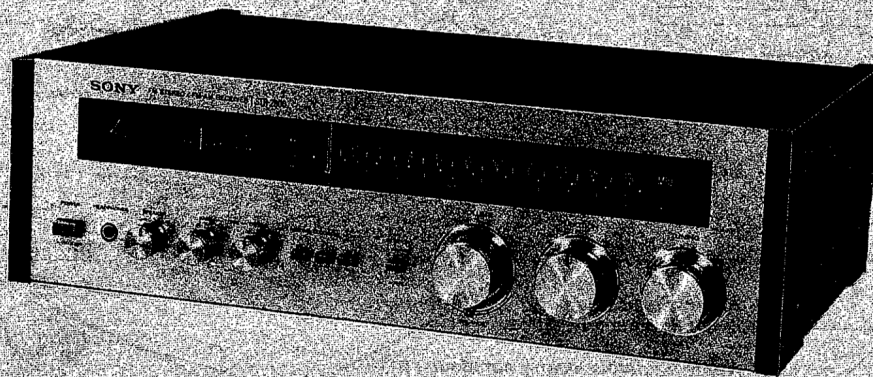


STR-2800

Canadian Model
US Model
E Model



FM STEREO/FM-AM RECEIVER

SPECIFICATIONS

GENERAL

Power Requirements:	120 V ac, 60 Hz (US, Canadian model) 110, 127, 220, 240 V ac, 50/60 Hz (E model)
Power Consumption:	95 W (US model) 140 W (Canadian model) 170 W (E model)
AC OUTLET:	2 unswitched, total 200 W (US, Canadian model)
Dimensions:	Approx. 485 (w) x 145 (h) x 375 (d) mm 19 ¹ / ₁₆ (w) x 5 ³ / ₄ (h) x 14 ¹¹ / ₁₆ (d) inches including projecting parts and controls
Weight:	US model Approx. 8.1 kg, 17 lb 10 oz net Approx. 10.5 kg, 23 lb 2 oz in shipping carton Canadian, E model Approx. 8.8 kg, 19 lb 7 oz net Approx. 11.5 kg, 25 lb 6 oz in shipping carton

FM SECTION

Tuning Range:	87.5 MHz – 108 MHz
Antennas:	300 ohm balanced 75 ohm unbalanced
Intermediate Frequency:	10.7 MHz
Sensitivity at 50 dB	
Quieting:	4.0 μ V (MONO) 45 μ V (STEREO)
Usable Sensitivity:	IHF 1.9 μ V

Signal-to-noise Ratio:	70 dB (MONO) 68 dB (STEREO)
Harmonic Distortion:	at 100 Hz 0.2% (MONO) 0.5% (STEREO) at 1 kHz 0.2% (MONO) 0.5% (STEREO) at 10 kHz 0.2% (MONO) 0.8% (STEREO)
IM Distortion:	0.2% (MONO) 0.5% (STEREO)
Separation:	30 dB at 100 Hz 35 dB at 1 kHz 30 dB at 10 kHz
Frequency Response:	30 Hz – 15 kHz ⁺¹ ₋₃ dB
Capture Ratio:	1.5 dB
AM Suppression Ratio:	54 dB
Image Response Ratio:	45 dB
IF Response Ratio:	90 dB
Spurious Response Ratio:	75 dB
RF Intermodulation:	55 dB
Muting Threshold:	Approx. 5 μ V

— continued on next page —

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY SHADING ON THE SCHEMATIC DIAGRAMS 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

SECTION 1
OUTLINE

AM SECTION

Tuning Range: 530 kHz – 1,605 kHz

Antennas: Built-in ferrite-rod antenna
External antenna terminal

Intermediate Frequency: 455 kHz

Usable Sensitivity: 250 μ V/m, built-in antenna
100 μ V, external antenna
at 1,000 kHz

Signal-to-noise Ratio: 50 dB at 50 mV/m

Harmonic Distortion: 0.5 % at 50 mV/m, 400 Hz

Selectivity: 35 dB

Image Response Ratio: 40 dB at 1,000 kHz

AUDIO AMPLIFIER SECTION

Continuous RMS Power Output: Both channels driven simultaneously
(rated output) at 20 – 20,000 Hz
(less than 0.3% THD) 20 W + 20 W (8 Ω)

Damping Factor: 25 at 1 kHz, 8 ohms

IM Distortion: Less than 0.3% at rated output
(60 Hz : 7 kHz = 4 : 1) Less than 0.1% at 1 W output

Inputs:

	Sensitivity	Impedance	S/N	Weighting Network
PHONO	2.5 mV	50 k ohms	70 dB	A
TAPE REC/PB	250 mV	80 k ohms	90 dB	A

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

Outputs (with rated input):

	Voltage	Impedance
REC OUT	250 mV	4.7 k ohms
REC/PB	40 mV	82 k ohms

HEADPHONES: Accepts 8 – 10 k ohm headphones.

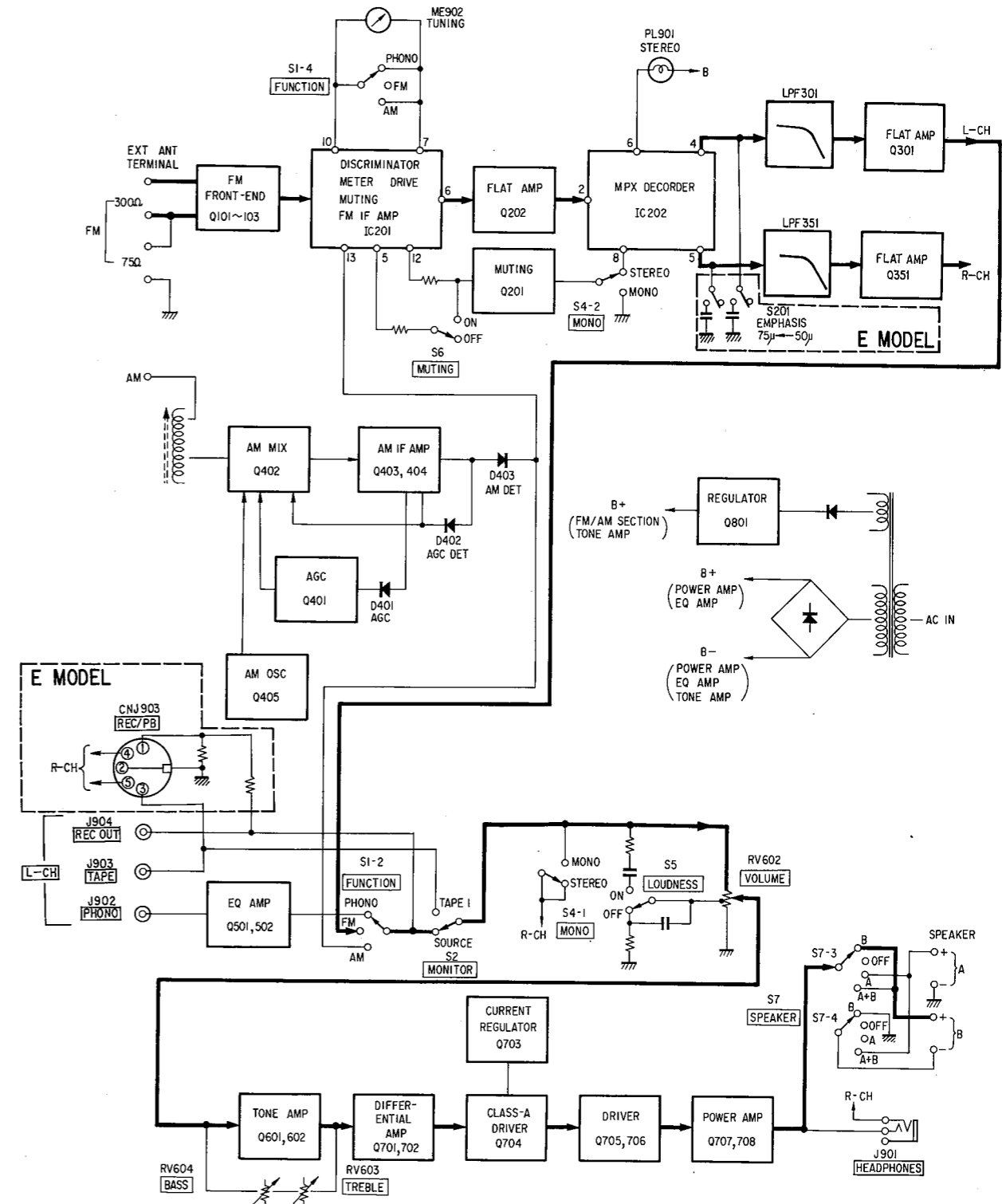
SPEAKER: 4 – 16 ohm speakers are suitable.

Frequency Response: PHONO
RIAA equalization curve ± 1 dB
TAPE (US, Canadian model)
TAPE, REC/PB (E model)
10 Hz – 30 kHz
+0.5 dB
-3.0 dB

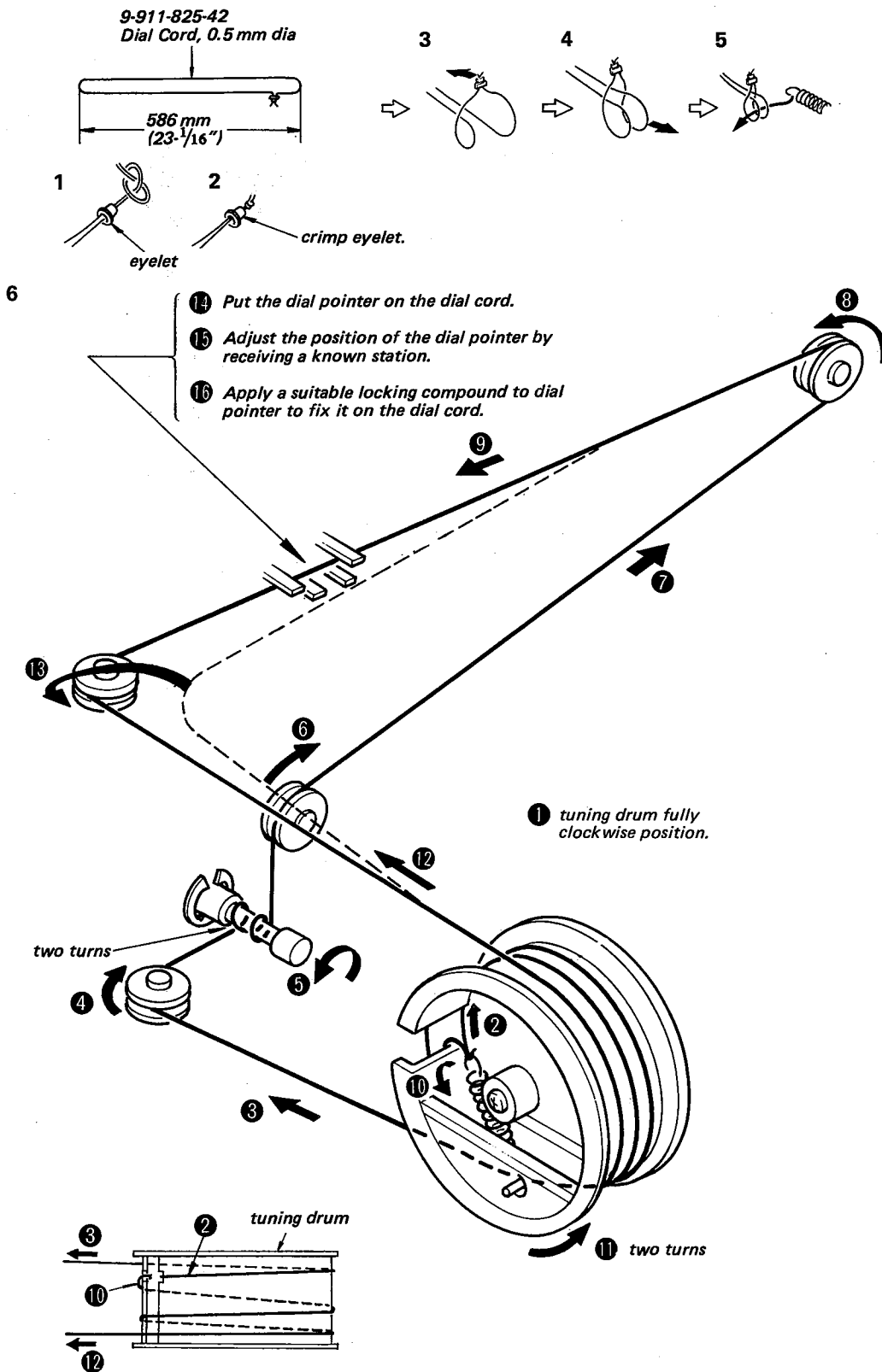
Tone Controls: BASS: ± 10 dB at 100 Hz
TREBLE: ± 10 dB at 10 kHz

LOUDNESS (att. 30 dB): +8 dB at 50 Hz
+3 dB at 10 kHz

1-1. BLOCK DIAGRAM



1-3. DIAL CORD STRINGING



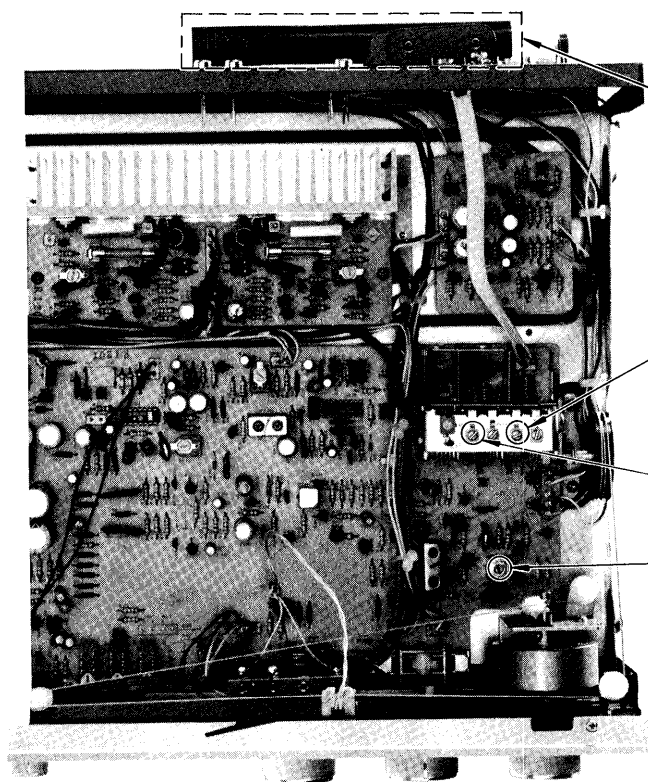
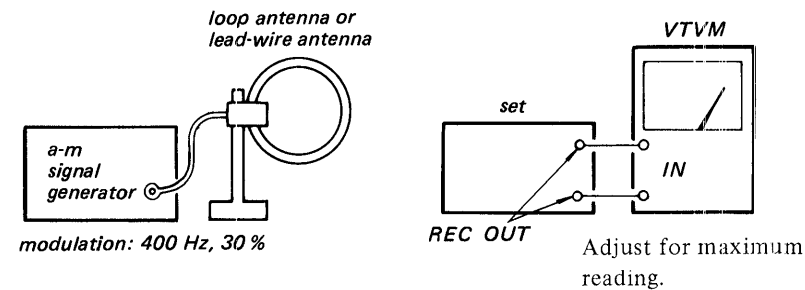
SECTION 2
ADJUSTMENTS

2-1. FM FREQUENCY COVERAGE AND TRACKING ADJUSTMENTS

Never attempt alignment of the fm front-end section for the fm frequency coverage and tracking adjustment. If the fm frequency coverage and tracking adjustments are required, consult the factory service center.

2-2. AM FREQUENCY COVERAGE AND TRACKING ADJUSTMENTS

Test setup:

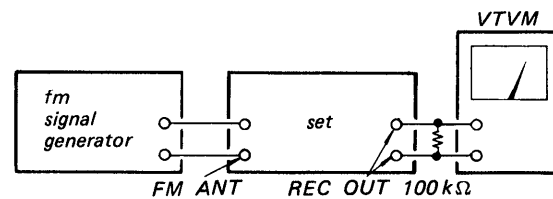


AM TRACKING	
L901	600 kHz (modulated)
CT401	1,400 kHz (modulated)

AM FREQUENCY COVERAGE	
CT402	1,605 kHz (modulated)
L403	530 kHz (modulated)

FM OUTPUT LEVEL ADJUSTMENT

Setup:
FUNCTION selector: FM

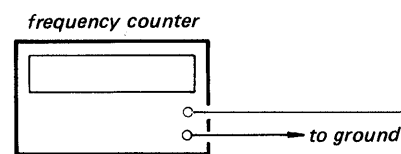


FM Signal Generator Setting:
Carrier frequency: 98 MHz
Modulation: 400 Hz, 75 kHz deviation (100 %)
Output level: 1 mV (60 dB)

Procedure:
Adjust RT202 for 0.775 V on the VTVM.

MPX ADJUSTMENT

Setup:
FUNCTION selector: FM



FM Signal Generator Setting:
Carrier frequency: 98 MHz
Modulation: no modulation
Output level: 3.2 mV (70 dB)

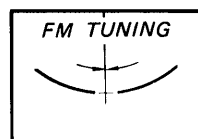
Procedure:
Adjust RT203 for 19 kHz ± 100 Hz on the counter.

Note: Perform this adjustment after the power switch turned ON and one minute passed.

DISCRIMINATOR ALIGNMENT

Procedure:
FUNCTION selector: FM

1. Detune the set.
2. Adjust the secondary side core of IFT201 for zero center on the TUNING meter as shown.

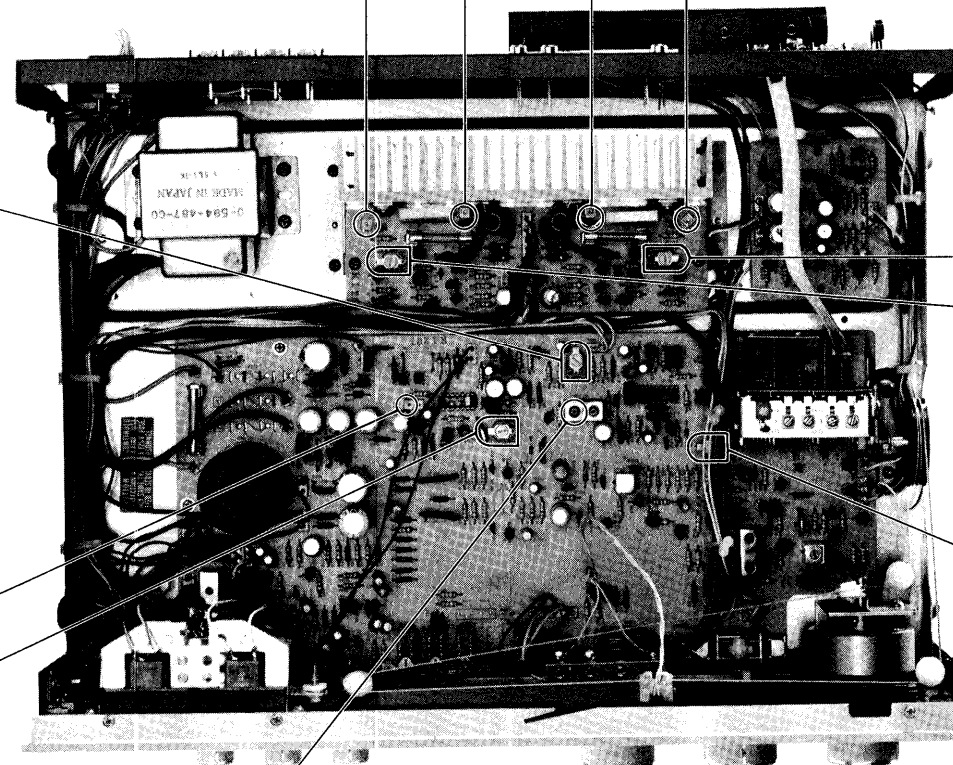


RT202

19 kHz TP

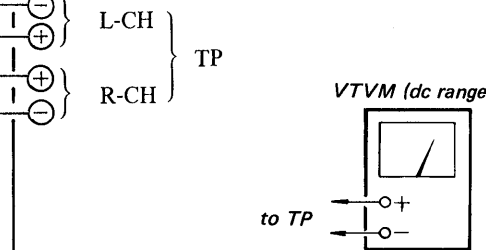
RT203

IFT201



DC BIAS ADJUSTMENT

Procedure:



With no input signal, adjust RT701 (L-CH) and RT751 (R-CH) for 50 mV VTVM reading.

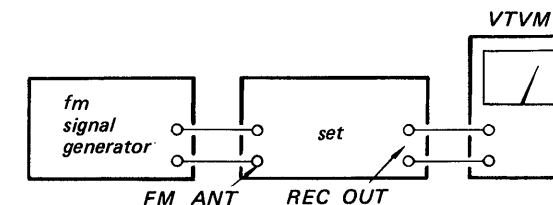
RT751 (R-CH)

RT701 (L-CH)

RT201

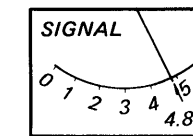
SIGNAL METER ADJUSTMENT

Setup:
FUNCTION selector: FM



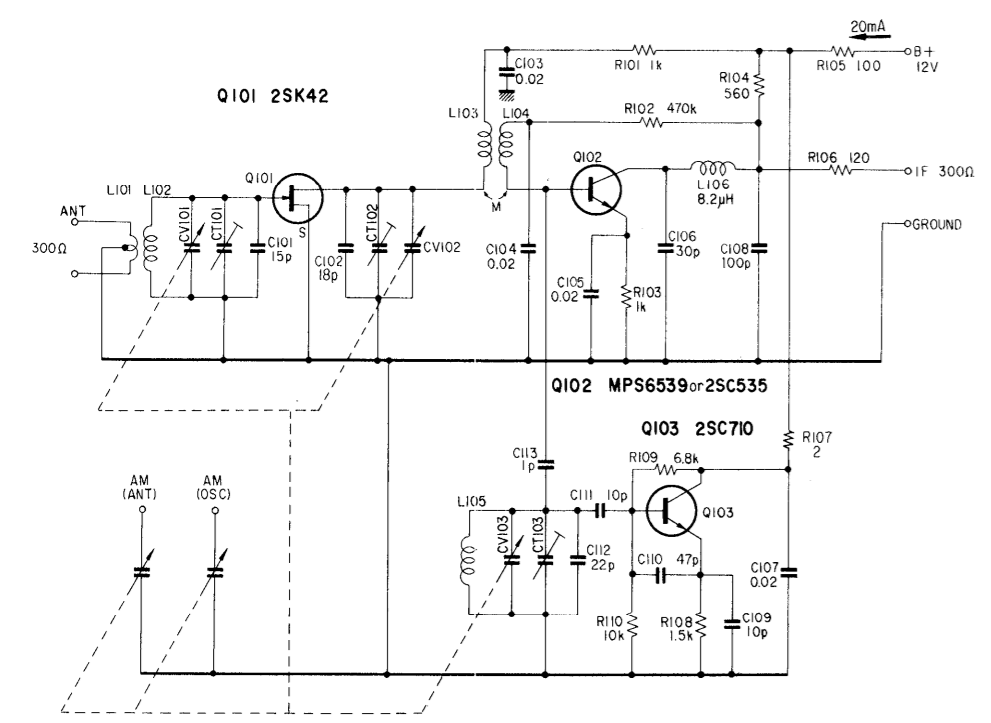
FM Signal Generator Setting:
Carrier frequency: 98 MHz
Modulation: no modulation
Output level: 3.2 mV (70 dB)

Procedure:
Tune the set to 98 MHz and adjust RT201 for specified pointer position (See figure below.) on the SIGNAL meter.



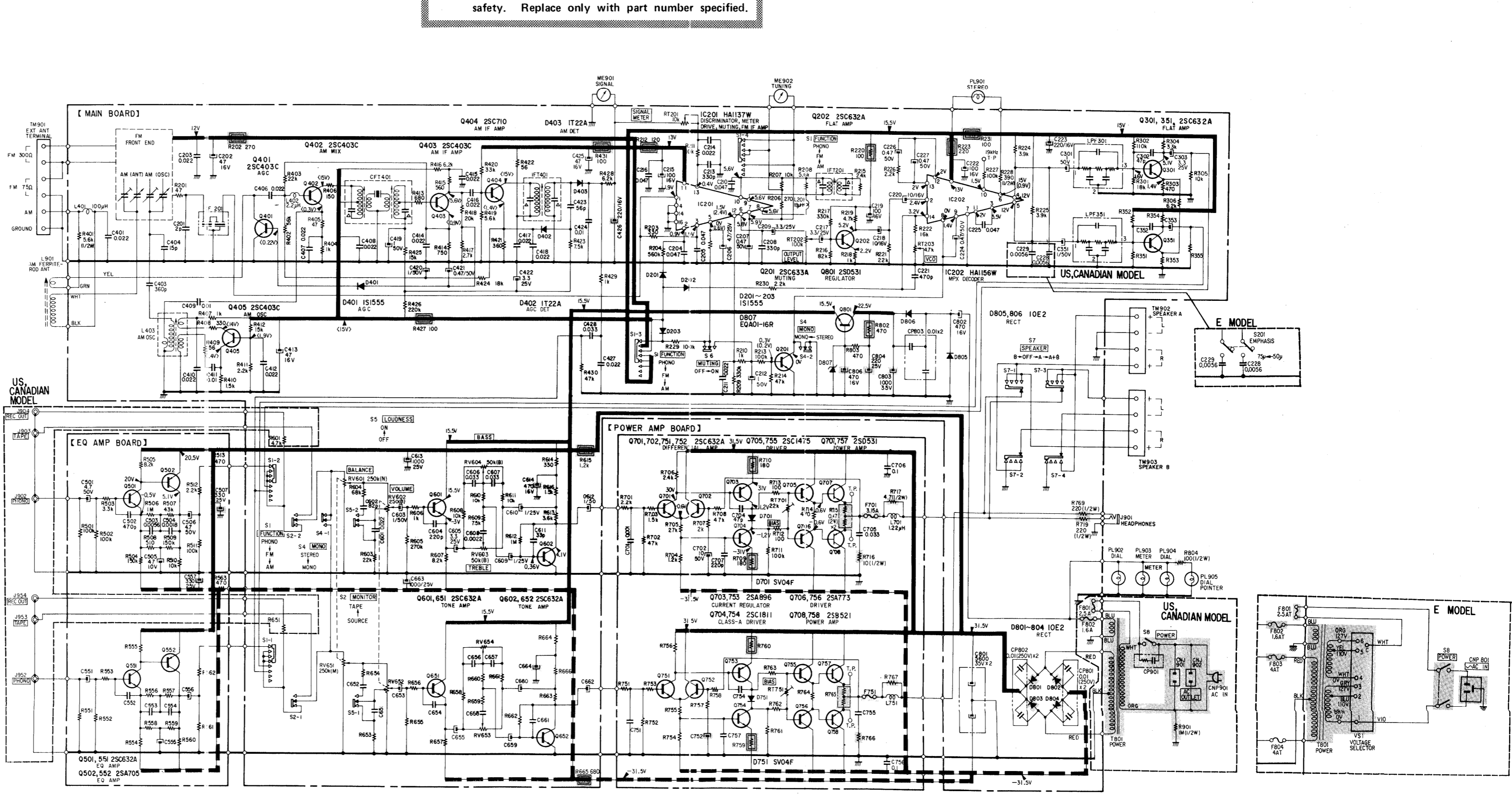
SECTION 3
DIAGRAMS

3-1. SCHEMATIC DIAGRAM (1) - Front-end Section -



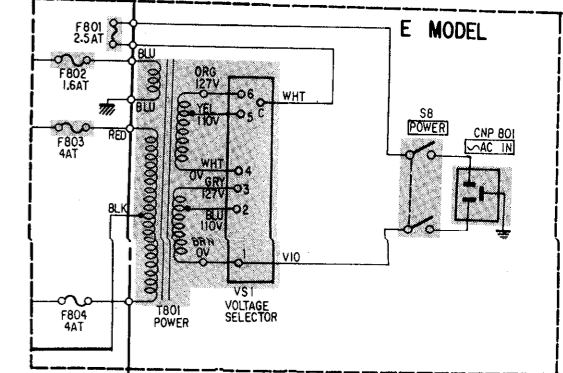
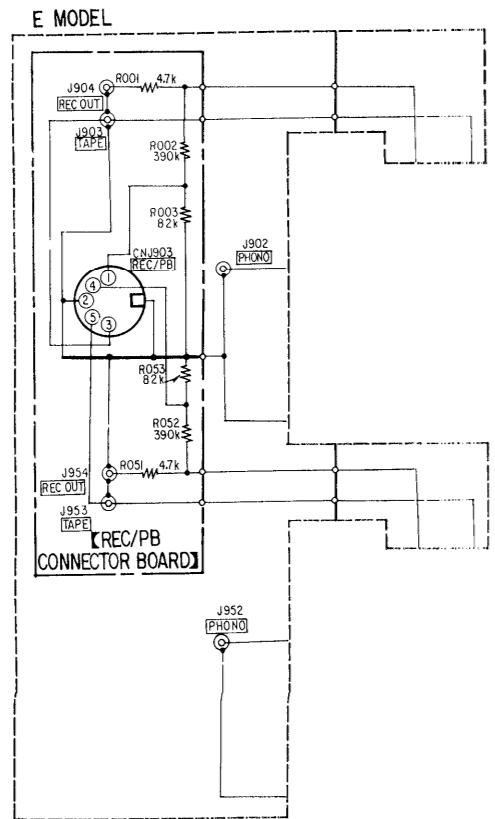
3-2. SCHEMATIC DIAGRAM (2) - Fm/a-m and Amp Sections -

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

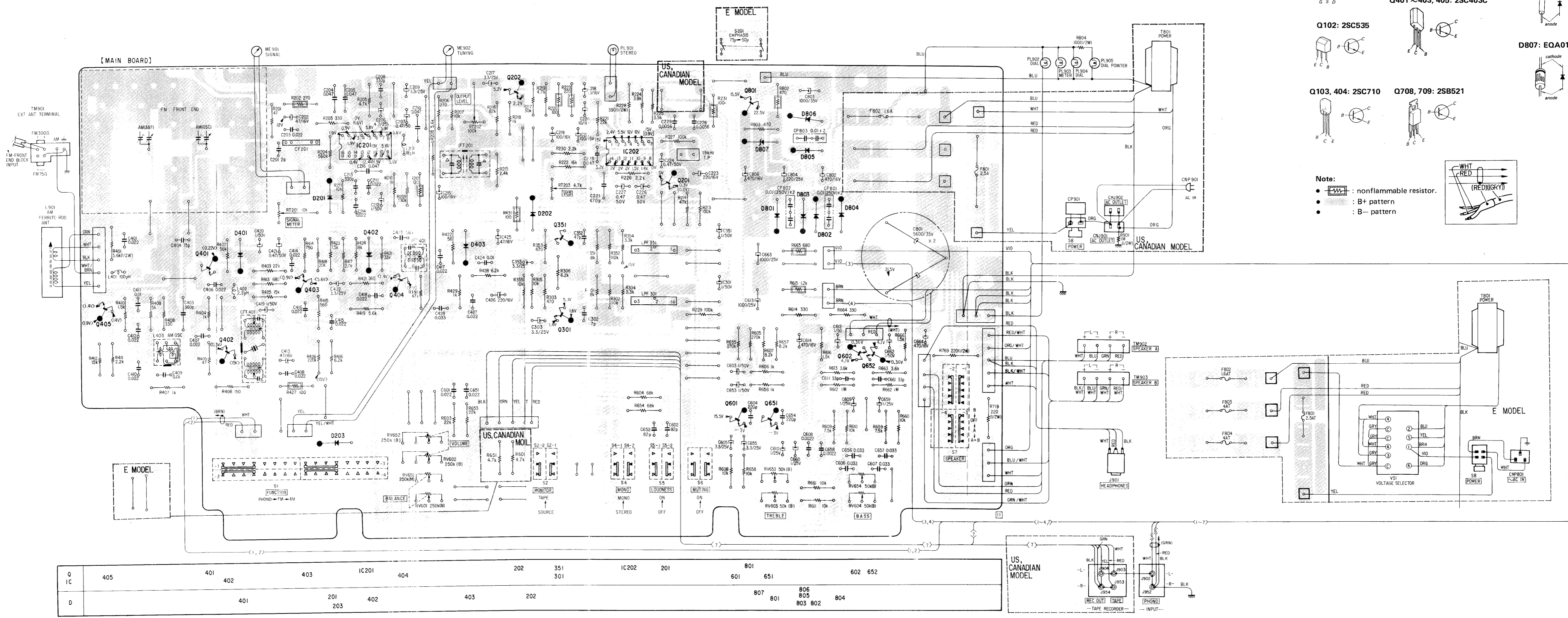


- Note:**
- All capacitors are in μF unless otherwise noted. 50 or less working voltages are not indicated except for electrolytic type. $p = \mu\text{F}$
 - All resistors are in Ω , $\frac{1}{2}W$, unless otherwise noted. $k = 1,000$ $M = 1,000k$
 - \triangle : internal components.
 - --- : chassis ground.
 - --- : B+ bus
 - --- : B- bus
 - Voltages are DC with respect to ground unless otherwise noted. Readings are taken under no-signal conditions with a VOM (20 $k\Omega/v$).
 - (): FM (when the set is detuned and S6 is on.)
 - []: FM STEREO
 - < >: AM
 - no mark: FM
 - Voltage variations may be noted due to normal production tolerances.
 - Voltage between base and emitter are measured with 2.5 V range.
 - --- : nonflammable resistor
 - --- : designation on the panel.
 - --- : adjustment for repair.
 - Switch Mode:

Ref. No.	Switch	Position
S1	FUNCTION	PHONO
S2	MONITOR	SOURCE
S4	MONO	STEREO
S5	LOUDNESS	OFF
S6	MUTING	OFF
S7	SPEAKER	B
S8	POWER	OFF
S201	EMPHASIS	50 μ



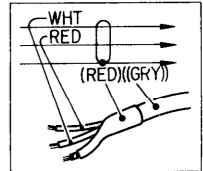
3-3. MOUNTING DIAGRAM (1) — Main Board —
— Conductor Side —



- Q101: 2SK42
- Q201: 2SC633A
- Q202, Q301, 351, Q601, 651, Q602, 652, Q401 ~ 403, 405: 2SC403C
- D201 ~ 203, 401: 1S1555
- D402, 403: 1T22A
- D801 ~ 806: 10E2

- Q102: 2SC535
- Q103, 404: 2SC710
- Q708, 709: 2SB521
- D807: EQA01-16R

- Note:
- : nonflammable resistor.
 - : B+ pattern
 - : B- pattern

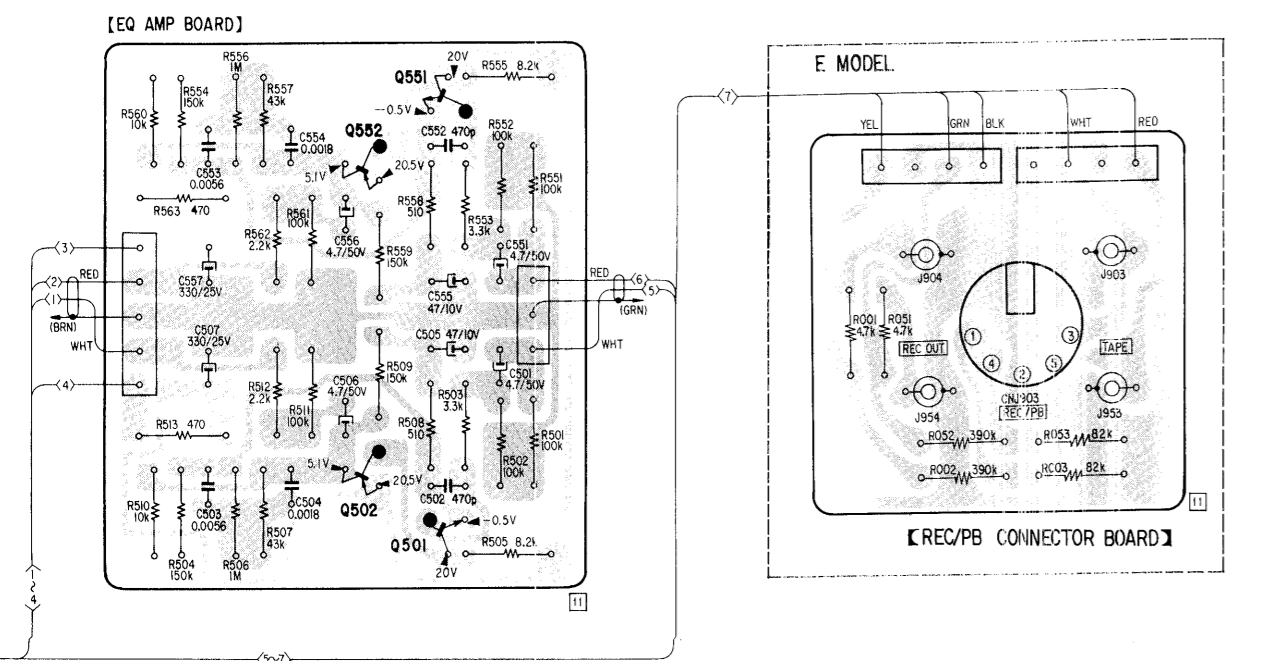
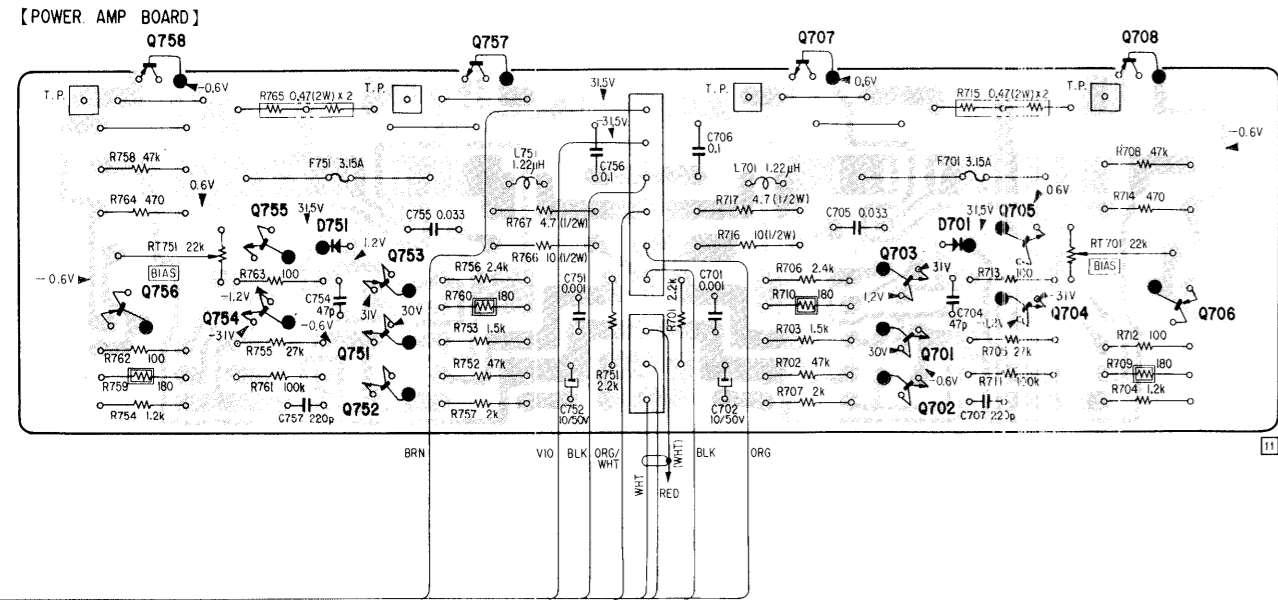
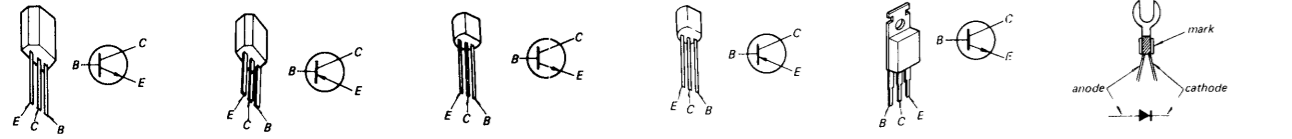


Q	IC	405	401	402	403	IC201	404	202	351	IC202	201	801	651	602	652			
D			401	201	402	403	202					807	801	806	805	803	802	804

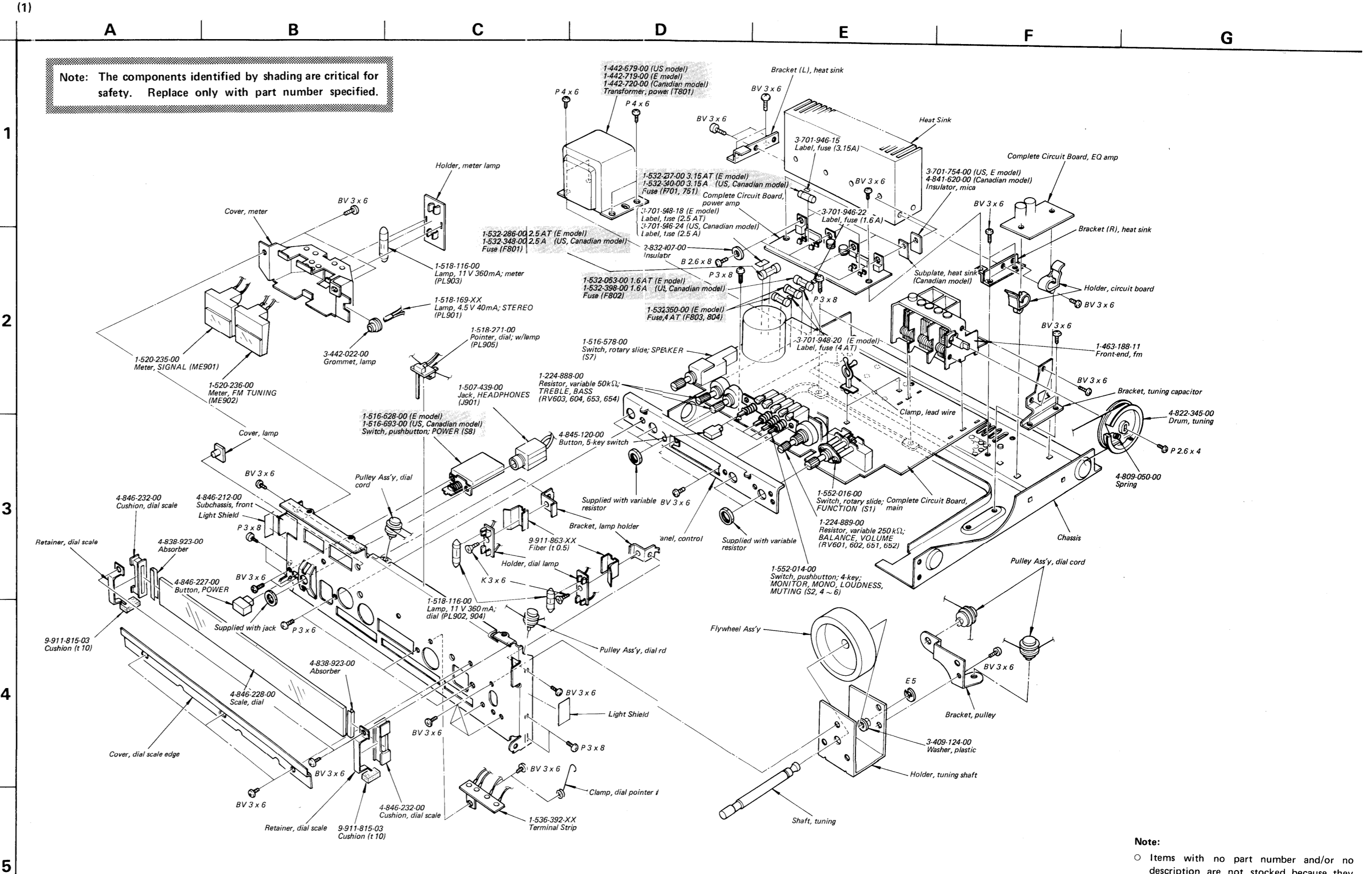
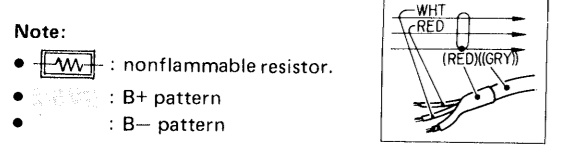
SECTION 4
EXPLODED VIEWS

3-4. MOUNTING DIAGRAM (2) - Power Amp, EQ Amp and REC/PB Connector Boards -
- Conductor Side -

- Q501, 551, Q701, 751: 2SC632A
- Q502, 552: 2SA705
- Q703, 753: 2SA896
- Q704, 754: 2SC1811
- Q705, 755: 2SC1475
- Q706, 756: 2SA773
- Q707, 757: 2SD531
- D701, 751: SV04F



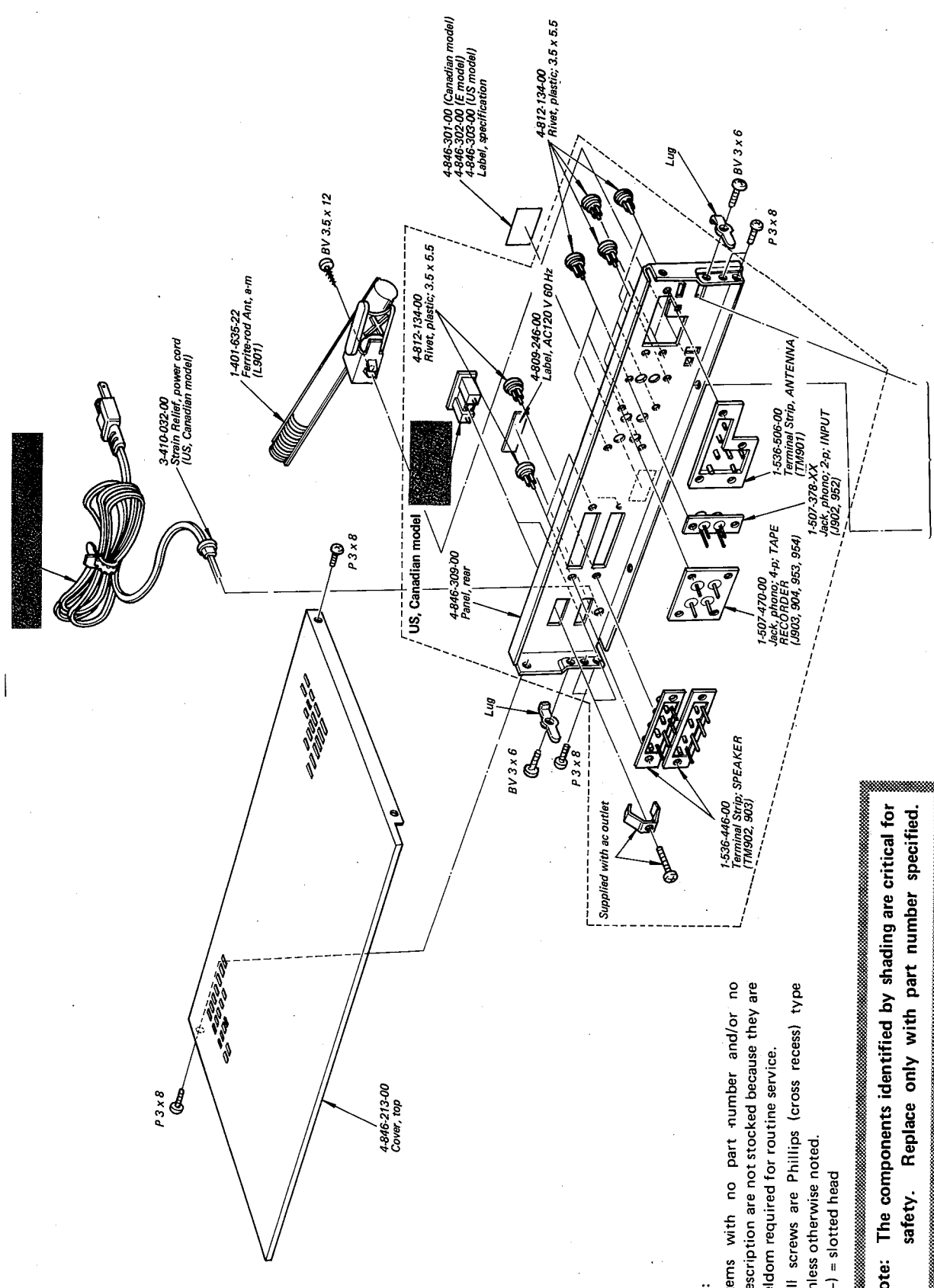
Q	756	758	755	751, 752, 753	757	707	703	705	708
			754	552	551		701	704	706
D				502	501		701		
				751					



Note:

- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head

A B C D E



1

2

3

- Note:**
- Items with no part number and/or no description are not stocked because they are seldom required for routine service.
 - All screws are Phillips (cross recess) type unless otherwise noted.
 - (-) = slotted head

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

SECTION 5

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>						
SEMICONDUCTORS											
Transistors											
Q201		2SC634A	D805, 806		10D2						
Q202		2SC632A	D807		EQB01-16R						
Q301, 351		2SC632A	COILS								
Q401 ~ 403		2SC403C	L201	1-407-741-00	Microinductor, 18 μ H						
Q404		2SC710	L401	1-407-169-XX	Microinductor, 100 μ H						
Q405		2SC403C	L402	1-407-182-XX	Microinductor, 2.2 μ H						
Q501, 551		2SC632A	L403	1-405-656-00	AM Osc						
Q502, 557		2SA705	L901	1-401-635-22	AM Ferrite-rod Antenna						
Q601, 651)		2SC632A	TRANSFORMERS								
Q602, 652)		2SC632A	CFT401	1-403-830-51	AM IFT (E model)						
Q701, 751)		2SC632A		1-403-150-11	AM IFT (US, Canadian model)						
Q702, 752)		2SC632A	IFT201	1-404-011-00	FM Discriminator						
Q703, 753		2SA896	IFT401	1-403-149-00	AM IFT						
Q704, 754		2SC1811	<table border="1"> <tr> <td>1-442-679-00</td> <td>Power (US model)</td> </tr> <tr> <td>1-442-749-00</td> <td>Power (E model)</td> </tr> <tr> <td>1-442-720-00</td> <td>Power (Canadian model)</td> </tr> </table>			1-442-679-00	Power (US model)	1-442-749-00	Power (E model)	1-442-720-00	Power (Canadian model)
1-442-679-00	Power (US model)										
1-442-749-00	Power (E model)										
1-442-720-00	Power (Canadian model)										
Q705, 755		2SC1475									
Q706, 756		2SA706									
Q707, 757		2SC1061	CAPACITORS								
Q708, 758		2SA671	All capacitors are in μ F and of electrolytic unless otherwise noted. 50 and/or less working voltages are not noted except for electrolytic type. (p = μ F)								
Q801		2SC1061	C201	1-102-935-11	2p ceramic						
ICs			C202	1-121-409-11	47 16 V						
IC201		HA1137	C203	1-101-924-11	0.022 ceramic						
IC202		HA1156	C204, 205	1-101-925-11	0.047 ceramic						
Diodes			C206	1-121-395-11	4.7 25 V						
D201 ~ 203		1S1555	C207	1-121-726-11	0.47 50 V						
D401		1S1555	C208	1-102-820-11	330p ceramic						
D402, 403		1T22A	C209	1-121-913-11	3.3 25 V						
D701, 751		SV04F	C210	1-101-925-11	0.047 ceramic						
			C211	1-101-924-11	0.022 ceramic						
			C212	1-121-391-11	1 50 V						
			C213	1-102-820-11	330p ceramic						
			C214	1-101-924-11	0.022 ceramic						

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

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C215	1-121-415-11	100	16 V	
C216	1-101-925-11	0.047		ceramic
C217	1-121-913-11	3.3	25 V	
C218	1-121-916-11	10	16 V	
C219	1-121-415-11	100	16 V	
C220	1-121-916-11	10	16 V	
C221	1-103-717-11	470 p		polystyrol
C222	1-121-415-11	100	16 V	
C223	1-123-068-11	220	16 V	
C224	1-121-726-11	0.47	50 V	
C225	1-108-845-12	0.047		mylar
C226, 227	1-121-726-11	0.47	50 V	
C228, 229	1-108-801-12	0.0056		mylar
C301, 351	1-121-912-11	1	50 V	
C302, 352	1-101-880-11	47 p		ceramic
C303, 353	1-121-913-51	3.3	25 V	
C401	1-101-924-11	0.022		ceramic
C403	1-103-714-11	360 p		polystyrol
C404	1-102-951-11	15 p		ceramic
C406 ~408	1-101-924-11	0.022		ceramic
C409	1-102-129-11	0.01		ceramic
C410	1-101-924-11	0.022		ceramic
C411	1-108-837-12	0.01		mylar
C412	1-101-924-11	0.022		ceramic
C413	1-121-409-11	47	16 V	
C414 ~418	1-101-924-11	0.022		ceramic
C419, 420	1-121-391-11	1	50 V	
C421	1-121-726-11	0.47	50 V	
C422	1-121-392-11	3.3	25 V	
C423	1-101-884-11	56 p		ceramic
C424	1-108-837-12	0.01		mylar
C425	1-121-409-11	47	16 V	
C426	1-123-068-11	220	16 V	
C427	1-108-841-12	0.022		mylar
C428	1-108-843-12	0.033		mylar
C501, 551	1-121-750-11	4.7	50 V	
C502, 552	1-102-824-11	470 p		ceramic
C503, 553	1-108-801-12	0.0056		mylar

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
C504, 554	1-108-795-12	0.0018		mylar
C505, 555	1-121-352-11	47	10 V	
C506, 556	1-121-750-11	4.7	50 V	
C507, 557	1-123-065-11	330	25 V	(explosionproof)
C601, 651	1-108-841-12	0.022		mylar
C602, 652	1-102-971-11	82 p		ceramic
C603, 653	1-121-912-11	1	50 V	
C604, 654	1-102-978-11	220 p		ceramic
C605, 655	1-121-913-11	3.3	25 V	
C606, 656	1-108-843-12	0.033		mylar
C607, 657				
C608, 658	1-108-829-12	0.0022		mylar
C609, 659	1-121-913-11	3.3	25 V	
C610, 660				
C611, 661	1-102-963-11	33 p		ceramic
C612, 662	1-121-912-11	1	50 V	
C613, 663	1-123-066-11	1000	25 V	
C614, 664	1-121-939-11	470	16 V	
C701, 751	1-108-825-12	0.001		mylar
C702, 752	1-123-183-11	10	50 V	
C704, 754	1-101-880-11	47 p		ceramic
C705, 755	1-108-843-12	0.033		mylar
C706, 756	1-108-849-12	0.1		mylar
C707, 757	1-102-978-11	220 p		ceramic
C801	1-125-097-11	(5600	35 V) x 2	
C802	1-121-939-11	470	16 V	
C803	1-121-945-11	1000	35 V	
C804	1-121-936-11	220	25 V	
C806	1-121-939-11	470	16 V	
CP801 ~803	1-102-394-11	(0.01	250 V) x 2	ceramic

RESISTORS

All resistors are in ohms. Regular-type ¼ W carbon resistors are omitted. Check the schematic diagram for the resistance values. (k = 1000, M = 1000 k)

R202	1-211-532-11	270	¼ W	carbon (nonflammable)
R212	1-211-524-11	120	¼ W	carbon (nonflammable)

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

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
R220	1-211-522-11	100	¼ W	carbon (nonflammable)
R223	1-211-530-11	220	¼ W	carbon (nonflammable)
R228	1-202-563-11	390	¼ W	composition
R231	1-211-522-11	100	¼ W	carbon (nonflammable)

R401	1-244-891-11	5.6 k	½ W	carbon
R427, 431	1-211-522-11	100	¼ W	carbon (nonflammable)

R615	1-211-540-11	560	¼ W	carbon (nonflammable)
R665	1-211-542-11	680	¼ W	carbon (nonflammable)

R709, 759	1-211-528-11	180	¼ W	carbon (nonflammable)
R710, 760				
R715, 765	1-217-359-11	(0.47	2 W) x 2	metal
R716, 766	1-202-525-11	10	½ W	composition
R717, 767	1-202-517-11	4.7	½ W	composition
R719, 769	1-202-557-11	220	½ W	composition
R802	1-211-538-11	470	¼ W	carbon (nonflammable)
R804	1-202-549-11	100	½ W	composition
R901	1-202-719-11	1 M	½ W	composition (US, Canadian model)

RT201	1-224-645-XX	10 k, adjustable
RT202	1-224-648-XX	100 k, adjustable
RT203	1-224-644-XX	4.7 k, adjustable

RV601, 651	1-224-889-00	250 k, variable, BALANCE, VOLUME
RV602, 652		
RV603, 653	1-224-888-00	50 k, variable, TREBLE, BASS
RV604, 654		

RT701, 751	1-224-646-XX	22 k, adjustable
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SWITCHES

S1	1-552-016-00	Rotary Slide, FUNCTION
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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
S2, 4~6	1-552-014-00	Pushbutton, 4-key; MONITOR, MONO, LOUDNESS, MUTING
S7	1-516-578-00	Rotary Slide, SPEAKER
S8	1-516-628-00	Pushbutton, POWER (E model)
	1-516-693-00	Pushbutton, POWER (US, Canadian model)

S201	1-516-954-00	De-emphasis (E model)
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FUSES

F701, 751	1-532-237-00	3.15 AT (E model)
	1-532-340-00	3.15 A (US, Canadian model)

F801	1-532-286-00	2.5 AT (E model)
	1-532-348-00	2.5 A (US, Canadian model)
F802	1-532-053-00	1.6 AT (E model)
	1-532-398-00	1.6 A (US, Canadian model)
F803, 804	1-532-350-00	4 AT (E model)

LAMPS

PL901	1-518-169-XX	4.5 V 40 mA, STEREO
PL902~904	1-518-116-00	11 V 360 mA, dial; meter, dial
PL905	1-518-271-00	Pointer, dial; w/lamp

JACKS

J901	1-507-439-00	HEADPHONES
J902, 952	1-507-378-XX	Phono, 2-p; INPUT
J903, 953,	1-507-470-00	Phono, 4-p; TAPE RECORDER (US, Canadian model)
J904, 954	1-507-471-00	Phono, 4-p; TAPE RECORDER (E model)

MISCELLANEOUS

CF201	1-527-248-XX	Filter, ceramic; 10.7 MHz
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CNJ901, 902	1-526-528-00	AC OUTLET (US, Canadian model)
CNJ903	1-509-549-00	Connector, REC/PB (E model)

CNP801	1-509-546-00	Connector, 3-p, AC INPUT (E model)
CNP901	1-534-986-XX	Cord, power (US, Canadian model)

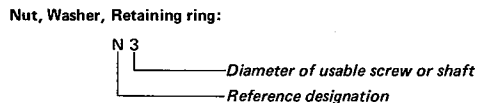
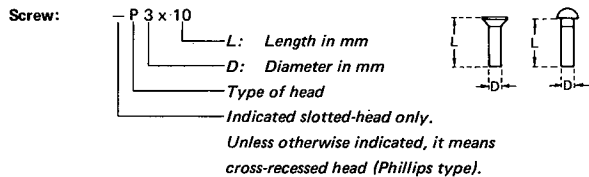
Note: The components identified by shading are critical for safety. Replace only with part number specified.













<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
CP901	1-231-057-31	Encapsulated Component (US, Canadian model)
LPF301, 351	1-231-224-00	Encapsulated Component
ME901	1-520-235-00	Meter, SIGNAL
ME902	1-520-236-00	Meter, FM TUNING
TM901	1-536-506-00	Terminal Strip, ANTENNA
TM902, 903	1-536-446-00	Terminal Strip, SPEAKER
	1-463-188-00	Front-end, fm
	1-508-690-00	Plug, voltage selector (E model)
	1-526-565-00	Adaptor, ac plug (E model)
	1-536-392-XX	Terminal Strip














ACCESSORIES AND PACKING MATERIALS	
<u>Ref. No.</u>	<u>Description</u>
X-4490-002-1	Cloth Ass'y, polishing
1-501-161-00	Ribbon Antenna, f-m
1-534-754-14	Cord, power (E model)
3-780-924-21	Manual, instruction (US, Canadian model)
3-780-924-51	Manual, instruction (E model)
3-794-010-31	Manual, instruction; French (Canadian model)
4-828-909-00	Bag, plastic; unit
4-846-217-00	Cushion
4-846-306-00	Carton

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

HARDWARE NOMENCLATURE



Reference Designation	Shape	Description	Remarks
SCREWS			
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-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
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
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	