driven separately (at 1 kHz)
	18 watts per channel (8 ohms) 20 watts per channel (4 ohms)
	Both channels driven simultaneously (at 1 kHz)
	15 watts per channel (8 ohms) Both channels driven simultaneously (from 20Hz to 20kHz)
Power bandwidth: (IHF)	10 Hz to 25 kHz
Harmonic distortion:	Less than 0.8% at 1 kHz at continuous RMS power output Less than 0.1% at 1 watt output
IM distortion: (60 Hz : 7 kHz = 4 : 1)	Less than 0.8% at 1 kHz at continuous RMS power output Less than 0.1% at 1 watt output
Frequency response:	10 Hz to 60 kHz $\pm$ <sub>3</sub> <sup>0</sup> dB
Residual noise:	Less than 0.08 $\mu$ watt/ 8 ohms
Frequency response:	

PHONO	RIAA equalization curve $\pm$ 2 dB
MIC	30 Hz-10 kHz $\pm$ <sub>3</sub> <sup>0</sup> dB
AUX TAPE REC/PB (Input)	30 Hz-40 kHz $\pm$ <sub>3</sub> <sup>0</sup> dB

#### Input sensitivity and impedance:

	Maximum sensitivity	Impedance
PHONO	2.5 mV	47 k ohms
MIC	2 mV	47 k ohms
AUX TAPE REC/PB (Input)	250 mV	100 k ohms

Measured with continuous RMS power output into 8-ohm loads (both channels driven simultaneously) at 1 kHz.

Signal output and impedance:

	Level	Impedance	Input level
REC OUT	250 mV	10 k ohms	PHONO 2.5 mV MIC 2 mV AUX 250 mV
REC/PB (Output)	30 mV	82 k ohms	TAPE 250 mV REC/PB (Input) 250 mV
HEAD-PHONE	Accepts low and high impedance headphones.		
SPEAKER	Accepts 4-16 ohm speakers.		

Signal-to-noise ratio:

	S/N	Weighting network	Input level
PHONO	60 dB	B	PHONO 2.5 mV
MIC	60 dB	B	MIC 2 mV
AUX	70 dB	A	AUX 250 mV
TAPE, REC/PB (Input)	80 dB	A	TAPE 250 mV REC/PB 250 mV

Tone controls: BASS  $\pm 10$  dB at 100 Hz  
TREBLE  $\pm 10$  dB at 10 kHz

Loudness control: +6 dB at 50 Hz, +4 dB at 10 kHz (at 30 dB attenuation)

**General**

Circuit system: Superheterodyne fm/a-m, switching MPX  
Quasi-complementary symmetry circuit (SEPP OTL)  
Direct output coupling

Semiconductors: 2 ICs, 2 FETs, 27 transistors and 19 diodes

Power requirements: 120V, 60 Hz ac (USA and Canada Model)  
110, 127, 220, 240V, 50/60 Hz (AEP Model)

Power consumption: 70 watts (USA Model)  
105 watts (Canada Model)  
160 watts (AEP Model)

Ac outlet: 1 unswitched, 300 watts total (USA and Canada Model only)

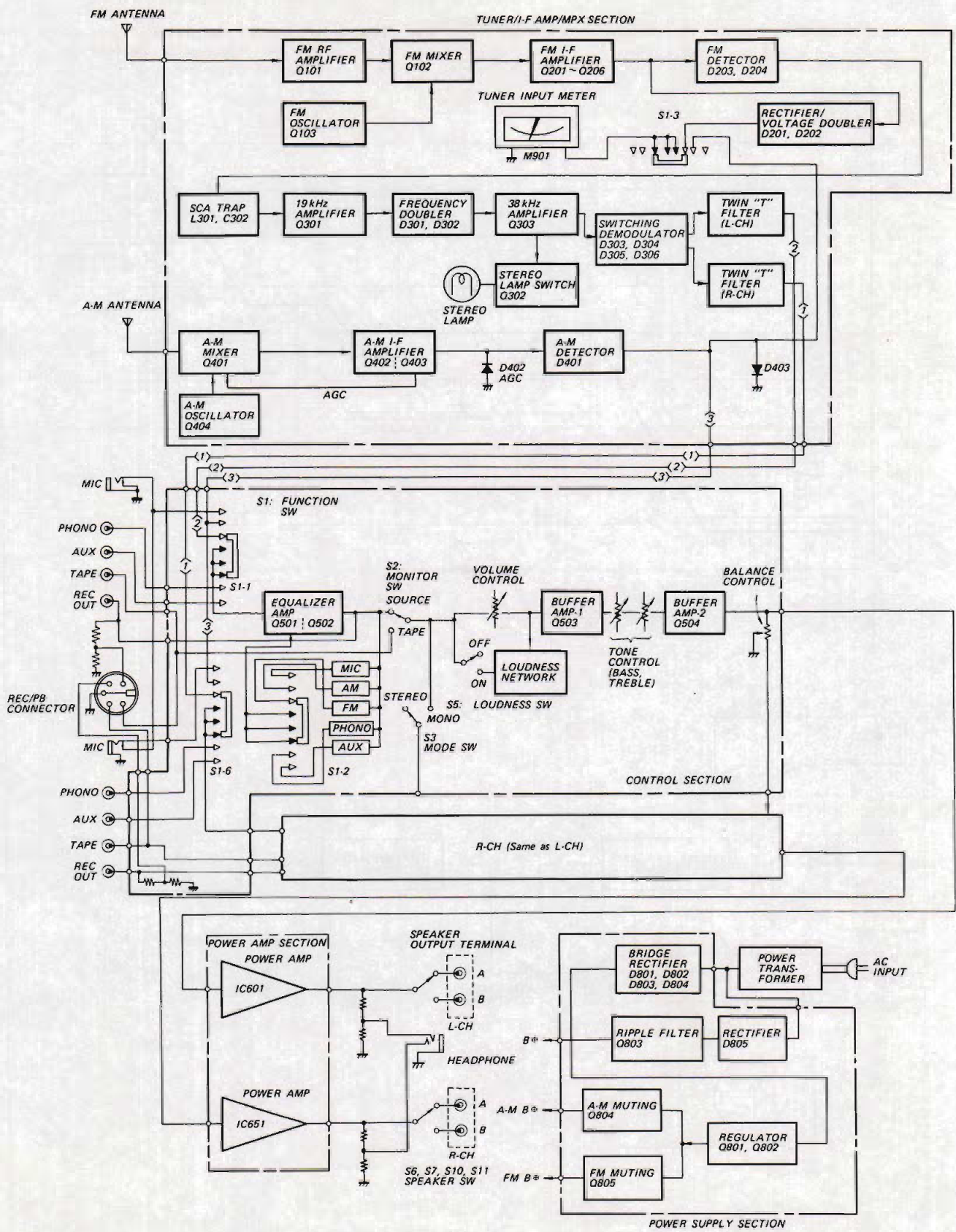
Dimensions: 434(w) x 145(h) x 348(d) mm  
17<sup>1</sup>/<sub>8</sub>(w) x 5<sup>11</sup>/<sub>16</sub>(h) x 13<sup>11</sup>/<sub>16</sub>(d) inches

Net weight: 8.6 kg (18 lb 15 oz)

Shipping weight: 11 kg (24 lb 5 oz)

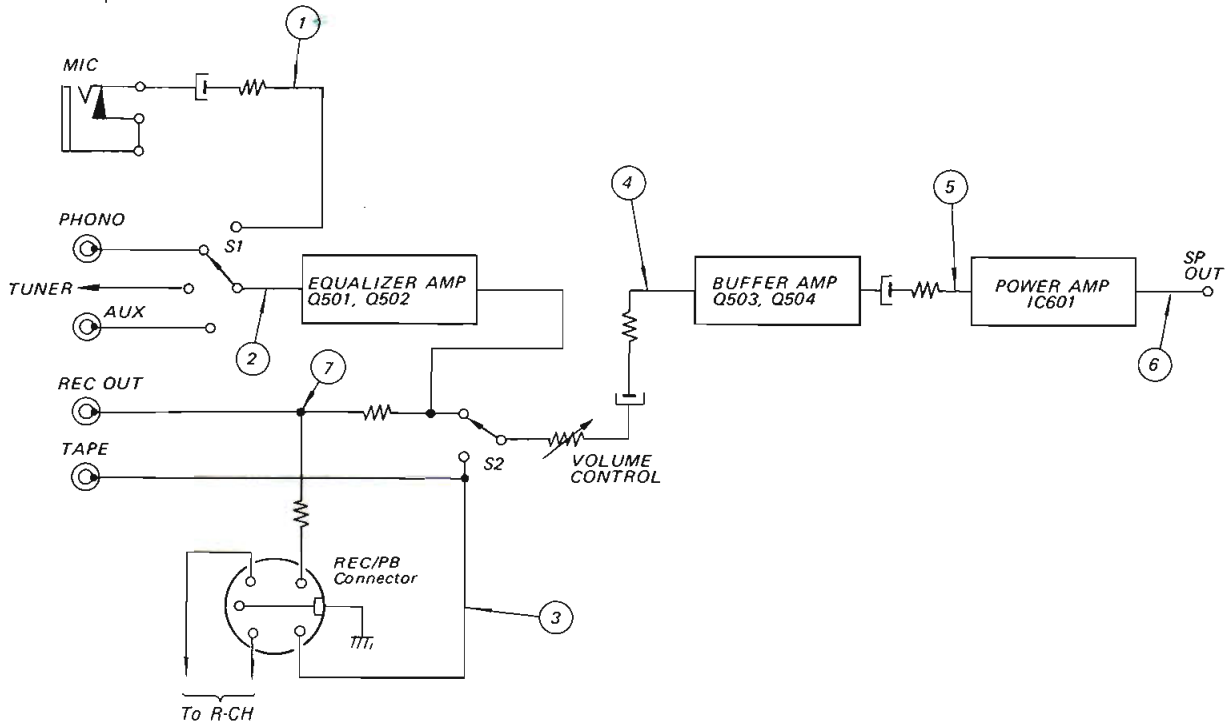
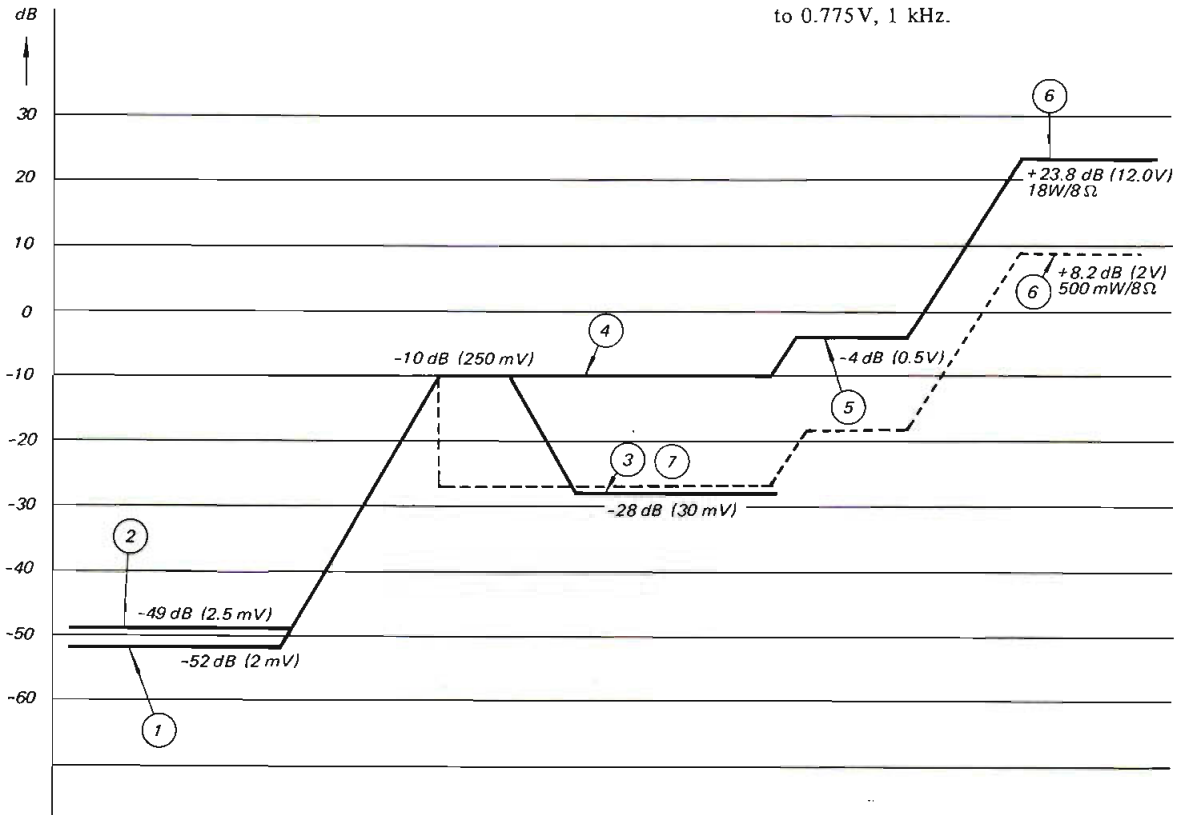


1-2. BLOCK DIAGRAM



1-3. LEVEL DIAGRAM

Note: Signal voltages are measured with ac VTVM and expressed in dB referred to 0.775V, 1 kHz.



## SECTION 2 DISASSEMBLY AND REPLACEMENT

### WARNING

Unplug the ac power cord before starting any disassembly or replacement procedures.

### 2-1. WOODEN CASE REMOVAL

1. Remove the two screws at each side of the wooden case as shown in Fig. 2-1.
2. Carefully push the wooden case backward and pull it up as shown in Fig. 2-1.



Fig. 2-1. Wooden case removal

### 2-2. BOTTOM PLATE REMOVAL

1. Remove the eight screws shown in Fig. 2-2.

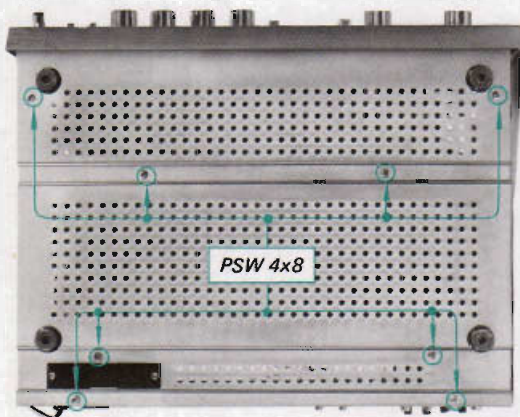


Fig. 2-2. Bottom plate removal

### 2-3. DIAL GLASS, CONTROL PANEL AND FRONT PANEL REMOVAL

1. Remove the wooden case as described in Procedure 2-1.
2. Remove the five screws securing the dial glass retainers as shown in Fig. 2-3. This frees the dial glass.

3. Remove all the knobs (POWER, VOLUME, BALANCE, BASS, TREBLE, FUNCTION and TUNING) except the pushbuttons.
4. Remove the two hexagon-head collars securing the VOLUME control and FUNCTION switch to the control panel as shown in Fig. 2-4. Place a piece of cardboard between the wrench and control panel to avoid marring the panel. This frees the control panel.
5. Remove the four screws securing the front panel to the front subchassis as shown in Fig. 2-5. This frees the front panel.

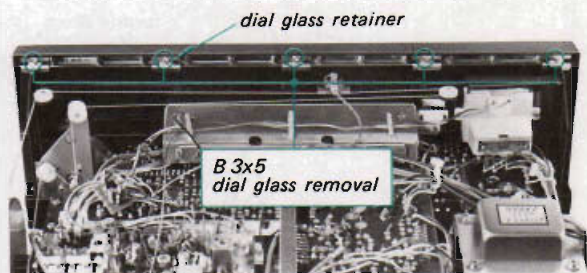


Fig. 2-3. Dial glass removal

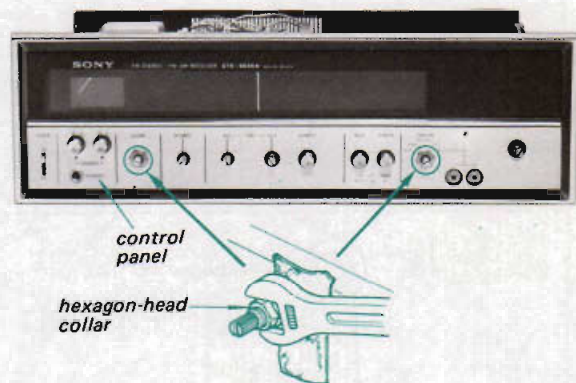


Fig. 2-4. Control panel removal

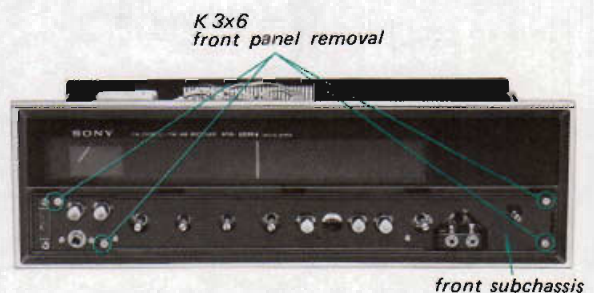


Fig. 2-5. Front panel removal

**2-4. DIAL CORD RESTRINGING**

**Preparation**

1. Remove the wooden case as described in Procedure 2-1.
2. Cut a 2,020 mm (78<sup>17</sup>/<sub>32</sub> inches) length of 0.3 mm (1/64 inch) diameter dial cord.
3. Rotate the tuning capacitor shaft fully clockwise (minimum capacitance position) and the slit of the tuning drum should be positioned as shown in Fig. 2-6.

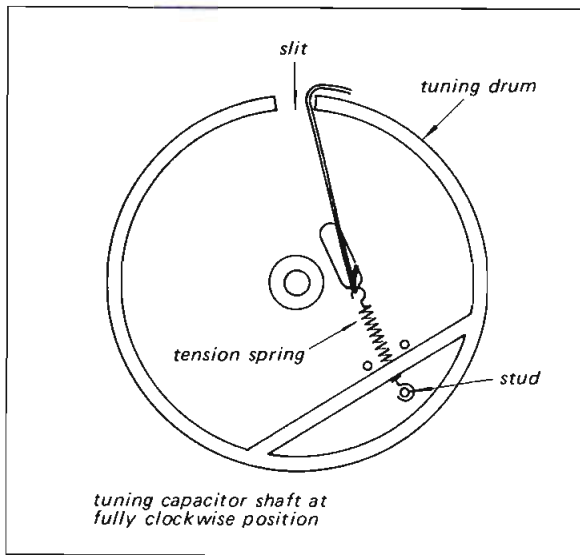


Fig. 2-6. Tension spring installation

**Procedure**

1. Tie the end of the cord to a spring and hook the spring to the stud on the tuning drum as shown in Fig. 2-6.
2. Wrap the dial cord one and half turns around the drum and string the dial cord in order as shown in Fig. 2-7.
3. At the finish point, pass the doubled end of the cord through the eyelet and tighten the cord and squeeze the eyelet so that the spring is under tension (See Fig. 2-8).

**Note:** The end of spring should be near the center of tuning drum as shown in Fig. 2-9. Make two knots in the cord to keep it from slipping out of the eyelet (See Fig. 2-8).

4. After completing the dial cord stringing, make sure that the tuning system works properly. Apply a drop of contact cement to the finish point, and then follow the mechanical dial calibration described in Procedure 2-5.

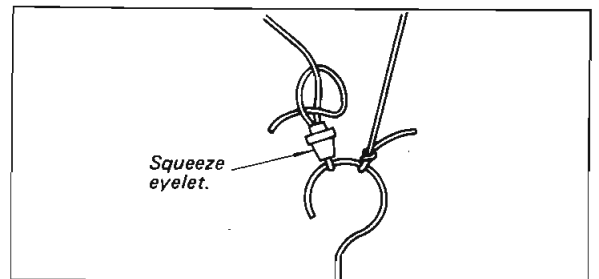


Fig. 2-8. Dial cord finish

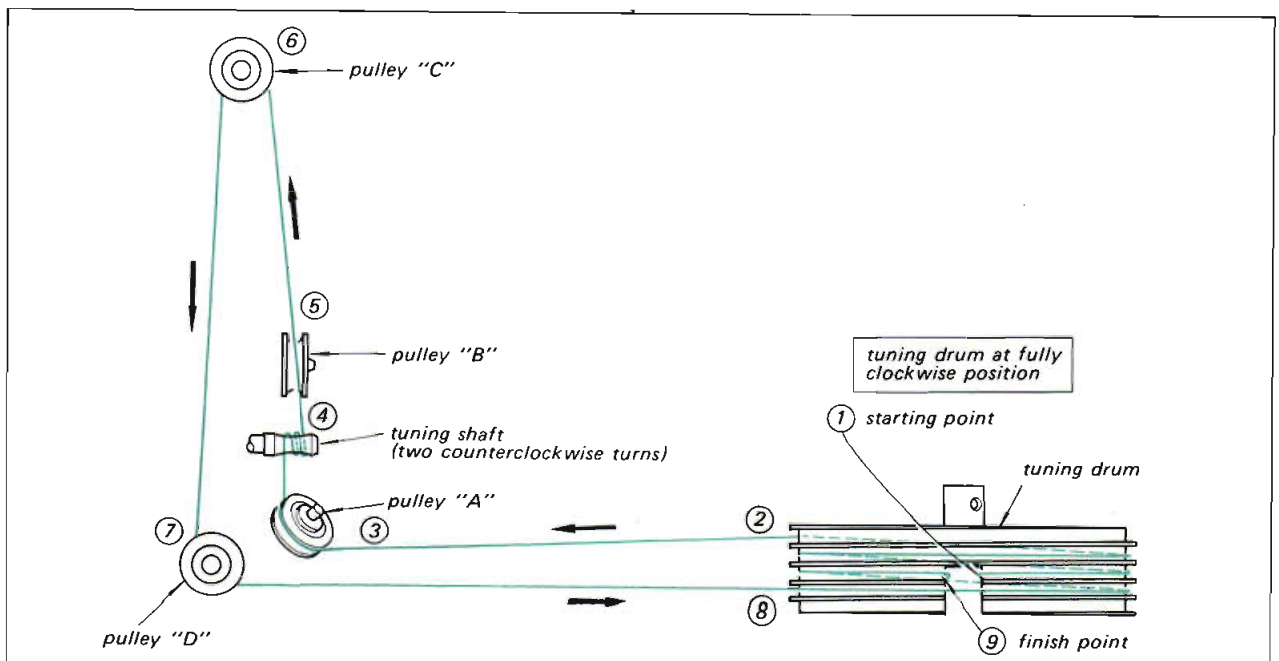


Fig. 2-7. Dial cord stringing



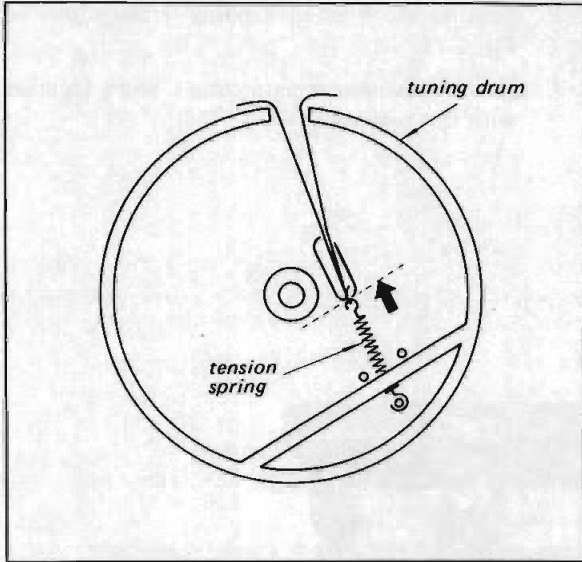


Fig. 2-9. End of dial cord stringing

## 2-5. MECHANICAL DIAL CALIBRATION

1. Put the dial pointer on the cord as shown in Fig. 2-10, and then tune the receiver to the local fm station. Move the dial pointer to the position where the pointer indicates the local station's carrier frequency. Apply a drop of contact cement to it.

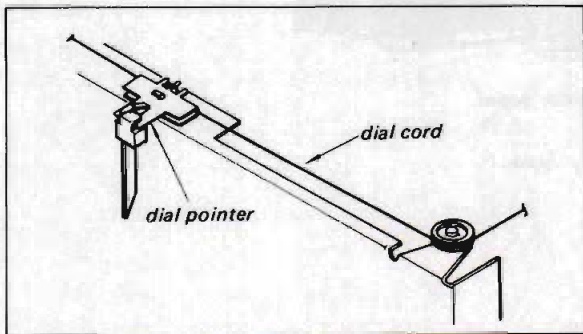


Fig. 2-10. Dial pointer installation

## 2-6. TUNER INPUT METER REPLACEMENT

1. Remove the wooden case as described in Procedure 2-1.
2. Remove the two screws securing the meter lamp shade to the front subchassis as shown in Fig. 2-11. This frees the meter lamp shade.

**Note:** Tuner input meter is fixed to the front subchassis with double stuck tape.

3. Pry open the tuner input meter from the front subchassis with a screwdriver.

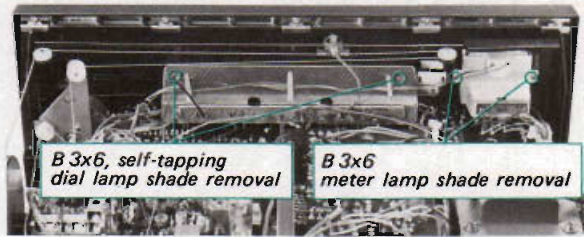


Fig. 2-11. Tuner input meter and dial lamp shade replacement

## 2-7. CONTROL CIRCUIT BOARD REMOVAL

1. Remove the wooden case, bottom plate and control panel as described in Procedure 2-1, 2-2 and 2-3.
2. Remove the meter lamp shade as described in Procedure 2-6.
3. Remove the two screws securing the dial lamp shade to the front subchassis as shown in Fig. 2-11.
4. Remove the two screws securing the control circuit board to the front subchassis as shown in Fig. 2-12.
5. Remove the three screws securing the control circuit board to the chassis as shown in Fig. 2-13.
6. This frees the control circuit board.



Fig. 2-12. Control circuit board removal

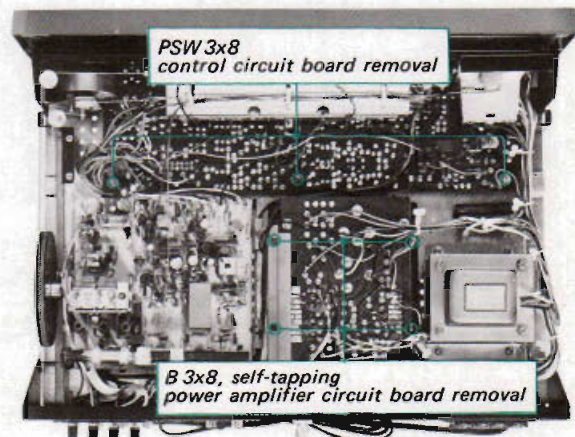


Fig. 2-13. Control and power amplifier circuit board removal

**2-8. POWER AMP CIRCUIT BOARD REMOVAL**

1. Remove the wooden case as described in Procedure 2-1.

2. Remove the four self-tapping screws shown in Fig. 2-13.
3. Remove the power amp circuit board together with the heat sink.

**2-9. CHASSIS LAYOUT**

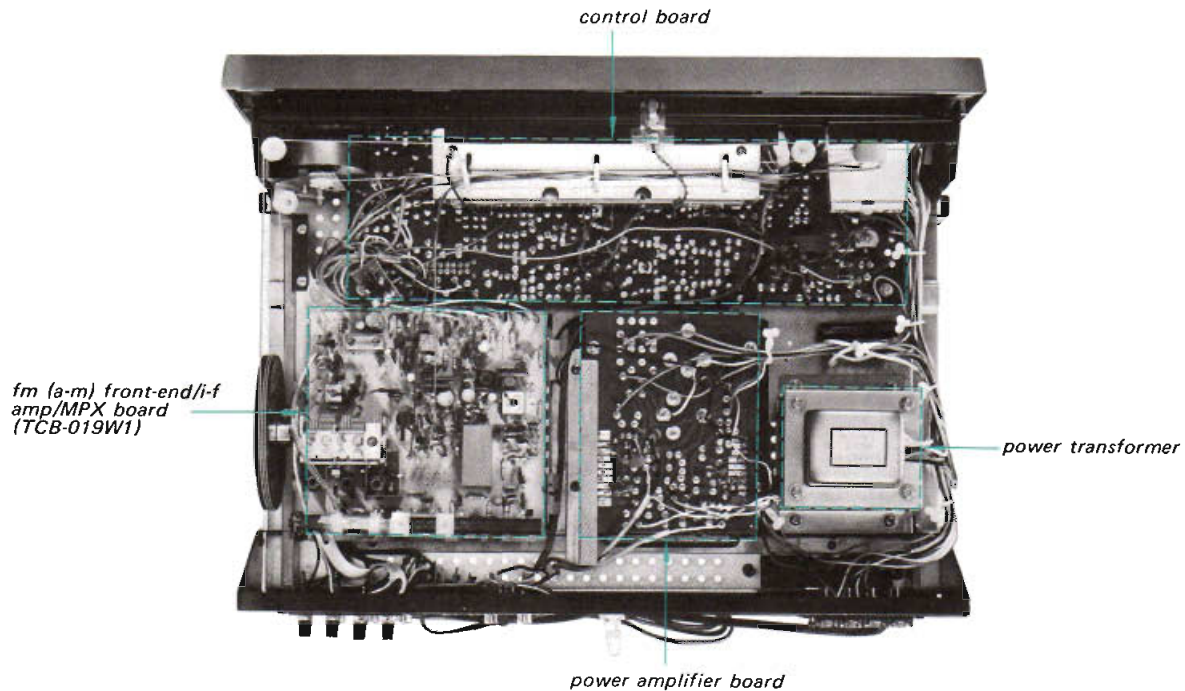


Fig. 2-14. Chassis layout



## SECTION 3 ALIGNMENT AND ADJUSTMENT

### 3-1. FM I-F AND DISCRIMINATOR ALIGNMENT

#### CAUTION

The ceramic filters in the fm i-f circuit are selected according to their specified center frequencies and color coded as shown in Fig. 3-1 and listed in Table 3-1. Check the color code of the filters to identify the same center frequency when replacing any of these filters.

TABLE 3-1.  
FM I-F CERAMIC FILTERS

Part No.	Color	Specified Center Freq.
1-527-220-11	red	10.70 MHz
1-527-220-21	blue	10.67 MHz
1-527-220-31	orange	10.73 MHz
1-527-220-41	black	10.64 MHz
1-527-220-51	white	10.76 MHz

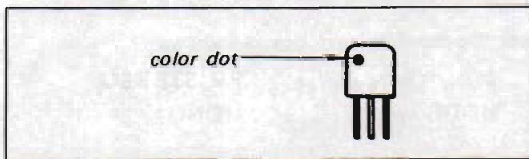


Fig. 3-1. Color dot on ceramic filter

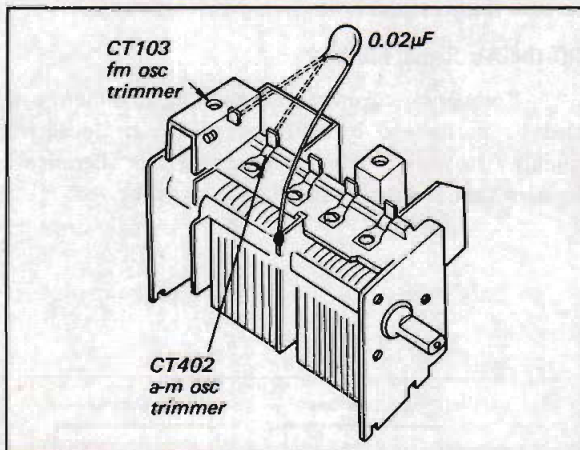


Fig. 3-2. Interruption of fm or a-m local oscillator operation

**Note:** Local oscillator should be killed when performing this alignment. To stop the local oscillator operation, shunt the oscillator capacitor with a 0.02µF capacitor as shown in Fig. 3-2.

#### Signal Generator Method

#### Test Equipment Required

1. Signal generator capable of generating a 10.7 MHz a-m/fm signal.
2. Oscilloscope  
Vertical sensitivity . . . . 100 mV/cm minimum
3. Ac VTVM
4. Alignment tools

#### Preparation:

1. Connect the input cable of the oscilloscope with alligator clips to R233 and ground on the fm (a-m) front-end/i-f amp/MPX board, and solder a 0.02µF capacitor across these clips as shown in Fig. 3-3.
2. Connect the output cable of the generator across CV102 on the fm (a-m) front-end/i-f amp/MPX board through a 0.02µF coupling capacitor as shown in Fig. 3-4.

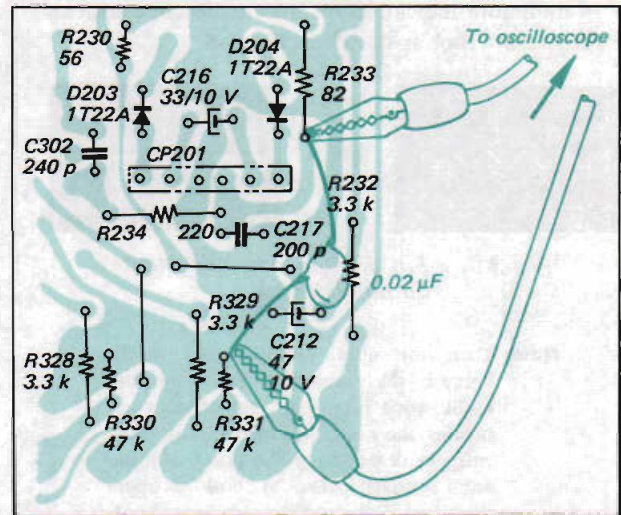


Fig. 3-3. Fm discriminator output connection

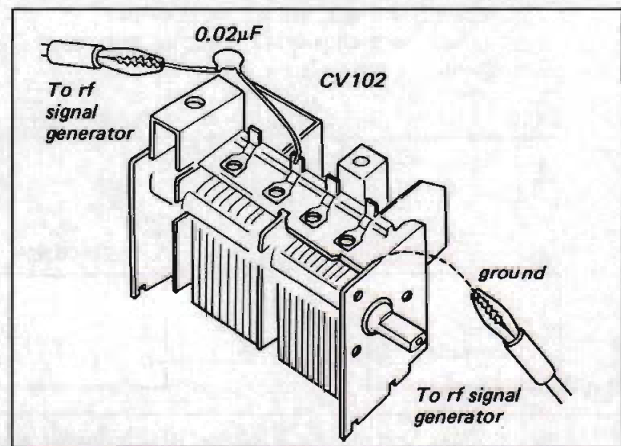
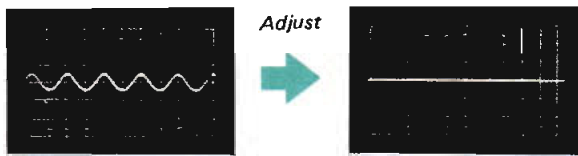


Fig. 3-4. 10.7MHz signal injection

**Procedure:**

1. With the equipment connected as shown in Fig. 3-5, set the signal-generator controls as follows:
  - Frequency . . . . . Specified frequency of ceramic filter.  
See Table 3-1.
  - Modulation . . . . . Fm, 400 Hz, 75 kHz deviation (100 %)
  - Output level . . . . . 1,000 $\mu$ V (60 dB)
2. Set the receiver switches as follows:
  - FUNCTION switch . . . . . FM STEREO
  - MODE switch . . . . . MONO
3. Adjust the signal generator frequency slightly to obtain a maximum output, and then change the signal generator modulation to a-m, 400Hz 30%.
4. If the discriminator transformer IFT201 is not aligned correctly, 400 Hz ripple will be observed as shown in Fig. 3-6.
5. Turn the top core (secondary side) of discriminator transformer IFT201 (see Fig. 3-11) to obtain a minimum indication on the oscilloscope with an alignment tool as shown in Fig. 3-6.



*Fig. 3-6. Fm discriminator alignment output response*

**Note:** Turn the core carefully and slowly because the output appearing on the oscilloscope jumps up and down when turning the core. This might cause difficulty in determining the point of minimum output. Also, at both extreme positions of the top core, decreased output will be observed. The real null point should be obtained in the middle of the core thread length, and maximum output appears at each side of the true null point.

6. Change the signal generator modulation to fm, 400 Hz, 75 kHz deviation (100 %).
7. Turn the core of fm IFT101 and the bottom core (primary side) of discriminator transformer IFT-201 (see Fig. 3-11) to obtain the maximum output.

**3-2. FM FREQUENCY COVERAGE AND TRACKING ALIGNMENT**

**Note:** Before starting this alignment, the fm i-f and discriminator alignment should be performed.

**Test Equipment Required**

1. Fm signal generator
2. Ac VTVM
3. Oscilloscope
4. Alignment tools

**Preparation:**

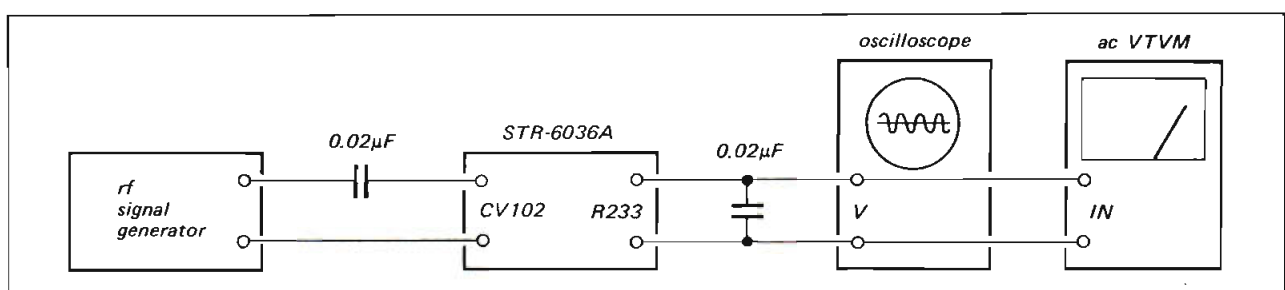
1. Connect the equipment as shown in Fig. 3-7.
2. Set the receiver switches as follows:
  - FUNCTION switch . . FM STEREO
  - MODE switch . . . . . MONO

**Signal Generator Method**

Follow the procedures given in Table 3-2 when performing this alignment with an fm signal generator. Be sure that the dial is mechanically calibrated.

**Off-the-Air Signal Method**

Frequency coverage and tracking alignment can also be performed by utilizing off-the-air local fm signals. However, before performing this alignment, be sure that the dial is mechanically calibrated.



*Fig. 3-5. Fm i-f and discriminator alignment test setup by rf signal generator*



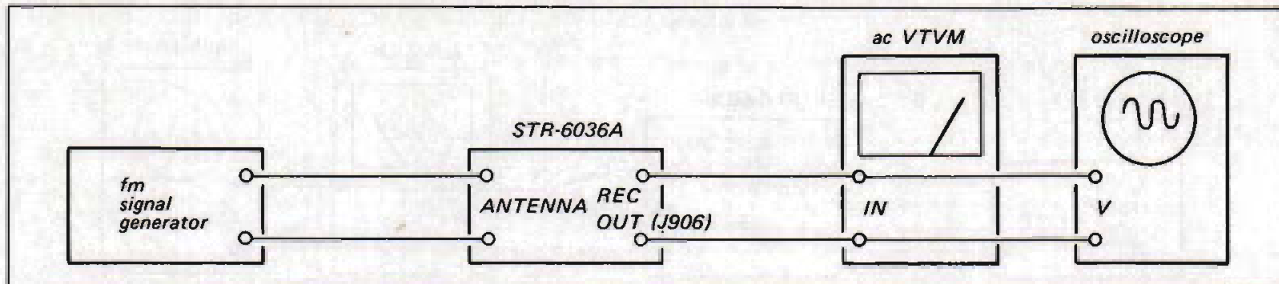


Fig. 3-7. Fm frequency coverage and tracking alignment test setup by rf signal generator

TABLE 3-2. FM FREQUENCY COVERAGE AND TRACKING ALIGNMENT

FREQUENCY COVERAGE ALIGNMENT		SG Coupling ..... Direct SG Output Level ..... 400 Hz, 75 kHz Deviation mod; as low as possible			
Step	SG Frequency	Receiver Dial Setting	Ac VTVM Connection	Adjust	Indication
1	87.5 MHz	87.5 MHz	REC OUT J906	OSC coil L103 See Fig. 3-11.	Maximum VTVM reading
2	108 MHz	108 MHz		OSC trimmer CT103 See Fig. 3-11.	
TRACKING ALIGNMENT		SG Coupling ..... Direct SG Output Level ..... 400 Hz, 75 kHz Deviation mod; as low as possible			
1	87.5 MHz	87.5 MHz	REC OUT J906	Antenna coil L101 RF coil L102 See Fig. 3-11.	Maximum VTVM reading
2	108 MHz	108 MHz		Antenna trimmer CT101 RF trimmer CT102 See Fig. 3-11.	

### 3-3. FM STEREO SEPARATION ADJUSTMENT

#### Test Equipment Required

1. Fm stereo signal generator
2. Ac VTVM
3. Oscilloscope

#### Preparation:

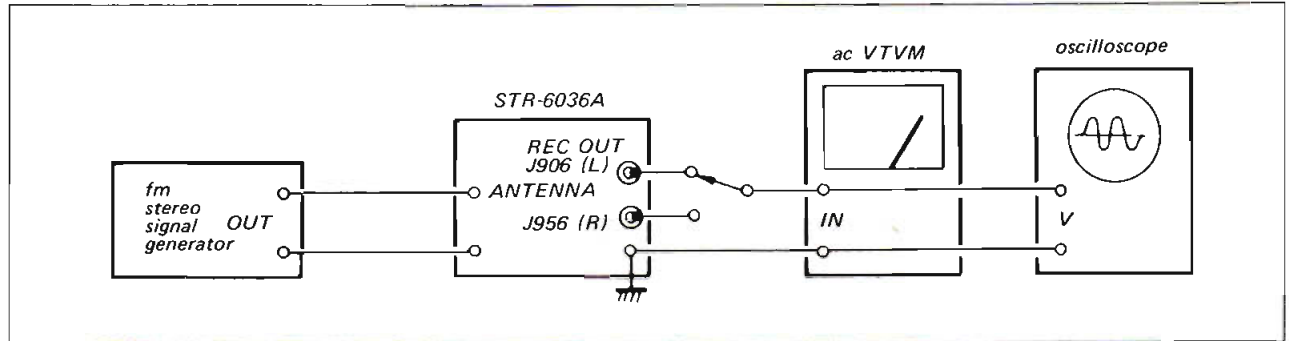
Connect the equipment as shown in Fig. 3-8, then set the fm stereo signal generator controls as follows:

Carrier frequency . . . . 98 MHz  
 Output level . . . . . 1,000  $\mu$ V (60 dB)  
 Mode . . . . . Stereo  
 Audio (400 Hz) Mod . . 67.5 kHz (90 %) \*  
 Pilot (19 kHz) Mod . . . 7.5 kHz (10 %)

\* Note: 75 kHz (100%) if the metering indicates total modulation (audio-pilot).

#### Procedure:

1. Precisely tune the receiver to the carrier frequency of stereo signal generator, then turn the top core of switching transformer L302 (see Fig. 3-11) to obtain maximum output at the left channel. Note that this adjustment has a close relationship with stereo distortion.
2. Record the output level of the left channel when the stereo signal generator input selector is set to the left channel.
3. Switch the stereo signal generator input selector to the right channel and read the residual signal level in the left channel.
4. The output-level to residual-level ratio represents the separation. Adjust separation control RT501 (see Fig. 3-9) on the control board for minimum residual level. Check the right channel for separation. Usually, about an 8 to 9 dB difference in channel separation exists. Readjust RT501 for

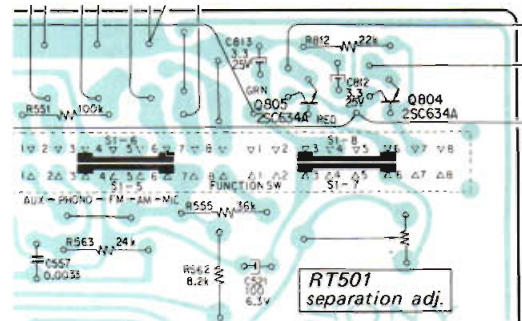


**Fig. 3-8.** Fm stereo separation adjustment test setup

minimum difference between left- and right-channel separation. While doing this, remember that the output level also changes according to the setting of RT501.

**3-4. A-M I-F STRIP ALIGNMENT**

**Note:** The a-m i-f transformers (CFT401 and IFT401) are shipped from the factory with all adjustments set for correct operation. Therefore no adjustment is required in field service.



**Fig. 3-9.** Adjusting parts location

**3-5. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT**

**Preparation:**

Set the FUNCTION switch to AM.

**Signal Generator Method**

**Test Equipment Required**

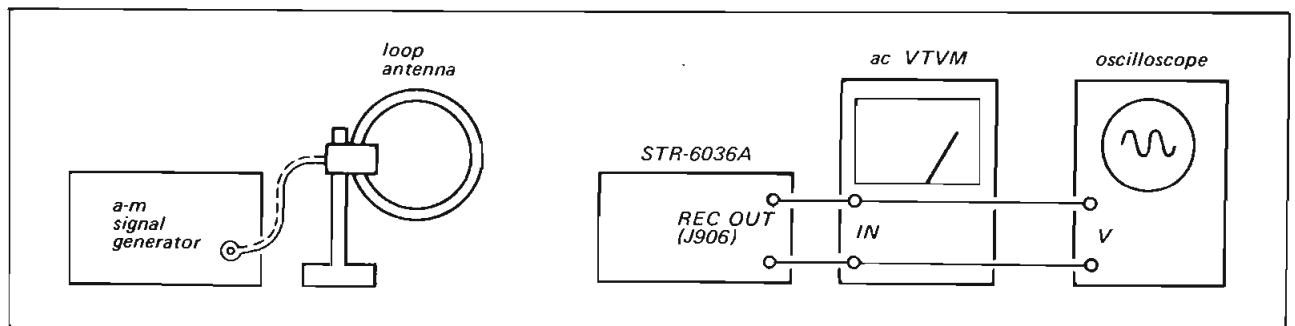
1. Signal generator
2. Loop antenna
3. Ac VTVM or oscilloscope

**Procedure:**

With the equipment connected as shown in Fig. 3-10, follow the procedures given in Table 3-3 when performing this alignment with an a-m signal generator. Be sure that the dial is mechanically calibrated.

**Off-the-Air Signal Method**

Frequency coverage and tracking alignment can also be performed by utilizing off-the-air local a-m signals. However, before performing this alignment, be sure that the dial is mechanically calibrated.



**Fig. 3-10.** A-m frequency coverage and tracking alignment test setup

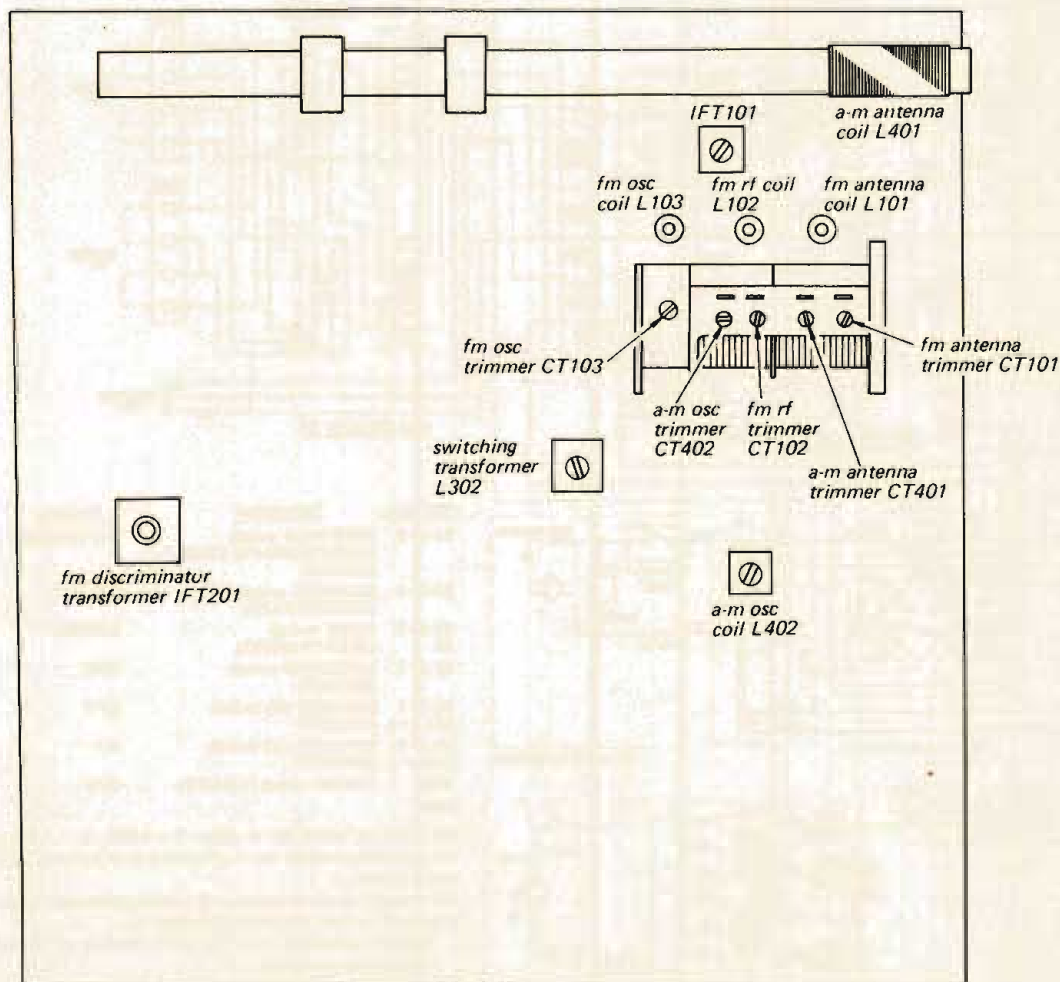
**SECTION 4  
REPACKING**

**Note:** Applicable serial number  
 USA Model: 800,001 and later  
 Canada Model: 700,001 and later  
 AEP Model: 500,001 and later

**TABLE 3-3. A-M FREQUENCY COVERAGE AND TRACKING ALIGNMENT**

FREQUENCY COVERAGE ALIGNMENT		SG Coupling . . . . . Loop antenna		Adjust	Indication
Step	SG Frequency	Receiver Dial Setting	Ac VTVM Connection		
1	550 kHz	550 kHz	REC OUT J906	OSC coil L402 See Fig. 3-11.	Maximum VTVM reading
2	1,600 kHz	1,600 kHz		OSC trimmer CT402 See Fig. 3-11.	
TRACKING ALIGNMENT		SG Coupling . . . . . Loop antenna		Adjust	Indication
Step	SG Frequency	Receiver Dial Setting	Ac VTVM Connection		
1	600 kHz	Tune to the SG signal.	REC OUT J906	Position of bar antenna L401. See Fig. 3-11.	Maximum VTVM reading
2	1,400 kHz			Antenna trimmer CT401 See Fig. 3-11.	

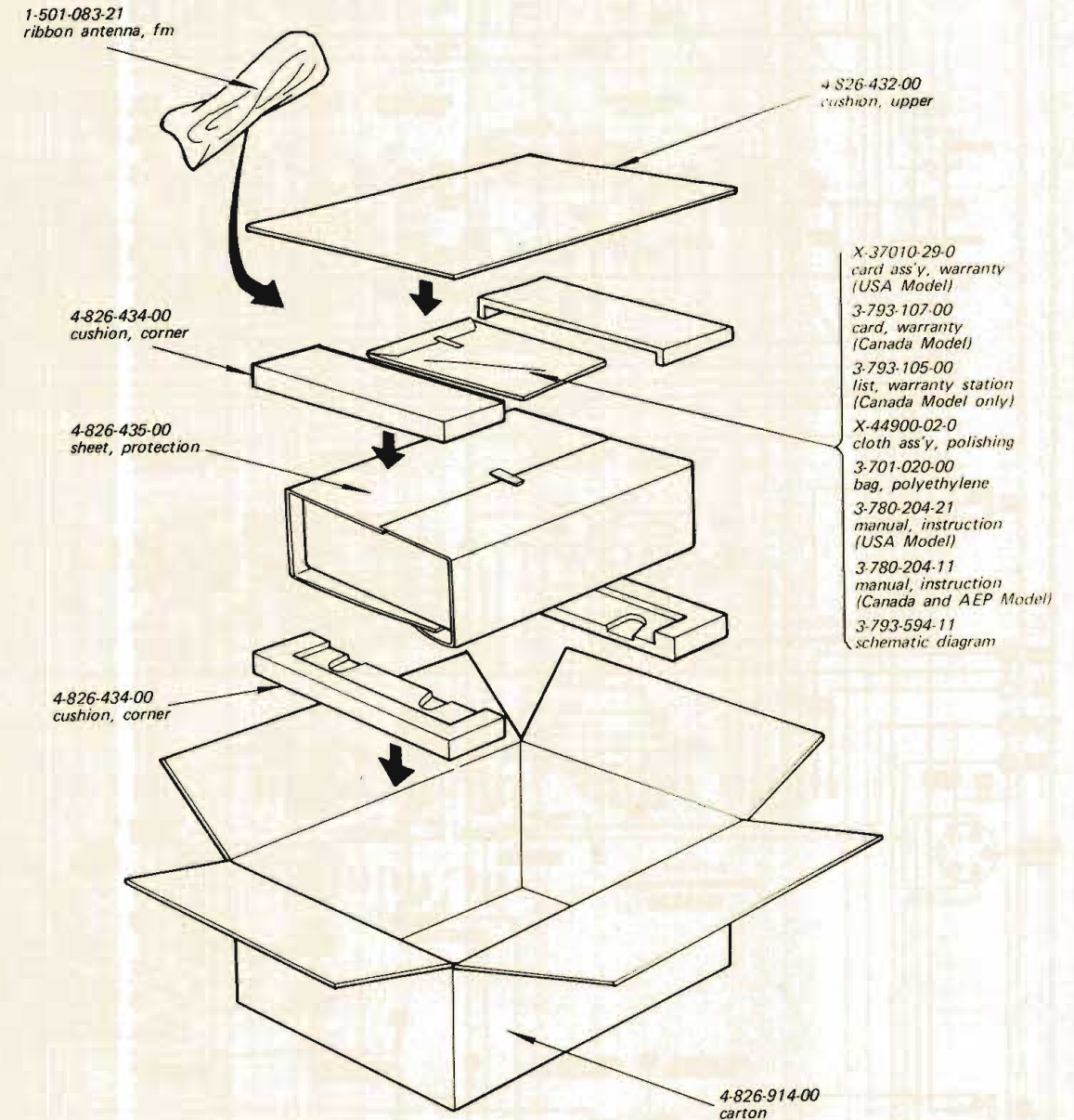
**Adjustment Parts Location:**



**Fig. 3-11. Adjustment parts location**

The original shipping carton and packing materials are the ideal containers for shipping the unit. However to secure the maximum protection,

the receiver must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.



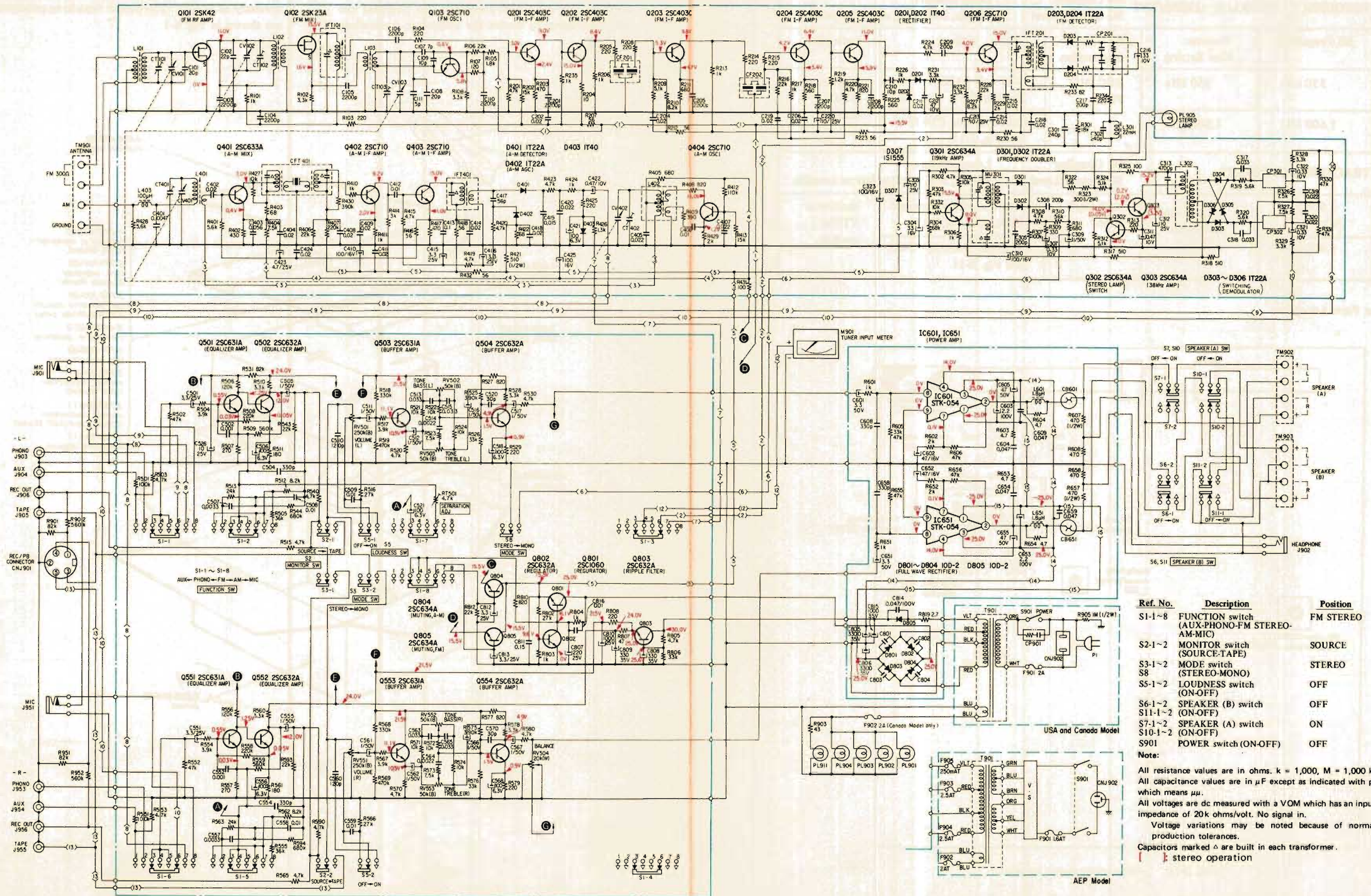
**Fig. 4-1. Repacking**



SECTION 5  
DIAGRAMS

Note: Applicable serial number  
USA Model: 800,001 and later  
Canada Model: 700,001 and later  
AEP Model: 500,001 and later

5-1. SCHEMATIC DIAGRAM



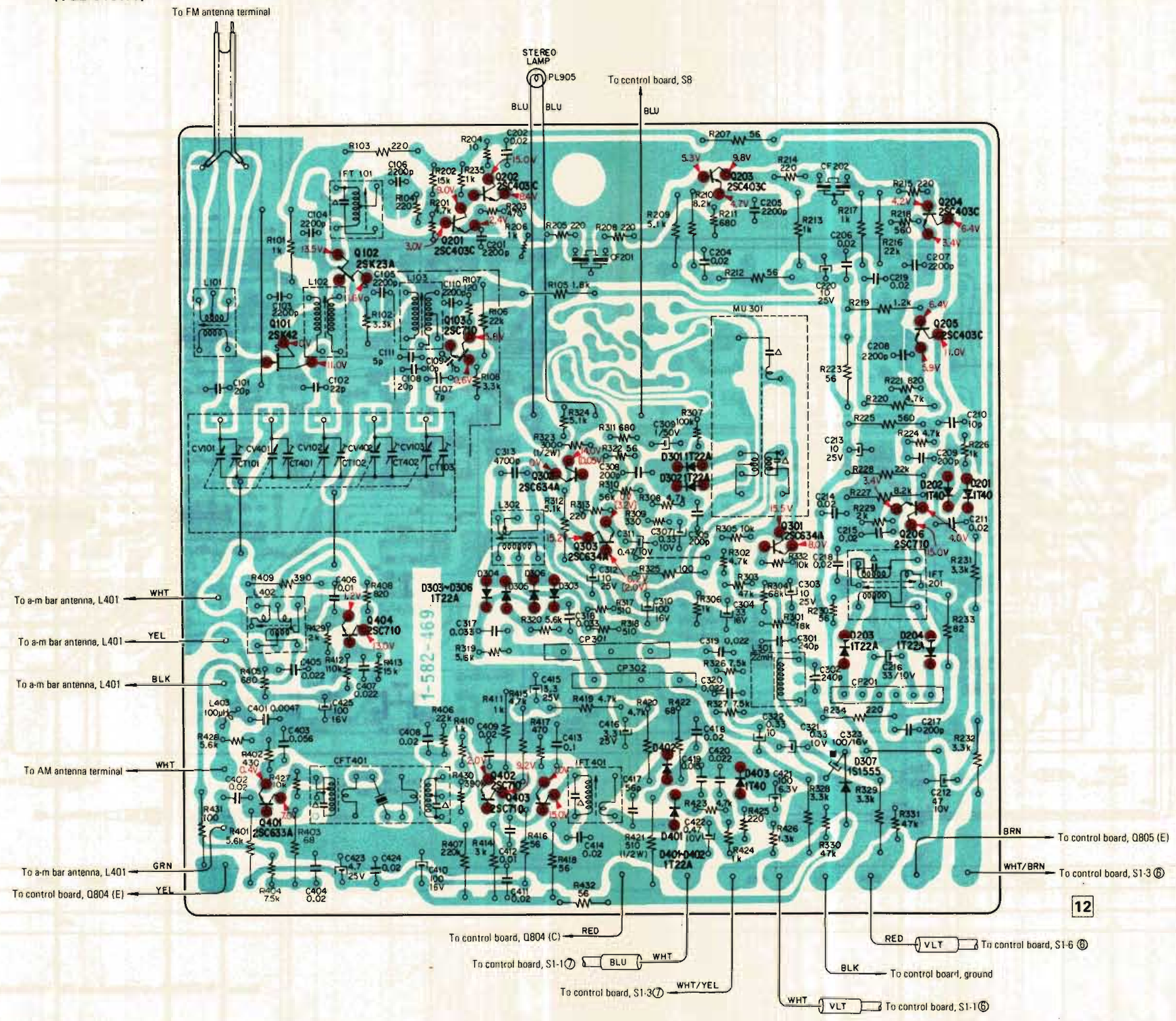
Ref. No.	Description	Position
S1-1~8	FUNCTION SWITCH (AUX-PHONO-FM STEREO-AM-MIC)	FM STEREO
S2-1~2	MONITOR switch (SOURCE-TAPE)	SOURCE
S3-1~2	MODE switch (STEREO-MONO)	STEREO
S5-1~2	LOUDNESS switch (ON-OFF)	OFF
S6-1~2	SPEAKER (B) switch (ON-OFF)	OFF
S7-1~2	SPEAKER (A) switch (ON-OFF)	ON
S10-1~2	POWER switch (ON-OFF)	OFF

Note:  
All resistance values are in ohms. k = 1,000, M = 1,000 k.  
All capacitance values are in  $\mu$ F except as indicated with p, which means  $\mu$ .  
All voltages are dc measured with a VOM which has an input impedance of 20k ohms/volt. No signal in.  
Voltage variations may be noted because of normal production tolerances.  
Capacitors marked  $\Delta$  are built in each transformer.  
[ ] stereo operation

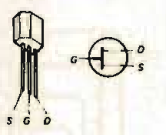


5-2. MOUNTING DIAGRAM – Fm (A-m) Front-End/I-f Amp/MPX Board –  
 – Conductor Side – (TCB-019W1)

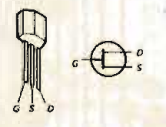
Parts Location		
Q	D	ADJ
Q203		
Q202		IFT101
Q204		
Q201		
Q102		L101 L102 L103
Q205		
Q103		
Q101		
Q302	D301	CT101 CT401 CT102 CT402 CT103
Q206	D201	
Q303		L302
Q301		
Q404	D303 D304 D305 D306	IFT201 L402
	D203 D204	L301
		D402
Q402	D403	IFT401
Q401	D401	
Q403		



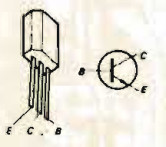
2SK23A



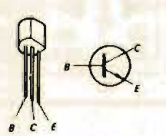
2SK42



2SC403C  
2SC633A  
2SC634A



2SC710



1S1555  
1S351M  
1T22A  
1T40

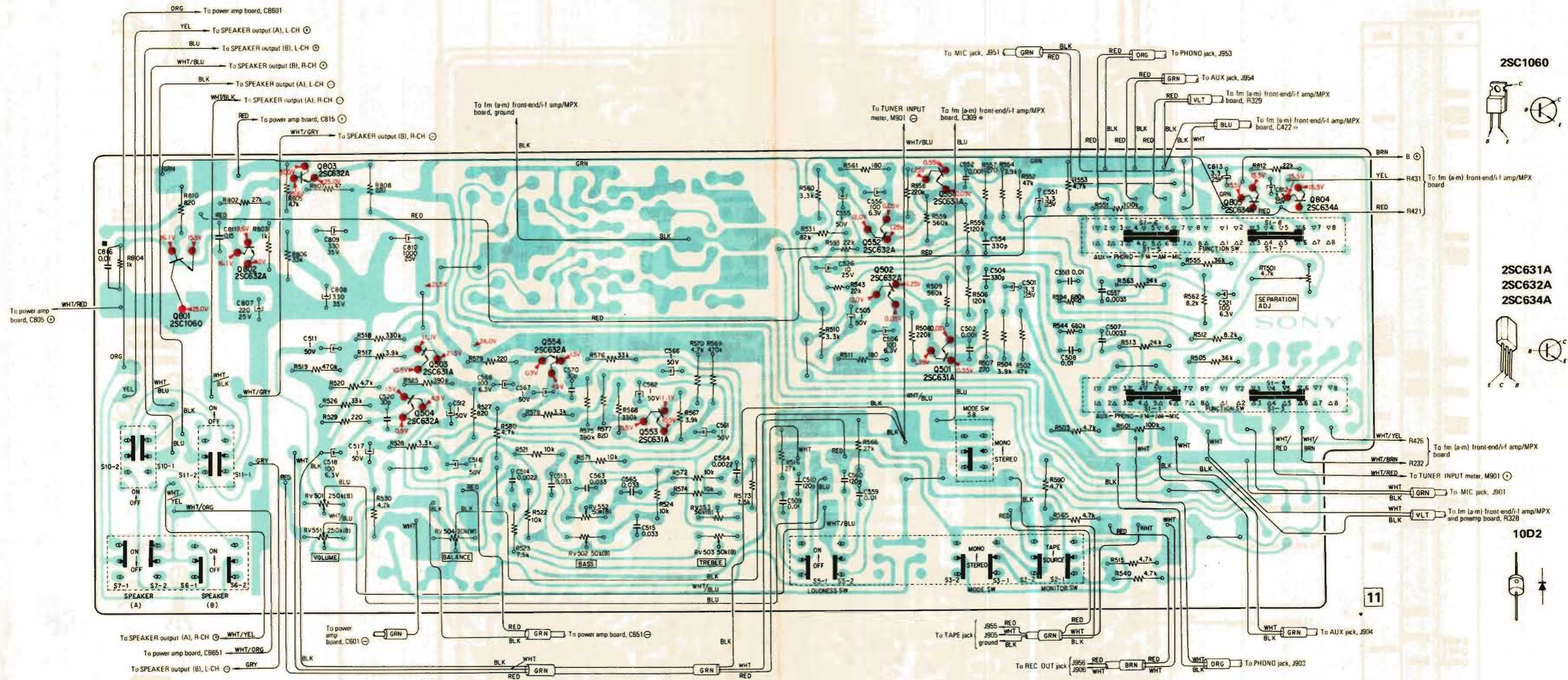


[ ] : stereo operation

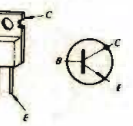
Note: ■ C323 is mounted on the conductor side.



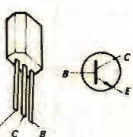
5-3. MOUNTING DIAGRAM - Control Board -  
- Conductor Side -



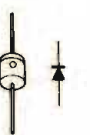
2SC1060



2SC631A  
2SC632A  
2SC634A



10D2

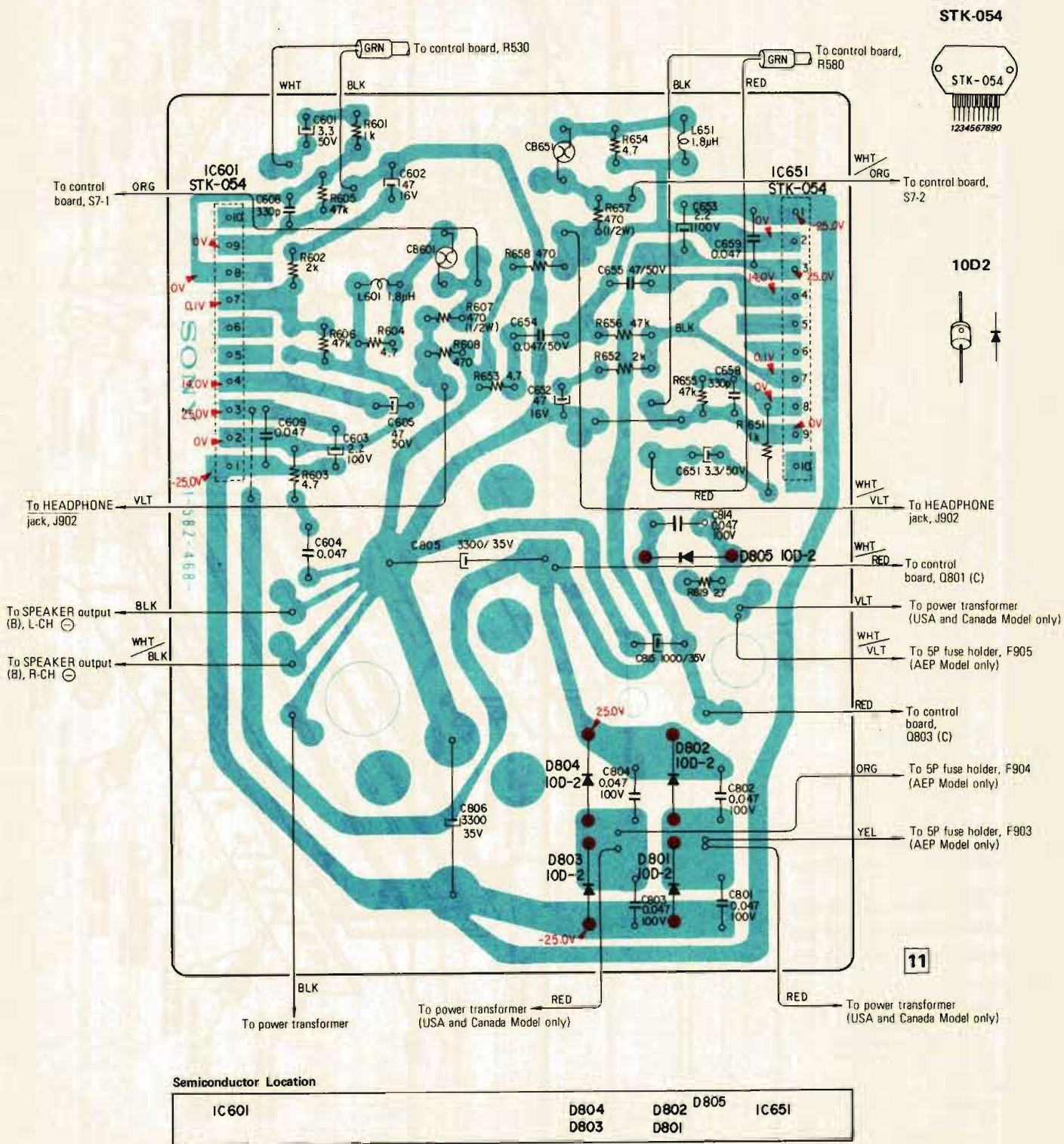


Parts Location	Q801	Q802	Q803	Q503 Q504	Q554	Q553	Q552 Q502	Q551 Q501	Q805	Q804
Q										
D										
ADJ										RT501

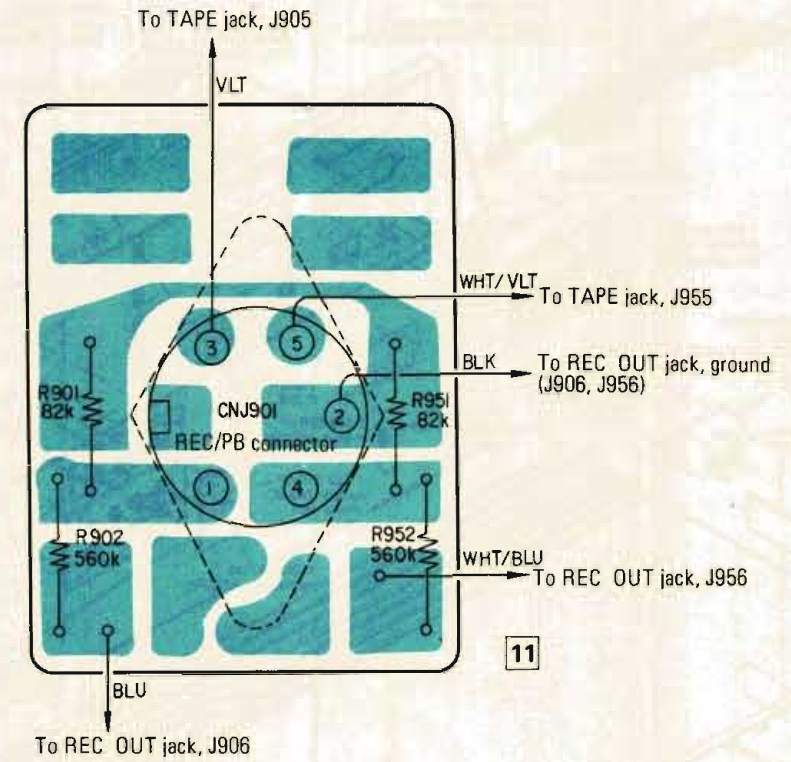
Note: ■ C816 is mounted on the conductor side.



5-4. MOUNTING DIAGRAM -- Power Amplifier Board --  
-- Conductor Side --



5-5. MOUNTING DIAGRAM -- REC/PB Connector Board --  
-- Conductor Side --

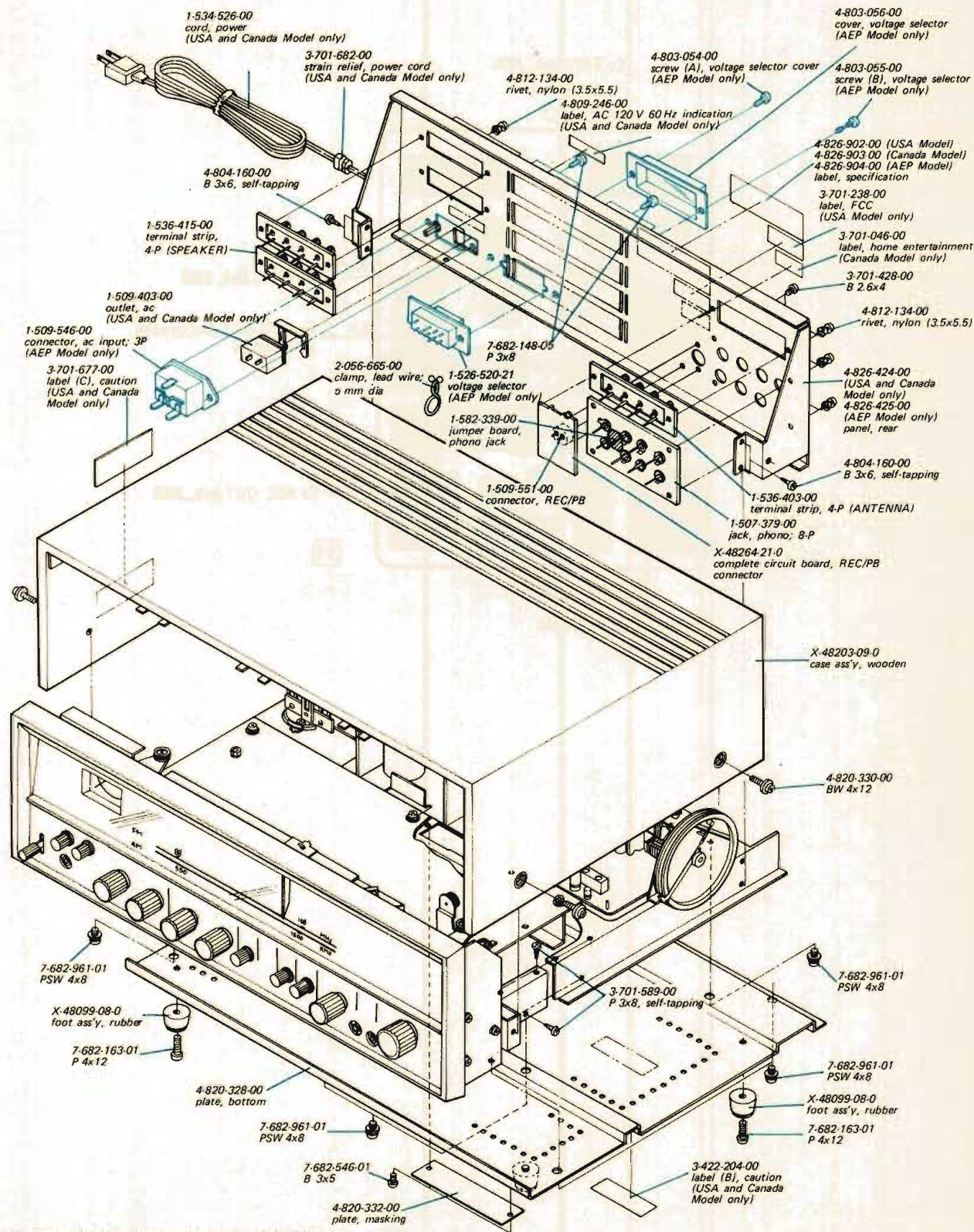




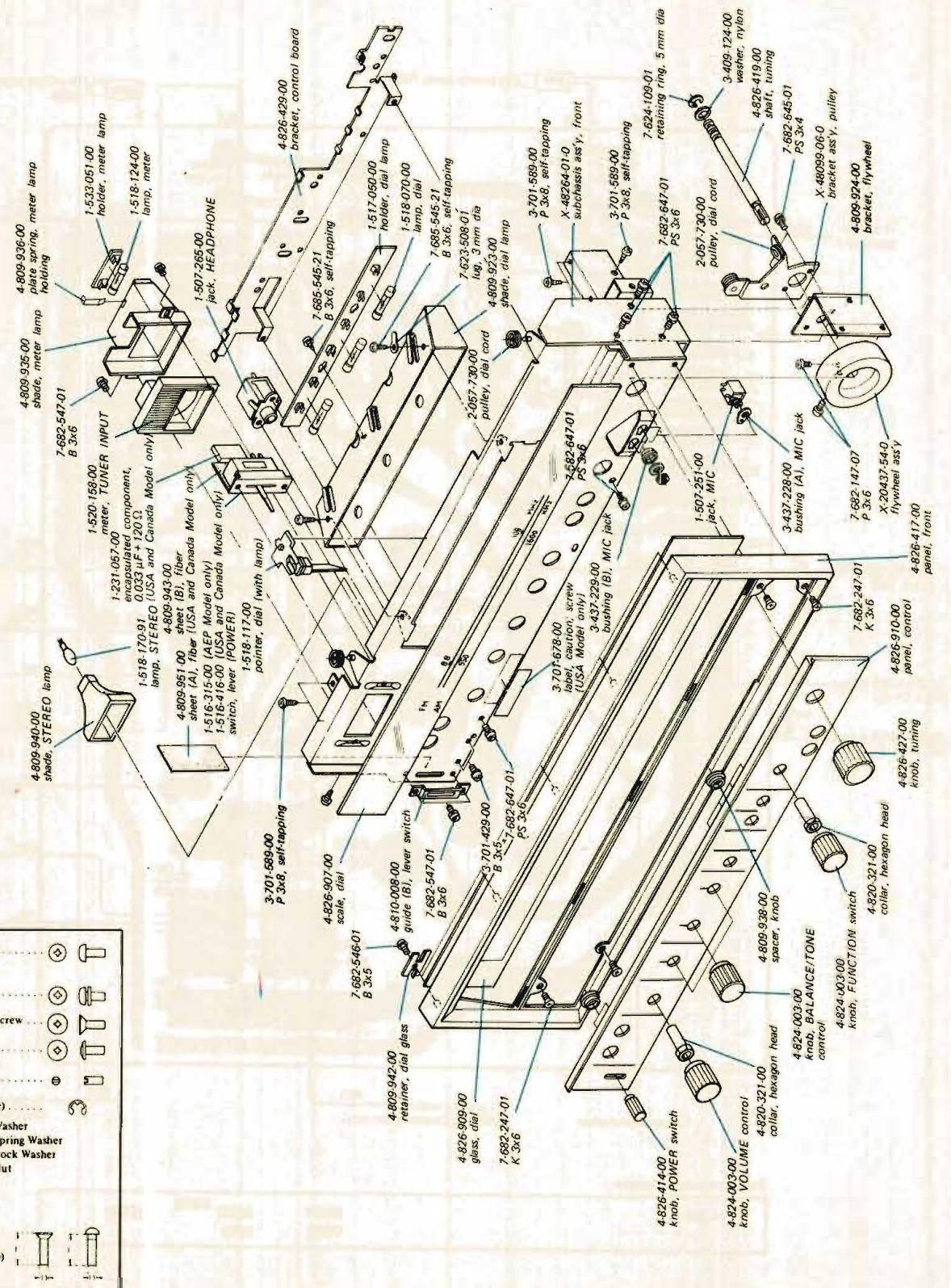
SECTION 6  
EXPLODED VIEWS

Note: Applicable serial number  
USA Model: 800,001 and later  
Canada Model: 700,001 and later  
AEP Model: 500,001 and later

(1)



(2)



P	Pan Head Screw	
PS	Pan Head Screw with Spring Washer	
K	Flat Countersunk Head Screw	
B	Binding Head Screw	
SC	Set Screw	
E	Retaining Ring (E Washer)	
W	Washer	
SW	Spring Washer	
LW	Lock Washer	
N	Nut	

Example

Type of Slot

Length in mm (L)

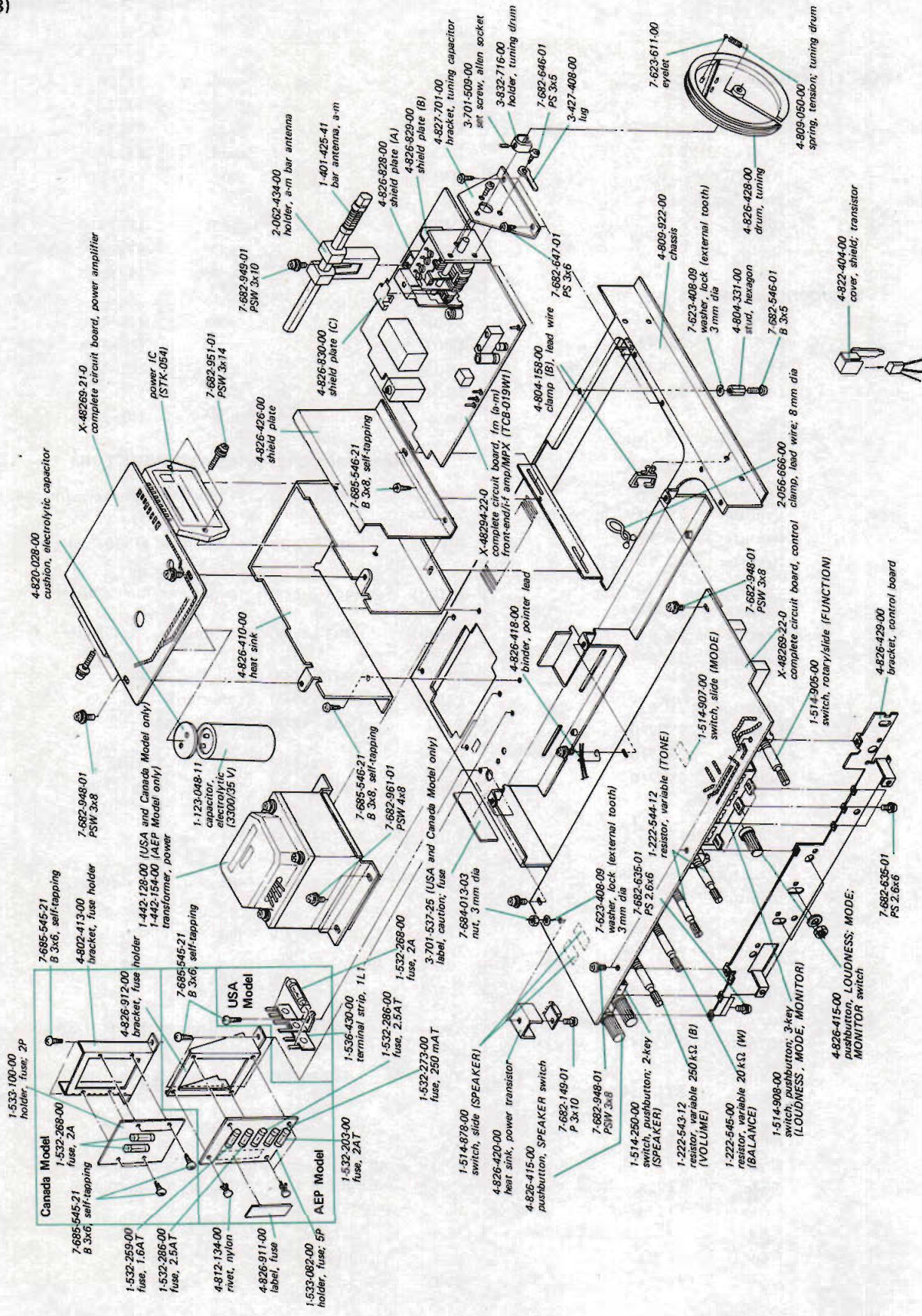
Diameter in mm (D)

Type of Head

Note: All screws in this service manual are Phillips type (cross recess type) unless otherwise indicated. (-); slotted head.



(3)



## SECTION 7 ELECTRICAL PARTS LIST

**Note:** Applicable serial number  
 USA Model: 800,001 and later  
 Canada Model: 700,001 and later  
 AEP Model: 500,001 and later

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
<b>COMPLETE CIRCUIT BOARDS</b>					
X-48294-22-0		fm (a-m) front-end/i-f amp/MPX (TCB-019W1)			
X-48264-21-0		REC/PB connector			
X-48269-21-0		power amplifier			
X-48269-22-0		control			
<b>SEMICONDUCTORS</b>					
Q101		FET 2SK42	D303		diode 1T22A
Q102		FET 2SK23A	D304		diode 1T22A
Q103		transistor 2SC710	D305		diode 1T22A
Q201		transistor 2SC403C	D306		diode 1T22A
Q202		transistor 2SC403C	D307		diode 1S1555
Q203		transistor 2SC403C	D401		diode 1T22A
Q204		transistor 2SC403C	D402		diode 1T22A
Q205		transistor 2SC403C	D403		diode 1T40
Q206		transistor 2SC710	D801		diode 10D-2
Q301		transistor 2SC634A	D802		diode 10D-2
Q302		transistor 2SC634A	D803		diode 10D-2
Q303		transistor 2SC634A	D804		diode 10D-2
Q401		transistor 2SC633A	D805		diode 10D-2
Q402		transistor 2SC710	<b>TRANSFORMERS, COILS AND INDUCTORS</b>		
Q403		transistor 2SC710	CFT401	1-403-150-00	i-f transformer/ceramic filter, 455 kHz
Q404		transistor 2SC710	IFT101	1-403-914-00	transformer, i-f; 10.7 MHz
Q501 (Q551)		transistor 2SC631A	IFT201	1-403-291-00	transformer, discriminator
Q502 (Q552)		transistor 2SC632A	IFT401	1-403-149-00	transformer, i-f; 455 kHz
Q503 (Q553)		transistor 2SC631A	L101	1-401-541-00	coil, fm antenna
Q504 (Q554)		transistor 2SC632A	L102	1-405-599-00	coil, fm rf
Q801		transistor 2SC1060	L103	1-405-598-00	coil, fm osc
Q802		transistor 2SC632A	L301	1-405-418-00	coil, trap 22 mH
Q803		transistor 2SC632A	L302	1-425-683-00	transformer, switching
Q804		transistor 2SC634A	L401	1-401-425-41	bar antenna, a-m
Q805		transistor 2SC634A	L402	1-405-444-00	coil, a-m osc
IC601 (IC651)	IC	STK-054	L403	1-407-169-00	inductor, micro 100 $\mu$ H
D201		diode 1T40	L601 (L651)	1-407-592-00	inductor, micro 1.8 $\mu$ H
D202		diode 1T40	MU301	1-425-548-00	MPX unit
D203		diode 1T22A	T901	1-442-128-00	transformer, power (USA and Canada Model only)
D204		diode 1T22A	T901	1-442-154-00	transformer, power (AEP Model only)
D301		diode 1T22A	<b>CAPACITORS</b>		
D302		diode 1T22A	All capacitors are in $\mu$ F except as indicated with p and $\pm 20\%$ , 50 V, ceramic type unless otherwise specified. (p = $\mu$ m, elect = electrolytic)		
			C101	1-102-958-11	20 p $\pm 5\%$
			C102	1-102-959-11	22 p $\pm 5\%$



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C103	1-102-257-11	2200 p	C401	1-105-669-12	0.0047 ±10% 50V mylar
C104	1-102-257-11	2200 p	C402	1-101-924-11	0.02 25V
C105	1-102-257-11	2200 p	C403	1-105-682-12	0.056 ±10% 50V mylar
C106	1-102-257-11	2200 p	C404	1-101-924-11	0.02 25V
C107	1-102-875-11	7p ±0.5p	C405	1-105-677-12	0.022 ±10% 50V mylar
C108	1-101-973-11	20p ±5%	C406	1-105-673-12	0.01 ±10% 50V mylar
C109	1-101-978-11	10p ±0.5p	C407	1-105-677-12	0.022 ±10% 50V mylar
C110	1-102-257-11	2200p	C408	1-101-924-11	0.02 25V
C111	1-101-588-11	5p ±0.5p	C409	1-101-924-11	0.02 25V
C201	1-102-257-11	2200p	C410	1-121-415-11	100 16V elect
C202	1-101-924-11	0.02 25V	C411	1-101-924-11	0.02 25V
C203	-----		C412	1-101-923-11	0.01 25V
C204	1-101-924-11	0.02 25V	C413	1-105-685-12	0.1 ±10% 50V mylar
C205	1-102-257-11	2200p	C414	1-101-924-11	0.02 25V
C206	1-101-924-11	0.02 25V	C415	1-121-392-11	3.3 25V elect
C207	1-102-257-11	2200p	C416	1-121-392-11	3.3 25V elect
C208	1-102-257-11	2200p	C417	1-101-884-11	56p ±5%
C209	1-102-977-11	200p ±5%	C418	1-101-924-11	0.02 25V
C210	1-102-947-11	10p ±5%	C419	1-105-675-12	0.015 ±10% 50V mylar
C211	1-101-924-11	0.02 25V	C420	1-105-677-12	0.022 ±10% 50V mylar
C212	1-121-352-11	47 10V elect	C421	1-121-413-11	100 6.3V elect
C213	1-121-398-11	10 25V elect	C422	1-127-022-11	0.47 10V solid aluminum
C214	1-101-924-11	0.02 25V	C423	1-121-395-11	4.7 25V elect
C215	1-101-924-11	0.02 25V	C424	1-101-924-11	0.02 25V
C216	1-121-402-11	33 10V elect	C425	1-121-415-11	100 16V elect
C217	1-102-977-11	200p ±5%	C501 (C551)	1-121-913-11	3.3 25V elect
C218	1-101-924-11	0.02 25V	C502 (C552)	1-105-661-12	0.001 ±10% 50V mylar
C219	1-101-924-11	0.02 25V	C503 (C553)	-----	
C220	1-121-398-11	10 25V elect	C504 (C554)	1-102-112-11	330p ±10%
C301	1-107-140-11	240p ±10% 50V silvered mica	C505 (C555)	1-121-912-11	1 50V elect
C302	1-107-140-11	240p ±10% 50V silvered mica	C506 (C556)	1-121-413-11	100 6.3V elect
C303	1-121-398-11	10 25V elect	C507 (C557)	1-105-667-12	0.0033 ±10% 50V mylar
C304	1-121-403-11	33 16V elect	C508 (C558)	1-105-673-12	0.01 ±10% 50V mylar
C305	1-102-977-11	200p ±5%	C509 (C559)	1-105-673-12	0.01 ±10% 50V mylar
C306	-----		C510 (C560)	1-102-816-11	120p ±5%
C307	1-127-021-11	0.33 10V solid aluminum	C511 (C561)	1-121-912-11	1 50V elect
C308	1-102-977-11	200p ±5%	C512 (C562)	1-121-912-11	1 50V elect
C309	1-121-391-11	1 50V elect	C513 (C563)	1-105-679-12	0.033 ±10% 50V mylar
C310	1-121-415-11	100 16V elect	C514 (C564)	1-105-665-12	0.0022 ±10% 50V mylar
C311	1-127-022-11	0.47 10V solid aluminum	C515 (C565)	1-105-679-12	0.033 ±10% 50V mylar
C312	1-121-398-11	10 25V elect	C516 (C566)	1-121-912-11	1 50V elect
C313	1-103-575-11	4700p 50V styrol	C517 (C567)	1-121-912-11	1 50V elect
C314	-----		C518 (C568)	1-121-413-11	100 6.3V elect
C315	-----		C519 (C569)	-----	
C316	-----		C520 (C570)	1-102-962-11	30p ±5%
C317	1-105-679-12	0.033 ±10% 50V mylar	C521	1-121-413-11	100 6.3V elect
C318	1-105-679-12	0.033 ±10% 50V mylar	C526	1-121-398-11	10 25V elect
C319	1-105-677-12	0.022 ±10% 50V mylar	C601 (C651)	1-121-914-11	3.3 50V elect
C320	1-105-677-12	0.022 ±10% 50V mylar	C602 (C652)	1-121-409-11	47 16V elect
C321	1-127-021-11	0.33 10V solid aluminum			
C322	1-127-021-11	0.33 10V solid aluminum			
C323	1-121-971-11	100 16V elect			

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C603 (C653)	1-123-025-11	2.2 100 V elect	R207	1-244-643-11	56
C604 (C654)	1-105-681-12	0.047 $\pm 10\%$ 50 V mylar	R208	1-242-657-11	220
C605 (C655)	1-123-058-11	47 50 V elect	R209	1-244-690-11	5.1 k
C606 (C656)	-----		R210	1-244-695-11	8.2 k
C607 (C657)	-----		R211	1-242-669-11	680
C608 (C658)	1-102-112-11	330 p $\pm 10\%$	R212	1-244-643-11	56
C609 (C659)	1-105-881-12	0.047 $\pm 20\%$ 100V mylar	R213	1-244-673-11	1 k
C801	1-105-881-12	0.047 $\pm 20\%$ 100 V mylar	R214	1-242-657-11	220
C802	1-105-881-12	0.047 $\pm 20\%$ 100 V mylar	R215	1-242-657-11	220
C803	1-105-881-12	0.047 $\pm 20\%$ 100 V mylar	R216	1-244-705-11	22 k
C804	1-105-881-12	0.047 $\pm 20\%$ 100 V mylar	R217	1-244-673-11	1 k
C805	1-123-048-11	3300 35 V elect	R218	1-242-667-11	560
C806	1-123-048-11	3300 35 V elect	R219	1-244-675-11	1.2 k
C807	1-121-936-11	220 25 V elect	R220	1-244-689-11	4.7 k
C808	1-123-064-11	330 35 V elect	R221	1-242-671-11	820
C809	1-123-064-11	330 35 V elect	R222	-----	
C810	1-123-066-11	1000 25 V elect	R223	1-244-643-11	56
C811	1-105-687-12	0.15 $\pm 10\%$ 50 V mylar	R224	1-242-689-11	4.7 k
C812	1-121-913-11	3.3 25 V elect	R225	1-244-667-11	560
C813	1-121-913-11	3.3 25 V elect	R226	1-242-673-11	1 k
C814	1-105-881-12	0.047 $\pm 20\%$ 100 V mylar	R227	1-244-695-11	8.2 k
C815	1-121-388-11	1000 35 V elect	R228	1-244-705-11	22 k
C816	1-105-673-12	0.01 $\pm 10\%$ 50V mylar	R229	1-242-680-11	2 k
CT101, 102, CT103	1-151-263-00	capacitor, tuning	R230	1-242-643-11	56
CT401, 402			R231	1-244-685-11	3.3 k
CV101, 102, CV103			R232	1-244-685-11	3.3 k
CV401, 402			R233	1-244-647-11	82
			R234	1-244-657-11	220
			R235	1-242-673-11	1 k
			R301	1-242-703-11	18 k
			R302	1-242-689-11	4.7 k
			R303	1-242-713-11	47 k
			R304	1-242-717-11	68 k
			R305	1-242-697-21	10 k
			R306	1-242-673-11	1 k
			R307	1-242-721-11	100 k
			R308	1-242-689-11	4.7 k
			R309	1-242-661-11	330
			R310	1-242-715-11	56 k
			R311	1-242-669-11	680
			R312	1-244-690-11	5.1 k
			R313	1-242-657-11	220
			R314	-----	
			R315	-----	
			R316	-----	
			R317	1-242-666-11	510
			R318	1-242-666-11	510
			R319	1-242-691-11	5.6 k
			R320	1-242-691-11	5.6 k
			R321	-----	
			R322	1-242-643-11	56

## RESISTORS

All resistors are in  $\Omega$ ,  $\pm 5\%$ ,  $\frac{1}{4}W$  and carbon type unless otherwise specified.

R101	1-244-673-11	1 k
R102	1-244-685-11	3.3 k
R103	1-244-657-11	220
R104	1-242-657-11	220
R105	1-244-679-11	1.8 k
R106	1-244-705-11	22 k
R107	1-242-651-11	120
R108	1-242-685-11	3.3 k
R201	1-242-689-11	4.7 k
R202	1-242-701-11	15 k
R203	1-242-665-11	470
R204	1-242-625-11	10
R205	1-242-657-11	220
R206	1-242-673-11	1 k



<u>Ref. No</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No</u>	<u>Part No.</u>	<u>Description</u>
R323	1-202-560-11	300 ½W composition	R510 (R560)	1-244-685-11	3.3 k
R324	1-242-690-11	5.1 k	R511 (R561)	1-244-655-11	180
R325	1-244-649-11	100	R512 (R562)	1-244-695-11	8.2 k
R326	1-242-694-11	7.5 k	R513 (R563)	1-244-706-11	24 k
R327	1-242-694-11	7.5 k	R514 (R564)		-----
R328	1-244-685-11	3.3 k	R515 (R565)	1-244-689-11	4.7 k
R329	1-244-685-11	3.3 k	R516 (R566)	1-244-707-11	27 k
R330	1-242-713-11	47 k	R517 (R567)	1-244-687-11	3.9 k
R331	1-242-713-11	47 k	R518 (R568)	1-244-733-11	330 k
R332	1-242-697-11	10 k	R519 (R569)	1-244-737-11	470 k
R401	1-244-691-11	5.6 k	R520 (R570)	1-244-689-11	4.7 k
R402	1-242-664-11	430	R521 (R571)	1-244-697-11	10 k
R403	1-244-645-11	68	R522 (R572)	1-244-697-11	10 k
R404	1-244-694-11	7.5 k	R523 (R573)	1-244-694-11	7.5 k
R405	1-242-669-11	680	R524 (R574)	1-244-697-11	10 k
R406	1-242-705-11	22 k	R525 (R575)	1-244-735-11	390 k
R407	1-244-729-11	220 k	R526 (R576)	1-244-709-11	33 k
R408	1-242-671-11	820	R527 (R577)	1-244-671-11	820
R409	1-244-663-11	390	R528 (R578)	1-244-685-11	3.3 k
R410	1-242-673-11	1 k	R529 (R579)	1-244-657-11	220
R411	1-244-673-11	1 k	R530 (R580)	1-244-689-11	4.7 k
R412	1-242-722-11	110 k	R531	1-244-719-11	82 k
R413	1-242-701-11	15 k	R540 (R590)	1-244-689-11	4.7 k
R414	1-244-684-11	3 k	R541		-----
R415	1-244-689-11	4.7 k	R542		-----
R416	1-244-643-11	56	R543 (R593)	1-242-705-11	22 k
R417	1-242-665-11	470	R544 (R594)	1-242-741-11	680 k
R418	1-244-643-11	56	R601 (R651)	1-244-673-11	1 k
R419	1-244-689-11	4.7 k	R602 (R652)	1-242-680-11	2 k
R420	1-244-689-11	4.7 k	R603 (R653)	1-242-617-11	4.7
R421	1-202-566-11	510 ½W composition	R604 (R654)	1-242-617-11	4.7
R422	1-244-645-11	68	R605 (R655)	1-242-713-11	47 k
R423	1-242-689-11	4.7 k	R606 (R656)	1-242-713-11	47 k
R424	1-242-673-11	1 k	R607 (R657)	1-202-565-11	470 ½W composition
R425	1-242-657-11	220	R608 (R658)	1-242-665-11	470
R426	1-242-676-11	1.3 k	R801		-----
R427	1-242-697-11	10 k	R802	1-244-207-11	27 k
R428	1-242-691-11	5.6 k	R803	1-244-673-11	1 k
R429	1-242-680-11	2 k	R804	1-244-673-11	1 k
R430	1-242-735-11	390 k	R805	1-244-689-11	4.7 k
R431	1-244-649-11	100	R806	1-244-709-11	33 k
R432	1-244-643-11	56	R807	1-244-641-11	47
R501 (R551)	1-244-721-11	100 k	R808	1-244-657-11	220
R502 (R552)	1-244-713-11	47 k	R809		-----
R503 (R553)	1-244-689-11	4.7 k	R810	1-244-671-11	820
R504 (R554)	1-244-687-11	3.9 k	R811	1-244-705-11	22 k
R505 (R555)	1-244-710-11	36 k	R812	1-244-705-11	22 k
R506 (R556)	1-244-723-11	120 k	R819	1-242-611-11	2.7
R507 (R557)	1-244-659-11	270			
R508 (R558)	1-244-729-11	220 k			
R509 (R559)	1-244-739-11	560 k			

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R901 (R951)	1-244-719-11	82 k
R902 (R952)	1-244-739-11	560 k
R903	1-244-640-11	43
R904		-----
R905	1-202-645-11	1M $\frac{1}{2}$ W composition (USA and Canada Model only)
RV501 (RV551)	1-222-543-12	250 k (B), variable (VOLUME)
RV502 (RV552)	1-222-544-12	50 k (B), variable (BASS)
RV503 (RV553)	1-222-544-12	50 k (B), variable (TREBLE)
RV504	1-222-545-00	20 k (W), variable (BALANCE)
RT501	1-222-773-00	4.7 k, adjustable (SEPARATION adj)

**SWITCHES**

S1	1-514-905-00	rotary/slide (FUNCTION)
S2, 3, 5	1-514-908-00	pushbutton, 3-key (MONITOR, MODE, LOUDNESS)
S6, 7	1-514-250-00	pushbutton, 2-key (SPEAKER)
S8	1-514-907-00	slide (MODE)
S10, 11	1-514-878-00	slide (SPEAKER)
S901	1-516-315-00	lever (POWER) (AEP Model only)
	1-516-416-00	lever (POWER) (USA and Canada Model only)

**FILTERS**

CF201, 202	1-527-220-11	Fm (I-f), ceramic	10.70 MHz (red)
	1-527-220-21	Fm (I-f), ceramic	10.67 MHz (blue)
	1-527-220-31	Fm (I-f), ceramic	10.73 MHz (orange)
	1-527-220-41	Fm (I-f), ceramic	10.64 MHz (black)
	1-527-220-51	Fm (I-f), ceramic	10.76 MHz (white)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
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**JACKS**

J901 (J951)	1-507-251-00	MIC
J902	1-507-265-00	HEADPHONT.
J903~906 (J953~956)	1-507-379-00	phono, 8-p

**MISCELLANEOUS**

CP201	1-231-193-00	encapsulated component
CP301, 302	1-231-224-00	encapsulated component
CP901	1-231-057-00	encapsulated component, 0.033 $\mu$ F + 120 $\Omega$ (USA and Canada Model only)
CNJ901	1-509-551-00	connector, REC/PB
CNJ902	1-509-403-00	outlet, ac (USA and Canada Model only)
	1-509-546-00	connector, ac input; 3P (AEP Model only)
F901	1-532-268-00	fuse, 2A (USA Model)
	1-532-259-00	fuse, 1.6AT (AEP Model)
F901, 902	1-532-268-00	fuse, 2A (Canada Model)
F902	1-532-203-00	fuse, 2AT (AEP Model only)
F903, 904	1-532-286-00	fuse, 2.5AT (AEP Model only)
F905	1-532-273-00	fuse, 250mAT (AEP Model only)
M901	1-520-158-00	meter, TUNER INPUT
P1	1-534-526-00	cord, power (USA and Canada Model only)
	1-536-430-00	terminal strip, 1L1 (USA Model only)
PL901	1-518-124-00	lamp, meter 8V/0.25A
PL902-904	1-518-070-00	lamp, dial 8V/0.3A
PL905	1-518-170-91	lamp, STEREO 4.5V/40mA
PL911	1-518-117-00	pointer, dial; with lamp
CB601 (CB651)	1-532-380-00	breaker, circuit
	1-536-403-00	terminal strip, 4P (ANTENNA)
TM901	1-536-415-00	terminal strip, 4P (SPEAKER)
	1-517-050-00	holder, dial lamp
	1-533-051-00	holder, meter lamp
	1-533-100-00	holder, fuse; 2P (Canada Model only)
	1-533-082-00	holder, fuse; 5P (AEP Model only)
VS	1-526-520-21	selector, voltage (AEP Model only)



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