

TAE-20F/20FB

TAE-20F (Panel : silver)

US Model
AEP Model
E Model

TAE-20FB (Panel : black)

Canadian Model
AEP Model



STEREO PREAMPLIFIER


SPECIFICATIONS

GENERAL


- Power Requirements:** 120 V ac, 60 Hz (US, Canadian model)
220 V ac (or 240 V ac adjustable by authorized Sony personnel), 50/60 Hz (AEP model)
120, 220, or 240 V ac adjustable, 50/60 Hz (E model)
- Power Consumption:** 10 W
- AC Outlets:** 4 switched, total 450 W
1 unswitched, 100 W (US, Canadian model)
2 switched, total 450 W (AEP, E model)
- Dimensions:** Approx. 430 (w) x 70 (h) x 160 (d) mm
17 (w) x 2 3/4 (h) x 6 1/8 (d) inches
including projecting parts and controls
- Weight:** Approx. 2.7 kg, 6 lb net

— continued on next page —

SAFETY-RELATED COMPONENT WARNING!!

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

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHEMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY.

SONY[®]
SERVICE MANUAL

AMPLIFIER SECTION

Input:

	Sensitivity	Impedance	Maximum input capability (at 1kHz, 0.01% distortion)	S/N (weighting network)
PHONO with cartridge selector set at MM	-50 dB (2.5 mV)	50 kΩ	-10 dB (250 mV)	85 dB (A)
PHONO with cartridge selector set at MC	-70 dB (0.25 mV)	100 Ω	-32 dB (20 mV)	70 dB (A)
TUNER TAPE AUX	-14 dB (150 mV)	50 kΩ	—	95 dB (A)

Outputs:

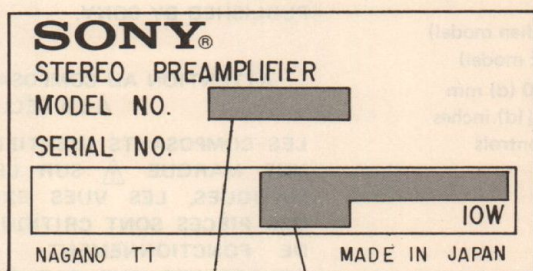
	Output level	Output impedance
REC OUT	150 mV (15 V max.)	10 kΩ
OUTPUT	1 V (15 V max.)	1 kΩ

0 dB = 0.775 V

- Headphones:** Load impedance 8 Ω
- Harmonic Distortion:** Less than 0.01 % at rated output
- IM Distortion:** (60Hz : 7kHz = 4 : 1): Less than 0.03 % at rated output
- Frequency Response:** PHONO
RIAA equalization curve ± 0.3 dB
TUNER, TAPE, AUX
10 Hz – 100 kHz ± 0.5 dB
- Low Filter:** 12 dB/oct. below 20 Hz
- Residual Noise:** Less than 40 μV (A weighting, IHF)
- Tone Controls:** BASS: ± 10 dB at 100 Hz
TREBLE: ± 10 dB at 10 kHz
- Loudness Control:** (att. 30dB): +8 dB at 100 Hz

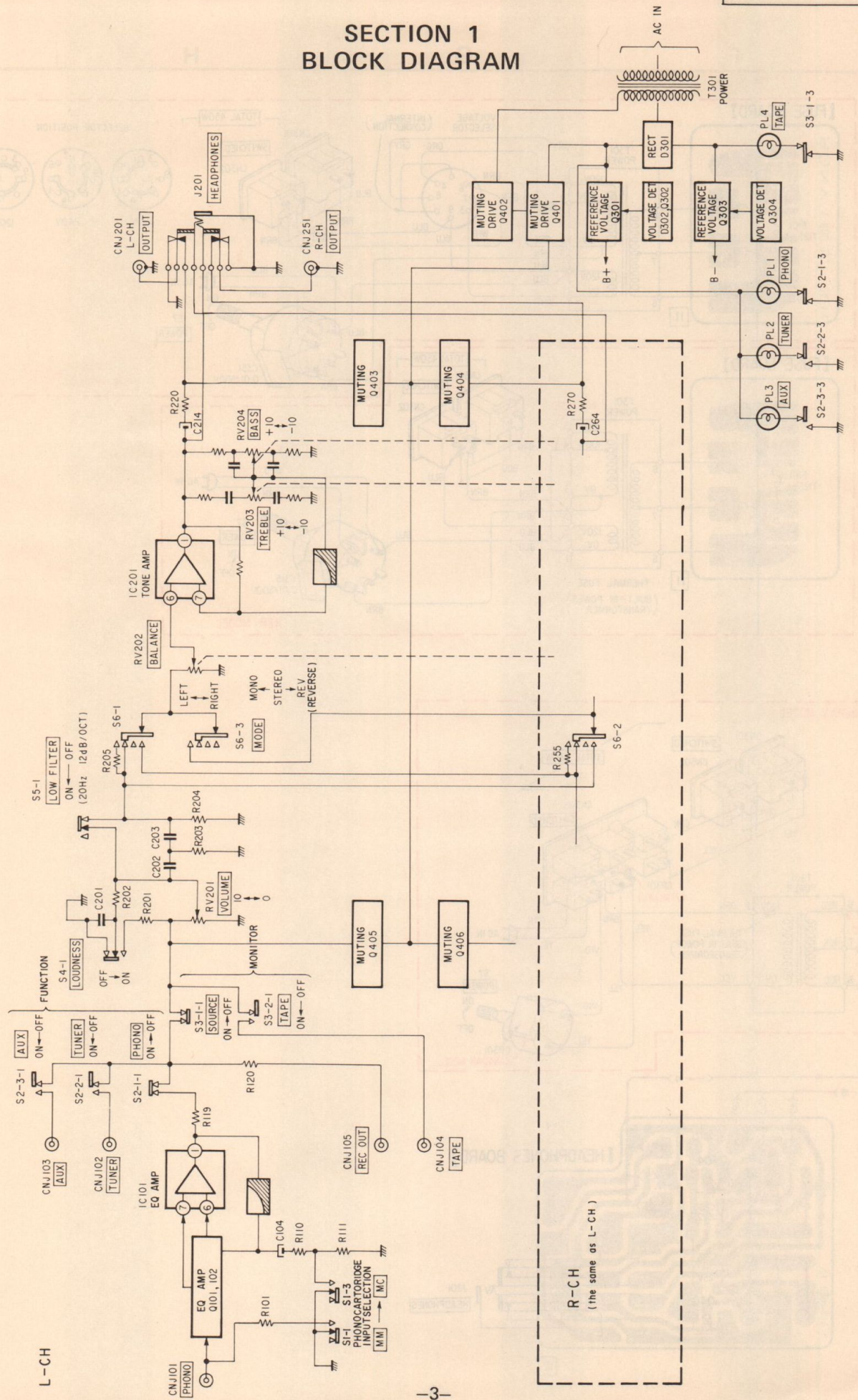
MODEL IDENTIFICATION

Specification Label



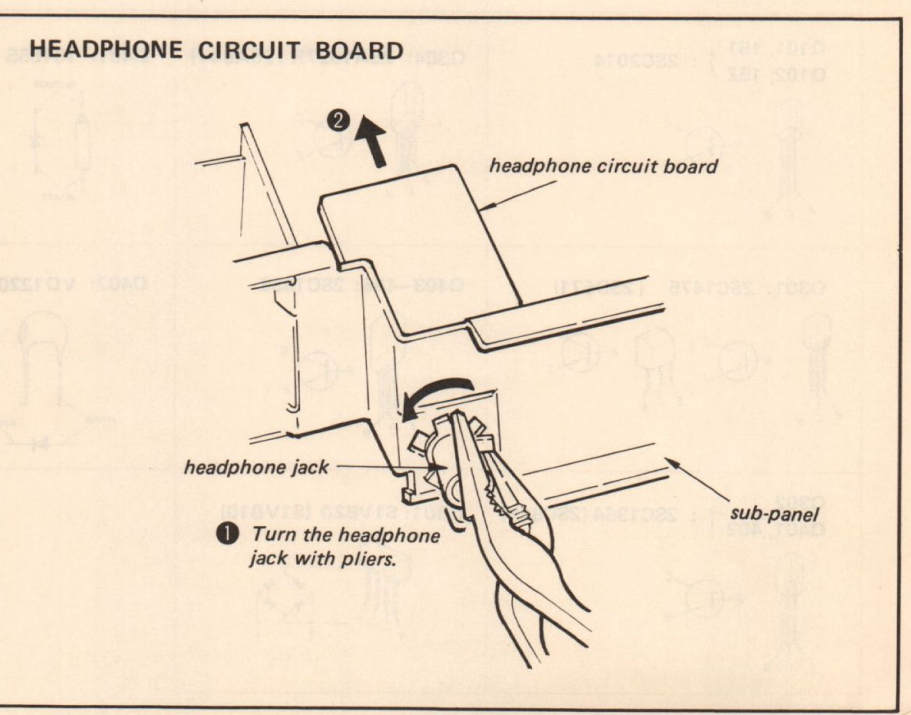
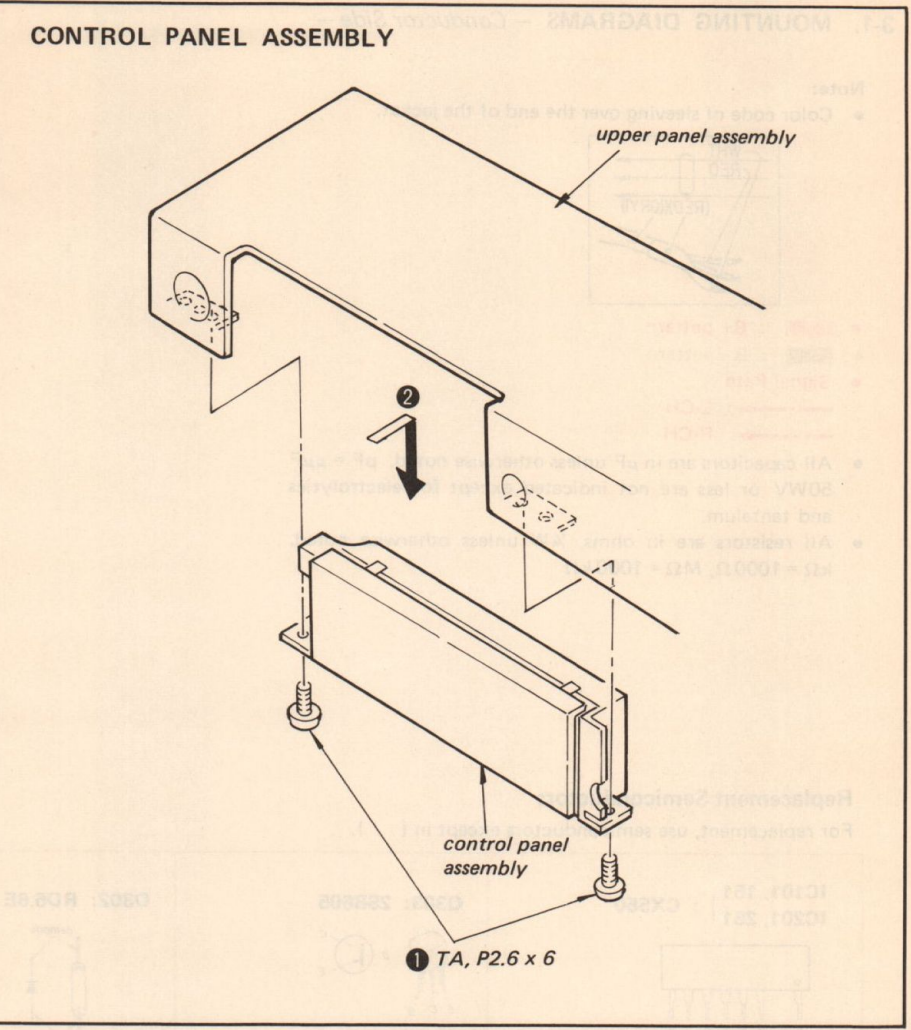
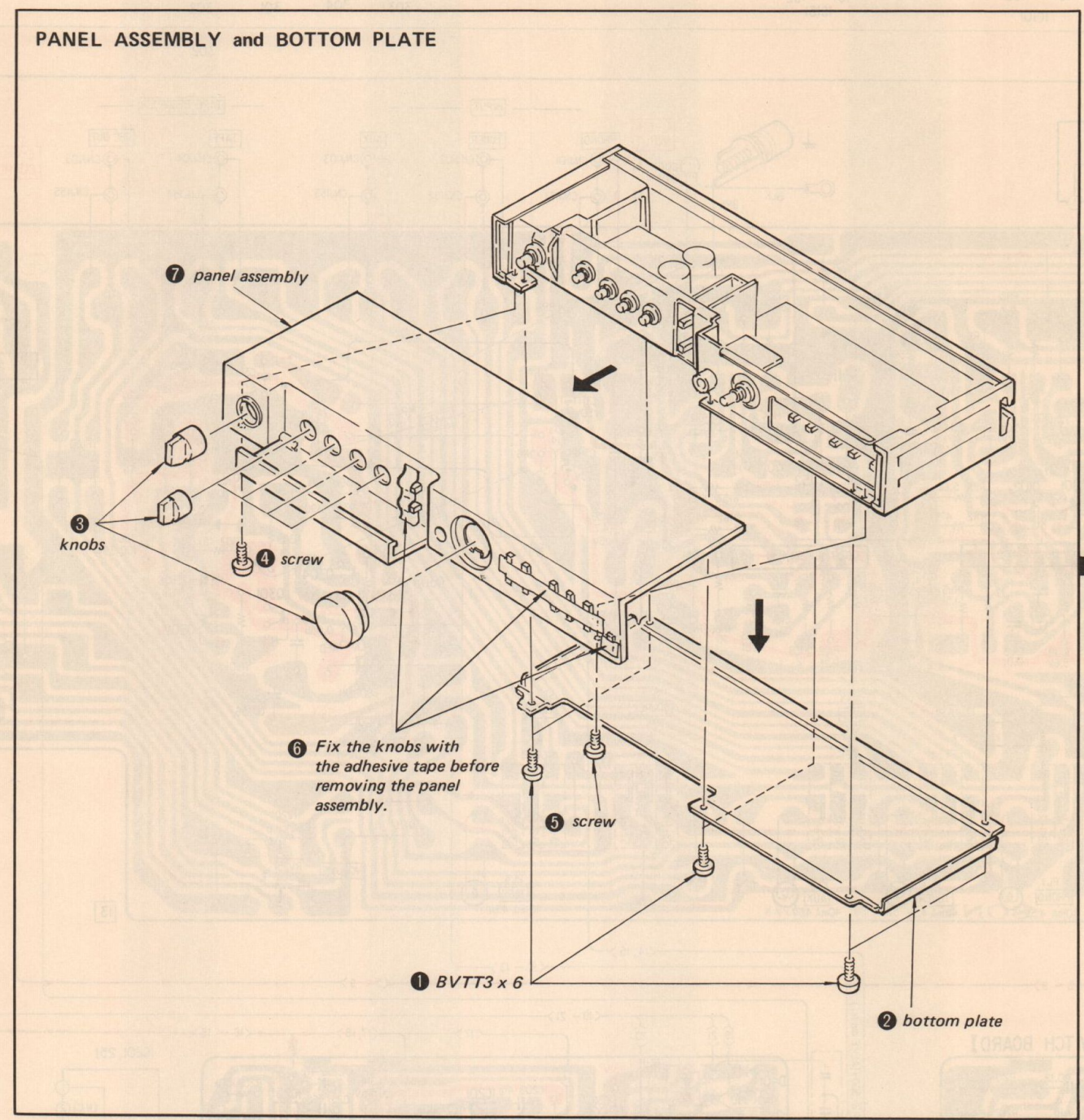
- TAE-20F { AC 120V 60Hz.....(US model)
AC 220V 50Hz.....(AEP model)
AC 120, 220, 240V 50/60Hz.....(E model)
- TAE-20FB { AC 220V 50Hz.....(AEP model)
AC 120V 60Hz.....(Canadian model)

SECTION 1
BLOCK DIAGRAM



SECTION 2
DISASSEMBLY

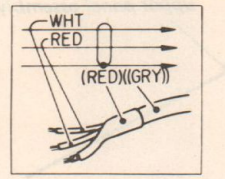
Note: Follow the disassembly procedure in the numerical order given.



SECTION 3
DIAGRAMS

3-1. MOUNTING DIAGRAMS - Conductor Side -

Note:
• Color code of sleeving over the end of the jacket.



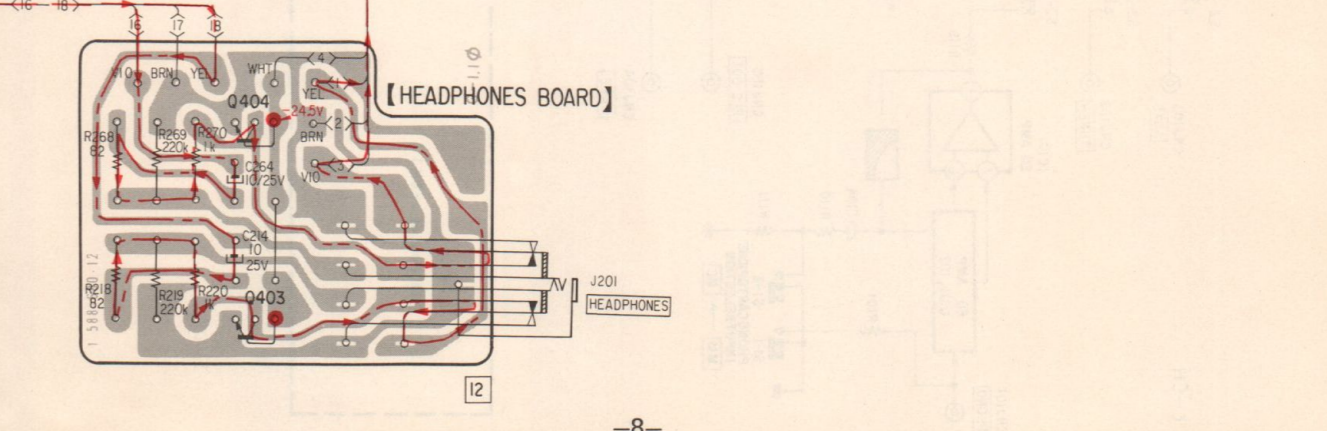
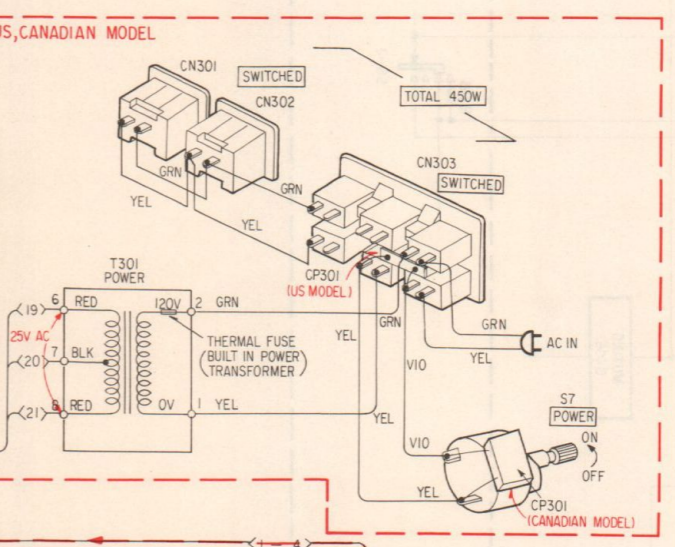
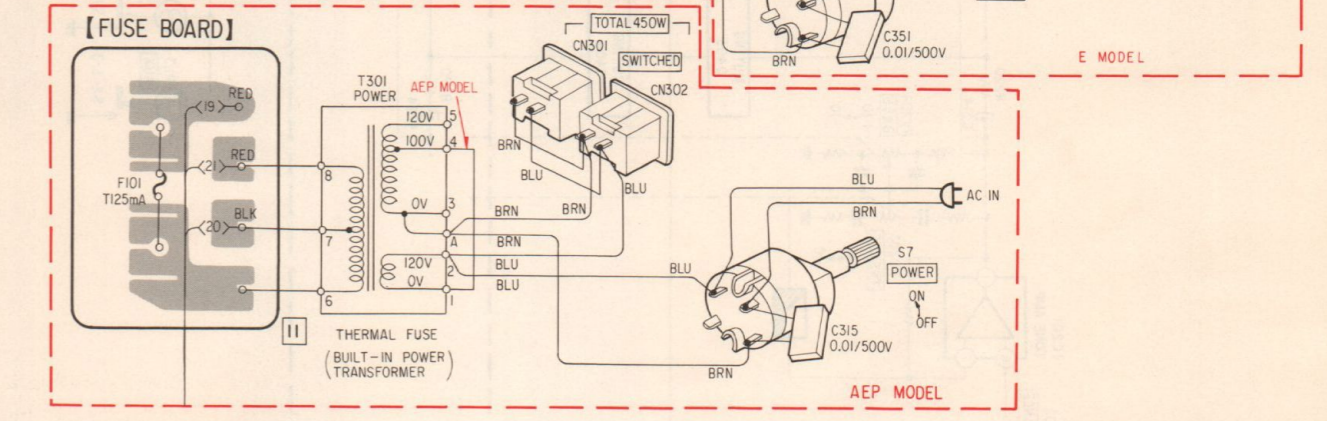
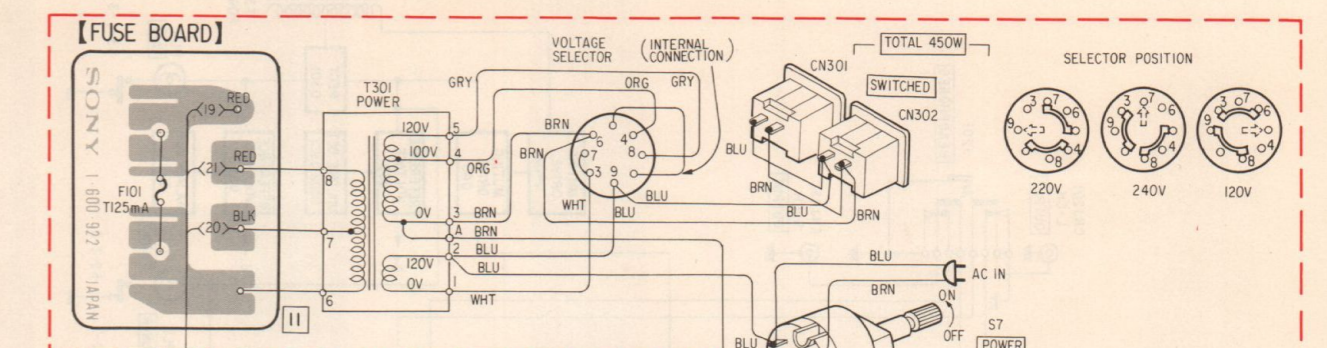
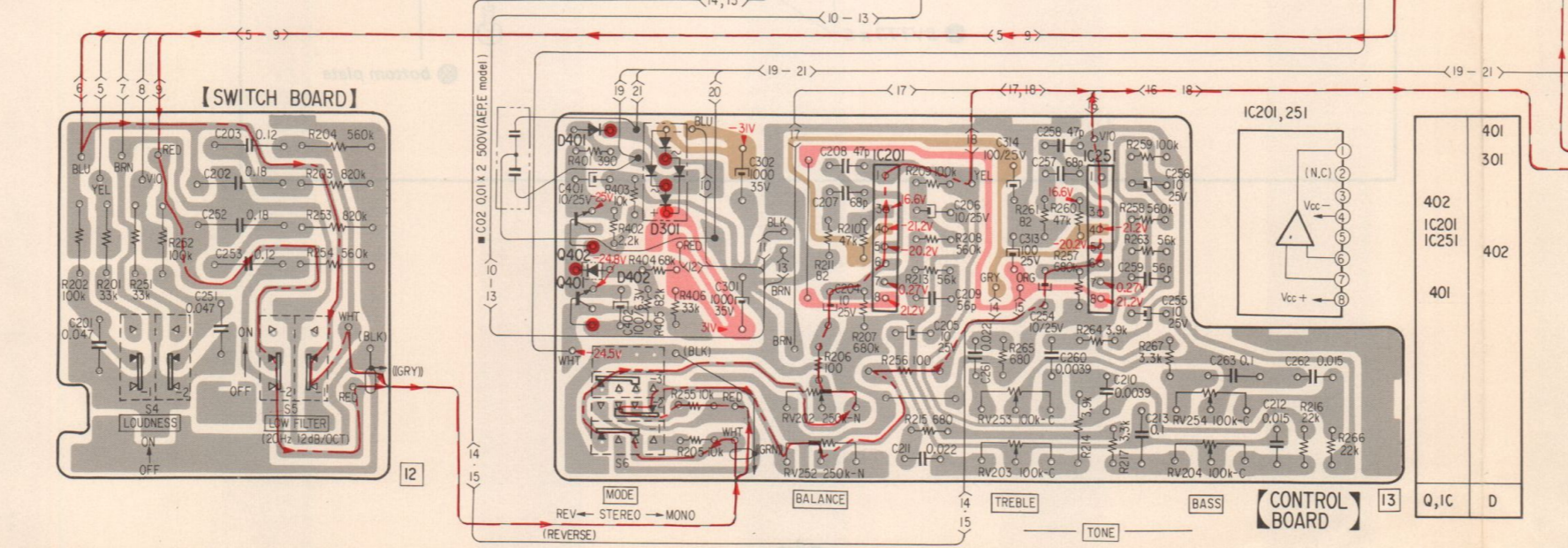
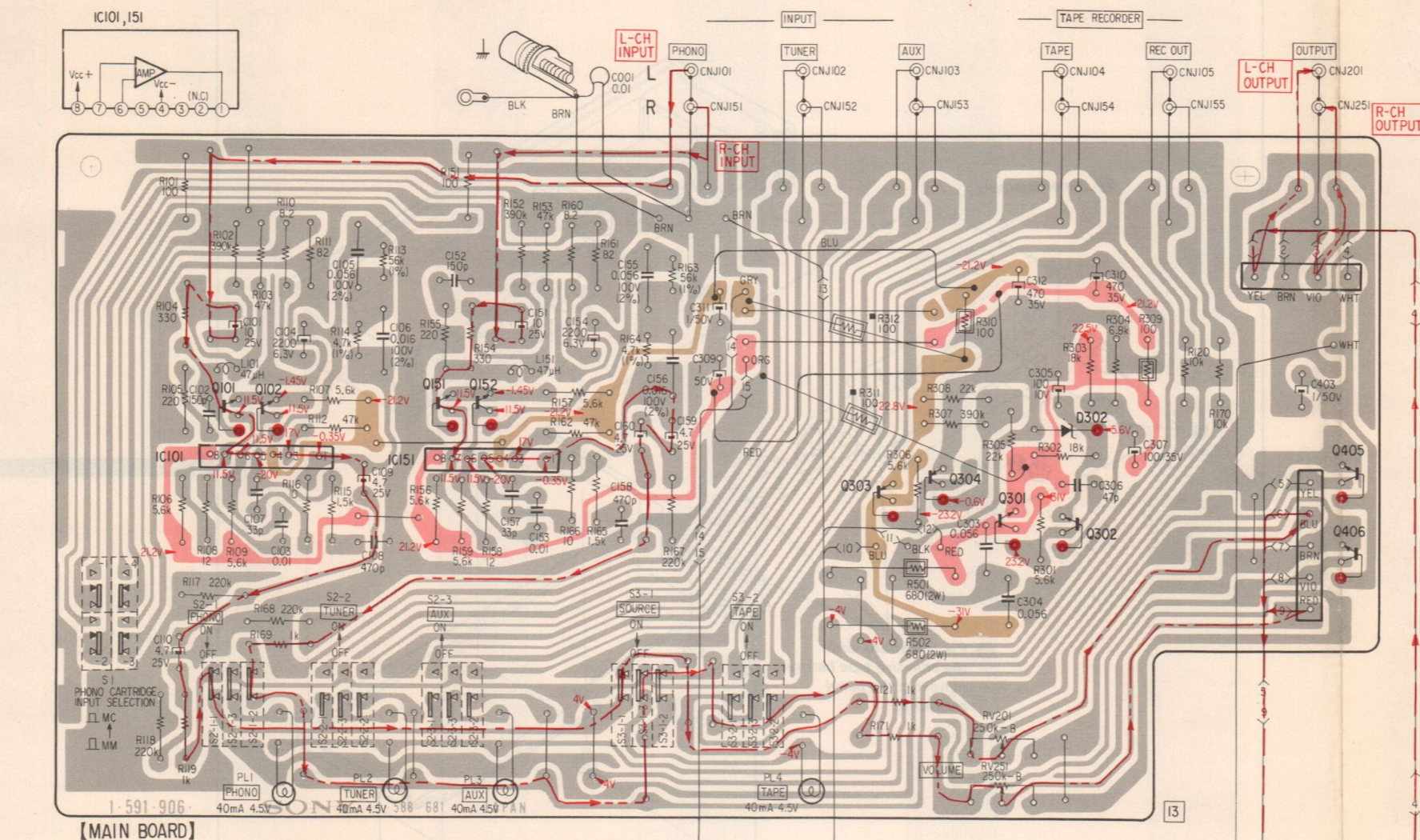
- — : B+ pattern
- — : B- pattern
- → : Signal Path
- → : L-CH
- → : R-CH
- All capacitors are in μF unless otherwise noted. $\text{pF} = \mu\text{F} / 100$. 50WV or less are not indicated except for electrolytics and tantalum.
- All resistors are in ohms, $\frac{1}{4}\text{W}$ unless otherwise noted. $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$

Replacement Semiconductors

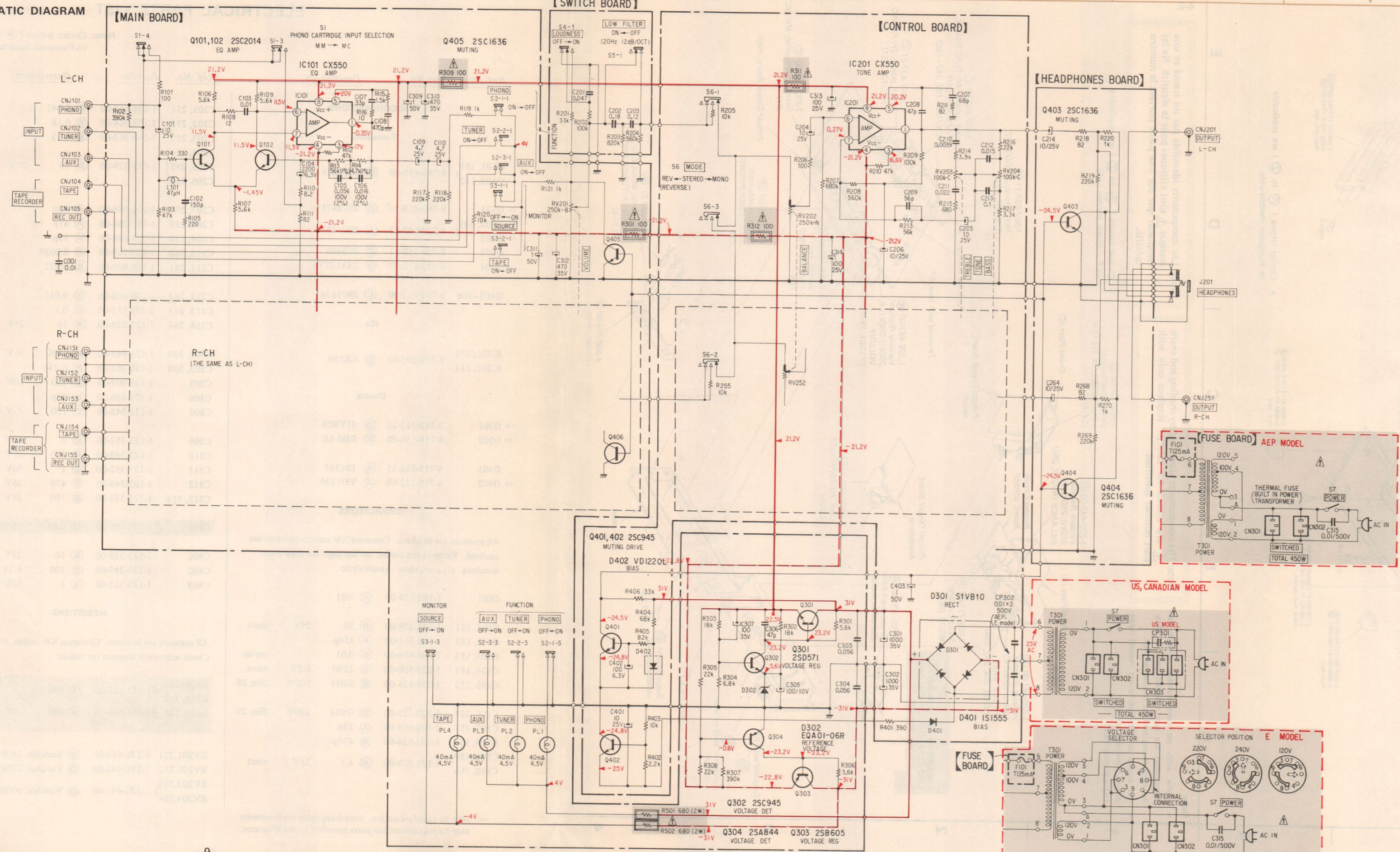
For replacement, use semiconductors except in ().

<p>IC101, 151 IC201, 251 : CX550</p>	<p>Q303: 2SB605</p>	<p>D302: RD5.6E (EQA01-06R)</p>
<p>Q101, 151 Q102, 152 : 2SC2014</p>	<p>Q304: 2SA1027R (2SA844)</p>	<p>D401: 1S1555</p>
<p>Q301: 2SC1475 (2SD571)</p>	<p>Q403-406: 2SC1636</p>	<p>D402: VD1220 (VD1220L)</p>
<p>Q302 Q401, 402 : 2SC1364 (2SC945)</p>	<p>D301: S1VB20 (S1VB10)</p>	

Q	IC	101	102	151	152	303	304	301	302	405	406	Q	IC
D		IC101		IC151					302			D	



3-2. SCHEMATIC DIAGRAM



- Note:**
- All capacitors are in μF unless otherwise noted. $\text{pF} : \mu\text{F}$ 50WV or less are not indicated except for electrolytics and tantalum.
 - All resistors are in ohms, $\frac{1}{2}\text{W}$ unless otherwise noted. $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$
 - NF : nonflammable resistor.
 - 1% indicates component tolerance.
 - Readings are taken under no-signal conditions with a VOM ($20\text{k}\Omega/\text{V}$).
 - Switch

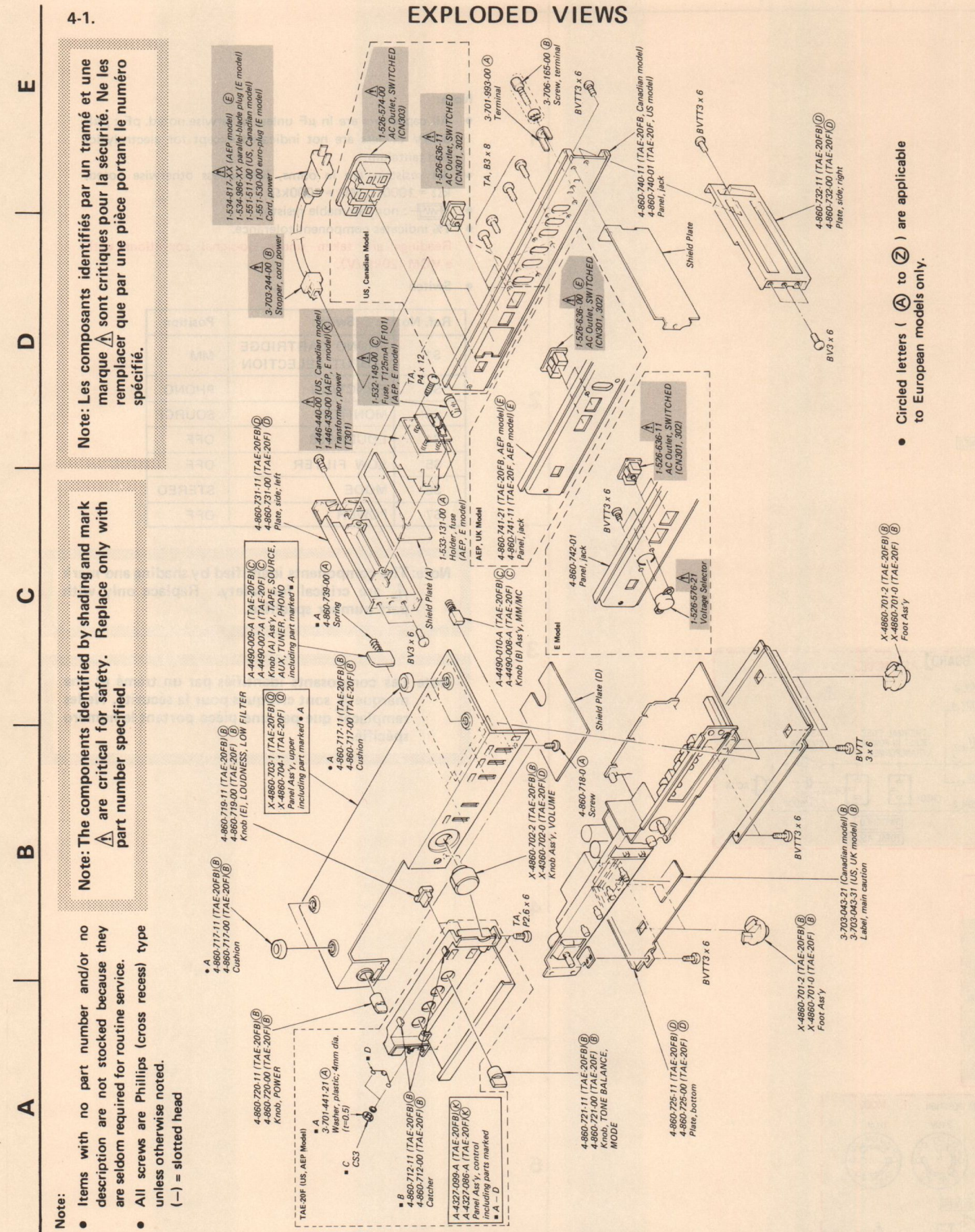
Ref. No.	Switch	Position
S1	PHONO CARTRIDGE INPUT SELECTION	MM
S2	FUNCTION	PHONO
S3	MONITOR	SOURCE
S4	LOUDNESS	OFF
S5	LOW FILTER	OFF
S6	MODE	STEREO
S7	POWER	OFF

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

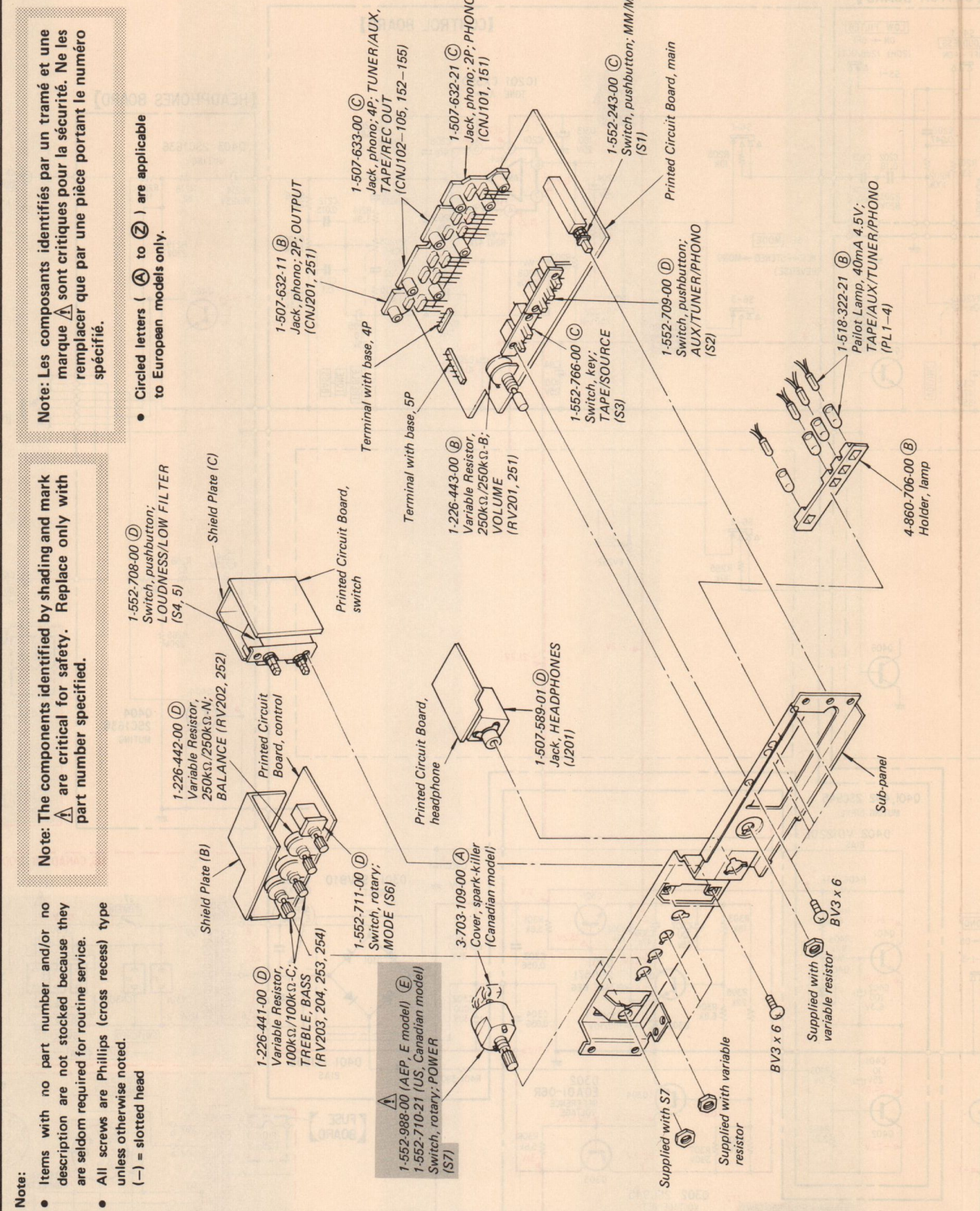
Note: Les composants identifiés par un tramé et une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 4

EXPLODED VIEWS



4-2.



SECTION 5
ELECTRICAL PARTS LIST

Note: Circled letters (A to Z) are applicable to European models only.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
SEMICONDUCTORS					
Transistors					
Q101, 151	8-765-493-00	D 2SC2014	C201, 251	1-108-812-00	B 0.047 mylar
Q102, 152	8-765-493-00	D 2SC2014	C202, 252	1-108-364-00	B 0.18 mylar
Q301	8-760-413-10	D 2SC1475	C203, 253	1-108-363-00	B 0.12 mylar
Q302, 401	8-729-663-47	A 2SC1364	C204, 254	1-123-329-00	B 10 25V elect
Q402	8-729-663-47	A 2SC1364	C205, 255	1-123-329-00	B 10 25V elect
Q303	8-729-160-51	C 2SB605	C206, 256	1-123-329-00	B 10 25V elect
Q304	8-729-612-77	B 2SA1027R	C207, 257	1-101-888-00	A 68p
Q403-406	8-761-622-00	C 2SC1636	C208, 258	1-101-880-00	A 47p
IC101, 151	8-759-305-00	D CX550	C209, 259	1-101-884-00	A 56p
IC201, 251	8-759-305-00	D CX550	C210, 260	1-108-569-00	B 0.0039 mylar
D301	8-719-511-20	D S1VB20	C211, 261	1-108-808-00	B 0.022 mylar
D302	8-719-156-08	B RD5.6E	C212, 262	1-108-806-00	B 0.015 mylar
D401	8-719-815-55	A 1S1555	C213, 263	1-108-251-00	B 0.1 mylar
D402	8-719-122-00	A VD1220	C214, 264	1-123-329-00	B 10 25V elect
DIODES					
C301, 302	1-121-945-00	B 1000 35V elect	C309	1-123-352-00	B 1 50V elect
C303, 304	1-108-361-00	B 0.056 mylar	C310	1-123-348-00	B 470 35V elect
C305	1-123-307-00	B 100 10V elect	C311	1-123-352-00	B 1 50V elect
C306	1-101-880-00	B 47p	C312	1-123-348-00	B 470 35V elect
C307	1-123-345-00	B 100 35V elect	C313, 314	1-123-333-00	B 100 25V elect
CAPACITORS					
C001	1-102-129-00	A 0.01	C315	Δ 1-130-196-00	D 0.01 500V (AEP, E model)
C101, 151	1-123-329-00	B 10 25V elect	C401	1-123-329-00	B 10 25V elect
C102, 152	1-101-361-00	A 150p	C402	1-123-295-00	B 100 6.3V elect
C103, 153	1-108-804-00	B 0.01 mylar	C403	1-123-352-00	B 1 50V elect
C104, 154	1-123-300-00	B 2200 6.3V elect	RESISTORS		
C105, 155	1-130-126-00	B 0.056 100V film 2%	All resistors are in ohms. Common 1/4W carbon resistors are omitted. Check schematic diagram for values.		
C106, 156	1-130-125-00	B 0.016 100V film 2%	R309, 310	Δ 1-221-522-00	A 100 nonflammable
C107, 157	1-102-963-00	A 33p	R311, 312	Δ 1-221-522-00	A 100 nonflammable
C108, 158	1-102-824-00	A 470p	R501, 502	Δ 1-206-660-00	B 680 2W metal oxide (nonflammable)
C109, 159	1-123-328-00	B 4.7 25V elect	RV201,251	1-226-443-00	B Variable; 250k Ω /250k Ω -B; VOLUME
C110, 160	1-123-328-00	B 4.7 25V elect	RV202,252	1-226-442-00	D Variable; 250k Ω /250k Ω -N; BALANCE
			RV203,253	1-226-441-00	D Variable; 100k/100k-C; TREBLE/BASS
			RV204,254	1-226-441-00	D Variable; 100k/100k-C; TREBLE/BASS

Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: Circled letters (A to Z) are applicable to European models only.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
COIL		
L101, 151	1-408-164-00	(B) 47 μ H, microinductor
TRANSFORMERS		
T301	(A) 1-446-439-00	(K) Power (AEP, E model)
T301	(A) 1-446-440-00	Power (US, Canadian model)
SWITCHES		
S1	1-552-243-00	(C) Pushbutton, MM/MC
S2	1-552-709 -00	(D) Pushbutton, AUX/TUNER/ PHONO
S3	1-552-766-00	(C) Key, TAPE/SOURCE
S4, 5	1-552-708-00	(D) Pushbutton, LOUDNESS/ LOW FILTER
S6	1-552-711-00	(D) Rotary, MODE
S7	(A) 1-552-710-00	Rotary, POWER (US, Canadian model)
S7	(A) 1-552-988-00	(E) Rotary, POWER (AEP, E model)
JACKS		
CNJ101,151	1-507-632-21	(C) PHONO
CNJ102-105	1-507-633-00	(C) TUNER/AUX, TAPE/ REC OUT
CNJ152-155		
CNJ201,251	1-507-632-11	(B) OUTPUT
J201	1-507-589-01	(D) HEADPHONES
LAMPS		
PL1-4	1-518-322-21	(B) Pilot, 40mA, 4.5V; TAPE/ AUX/TUNER/PHONO
MISCELLANEOUS		
CN301, 302	(A) 1-526-636-00	(E) AC outlet
CN303	(A) 1-526-574-00	AC outlet (US, Canadian model)
CP301	(A) 1-231-341-00	Spark Killer (US, Canadian model)
CP302	(A) 1-102-355-00	(B) Encapsulated Component, 0.01 x 2, 500V (AEP, E model)
F101	(A) 1-532-149-00	(C) Fuse, T125mA (AEP, E model)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
(A) 1-231-326-11	(B)	Encapsulated Component
(A) 1-526-576-21		Voltage Selector (E model)
1-533-131-00	(A)	Fuse, holder (AEP, E model)
(A) 1-534-817-XX	(E)	Cord, power (AEP model)
(A) 1-534-986-XX		Cord, power; parallel-blade plug (E model)
(A) 1-551-511-00		Cord, power (US, Canadian model)
(A) 1-551-530-00	(D)	Cord, power; euro-plug (E model)

ACCESSORIES AND PACKING MATERIALS

<u>Part No.</u>	<u>Description</u>
3-770-682-21	(D) Manual, instruction; english
3-770-682-31	(I) Manual, instruction; french
3-770-682-51	(I) Manual, instruction; spanish (GG-20F)
3-770-683-11	(I) Manual, instruction; GG-10F/10FB (AEP model)
3-770-683-21	Manual, instruction; GG-10F (US model)
3-770-683-51	Manual, instruction; GG-10F (E model)
4-860-646-00	(A) Sheet, protection
4-860-648-00	(C) Cushion
4-860-743-00	(J) Carton, TAE-20F
4-860-744-00	(J) Carton, TAE-20FB

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

Note: Les composants identifiés par un tramé et une marque (A) sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

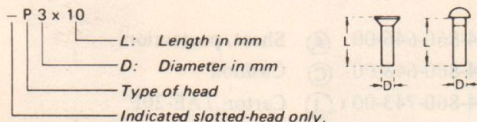
1/4 WATT CARBON RESISTORS (A)

Note: Circled letter (A) is applicable to European models only.

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

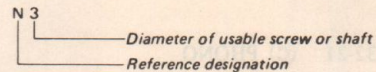
HARDWARE NOMENCLATURE

Screw:



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

Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
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
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	