

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 μ V (IHF)
 1.7 μ 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 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.

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: RIAA 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 }

A-M TUNER SECTION

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

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)

AUDIO AMP SECTION

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

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 μ V (IHF) 1.7 μ 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 ₂ ⁰ 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 μ 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 ₃ ⁰ dB
Residual noise:	Less than 0.08 μ watt/ 8 ohms
Frequency response:	

PHONO	RIAA equalization curve \pm 2 dB
MIC	30 Hz-10 kHz \pm ₃ ⁰ dB
AUX TAPE REC/PB (Input)	30 Hz-40 kHz \pm ₃ ⁰ 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 ± 10 dB at 100 Hz
TREBLE ± 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)

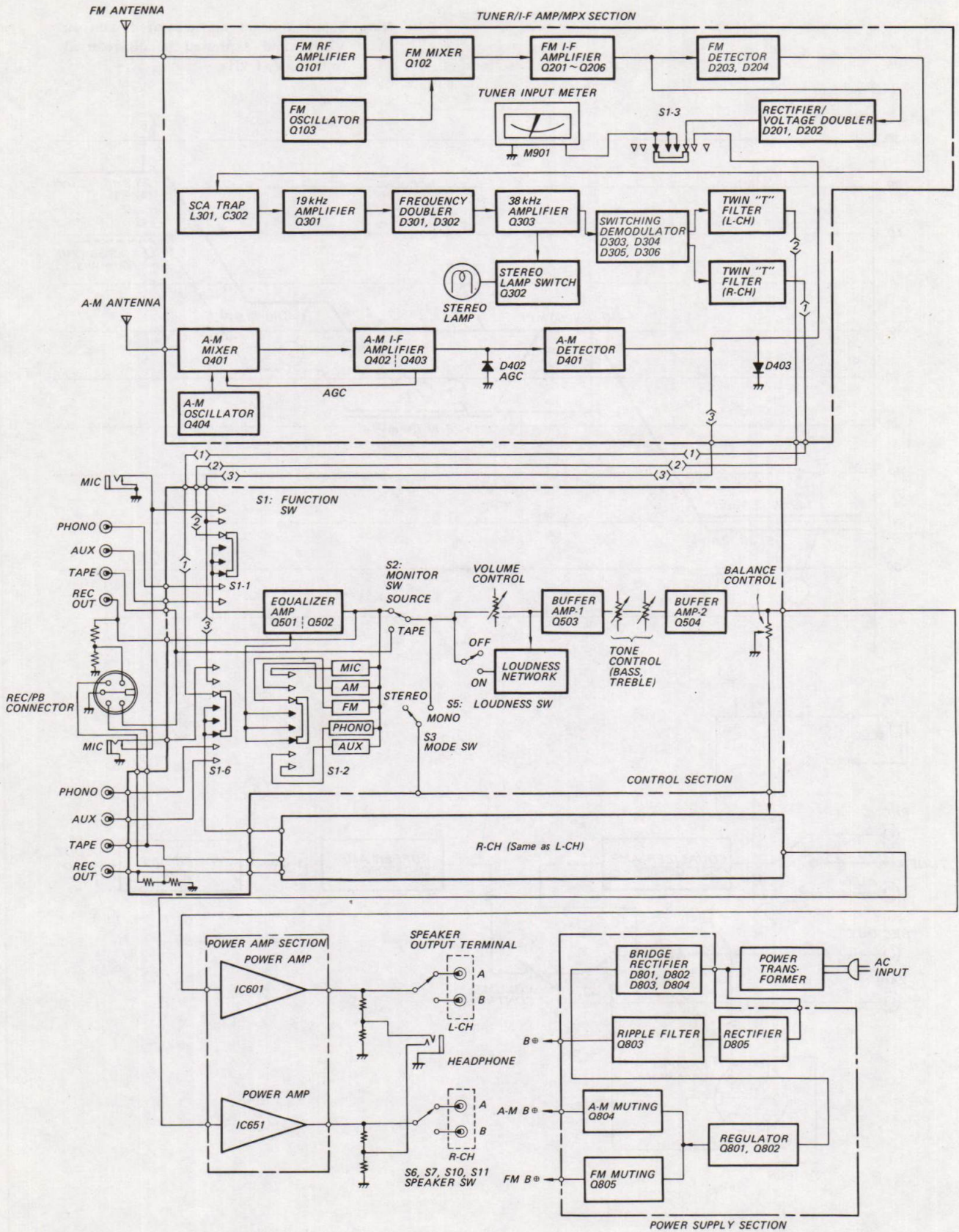
Ac outlet: 1 unswitched, 300 watts total (USA and Canada Model only)

Dimensions: 434(w) \times 145(h) \times 348(d) mm
17 $\frac{1}{8}$ (w) \times 5 $\frac{11}{16}$ (h) \times 13 $\frac{11}{16}$ (d) inches

Net weight: 8.6 kg (18 lb 15 oz)

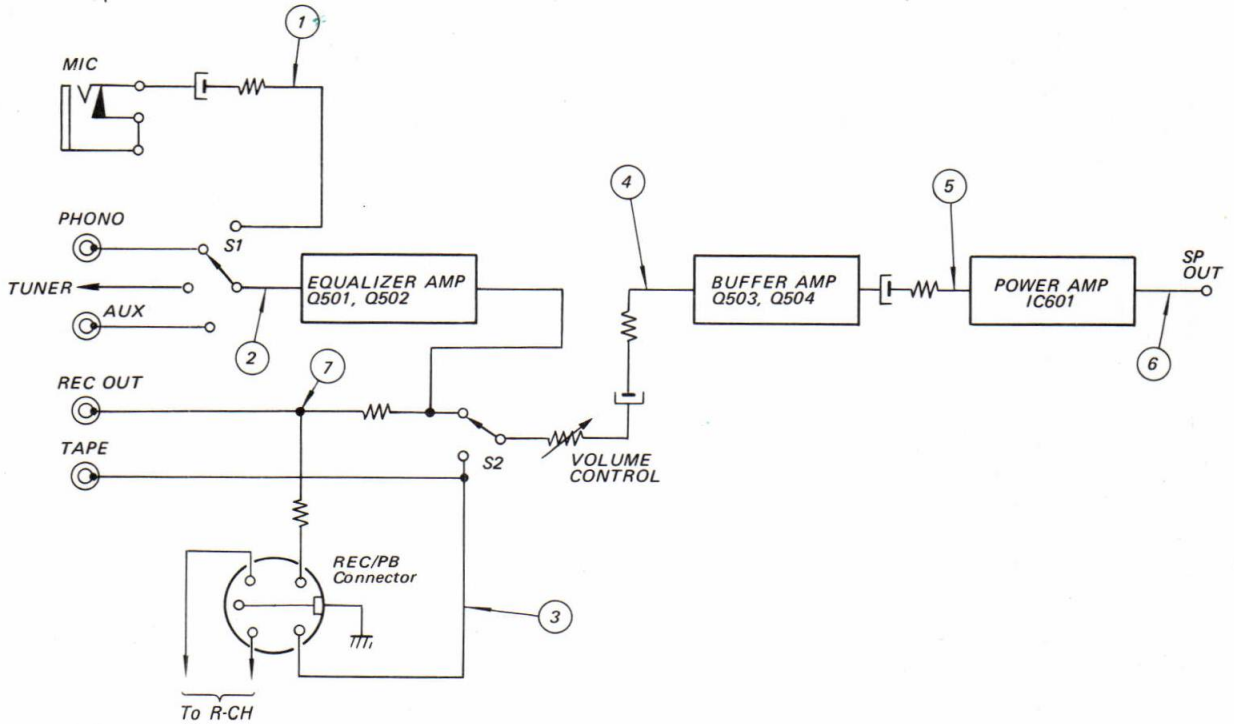
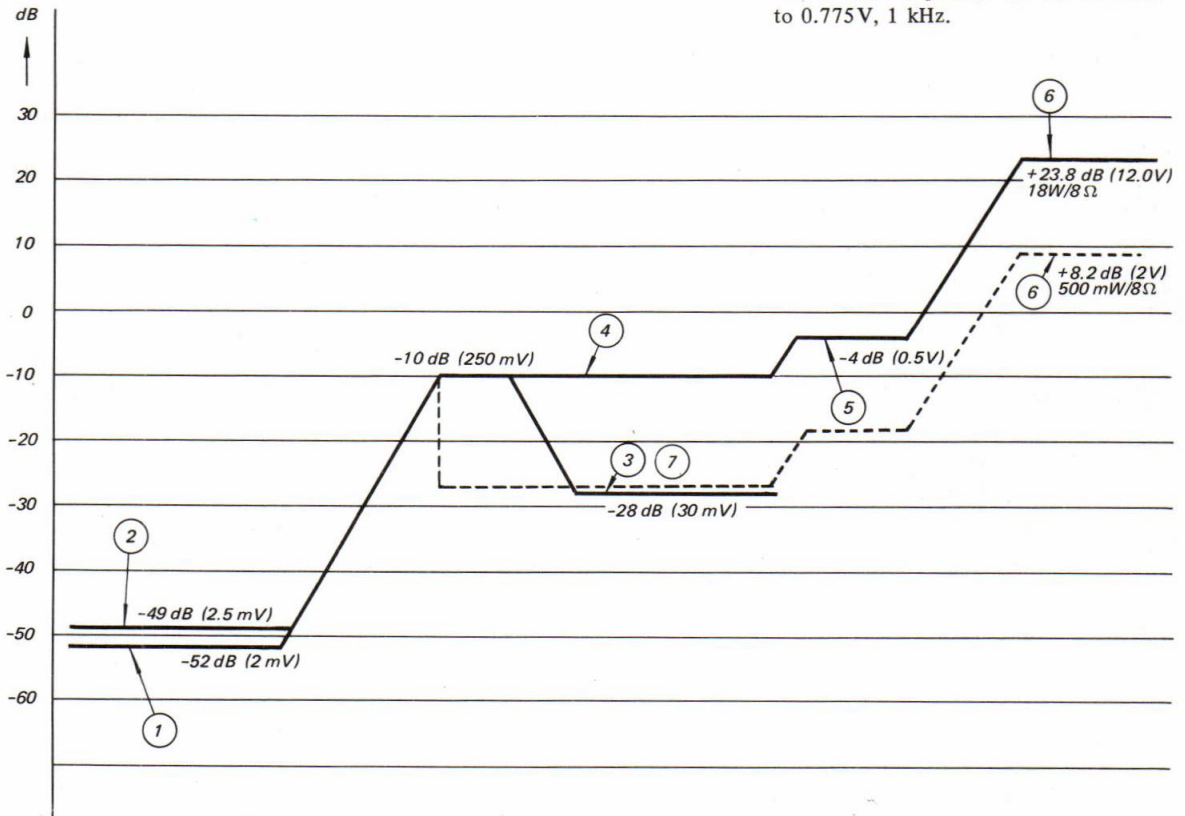
Shipping weight: 11 kg (24 lb 5 oz)

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.

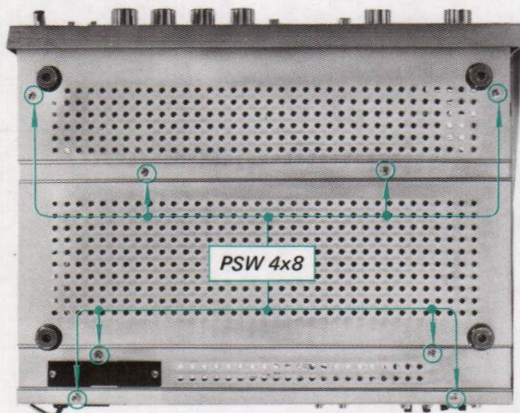


Fig. 2-2. Bottom plate removal

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.

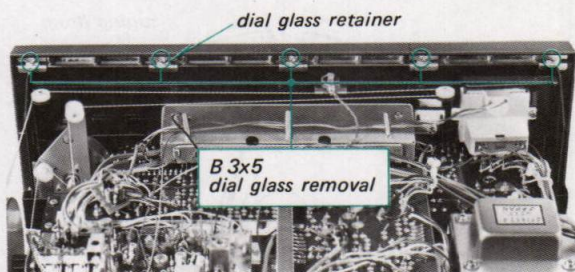


Fig. 2-3. Dial glass removal

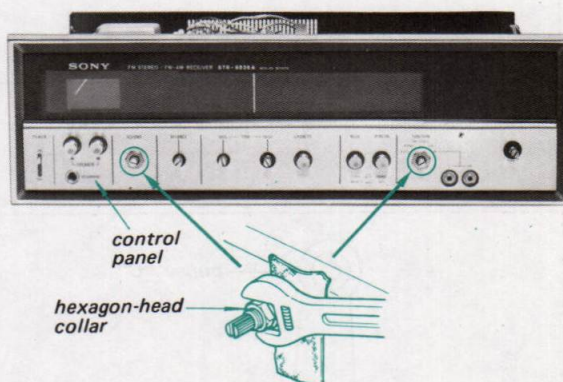


Fig. 2-4. Control panel removal

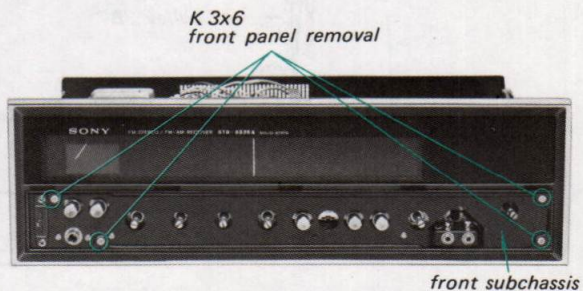


Fig. 2-5. Front panel removal

2-4. DIAL CORD RESTRINGING

Preparation

1. Remove the wooden case as described in Procedure 2-1.
2. Cut a 2,020 mm (78 17/32 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.

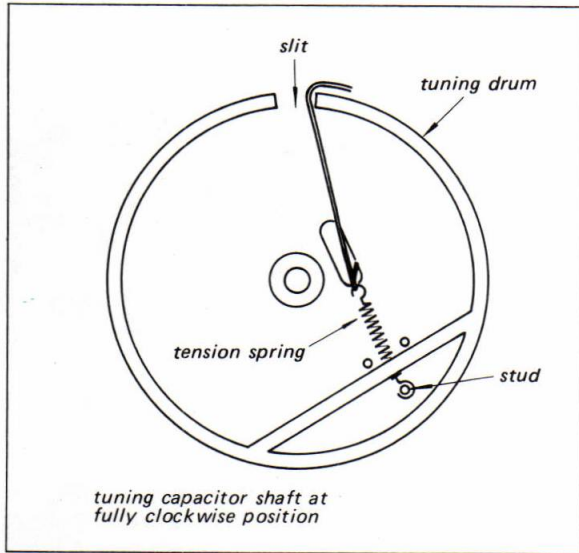


Fig. 2-6. Tension spring installation

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.

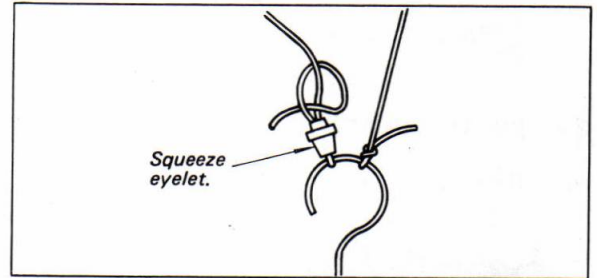


Fig. 2-8. Dial cord finish

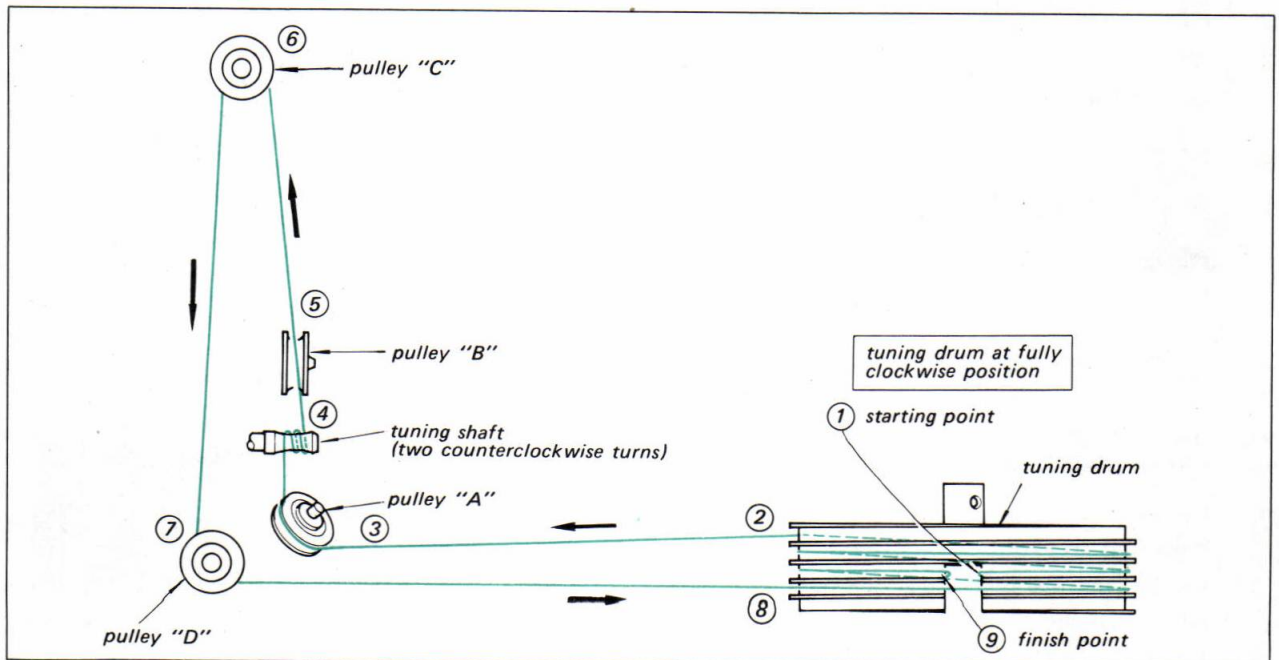


Fig. 2-7. Dial cord stringing

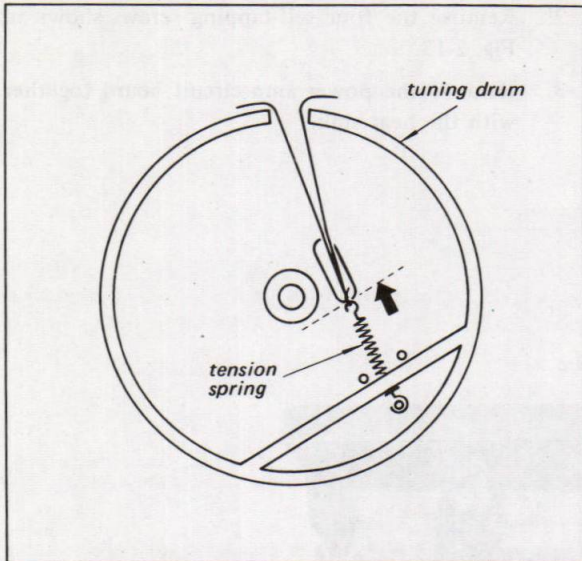


Fig. 2-9. End of dial cord stringing

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.

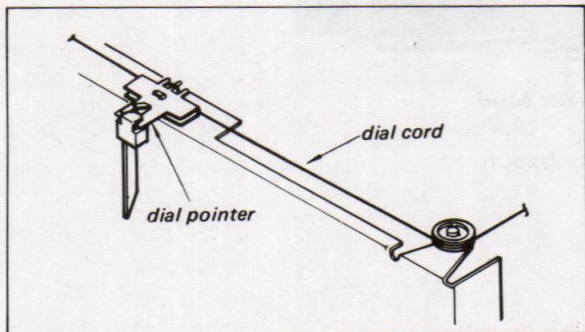


Fig. 2-10. Dial pointer installation

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.

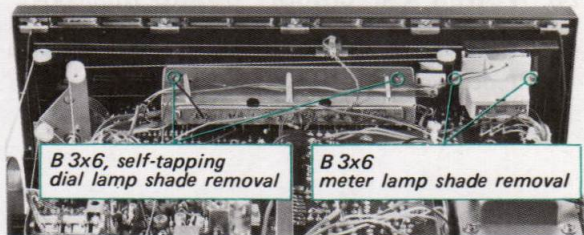


Fig. 2-11. Tuner input meter and dial lamp shade replacement

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.

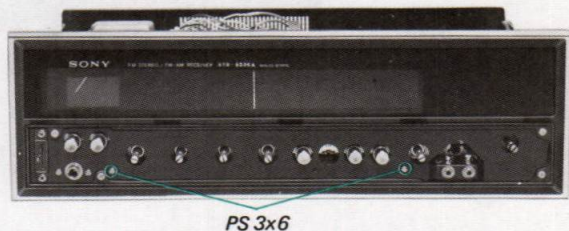


Fig. 2-12. Control circuit board removal

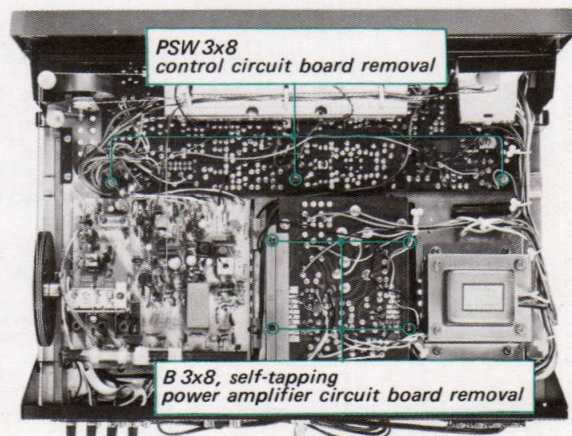


Fig. 2-13. Control and power amplifier circuit board removal

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

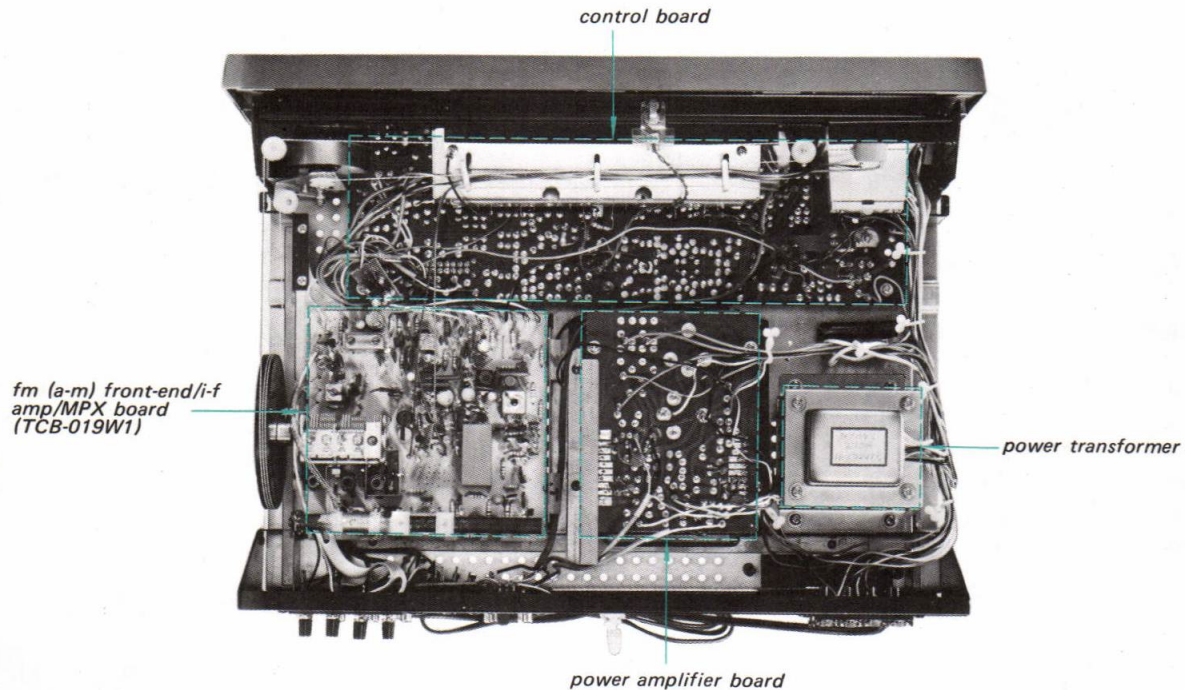


Fig. 2-14. Chassis layout

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

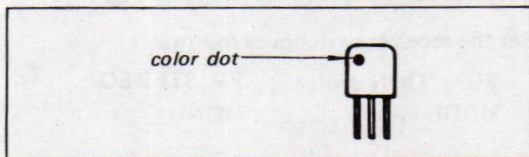


Fig. 3-1. Color dot on ceramic filter

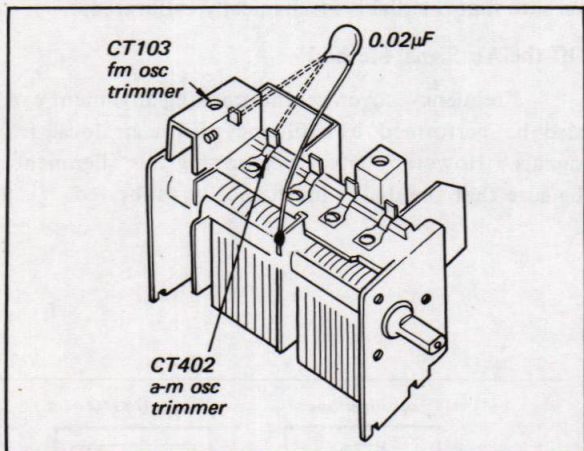


Fig. 3-2. Interruption of fm or a-m local oscillator operation

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.

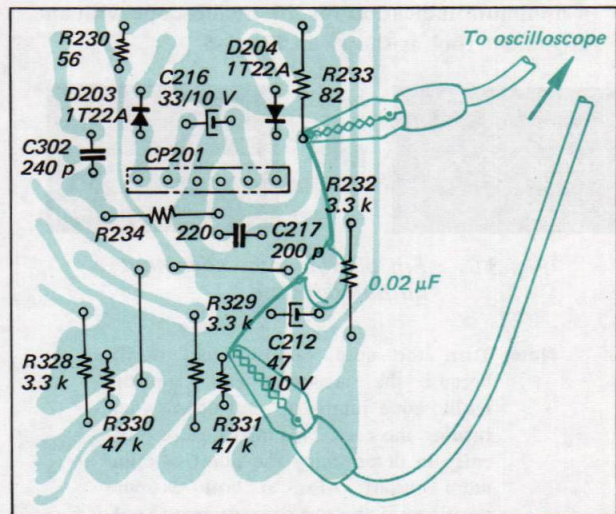


Fig. 3-3. Fm discriminator output connection

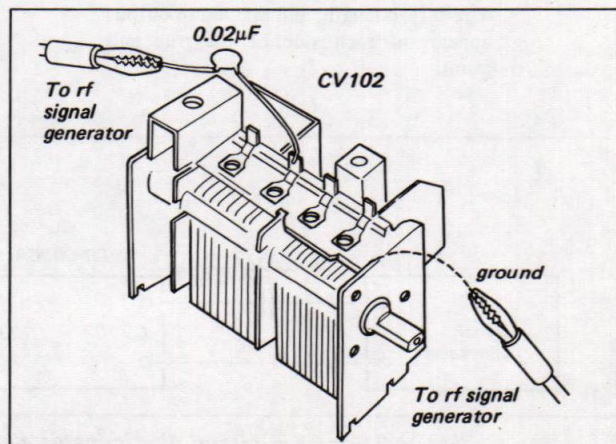


Fig. 3-4. 10.7MHz signal injection

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 μ 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.

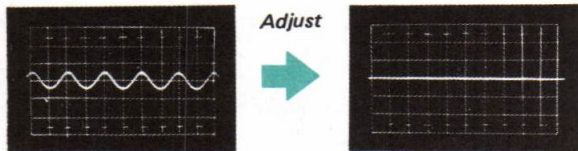


Fig. 3-6. Fm discriminator alignment output response

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.

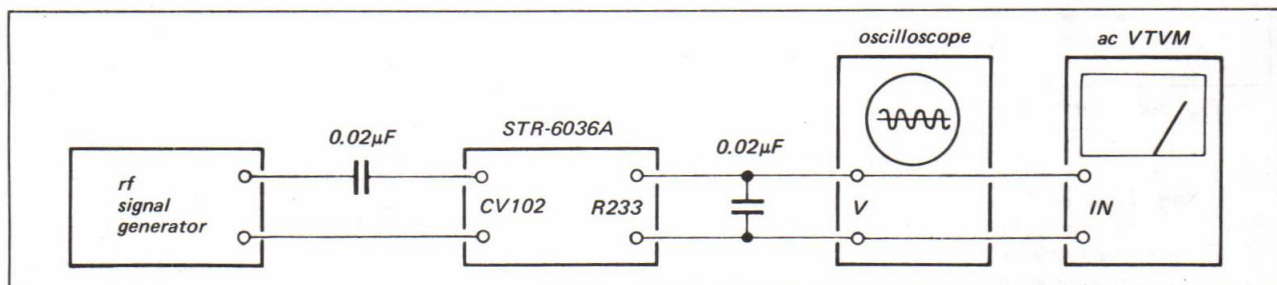


Fig. 3-5. Fm i-f and discriminator alignment test setup by rf signal generator

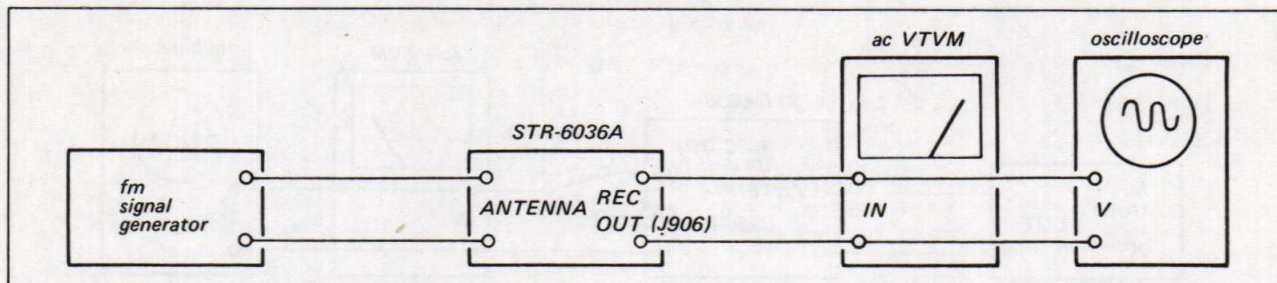


Fig. 3-7. Fm frequency coverage and tracking alignment test setup by rf signal generator

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 μ 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

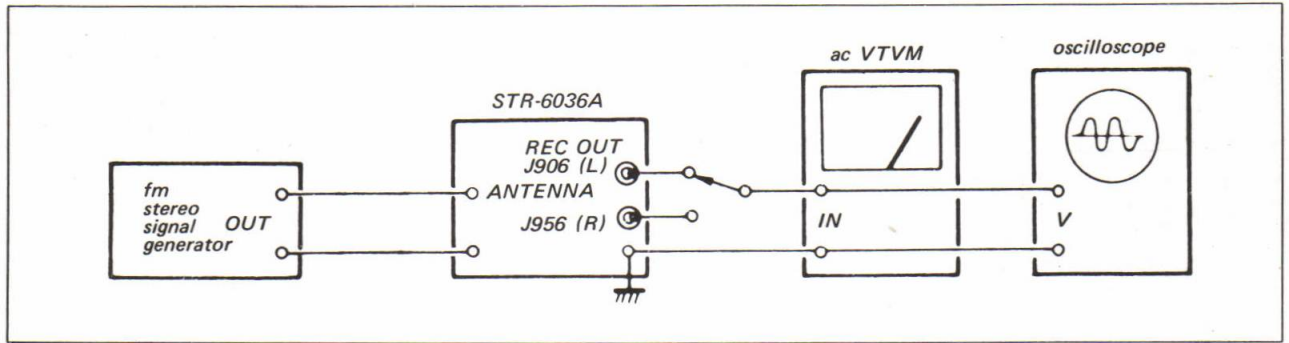


Fig. 3-8. Fm stereo separation adjustment test setup

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.

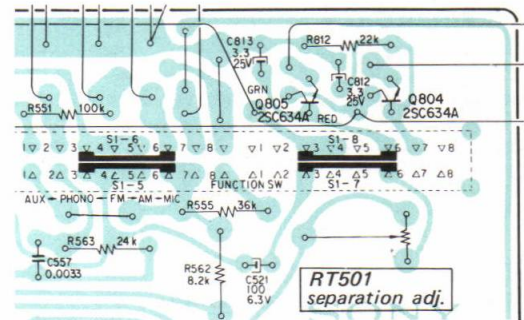


Fig. 3-9. Adjusting parts location

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.

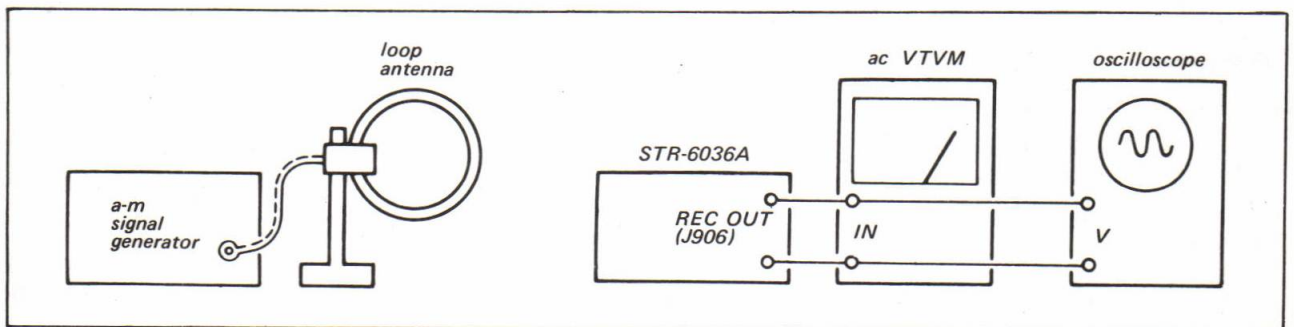


Fig. 3-10. A-m frequency coverage and tracking alignment test setup

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 SG Output Level 400Hz, 30% mod; as low as possible			
Step	SG Frequency	Receiver Dial Setting	Ac VTVM Connection	Adjust	Indication
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 SG Output Level 400Hz, 30% mod; as low as possible			
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:

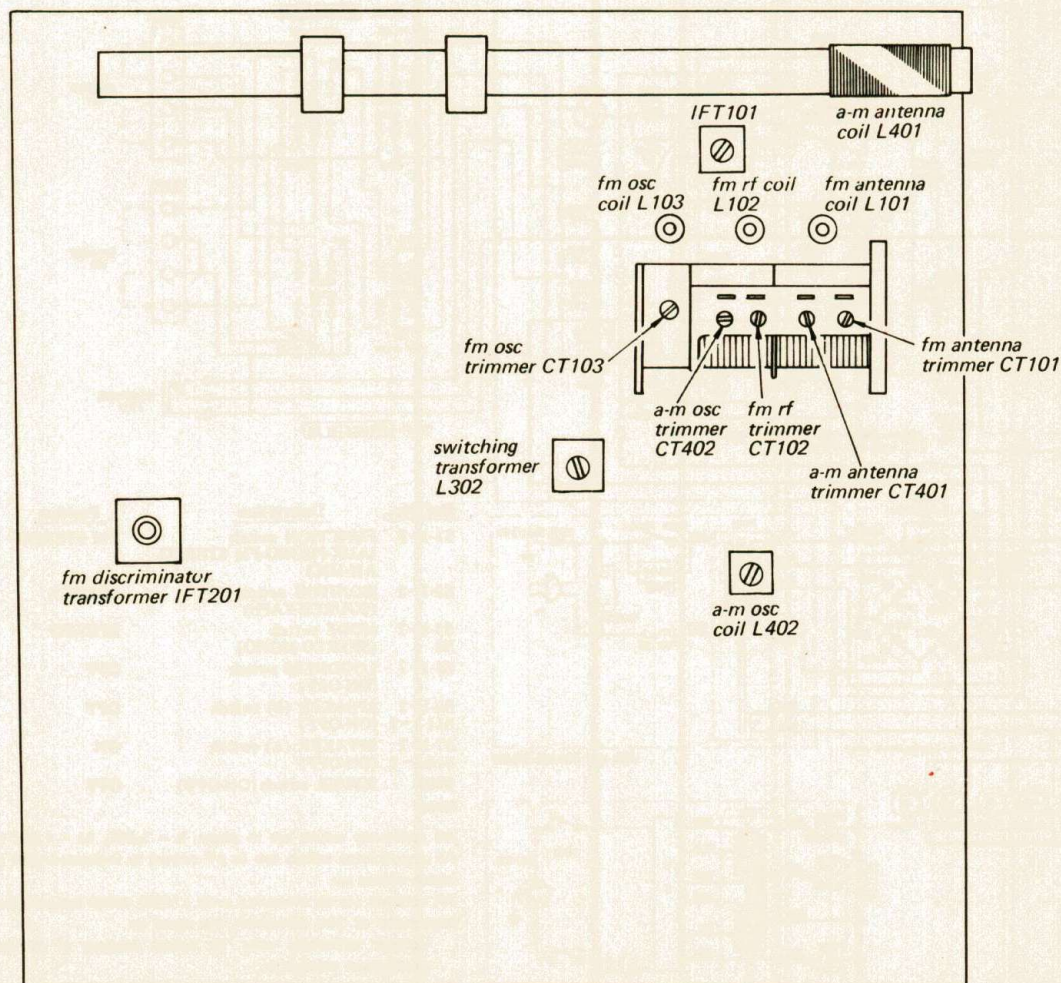


Fig. 3-11. Adjustment parts location

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.

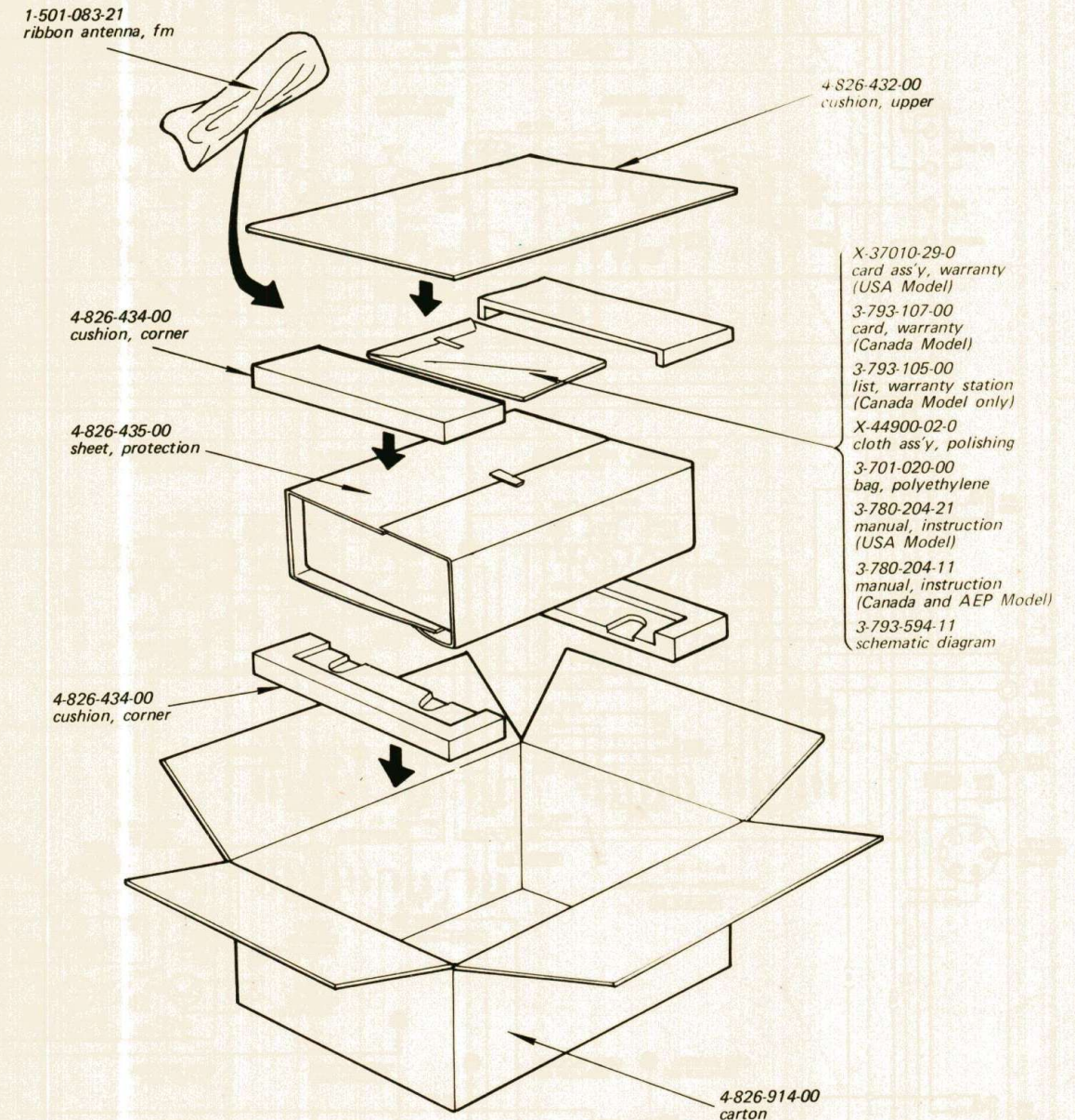
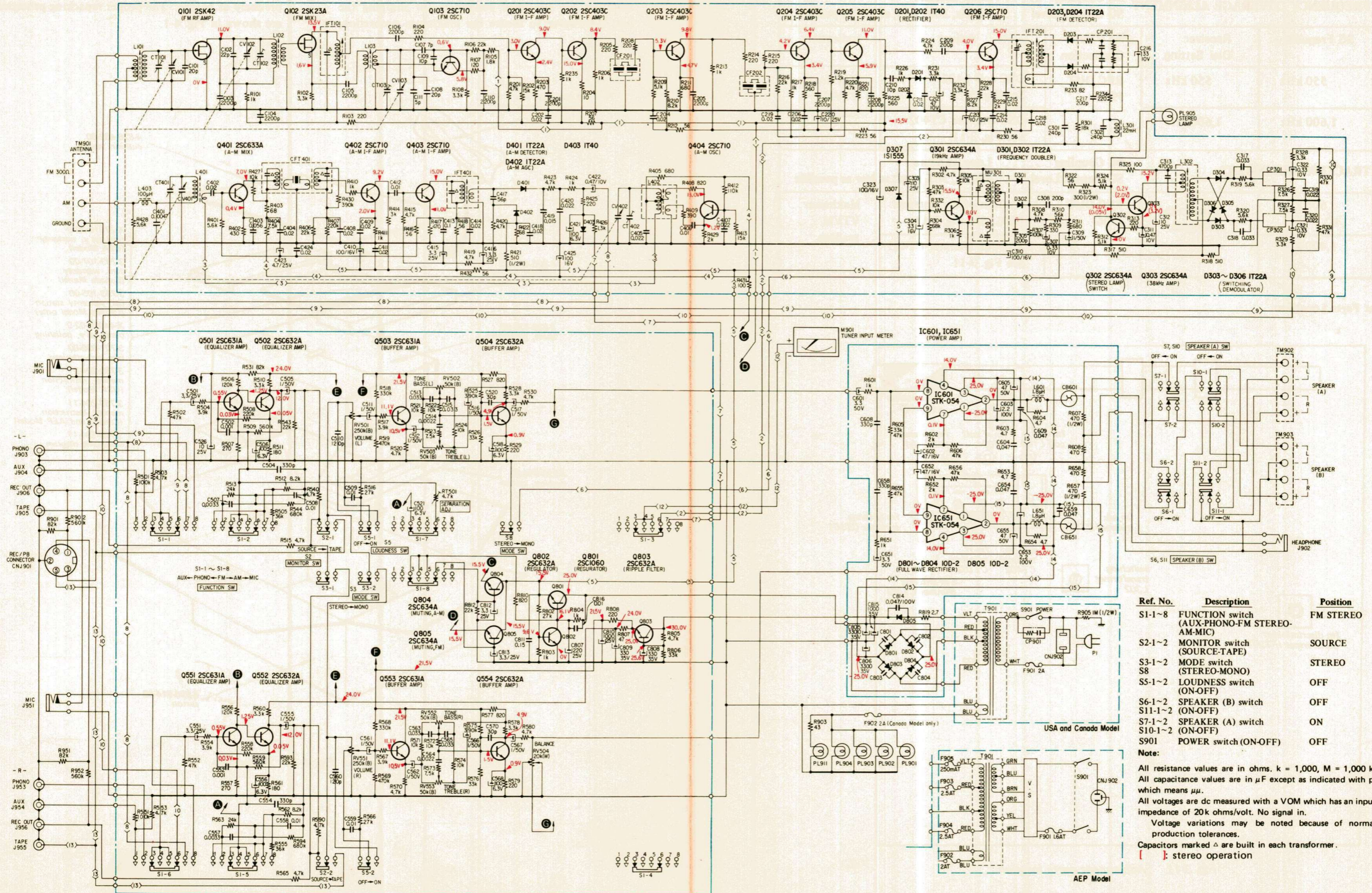


Fig. 4-1. Repacking

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

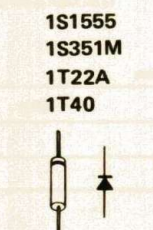
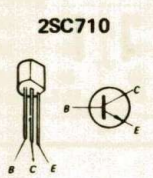
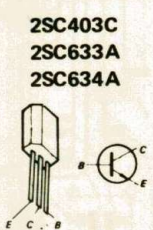
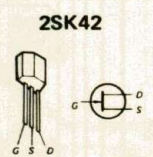
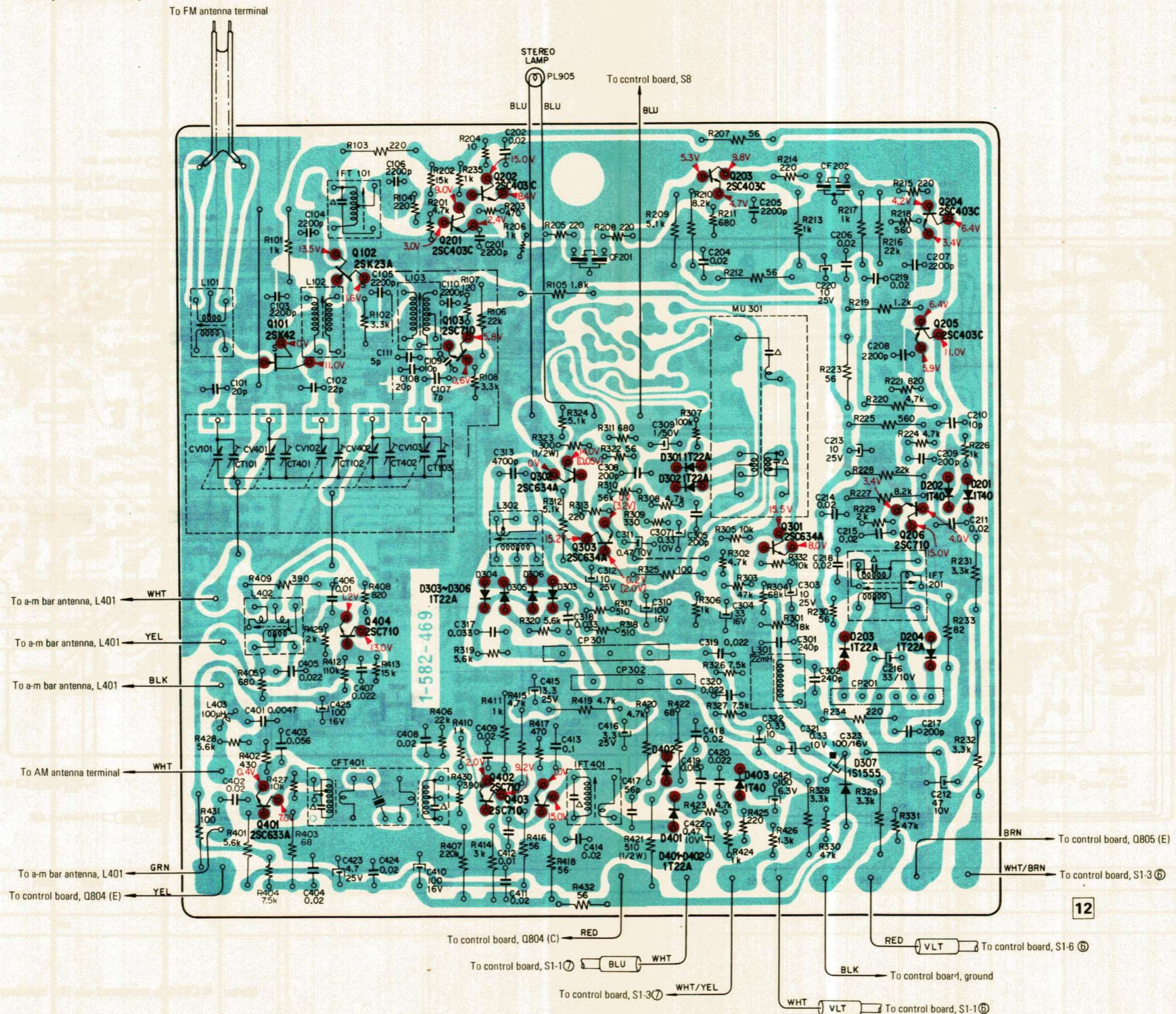


Ref. No.	Description	Position
S1-1~8	FUNCTION switch (AUX-PHONO-FM STEREO-AM-MIC)	FM STEREO
S2-1~2	MONITOR switch (SOURCE-TAPE)	SOURCE
S3-1~2	MODE switch (STEREO-MONO)	STEREO
S5-1~2	LOUDNESS switch (ON-OFF)	OFF
S6-1~2	SPEAKER (B) switch (ON-OFF)	OFF
S7-1~2	SPEAKER (A) switch (ON-OFF)	ON
S10-1~2	POWER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

Note:
All resistance values are in ohms. k = 1,000, M = 1,000 k.
All capacitance values are in μ F except as indicated with p, which means μ m.
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 Δ are built in each transformer.
[]: stereo operation

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

Parts Location		
Q	D	ADJ
Q203		
Q202		
Q204	IFT101	
Q201		
Q102		
Q205	L101	
Q103	L102	
Q101	L103	
Q302	CT101	
	CT401	
	CT102	
	CT402	
	CT103	
Q206	D301	
	D302	
Q303	D201	
Q301	D202	
	L302	
	D303	
	D304	
	D305	
	D306	
Q404	L401	
	L402	
	D203	
	D204	
	L301	
	D402	
Q402	D403	
Q401	IFT401	
Q403	D401	

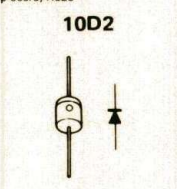
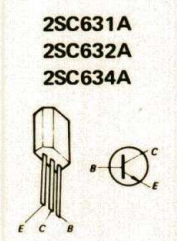
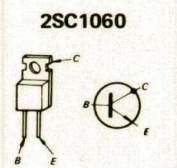
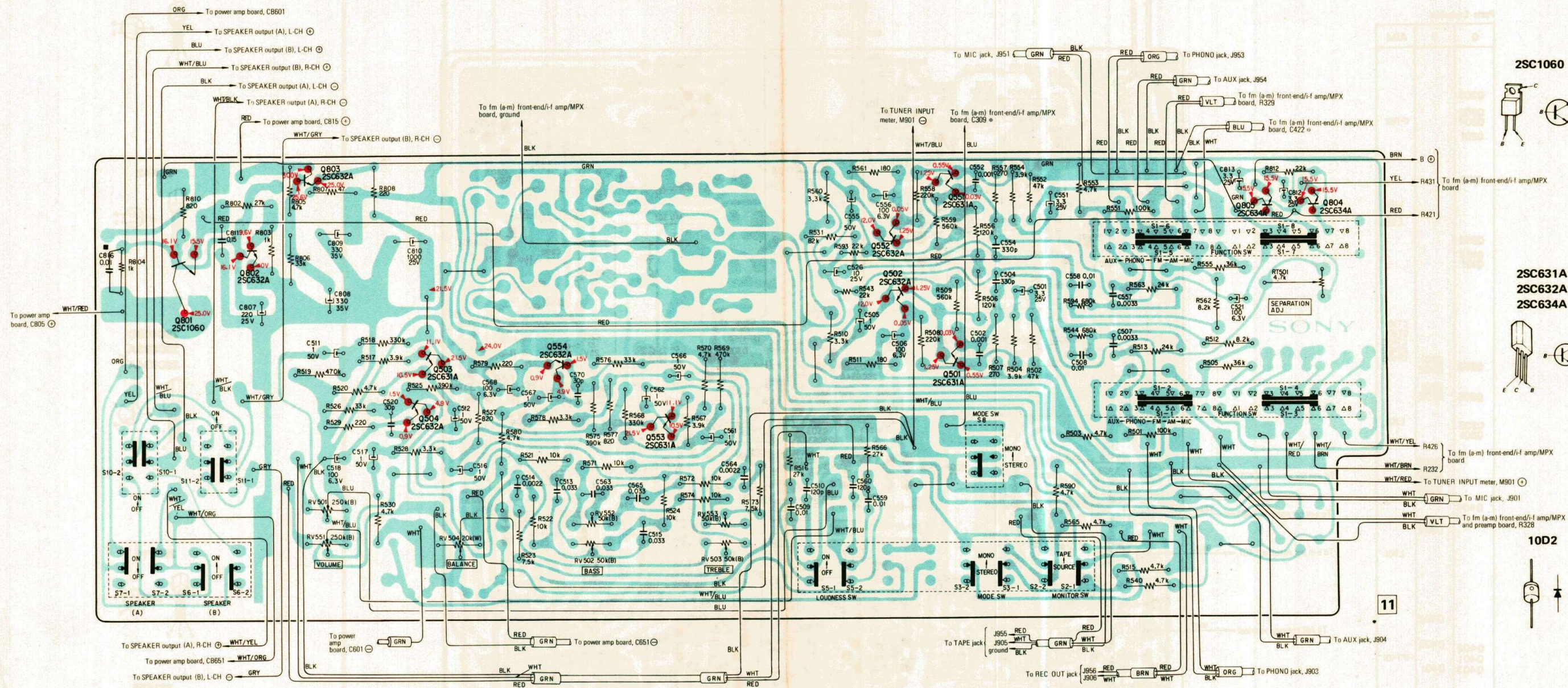


[] : stereo operation

Note: ■ C323 is mounted on the conductor side.

5-3. MOUNTING DIAGRAM - Control Board -

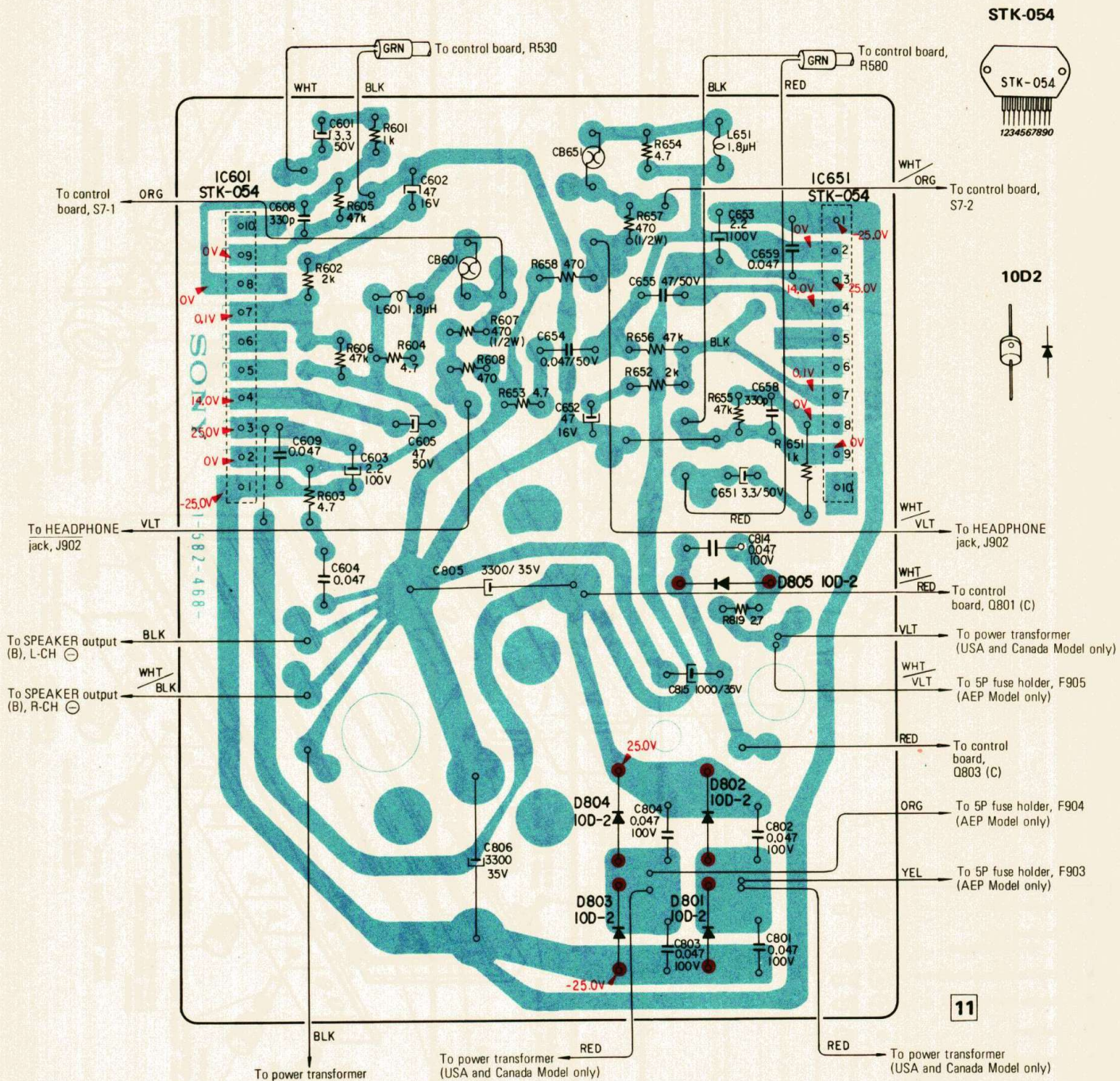
- Conductor Side -



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.

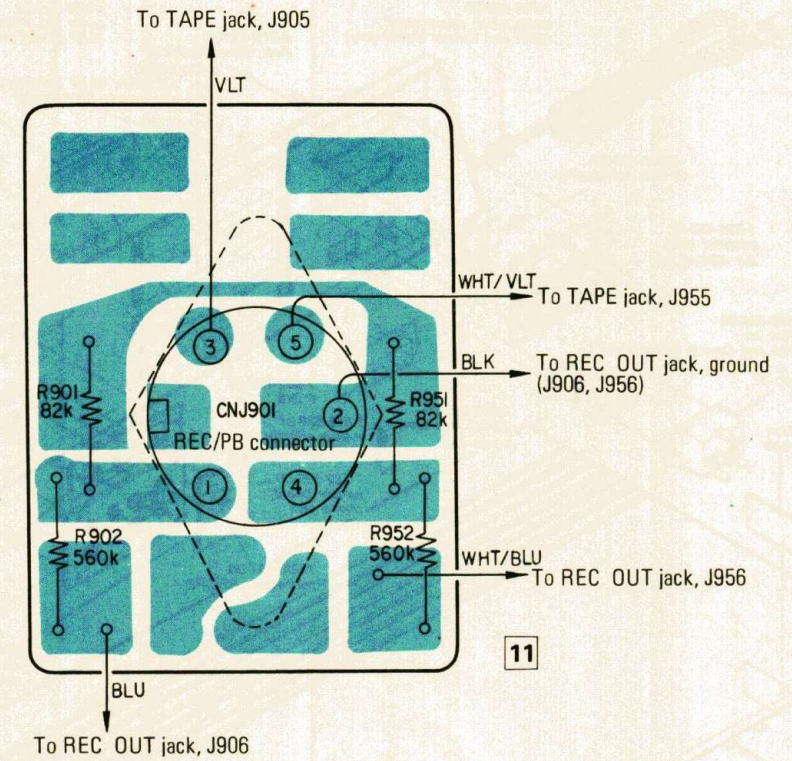
5-4. MOUNTING DIAGRAM – Power Amplifier Board –
– Conductor Side –



Semiconductor Location

IC601	D804	D802	D805	IC651
	D803	D801		

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

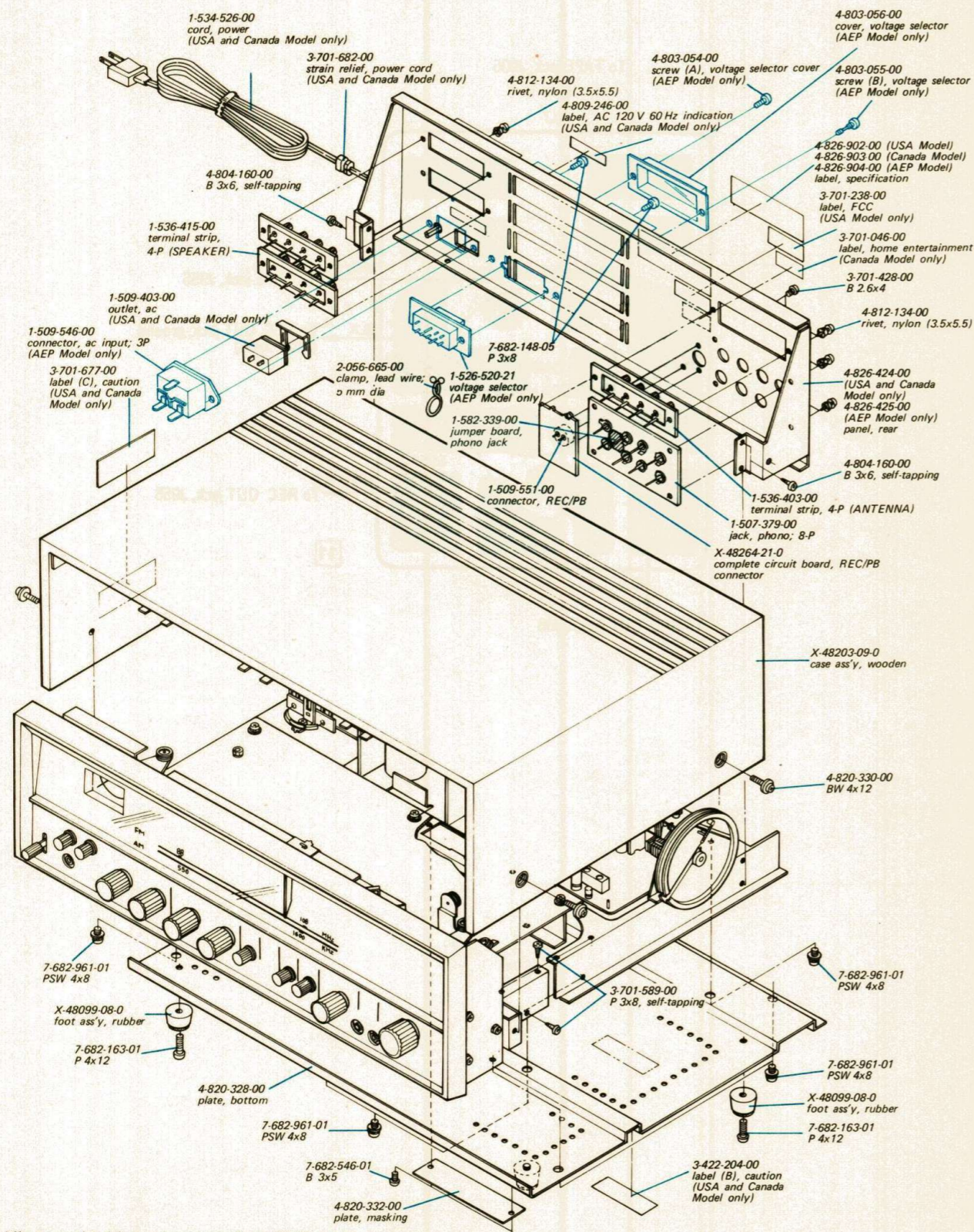


STR-6036A STR-6036A

SECTION 6 EXPLODED VIEWS

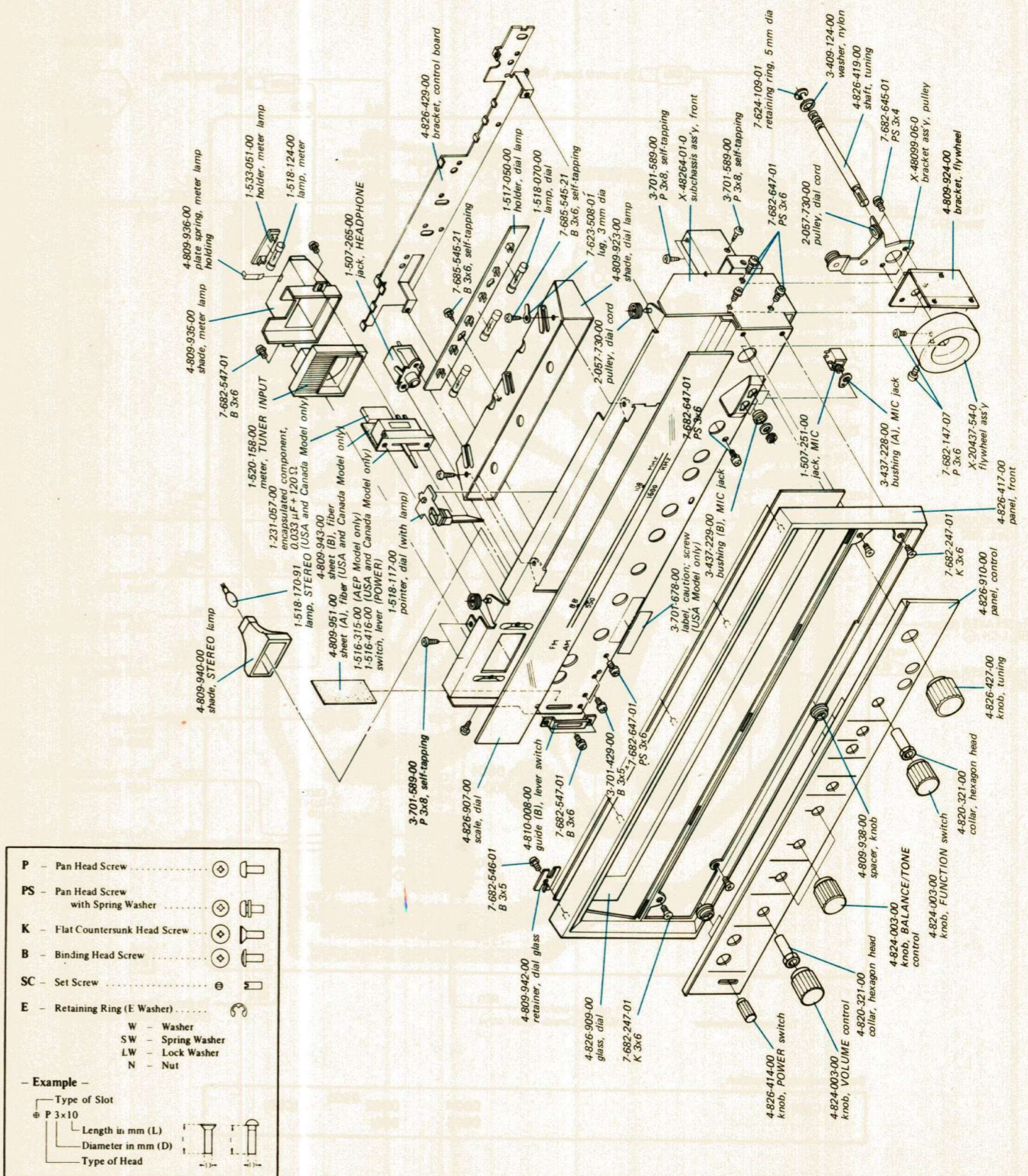
Note: Applicable serial number
 USA Model: 800,001 and later
 Canada Model: 700,001 and later
 AEP Model: 500,001 and later

(1)



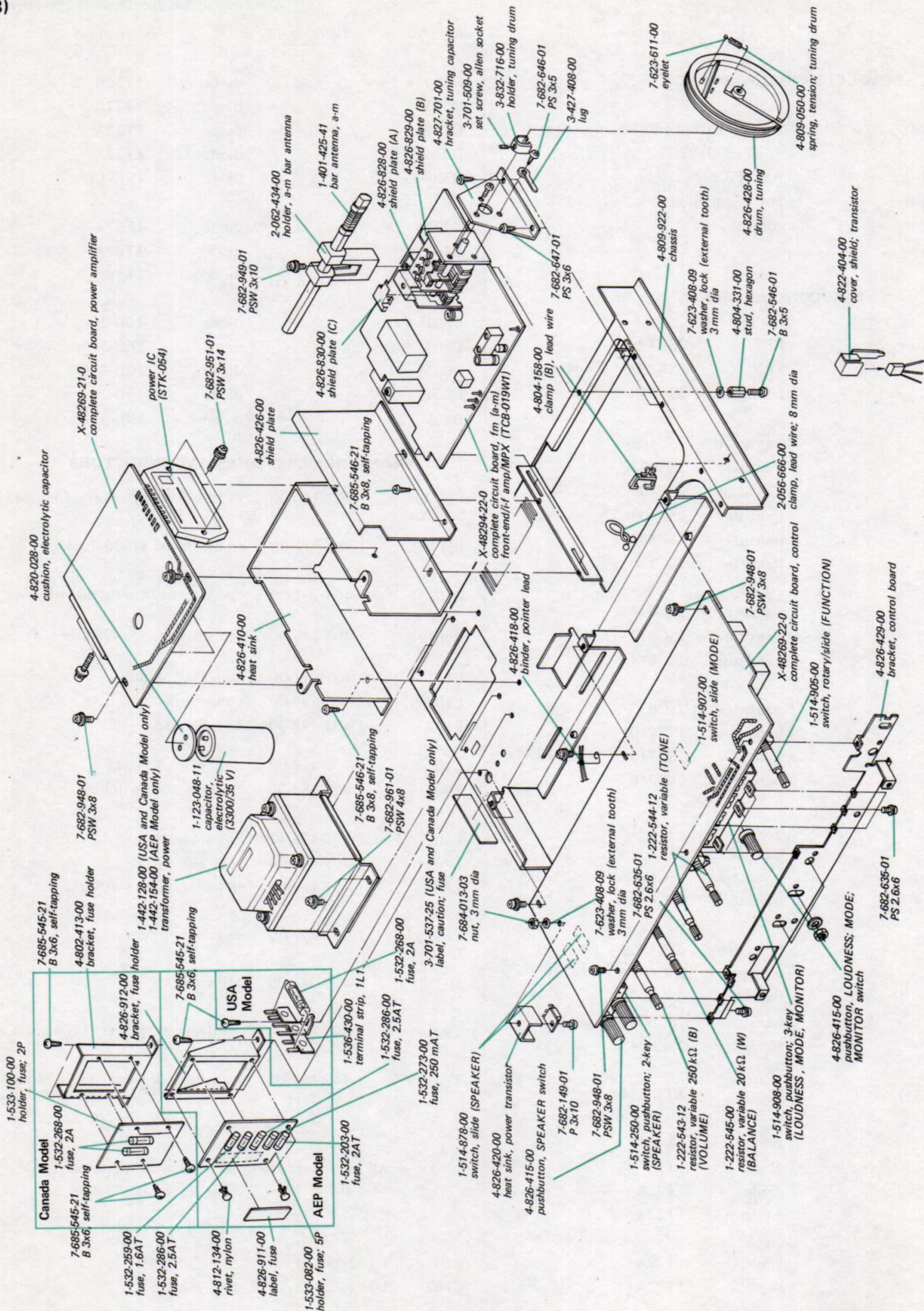
Note: All screws in this service manual are Phillips type (cross recess type) unless otherwise indicated.
 (-); slotted head.

(2)



P	-	Pan Head Screw	.....	(Symbol)
PS	-	Pan Head Screw with Spring Washer	.....	(Symbol)
K	-	Flat Countersunk Head Screw	.....	(Symbol)
B	-	Binding Head Screw	.....	(Symbol)
SC	-	Set Screw	.....	(Symbol)
E	-	Retaining Ring (E Washer)	.....	(Symbol)
W	-	Washer	.....	(Symbol)
SW	-	Spring Washer	.....	(Symbol)
LW	-	Lock Washer	.....	(Symbol)
N	-	Nut	.....	(Symbol)
Example				
- Type of Slot				
- Length in mm (L)				
- Diameter in mm (D)				
- Type of 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>
COMPLETE CIRCUIT BOARDS					
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			
SEMICONDUCTORS					
Q101	FET	2SK42	D303	diode	1T22A
Q102	FET	2SK23A	D304	diode	1T22A
Q103	transistor	2SC710	D305	diode	1T22A
			D306	diode	1T22A
			D307	diode	1S1555
Q201	transistor	2SC403C	D401	diode	1T22A
Q202	transistor	2SC403C	D402	diode	1T22A
Q203	transistor	2SC403C	D403	diode	1T40
Q204	transistor	2SC403C			
Q205	transistor	2SC403C	D801	diode	10D-2
Q206	transistor	2SC710	D802	diode	10D-2
Q301	transistor	2SC634A	D803	diode	10D-2
Q302	transistor	2SC634A	D804	diode	10D-2
Q303	transistor	2SC634A	D805	diode	10D-2
Q401	transistor	2SC633A	TRANSFORMERS, COILS AND INDUCTORS		
Q402	transistor	2SC710	CFT401	1-403-150-00	i-f transformer/ceramic filter, 455 kHz
Q403	transistor	2SC710	IFT101	1-403-914-00	transformer, i-f; 10.7 MHz
Q404	transistor	2SC710	IFT201	1-403-291-00	transformer, discriminator
Q501 (Q551)	transistor	2SC631A	IFT401	1-403-149-00	transformer, i-f; 455 kHz
Q502 (Q552)	transistor	2SC632A	L101	1-401-541-00	coil, fm antenna
Q503 (Q553)	transistor	2SC631A	L102	1-405-599-00	coil, fm rf
Q504 (Q554)	transistor	2SC632A	L103	1-405-598-00	coil, fm osc
Q801	transistor	2SC1060	L301	1-405-418-00	coil, trap 22 mH
Q802	transistor	2SC632A	L302	1-425-683-00	transformer, switching
Q803	transistor	2SC632A	L401	1-401-425-41	bar antenna, a-m
Q804	transistor	2SC634A	L402	1-405-444-00	coil, a-m osc
Q805	transistor	2SC634A	L403	1-407-169-00	inductor, micro 100 μ H
IC601 (IC651)	IC	STK-054	L601 (L651)	1-407-592-00	inductor, micro 1.8 μ H
D201	diode	1T40	MU301	1-425-548-00	MPX unit
D202	diode	1T40	T901	1-442-128-00	transformer, power (USA and Canada Model only)
D203	diode	1T22A	T901	1-442-154-00	transformer, power (AEP Model only)
D204	diode	1T22A	CAPACITORS		
D301	diode	1T22A	All capacitors are in μ F except as indicated with p and $\pm 20\%$, 50 V, ceramic type unless otherwise specified. (p = μ μ , elect = electrolytic)		
D302	diode	1T22A	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	2200 p	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	2200 p	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	2200 p	C416	1-121-392-11	3.3 25V elect
C208	1-102-257-11	2200 p	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>
C603 (C653)	1-123-025-11	2.2 100V elect
C604 (C654)	1-105-681-12	0.047 ±10% 50V mylar
C605 (C655)	1-123-058-11	47 50V elect
C606 (C656)	-----	
C607 (C657)	-----	
C608 (C658)	1-102-112-11	330p ±10%
C609 (C659)	1-105-881-12	0.047 ±20% 100V mylar
C801	1-105-881-12	0.047 ±20% 100V mylar
C802	1-105-881-12	0.047 ±20% 100V mylar
C803	1-105-881-12	0.047 ±20% 100V mylar
C804	1-105-881-12	0.047 ±20% 100V mylar
C805	1-123-048-11	3300 35V elect
C806	1-123-048-11	3300 35V elect
C807	1-121-936-11	220 25V elect
C808	1-123-064-11	330 35V elect
C809	1-123-064-11	330 35V elect
C810	1-123-066-11	1000 25V elect
C811	1-105-687-12	0.15 ±10% 50V mylar
C812	1-121-913-11	3.3 25V elect
C813	1-121-913-11	3.3 25V elect
C814	1-105-881-12	0.047 ±20% 100V mylar
C815	1-121-388-11	1000 35V elect
C816	1-105-673-12	0.01 ±10% 50V mylar
CT101, 102, CT103 CT401, 402 CV101, 102, CV103 CV401, 402	1-151-263-00	capacitor, tuning

RESISTORS

All resistors are in Ω, ±5%, 1/4W 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	15k
R203	1-242-665-11	470
R204	1-242-625-11	10
R205	1-242-657-11	220
R206	1-242-673-11	1k

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R207	1-244-643-11	56
R208	1-242-657-11	220
R209	1-244-690-11	5.1 k
R210	1-244-695-11	8.2 k
R211	1-242-669-11	680
R212	1-244-643-11	56
R213	1-244-673-11	1 k
R214	1-242-657-11	220
R215	1-242-657-11	220
R216	1-244-705-11	22 k
R217	1-244-673-11	1 k
R218	1-242-667-11	560
R219	1-244-675-11	1.2 k
R220	1-244-689-11	4.7 k
R221	1-242-671-11	820
R222	-----	
R223	1-244-643-11	56
R224	1-242-689-11	4.7 k
R225	1-244-667-11	560
R226	1-242-673-11	1 k
R227	1-244-695-11	8.2 k
R228	1-244-705-11	22 k
R229	1-242-680-11	2 k
R230	1-242-643-11	56
R231	1-244-685-11	3.3 k
R232	1-244-685-11	3.3 k
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

<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 ½W 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	HEADPHONE
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, 0.033µF + 120Ω (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
TM901	1-536-403-00	terminal strip, 4P (ANTENNA)
TM902, 903	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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