

SERVICE MANUAL

INTEGRATED STEREO AMPLIFIER

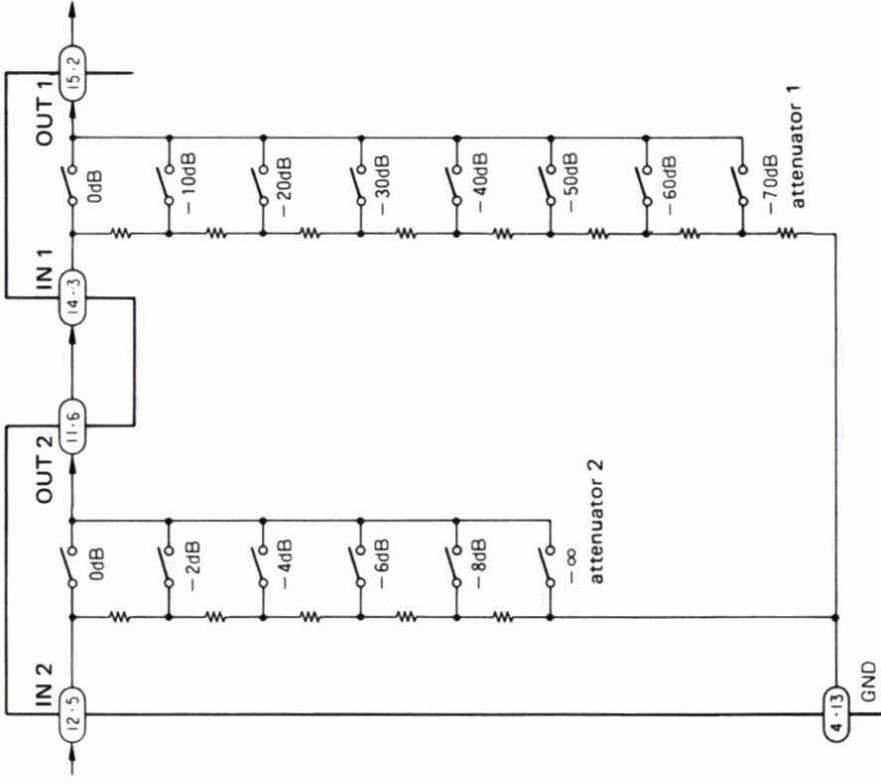
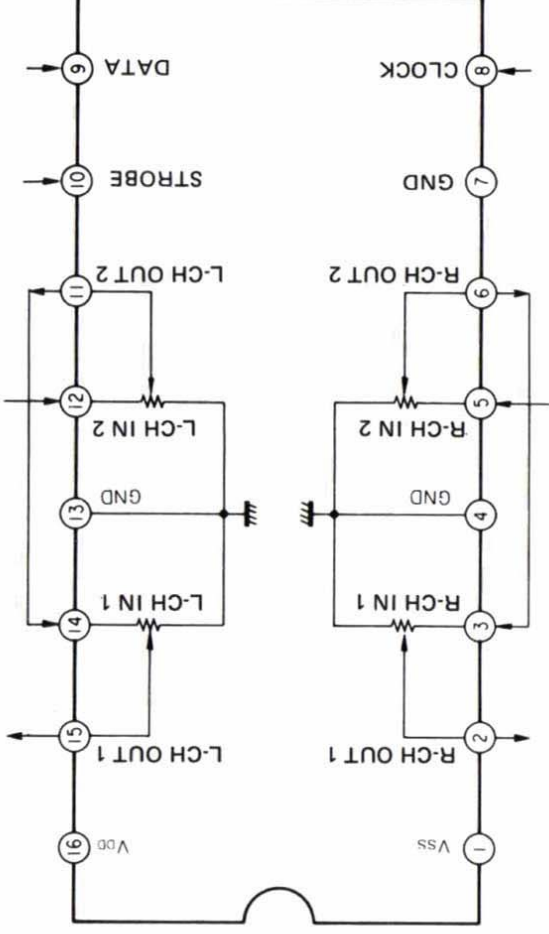
TA-177R

Note: TA-177R is an integrated stereo amplifier unit in FH-150R.

1. IC'S OPERATION

1-1. TC9176P (IC203)

TC9176P is an IC served as electronic volume. This IC is capable of controlling the attenuation from 0 dB to -76 dB at intervals of 2 dB.



● Pin Functions

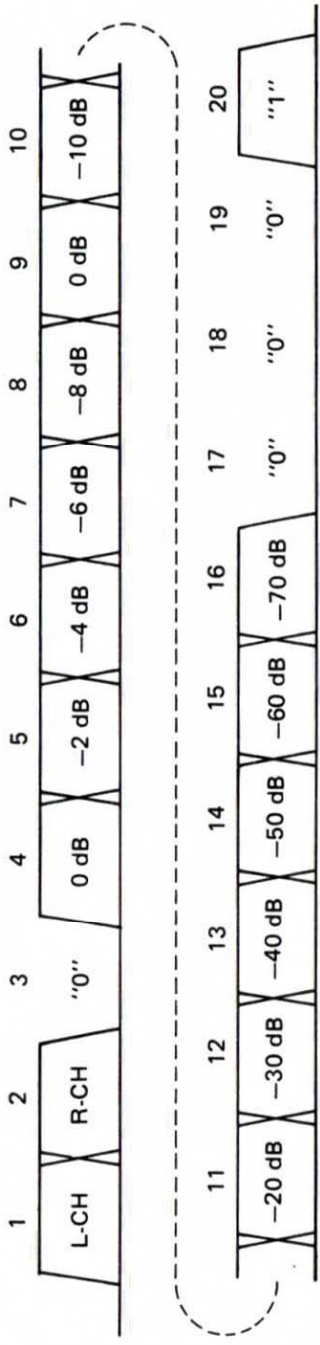
- ② R-CH OUT 1, ⑮ L-CH OUT 1
Output pin for 10 dB step attenuator.
The signal applied to L/R-CH IN 1 attenuates 8 steps from 0 to -70 dB at intervals of 10 dB.
- ③ R-CH IN 1, ⑭ L-CH IN 1
Input pin for 10 dB step attenuator.
- ⑥ R-CH OUT 2, ⑪ L-CH OUT 2
Output pin for 2 dB step attenuator.
The signal applied to L/R-CH IN 2 attenuates 5 steps from 0 to -8 dB at intervals of 2 dB.
- ⑤ R-CH IN 2, ⑫ L-CH IN 2
Input pin for 2 dB step attenuator.

The attenuator is composed of the resistors and the analog switches.
Attenuator 1 attenuates 10 dB steps from 0 to -70 dB and attenuator 2 attenuates 2 dB steps from 0 to 8 dB.
Total attenuation is 2 dB steps from 0 to -76 dB.

⑨ DATA

This pin is input the serial data from IC301.

Data contain attenuation value and selection of L-CH or R-CH, and these are composed of 20 bits.



⑧ CLOCK

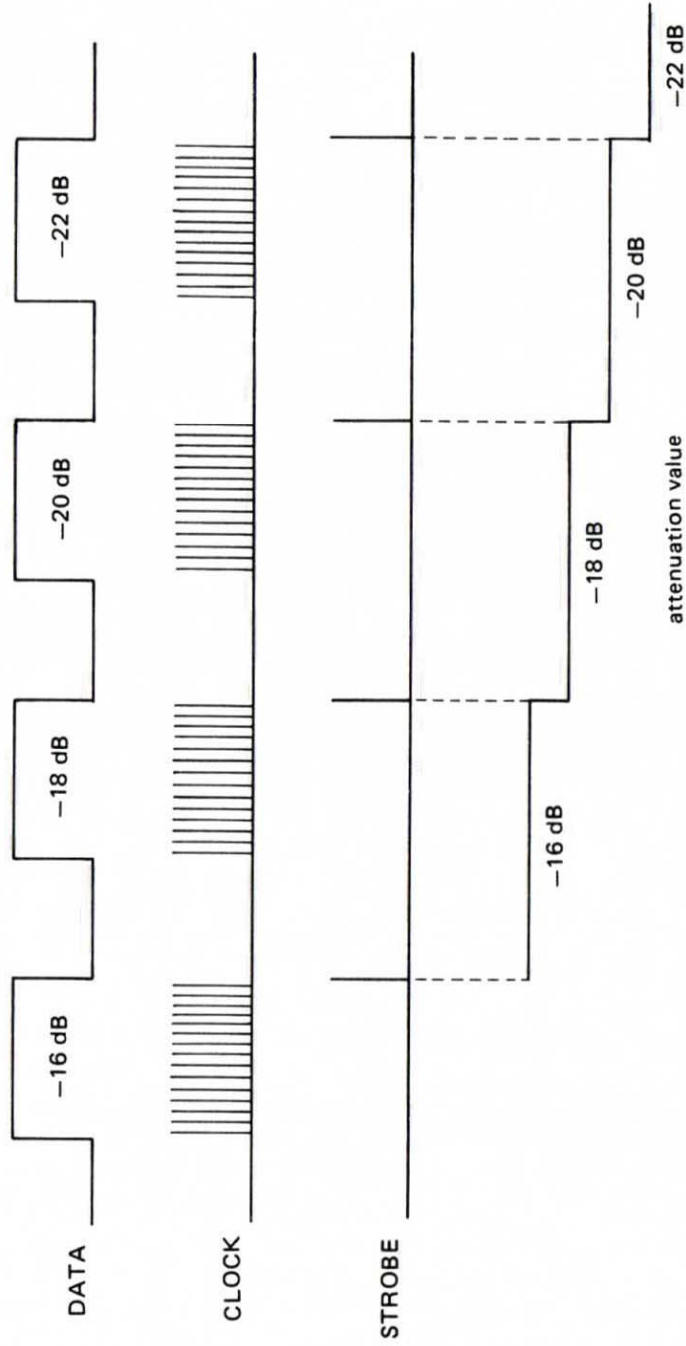
This pin is input the clock signal.

Data are input to the pin ⑨ that is synchronized by clock signal.

⑩ STROBE

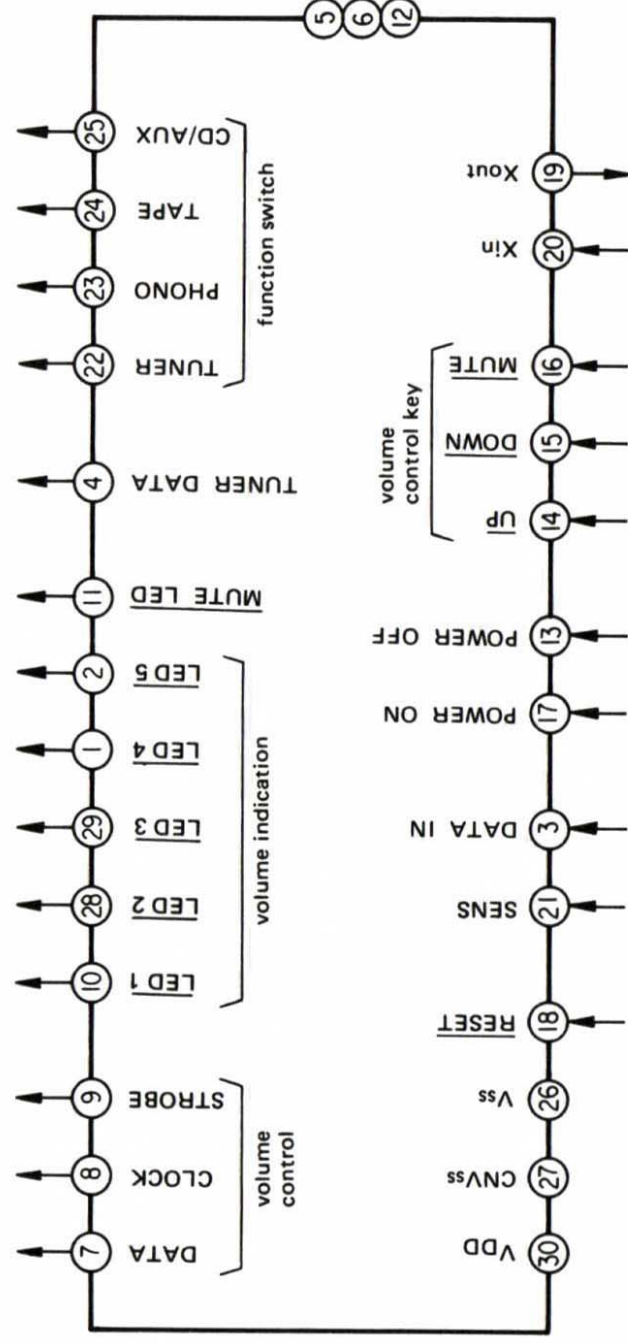
This pin is input the strobe pulse.

Data are latched, when strobe pulse is input to pin ⑩.



1-2. M50765-440SP (IC301)

M50765-440SP decodes the serial data of remote controller and feeds the volume control data to IC203.



● Pin Functions

Pin Number	Pin Name	I/O	Function
3	DATA IN	Input	This pin is input the serial data of remote controller.
21	SENS	Input	Input pin for starting transmission of the remote controller data. Input data ③ DATA is read at the beginning of the signal input to this pin.
17	POWER ON	Input	When power is turned on, pin ⑬ is input high level pulse from differential circuit and IC will be in standby mode. Second, pin ⑬ goes high level by integrating circuit and IC will be started.
13	POWER OFF	Input	
14	$\overline{\text{UP}}$	Input	<p>After power is turned off, ⑬ pin goes low level by integrating circuit and IC detects power off. IC's data (volume data) are kept by back-up battery.</p>
15	$\overline{\text{DOWN}}$	Input	
16	$\overline{\text{MUTE}}$	Input	<p>Input pin for volume control. When the signal is applied to these pins, ⑦ DATA, ⑧ CLOCK and ⑨ STROBE output the volume control data to IC203.</p>
22	TUNER	Output	

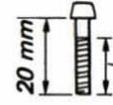
Pin Number	Pin Name	I/O	Function																																																
23	PHONO	Output	Output pin for switching the mode to PHONO. When ③ DATA IN inputs the data of PHONO, this pin goes high.																																																
24	TAPE	Output	Output pin for switching the mode to TAPE. When ③ DATA IN inputs the data of TAPE, this goes high.																																																
25	CD/AUX	Output	Output pin for switching the mode to CD/AUX. When ③ DATA IN inputs the data of CD/AUX, this pin goes high.																																																
11	MUTE LED	Output	Output pin for switching the MUTING -20 dB LED on/off.																																																
10	LED 1	Output	Output pin for indicating the volume level. These pins output signal that cope with volume level.																																																
28	LED 2																																																		
29	LED 3																																																		
1	LED 4																																																		
2	LED 5																																																		
			<table border="1"> <thead> <tr> <th>Volume level (dB)</th> <th colspan="5">Pin</th> </tr> <tr> <th></th> <th>⑩</th> <th>⑳</th> <th>㉑</th> <th>①</th> <th>②</th> </tr> </thead> <tbody> <tr> <td>0 to -2</td> <td>L</td> <td>L</td> <td>L</td> <td>L</td> <td>L</td> </tr> <tr> <td>-4 to -6</td> <td>L</td> <td>L</td> <td>L</td> <td>L</td> <td>H</td> </tr> <tr> <td>-8 to -18</td> <td>L</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>-20 to -34</td> <td>L</td> <td>L</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>-36 to -76</td> <td>L</td> <td>H</td> <td>H</td> <td>H</td> <td>H</td> </tr> <tr> <td>-78 to -∞</td> <td>H</td> <td>H</td> <td>H</td> <td>H</td> <td>H</td> </tr> </tbody> </table> <p>H: high level L: low level</p>	Volume level (dB)	Pin						⑩	⑳	㉑	①	②	0 to -2	L	L	L	L	L	-4 to -6	L	L	L	L	H	-8 to -18	L	L	L	H	H	-20 to -34	L	L	L	H	H	-36 to -76	L	H	H	H	H	-78 to -∞	H	H	H	H	H
Volume level (dB)	Pin																																																		
	⑩	⑳	㉑	①	②																																														
0 to -2	L	L	L	L	L																																														
-4 to -6	L	L	L	L	H																																														
-8 to -18	L	L	L	H	H																																														
-20 to -34	L	L	L	H	H																																														
-36 to -76	L	H	H	H	H																																														
-78 to -∞	H	H	H	H	H																																														
4	TUNER DATA	Output	This pin outputs the receiving band/station switching signal. That signal feeds to tuner unit (ST-177R).																																																
7	DATA	Output	This pin outputs the volume control data to IC203.																																																
8	CLOCK	Output	This pin outputs the clock signal of volume control data.																																																
9	STROBE	Output	This pin outputs the strobe signal of volume control data.																																																

2. SERVICING NOTE (G-AEP model only)

- Caution on replacing screws fixing speaker terminal board.

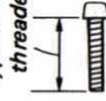
Two types ①, ② of screw (BVTT3 x 20) is supplied as repair part for speaker terminal board fixing. If ① type screw is supplied, make a hole as shown in the figure.

① type screw

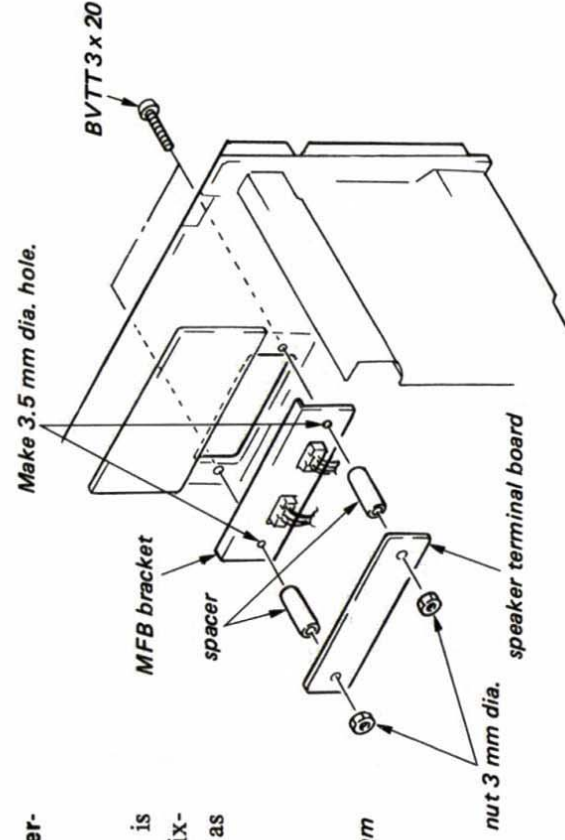


threaded length: 14 mm

② type screw



threaded length: 20 mm

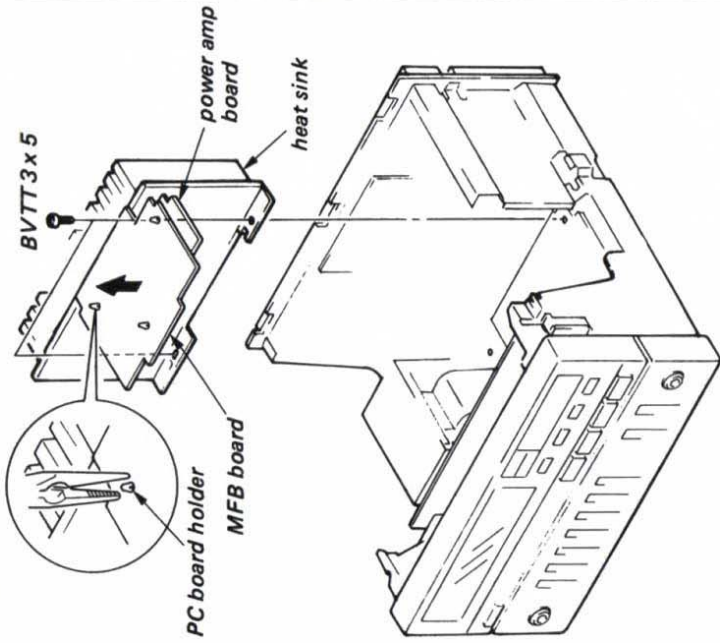


3. DISASSEMBLY

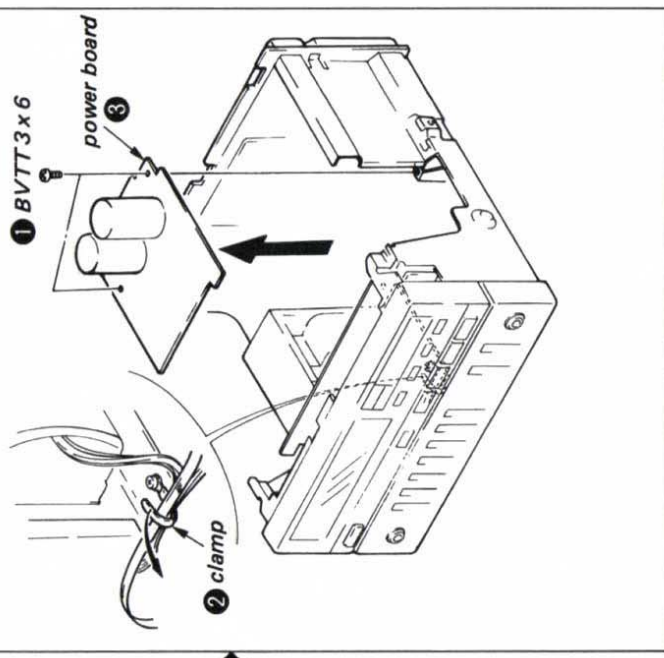
Note: Follow the disassembly procedure in the numerical order given.

MFB BOARD/POWER AMP BOARD

Unlock the MFB board from the PC board holder.

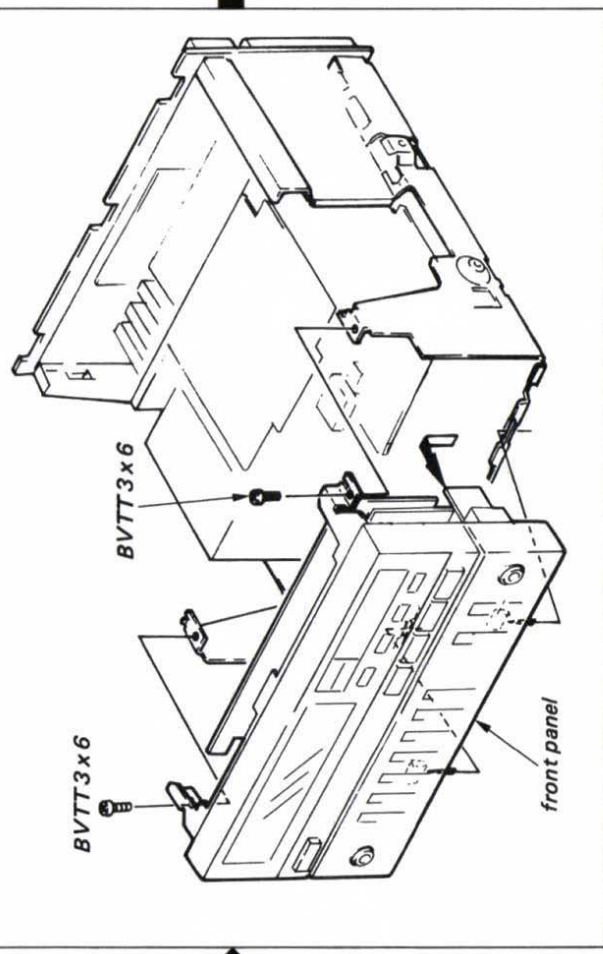


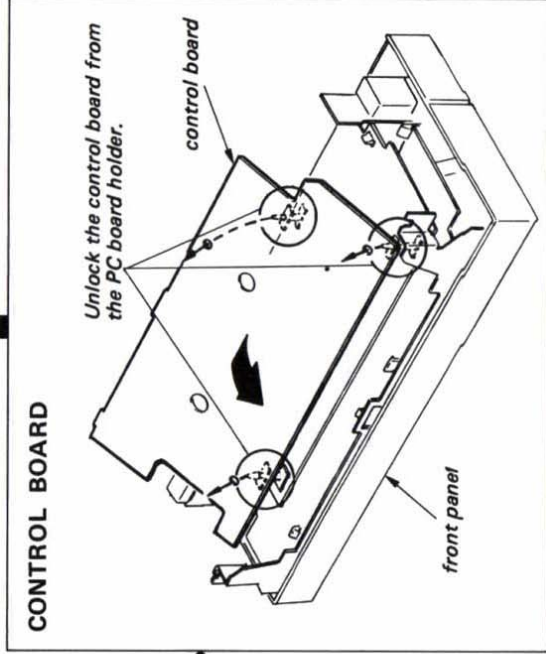
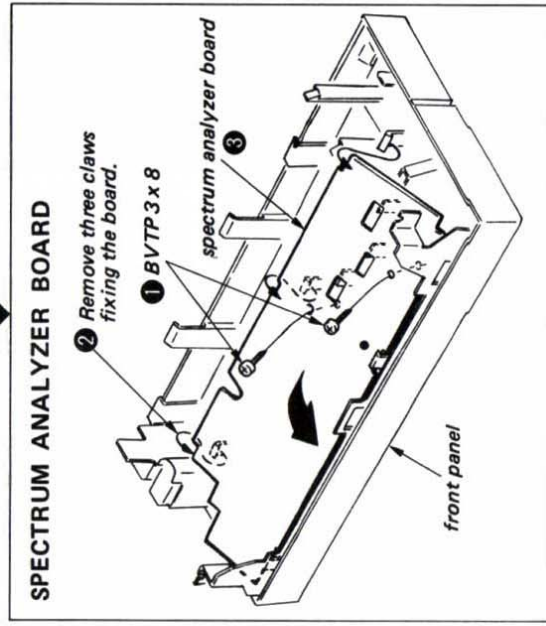
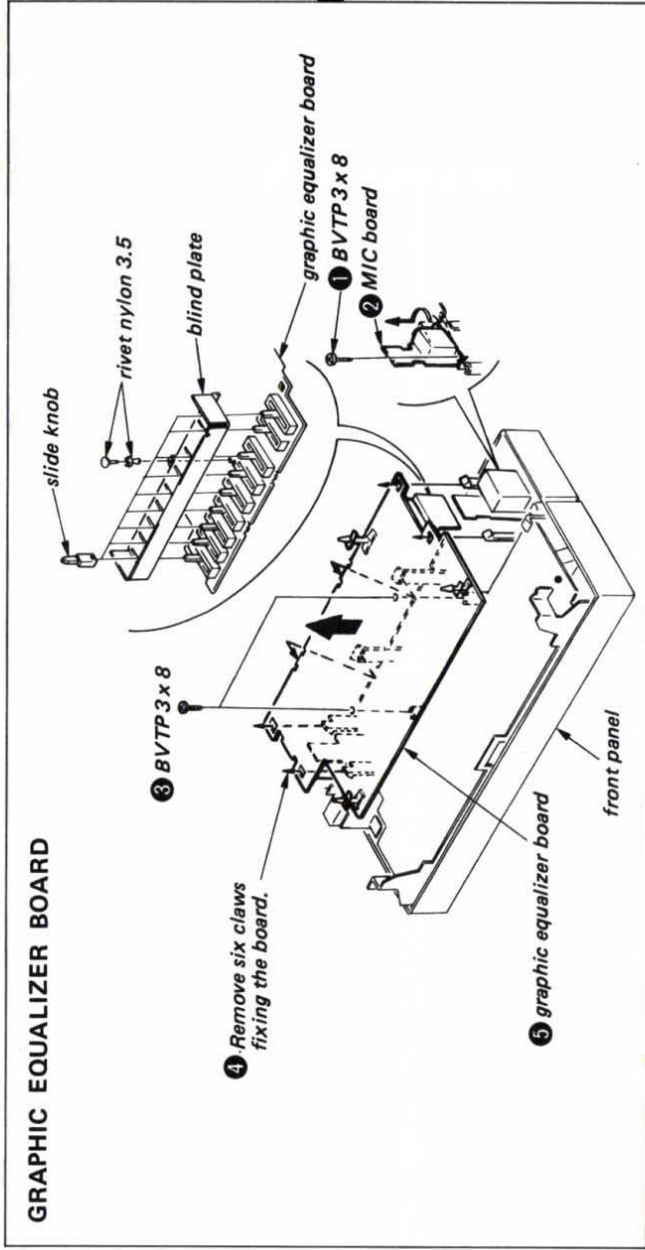
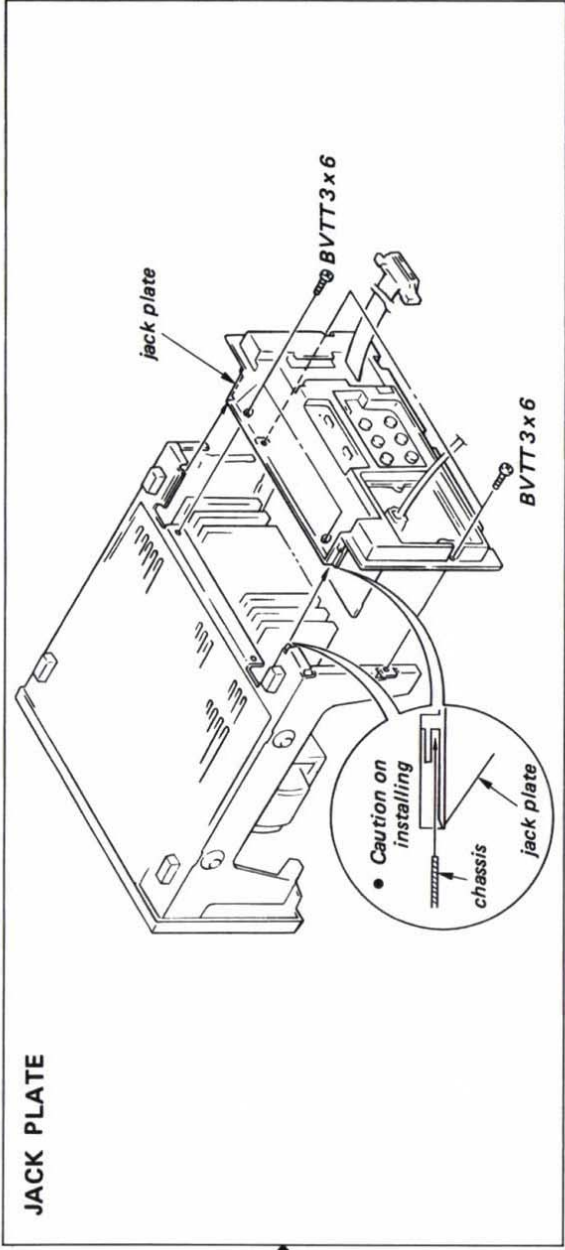
POWER BOARD



- Remove the case. (four screws)

FRONT PANEL

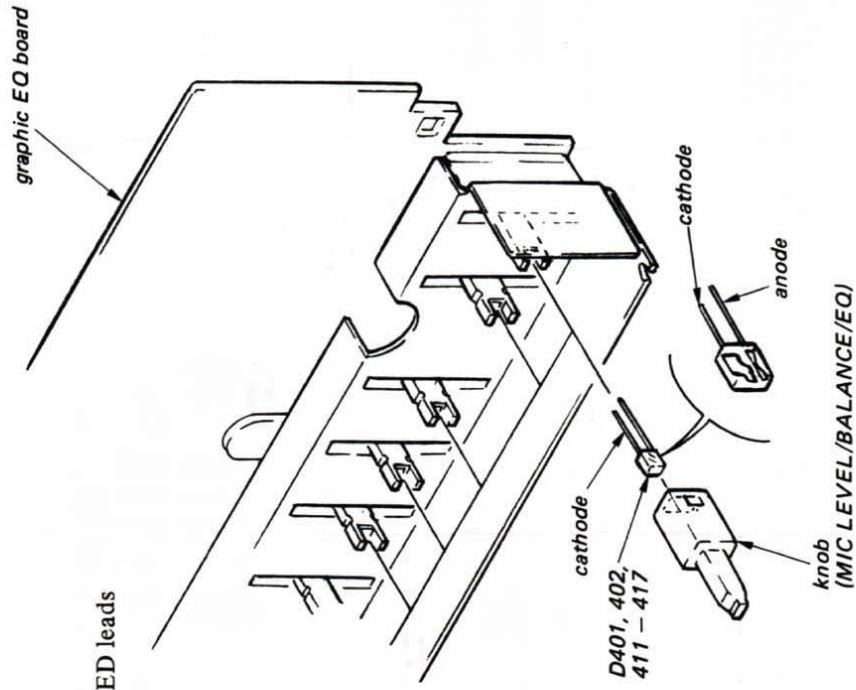




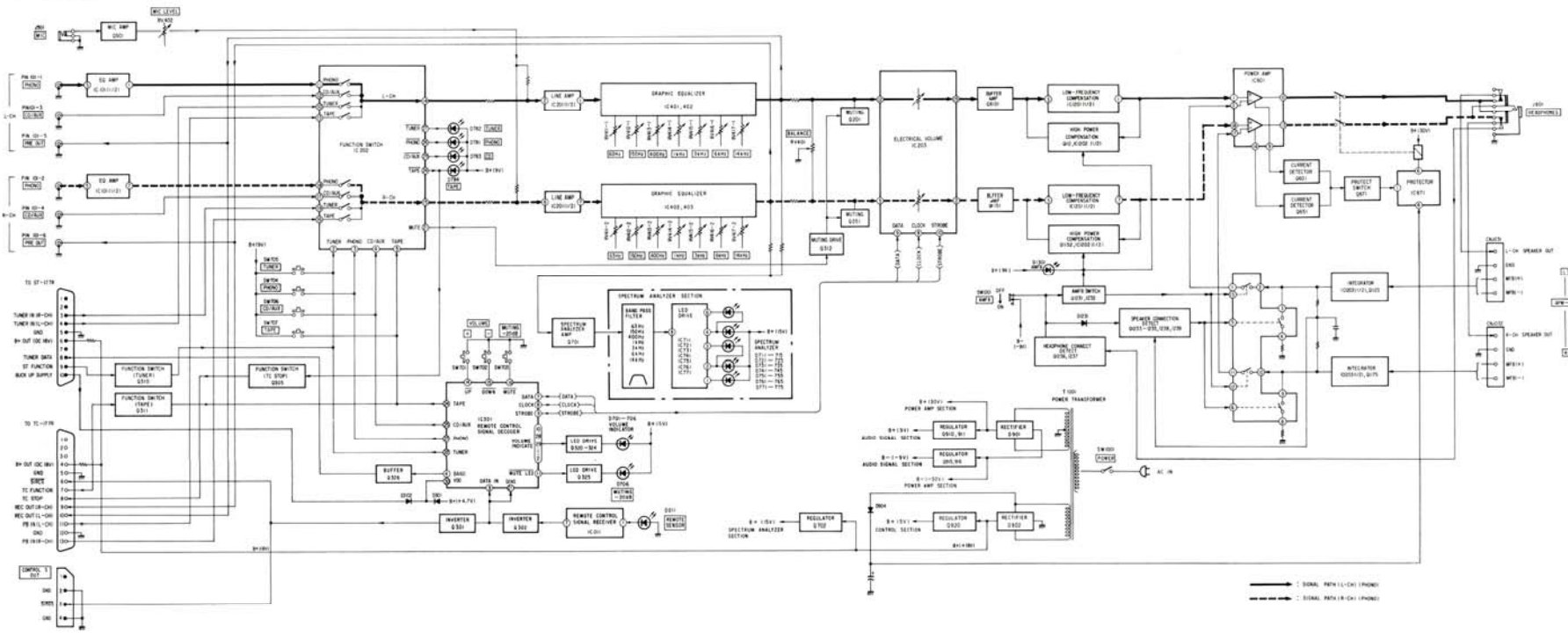
LEDs OF D401, 402, 411 - 417 REPLACEMENT

Though LEDs of D401, 402, 411 - 417 are built in each variable resistor RV401, 402, 411 - 417, only LEDs can be replaced.

1. Pull out the knobs, and pull out LED.
2. Cut the new LED leads as long as the LED leads mounted previously.



4. BLOCK DIAGRAM



• Semiconductor Lead Layouts

LC4966	H26A1L H27A1L H212A1 H216-2L	AA5535S
M5226P TC9176P	PH302B	Z5C1841-PA
LC7816H	RB402	Z5C6345P Z5C2603F DTA144WS DTF144WS
M50785-440GP	RB602F	Z5K381-E
CX20106A M0218L JFC1227H	LN450VP	Z5D909
IR2631	SEL2710K	Z5B965-Q
STK4152B	SEL2710K	Z5D1288-Q
1S5119	SEL2210S-C SEL2418E-C SEL2810A-C SEL2910A-C	Z5A1179

5. MOUNTING DIAGRAM

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
IC011	J-4	Q325	H-13	D321	G-10	D745	H-8		
IC101	D-17	Q326	H-12	D401	D-2	D751	G-7		
IC201	H-11	Q501	B-3	D402	C-2	D752	G-7		
IC202	G-10	Q601	C-22	D411	I-3	D753	G-7		
IC203	I-11	Q651	D-21	D412	H-3	D754	G-7		
IC301	I-13	Q671	D-22	D413	G-3	D755	G-8		
IC401	G-4	Q701	I-6	D414	G-2	D761	G-6		
IC402	F-4	Q702	E-6	D415	F-3	D762	G-7		
IC403	E-4	Q810	I-24	D416	E-2	D763	G-7		
IC601	B-22	Q811	I-23	D417	E-3	D764	G-7		
IC671	C-23	Q815	H-22	D671	C-23	D765	G-8		
IC711	I-8	Q816	H-22	D701	F7	D771	F-7		
IC721	H-8	Q820	H-21	D702	F-7	D772	F-7		
IC731	H-8	Q1101	H-19	D703	F-7	D773	F-7		
IC741	G-8	Q1102	I-18	D704	F-7	D774	F-7		
IC751	G-8	Q1125	G-16	D705	E-8	D775	F-8		
IC761	F-8	Q1151	H-20	D706	E-8	D781	C-6		
IC771	F-8	Q1152	G-19	D711	I-7	D782	D-6		
IC1201	G-18	Q1175	E-16	D712	I-7	D783	D-6		
IC1202	F-18	Q1231	I-16	D713	I-7	D784	E-6		
IC1203	F-18	Q1232	I-17	D714	I-7	D791	E-6		
IC1204	G-15	Q1233	H-16	D715	I-8	D901	J-22		
Q201	H-11	Q1234	H-15	D721	I-7	D902	I-21		
Q251	I-12	Q1235	I-16	D722	I-7	D904	I-21		
Q301	E-13	Q1236	I-15	D723	I-7	D910	J-23		
Q302	J-12	Q1237	H-15	D724	I-7	D915	I-22		
Q305	F-12	Q1238	I-16	D725	I-8	D920	H-21		
Q310	D-13	Q1239	I-16	D731	H-7	D1101	I-18		
Q311	D-13	D011	J-5	D732	H-7	D1102	I-17		
Q312	G-10	D301	E-12	D733	H-7	D1125	F-18		
Q320	H-13	D302	D-13	D734	H-7	D1151	G-19		
Q321	H-13	D303	J-13	D735	H-8	D1152	G-19		
Q322	H-13	D304	F-10	D741	H-7	D1175	F-18		
Q323	G-12	D311	F-13	D742	H-7	D1231	I-15		
Q324	H-12	D312	H-10	D743	H-7	D1232	I-15		
				D744	H-7	D1301	J-15		

Note:

EA3: Saudi Arabia model

AED: DENMARK model

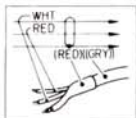
Note: SCHEMATIC DIAGRAM

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- \rightarrow : signal path.
- Components for right channel have same values as for left channel. Reference numbers are coded from 150, 250, 450, 650, 1150.
- \square : nonflammable resistor.
- \square : fusible resistor.
- --- : B+ bus.
- --- : B- bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 $\text{k}\Omega/\text{V}$).
- no mark: Not connecting speaker.
- < >: When inserting headphone plug into HEADPHONES JACK.
- (): When AMFB switch is off connecting APM-177M speaker or a load resistor (1k - 1.5k) with speaker terminal.
- (|): When AMFB switch is ON connecting APM-177M speaker or a load resistor (1k - 1.5k) with speaker terminal.
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in no-signal mode by using oscilloscope.
- Voltage variations may be noted due to normal production tolerances.

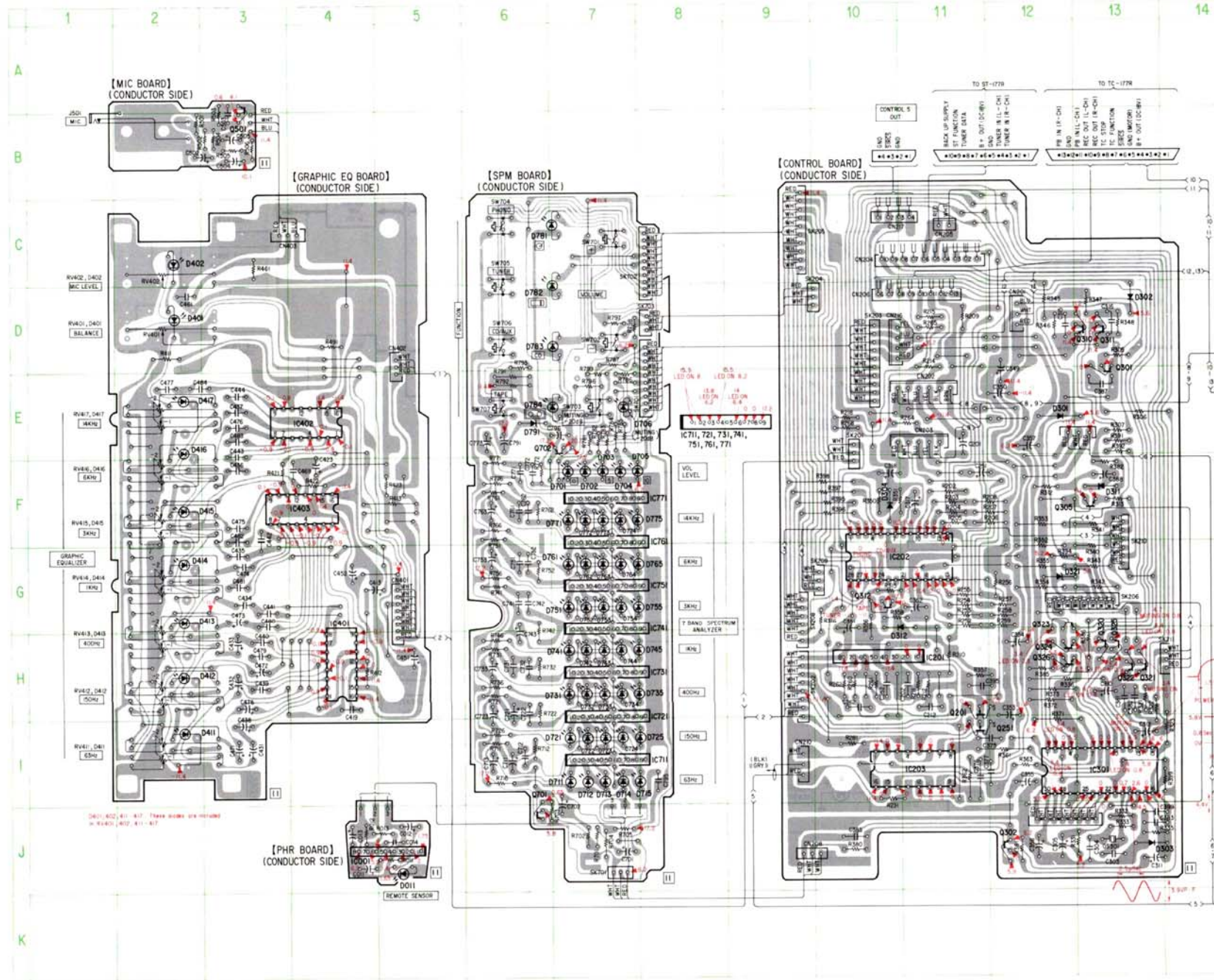
Ref. No.	Switch	Position
SW701	VOLUME UP	OFF
SW702	VOLUME DOWN	OFF
SW703	MUTING -20dB	OFF
SW704	PHONO	OFF
SW705	TUNER	OFF
SW706	CD/AUX	OFF
SW707	TAPE	OFF
SW1001	POWER	OFF
SW1002	VOLTAGE SELECTOR (E, EA3 model only)	240 V
SW1201	AMFB	OFF

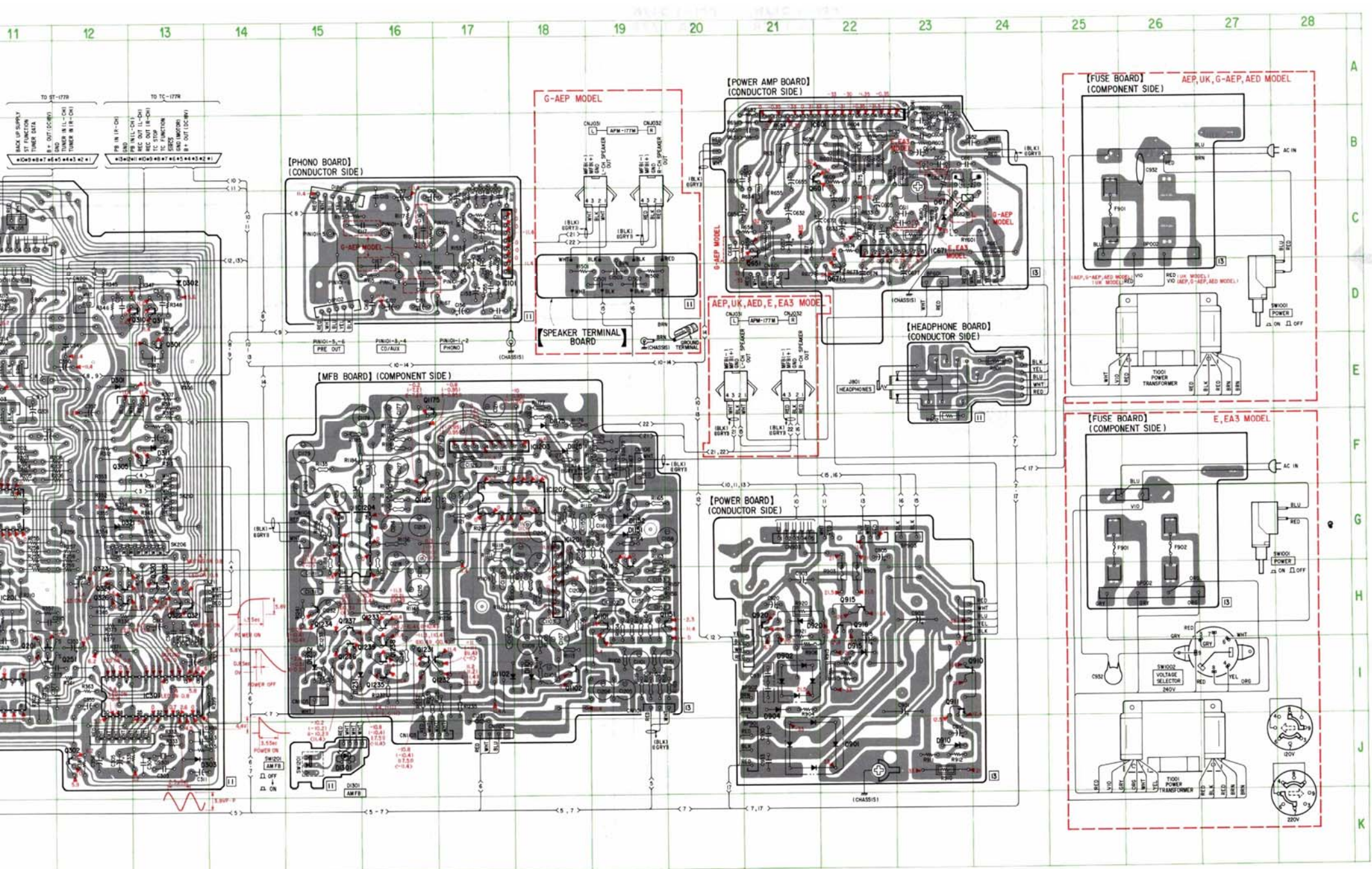
Note: MOUNTING DIAGRAM

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



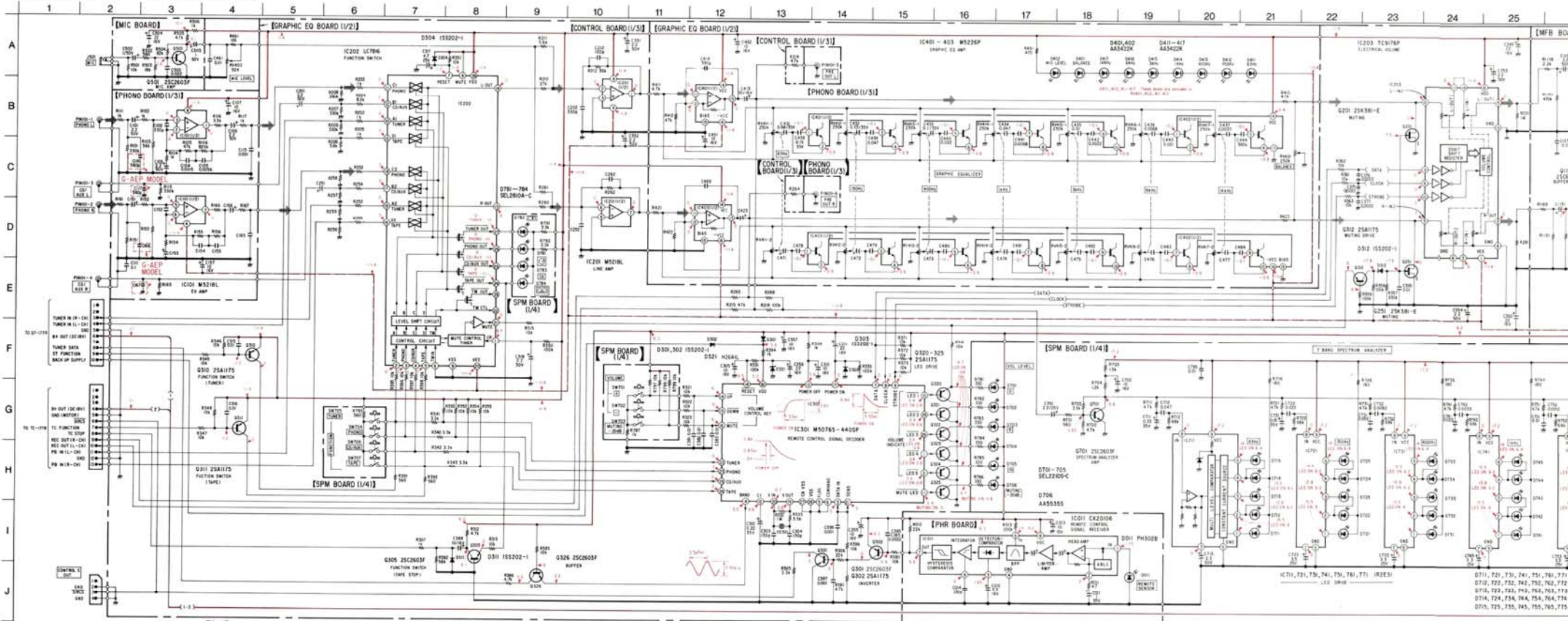
- \circ : parts extracted from the component side.
- \bullet : parts extracted from the conductor side.
- \blacksquare : part mounted on the conductor side.





6. SCHEMATIC DIAGRAM

• See page TA-13 for notes.



0711, 721, 731, 741, 751, 761, 771
 0712, 722, 732, 742, 752, 762, 772
 0713, 723, 733, 743, 753, 763, 773
 0714, 724, 734, 744, 754, 764, 774
 0715, 725, 735, 745, 755, 765, 775

7. EXPLODED VIEWS AND PARTS LIST

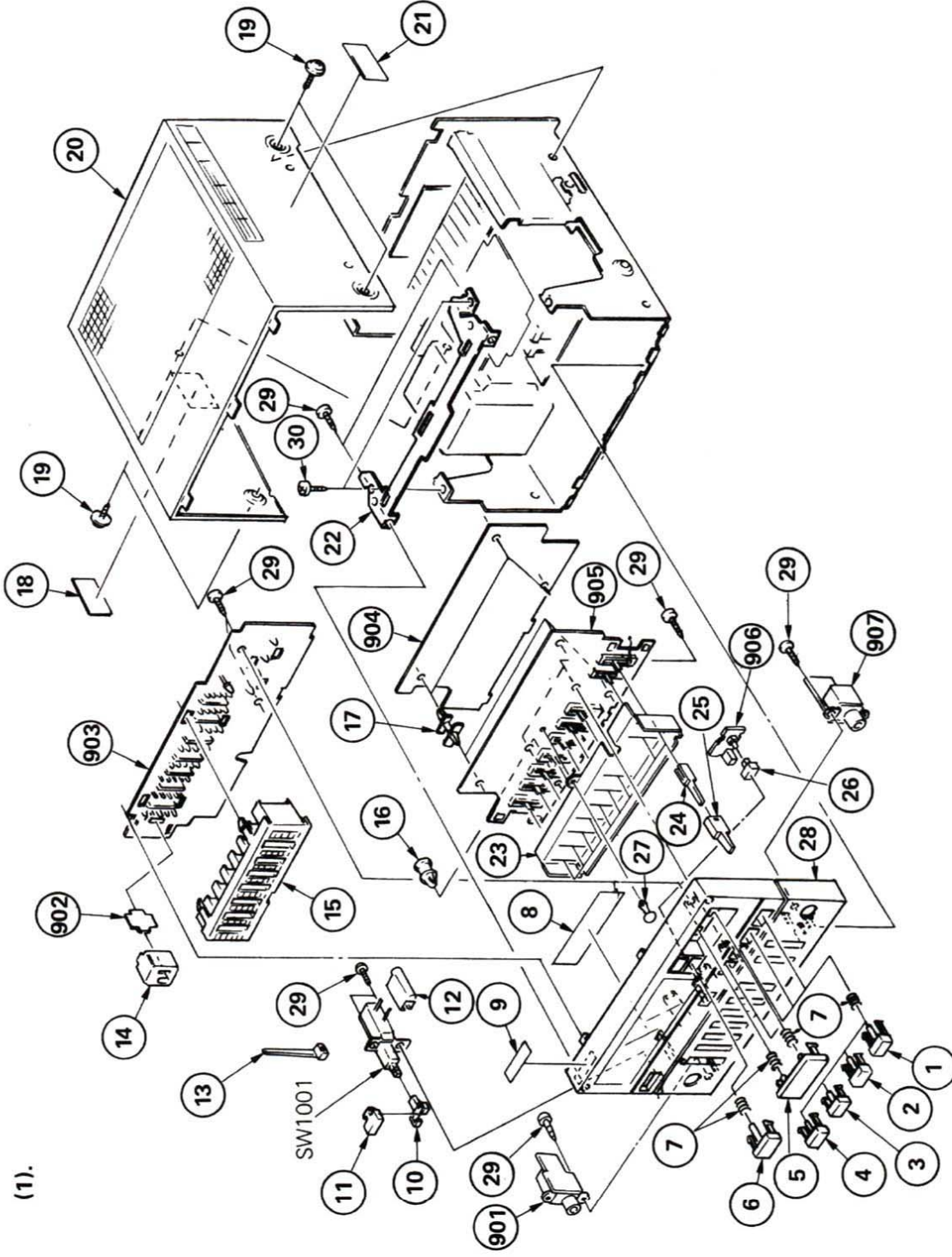
NOTE:

The mechanical parts with no reference number in the exploded views are not supplied.

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

The construction parts of an assembled part are indicated with a collation number in the remark column.

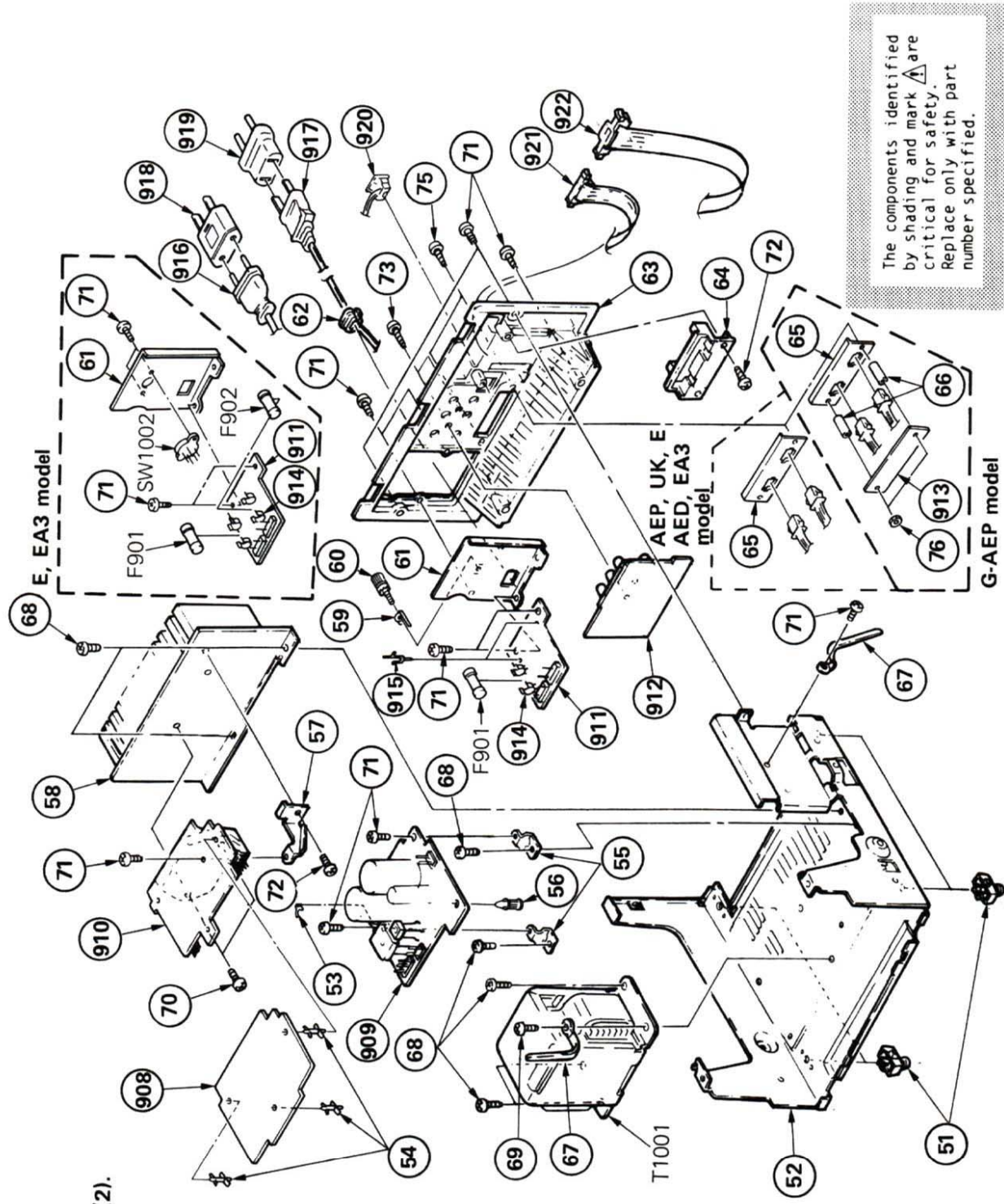
The components identified by shading and mark **A** are critical for safety. **A** Replace only with part number specified.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	4-914-350-31	BUTTON (FUNCTION), SQUARE, PHONO		19	4-886-821-01	SCREW, M3 CASE	
2	4-914-350-21	BUTTON (FUNCTION), SQUARE, TUNER		20	4-910-078-31	CASE	
3	4-914-350-11	BUTTON (FUNCTION), SQUARE, CD/AUX		21	3-703-845-01	(UK).....LABEL (N)(UIC), MAIN CAUTION	
4	4-914-350-01	BUTTON (FUNCTION), SQUARE, TAPE		22	*4-910-068-01	JOINT	
5	4-910-094-11	BUTTON (UP-DOWN), SQUARE, VOLUME		23	*4-914-353-01	PLATE, BLIND	
6	4-910-087-61	BUTTON (B), SQUARE, MUTING -20dB		24	*4-914-351-01	INDICATOR	
7	4-886-032-00	SPRING, COMPRESSION		25	4-914-352-01	KNOB, SLIDE	
8	*4-910-099-11	PLATE (8 GANG), INDICATION		26	4-910-392-01	KNOB, SQUARE, AMFB	
9	3-701-690-00	(UK).....LABEL (MADE IN JAPAN)		27	4-812-134-11	RIVET NYLON, 3.5	
10	4-910-058-01	JOINT, KNOB		28	X-4910-050-1	(EA3,E).....PANEL ASSY, FRONT	
11	4-910-056-11	KNOB, POWER			X-4910-050-2	(G-AEP,AEP,UK,AED)....PANEL ASSY, FRONT	
12	3-575-524-00	COVER, POWER SWITCH		29	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
13	3-701-748-00	CLAMP		30	7-685-871-01	SCREW +BVTT 3X6 (S)	
14	*4-910-301-01	PLATE, SHIELD		901	*1-619-008-11	PC BOARD, HP	
15	*4-910-306-01	HOUSE (8 GANG), LAMP		902	*1-619-014-11	PC BOARD, PHR	
16	*3-669-610-00	SPACER		903	*1-619-013-11	PC BOARD, SPM	
17	3-659-619-01	HOLDER, PC BOARD		904	*A-4375-251-A	MOUNTED PCB, CONTROL	
18	*4-914-325-01	(E,EA3).....LABEL, MODEL NUMBER (E2/E3)		905	*1-619-011-11	PC BOARD, GRAPHIC EQ	
	*4-914-326-11	(AEP,AED)....LABEL, MODEL NUMBER (AE2)		906	*1-619-039-11	PC BOARD, MFB SW	
	*4-914-327-01	(UK).....LABEL, MODEL NUMBER (UK)		907	*1-619-009-11	PC BOARD, MTC	
	*4-914-328-01	(G-AEP).....LABEL, MODEL NUMBER (AE4)					

ASM1001.1-553-318-51 SWITCH, PUSH (AC POWER)(1 KEY), POWER

(2).



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

No.	Part No.	Description	Remarks
51	X-4902-937-1	FOOT ASSY, RUBBER	
52	*4-902-974-01	CHASSIS	
53	*4-904-446-01	PLATE, GROUND	
54	3-659-619-01	HOLDER, PC BOARD	
55	*4-910-393-01	BRACKET, PC BOARD	
56	*3-669-610-00	SPACER	
57	*4-910-064-01	BRACKET (H), PC BOARD	
58	*4-910-077-01	HEAT SINK	
59	3-701-993-00	(G-AEP)...SPACER, TERMINAL	
60	3-706-165-00	(G-AEP)...SCREW	
61	*4-910-073-01	(G-AEP,AEP,UK,AED)...BRACKET, INLET	
	*4-910-073-11	(EA3,E)...BRACKET, INLET	
62	3-703-244-00	(G-AEP,AEP,UK,AED,EA3).....BUSHING(2104), CORD	
	3-703-571-00	(E).....BUSHING(4516), CORD	
63	*4-910-079-11	PLATE, JACK	
64	*4-910-302-01	HOLDER (H), WIRE	
65	*4-910-390-01	BRACKET, MFB	
66	3-654-603-00	(G-AEP)...SPACER	
67	*3-703-150-11	CLAMP	
68	7-682-546-04	SCREW +BVTT 3X5 (S)	
69	7-685-751-09	SCREW +BVTT 3X6 (S)	
70	7-685-650-71	SCREW +BVTP 3X16 TYPE2 IT-3	
71	7-685-871-01	SCREW +BVTT 3X6 (S)	
72	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3	
73	7-685-647-14	SCREW +BVTP 3X10 TYPE2 N-S	
75	7-685-877-01	(G-AEP)...SCREW +BVTT 3X20	
	7-685-871-01	(AEP,UK,AED,EA3,E)...SCREW +BVTT 3X6 (S)	
76	7-684-023-04	(G-AEP).....N 3, TYPE2	
908	*A-4388-532-A	MOUNTED PCB, MFB	
909	*A-4394-377-A	(G-AEP,AEP,UK,AED)...MOUNTED PCB, POWER	
	*A-4394-379-A	(EA3,E).....MOUNTED PCB, POWER	
910	*A-4388-528-A	(AEP,UK,AED)...MOUNTED PCB, POWER AMP	
	*A-4388-530-A	(G-AEP).....MOUNTED PCB, POWER AMP	
	*A-4388-531-A	(EA3,E).....MOUNTED PCB, POWER AMP	
911	*1-618-060-11	PC BOARD, FUSE	
912	*1-619-010-11	PC BOARD, PHONO	
913	*1-619-634-11	(G-AEP)...MOUNTED PCB, SPEAKER TERMINAL	
914	1-533-162-00	HOLDER, FUSE	
915	1-535-416-00	(G-AEP,AEP,UK,AED)...TERMINAL	
916	Δ 1-534-817-XX	(G-AEP,AEP,AED,EA3).....CORD, POWER, EULO PLUG	
917	Δ 1-551-472-00	(E).....CORD, POWER	
	Δ 1-551-884-00	(UK).....CORD, POWER	
918	Δ 1-506-409-00	(EA3)....AC PLUG, ADAPTOR	
919	Δ 1-526-565-00	(E).....AC PLUG, ADAPTOR	
920	1-558-350-21	(G-AEP,AEP,UK,E)...CORD (WITH CONNECTOR), CONTROL S OUT	
921	1-557-898-11	CORD (WITH CONNECTOR), 10P (BLUE)	
922	1-557-899-11	CORD (WITH CONNECTOR), 13P (GRAY)	
F901	Δ 1-532-285-00	FUSE, TIME-LAG, 1.25A	
F902	Δ 1-532-285-00	(EA3,E)...FUSE, TIME-LAG, 1.25A	
Δ SW1002	1-526-576-51	(EA3,E)...SELECTOR, POWER VOLTAGE	
T1001	Δ 1-448-133-11	(EA3,E)...TRANSFORMER, POWER	
T1001	Δ 1-448-134-11	(G-AEP,AEP,UK,AED)...TRANSFORMER, POWER	

8. ELECTRICAL PARTS LIST

NOTE:

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

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF:μF, PF:μF.

RESISTORS

• All resistors are in ohms.
• F : nonflammable

COILS

• MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:

UA....: μA...., UPA....: μPA...., UPC....: μPC,
UPD....: μPD....

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	*1-619-008-11	PC BOARD, HP
902	*1-619-014-11	PC BOARD, PHR
903	*1-619-013-11	PC BOARD, SPM
904	*A-4375-251-A	MOUNTED PCB, CONTROL
905	*1-619-011-11	PC BOARD, GRAPHIC EQ
906	*1-619-039-11	PC BOARD, MFB SW
907	*1-619-009-11	PC BOARD, MIC
908	*A-4388-532-A	MOUNTED PCB, MFB
909	*A-4394-377-A	(G-AEP,AEP,UK,AED) ...MOUNTED PCB, POWER
	*A-4394-379-A	(EA3,E).....MOUNTED PCB, POWER
910	*A-4388-528-A	(AEP,UK,AED)....MOUNTED PCB, POWER AMP
	*A-4388-530-A	(G-AEP).....MOUNTED PCB, POWER AMP
	*A-4388-531-A	(EA3,E).....MOUNTED PCB, POWER AMP
911	*1-618-060-11	PC BOARD, FUSE
912	*1-619-010-11	PC BOARD, PHONO
913	*1-619-634-11	(G-AEP)....MOUNTED PCB, SPEAKER TERMINAL
914	1-533-162-00	HOLDER, FUSE
915	1-535-416-00	(G-AEP,AEP,UK,AED)....TERMINAL
916	△.1-534-817-XX	(G-AEP,AEP,AED,EA3)
917	△.1-551-472-00	(E)....CORD, POWER, EULO PLUG
	△.1-551-884-00	(UK)....CORD, POWER
918	△.1-506-409-00	(EA3)....AC PLUG, ADAPTOR
919	△.1-526-565-00	(E)....AC PLUG, ADAPTOR
920	1-558-350-21	(G-AEP,AEP,UK,E) ...CORD (WITH CONNECTOR), CONTROL S OUT
921	1-557-898-11	CORD (WITH CONNECTOR), 10P (BLUE)
922	1-557-899-11	CORD (WITH CONNECTOR), 13P (GRAY)
BP002	*1-535-141-00	BASE POST 22MM (10MM PITCH) 4P
BP901	*1-535-116-00	TERMINAL
BP902	*1-535-115-00	TERMINAL
BP903	*1-535-115-00	TERMINAL
C011	1-131-347-00	TANTALUM 1MF 10%
C012	1-131-368-00	TANTALUM 3.3MF 10%
C013	1-131-377-00	TANTALUM 10MF 20%
C014	1-102-112-00	CERAMIC 330PF 10%
C101	1-123-612-00	ELECT 2.2MF 20%
C102	1-162-288-31	CERAMIC 330PF 10%
C103	1-123-612-00	ELECT 2.2MF 20%
C104	1-110-197-00	MYLAR 0.0015MF 5%
C105	1-110-204-00	MYLAR 0.0056MF 5%
C106	1-123-612-00	ELECT 2.2MF 20%
C107	1-123-617-00	ELECT 10MF 20%
C111	1-136-165-00	FILM 0.1MF 5%
C115	1-162-294-31	CERAMIC 0.001MF 10%
C116	1-162-291-31	(G-AEP)....CERAMIC 560PF 10%
C117	1-162-291-31	(G-AEP)....CERAMIC 560PF 10%

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C151	1-123-612-00	ELECT 2.2MF 20%
C152	1-162-288-31	CERAMIC 330PF 10%
C153	1-123-612-00	ELECT 2.2MF 20%
C154	1-110-197-00	MYLAR 0.0015MF 5%
C155	1-110-204-00	MYLAR 0.0056MF 5%
C156	1-123-612-00	ELECT 2.2MF 20%
C157	1-123-617-00	ELECT 10MF 20%
C165	1-162-294-31	CERAMIC 0.001MF 10%
C166	1-162-291-31	(G-AEP)....CERAMIC 560PF 10%
C167	1-162-291-31	(G-AEP)....CERAMIC 560PF 10%
C201	1-123-612-00	ELECT 2.2MF 20%
C202	1-162-288-31	CERAMIC 330PF 10%
C212	1-162-282-31	CERAMIC 100PF 10%
C251	1-123-612-00	ELECT 2.2MF 20%
C252	1-162-288-31	CERAMIC 330PF 10%
C262	1-162-282-31	CERAMIC 100PF 10%
C303	1-162-284-31	CERAMIC 150PF 10%
C304	1-162-284-31	CERAMIC 150PF 10%
C305	1-123-617-00	ELECT 10MF 20%
C310	1-131-343-00	TANTALUM 0.22MF 10%
C311	1-123-622-00	ELECT 22MF 20%
C312	1-123-617-00	ELECT 10MF 20%
C315	1-162-306-31	CERAMIC 0.01MF 30%
C316	1-162-306-31	CERAMIC 0.01MF 30%
C317	1-123-616-00	ELECT 4.7MF 20%
C318	1-123-612-00	ELECT 2.2MF 20%
C349	1-123-622-00	ELECT 22MF 20%
C350	1-123-622-00	ELECT 22MF 20%
C351	1-123-612-00	ELECT 2.2MF 20%
C352	1-123-612-00	ELECT 2.2MF 20%
C353	1-123-612-00	ELECT 2.2MF 20%
C354	1-123-612-00	ELECT 2.2MF 20%
C355	1-123-617-00	ELECT 10MF 20%
C356	1-123-622-00	ELECT 22MF 20%
C357	1-123-617-00	ELECT 10MF 20%
C375	1-162-302-31	CERAMIC 0.0022MF 30%
C376	1-162-302-31	CERAMIC 0.0022MF 30%
C377	1-162-302-31	CERAMIC 0.0022MF 30%
C381	1-162-306-31	CERAMIC 0.01MF 30%
C382	1-162-306-31	CERAMIC 0.01MF 30%
C383	1-162-306-31	CERAMIC 0.01MF 30%
C385	1-162-302-31	CERAMIC 0.0022MF 30%
C387	1-162-294-31	CERAMIC 0.001MF 10%
C388	1-123-617-00	ELECT 10MF 20%
C395	1-162-306-31	CERAMIC 0.01MF 30%

Note:

EA3: Saudi Arabia model
AED: DENMARK model

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

ELECTRICAL PARTS

f.No.	Part No.	Description	f.No.	Part No.	Description
C399	1-162-294-31	CERAMIC			
C413	1-131-371-00	TANTALUM	10%	50V	
C419	1-162-288-31	CERAMIC	10%	16V	
			10%	50V	
C423	1-131-371-00	TANTALUM	10%	16V	
C431	1-131-346-00	TANTALUM	10%	35V	
C432	1-131-344-00	TANTALUM	10%	35V	
C433	1-131-341-00	TANTALUM	10%	35V	
C434	1-136-161-00	FILM	5%	50V	
C435	1-162-306-31	CERAMIC	20%	16V	
C436	1-162-305-31	CERAMIC	20%	16V	
C437	1-162-303-31	CERAMIC	20%	16V	
C438	1-131-342-00	TANTALUM	10%	35V	
C439	1-136-161-00	FILM	5%	50V	
C440	1-162-596-00	CERAMIC	0.022MF	25V	
C441	1-162-305-31	CERAMIC	0.0068MF	16V	
C442	1-162-302-31	CERAMIC	0.0022MF	16V	
C443	1-162-294-31	CERAMIC	0.001MF	50V	
C444	1-162-291-31	CERAMIC	560PF	50V	
C451	1-131-371-00	TANTALUM	10MF	16V	
C452	1-131-371-00	TANTALUM	10MF	16V	
C461	1-162-306-31	CERAMIC	0.01MF	16V	
C469	1-162-288-31	CERAMIC	330PF	50V	
C471	1-131-346-00	TANTALUM	0.68MF	35V	
C472	1-131-344-00	TANTALUM	0.33MF	35V	
C473	1-131-341-00	TANTALUM	0.1MF	35V	
C474	1-136-161-00	FILM	0.047MF	50V	
C475	1-162-306-31	CERAMIC	0.01MF	16V	
C476	1-162-305-31	CERAMIC	0.0068MF	16V	
-C477	1-162-303-31	CERAMIC	0.0033MF	16V	
C478	1-131-342-00	TANTALUM	0.15MF	35V	
C479	1-136-161-00	FILM	0.047MF	50V	
C480	1-162-596-00	CERAMIC	0.022MF	25V	
C481	1-162-305-31	CERAMIC	0.0068MF	16V	
C482	1-162-302-31	CERAMIC	0.0022MF	16V	
C483	1-162-294-31	CERAMIC	0.001MF	50V	
C484	1-162-291-31	CERAMIC	560PF	50V	
C502	1-123-611-00	ELECT	1MF	50V	
C503	1-161-085-00	CERAMIC	0.022MF	25V	
C504	1-123-622-00	ELECT	22MF	16V	
C505	1-123-611-00	ELECT	1MF	50V	
C601	1-162-286-31	CERAMIC	220PF	50V	
C602	1-136-165-00	FILM	0.1MF	50V	
C603	1-162-302-31	CERAMIC	0.0022MF	16V	
C604	1-123-357-00	ELECT	22MF	50V	
C605	1-123-359-00	ELECT	47MF	50V	
C606	1-162-290-31	CERAMIC	470PF	50V	
C607	1-123-380-00	ELECT	1MF	50V	
C611	1-136-165-00	FILM	0.1MF	50V	
C612	1-136-165-00	(G-AEP,AEP,UK,AED)...	FILM	0.1MF	50V
C623	1-161-330-00	(G-AEP)...	CERAMIC	0.01MF	30%
C632	1-123-360-00	ELECT	100MF	20%	50V
C633	1-123-356-00	ELECT	10MF	20%	50V
C651	1-162-286-31	CERAMIC	220PF	10%	50V
C652	1-136-165-00	FILM	0.1MF	5%	50V
C653	1-162-302-31	CERAMIC	0.0022MF	20%	16V
C654	1-123-357-00	ELECT	22MF	20%	50V
C655	1-123-359-00	ELECT	47MF	20%	50V


ELECTRICAL PARTS

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
C656	1-162-290-31	CERAMIC			
C657	1-123-380-00	ELECT			
C661	1-136-165-00	FILM			
C662	1-136-165-00	(G-AEP,AEP,UK,AED)...			
		FILM			
C672	1-123-308-00	ELECT			
C673	1-162-306-31	CERAMIC			
C674	1-123-308-00	ELECT			
C675	1-136-157-00	FILM			
C677	1-123-307-00	ELECT			
C682	1-161-330-00	(G-AEP)...			
C683	1-162-306-31	(G-AEP)...			
		CERAMIC			
C701	1-131-355-00	TANTALUM			
C702	1-131-371-00	TANTALUM			
C711	1-131-344-00	TANTALUM			
C712	1-136-161-00	FILM			
C713	1-131-356-00	TANTALUM			
C721	1-131-342-00	TANTALUM			
C722	1-162-596-00	CERAMIC			
C723	1-131-356-00	TANTALUM			
C731	1-136-162-00	FILM			
C732	1-161-012-00	CERAMIC			
C733	1-131-356-00	TANTALUM			
C741	1-162-596-00	CERAMIC			
C742	1-162-303-31	CERAMIC			
C743	1-131-356-00	TANTALUM			
C751	1-162-306-31	CERAMIC			
C752	1-162-301-31	CERAMIC			
C753	1-131-356-00	TANTALUM			
C761	1-161-046-00	CERAMIC			
C762	1-162-291-31	CERAMIC			
C763	1-131-356-00	TANTALUM			
C771	1-161-041-00	CERAMIC			
C772	1-162-286-31	CERAMIC			
C773	1-131-356-00	TANTALUM			
C791	1-131-371-00	TANTALUM			
C795	1-162-306-31	CERAMIC			
C796	1-131-355-00	TANTALUM			
C901	1-124-362-00	ELECT			
C902	1-124-362-00	ELECT			
C903	1-123-338-00	ELECT			
C905	1-123-369-00	ELECT			
C910	1-123-356-00	ELECT			
C915	1-123-356-00	ELECT			
C920	1-123-307-00	ELECT			
C930	1-136-171-00	FILM			
C931	1-102-394-00	CERAMIC			
C932	1-161-744-00	CERAMIC			
C933	1-136-171-00	FILM			
C1101	1-123-612-00	ELECT			
C1102	1-136-165-00	FILM			
C1103	1-136-165-00	FILM			
C1104	1-162-282-31	CERAMIC			
C1105	1-136-160-00	FILM			
C1106	1-136-157-00	FILM			
C1107	1-123-617-00	ELECT			
C1108	1-123-612-00	ELECT			

10%
20%
5%470PF
1MF
0.1MF50V
50V
50V

(G-AEP,AEP,UK,AED)...

0.1MF
220MF
20%16V
10V
50V30%
20%
5%0.01MF
220MF
0.022MF10%
10%
10%100MF
0.01MF
0.01MF20%
30%
30%0.01MF
0.01MF
0.01MF10%
10%
10%0.022MF
0.022MF
0.022MF25V
25V
25V2.2MF
10MF
0.33MF10%
10%
10%0.047MF
3.3MF
0.15MF5%
10%
10%0.047MF
3.3MF
0.15MF25V
25V
25V0.022MF
0.022MF
0.022MF10%
10%
10%0.0082MF
3.3MF
0.01MF10%
10%
10%0.0033MF
3.3MF
0.01MF16V
25V
16V0.0033MF
3.3MF
0.01MF30%
10%
10%0.0015MF
3.3MF
0.0015MF10%
10%
10%0.0015MF
3.3MF
0.0015MF16V
25V
25V560PF
3.3MF
0.0015MF10%
10%
10%0.0015MF
3.3MF
0.0015MF50V
25V
25V220PF
3.3MF
10MF10%
10%
10%0.01MF
2.2MF
4700MF30%
10%
20%0.01MF
2.2MF
4700MF16V
25V
25V4700MF
2200MF
4.7MF20%
20%
20%4700MF
2200MF
4.7MF50V
50V
50V10MF
10MF
100MF20%
20%
20%10MF
10MF
100MF

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

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C1109	1-123-617-00	ELECT
C1111	1-123-611-00	ELECT
C1112	1-162-288-31	CERAMIC
C1125	1-162-199-11	CERAMIC
C1126	1-136-160-00	FILM
C1127	1-123-307-00	ELECT
C1128	1-123-611-00	ELECT
C1129	1-123-610-00	ELECT
C1131	1-136-168-00	FILM
C1151	1-123-612-00	ELECT
C1152	1-136-165-00	FILM
C1153	1-136-165-00	FILM
C1154	1-162-282-31	CERAMIC
C1155	1-136-160-00	FILM
C1156	1-136-157-00	FILM
C1157	1-123-617-00	ELECT
C1158	1-123-612-00	ELECT
C1159	1-123-617-00	ELECT
C1161	1-123-611-00	ELECT
C1162	1-162-288-31	CERAMIC
C1175	1-162-199-11	CERAMIC
C1176	1-136-160-00	FILM
C1177	1-123-307-00	ELECT
C1178	1-123-611-00	ELECT
C1179	1-123-610-00	ELECT
C1181	1-136-168-00	FILM
C1201	1-123-612-00	ELECT
C1202	1-123-612-00	ELECT
C1203	1-123-612-00	ELECT
C1204	1-123-612-00	ELECT
C1205	1-123-612-00	ELECT
C1206	1-123-612-00	ELECT
C1211	1-123-612-00	ELECT
C1213	1-123-612-00	ELECT
C1214	1-123-612-00	ELECT
C1215	1-123-617-00	ELECT
C1216	1-123-617-00	ELECT
C1218	1-123-612-00	ELECT
C1231	1-162-306-31	CERAMIC
C1232	1-123-617-00	ELECT
C1233	1-136-165-00	FILM
C1501	1-161-330-00	(G-AEP)...CERAMIC
C1502	1-161-330-00	(G-AEP)...CERAMIC
C1503	1-161-330-00	(G-AEP)...CERAMIC
CN201	*1-560-061-00	PIN, CONNECTOR 3P
CN202	*1-560-064-00	PIN, CONNECTOR 6P
CN203	*1-560-063-00	PIN, CONNECTOR 5P
CN204	*1-560-066-00	PIN, CONNECTOR 10P
CN205	*1-560-060-00	PIN, CONNECTOR 2P
CN206	*1-560-065-00	PIN, CONNECTOR 8P
CN208	*1-564-496-11	PIN, CONNECTOR 3P
CN216	*1-560-062-00	PIN, CONNECTOR 4P
CN217	*1-560-603-00	PIN, CONNECTOR 4P
CN401	*1-564-501-11	PIN, CONNECTOR 8P
CN402	*1-564-496-11	PIN, CONNECTOR 3P
CN403	*1-564-112-21	PIN, CONNECTOR 3P

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CN601	*1-560-070-00	BASE POST 5P
CN603	*1-560-070-00	BASE POST 5P
CN903	*1-560-063-00	PIN, CONNECTOR 5P
CN1101*	*1-564-506-11	PLUG, CONNECTOR 3P
CN1102*	*1-564-507-11	PLUG, CONNECTOR 4P
CN1103*	*1-564-338-00	PIN, CONNECTOR 4P
CN1104*	*1-564-506-11	PLUG, CONNECTOR 3P
CN1105*	*1-564-505-11	PLUG, CONNECTOR 2P
CN1106*	*1-564-506-11	PLUG, CONNECTOR 3P
CN1107*	*1-564-507-11	PLUG, CONNECTOR 4P
D011	8-719-110-32	DIODE PH302B
D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119
D311	8-719-911-19	DIODE 1SS119
D312	8-719-911-19	DIODE 1SS119
D321	8-719-910-61	DIODE HZ6A1L
D401	1-807-013-11	DIODE AA3422K
D402	1-807-013-11	DIODE AA3422K
D411	1-807-013-11	DIODE AA3422K
D412	1-807-013-11	DIODE AA3422K
D413	1-807-013-11	DIODE AA3422K
D414	1-807-013-11	DIODE AA3422K
D415	1-807-013-11	DIODE AA3422K
D416	1-807-013-11	DIODE AA3422K
D417	1-807-013-11	DIODE AA3422K
D671	8-719-911-19	DIODE 1SS119
D701	8-719-301-38	DIODE SEL2210S-C
D702	8-719-301-38	DIODE SEL2210S-C
D703	8-719-301-38	DIODE SEL2210S-C
D704	8-719-301-38	DIODE SEL2210S-C
D705	8-719-301-38	DIODE SEL2210S-C
D706	8-719-907-80	DIODE AA5535S
D711	8-719-301-43	DIODE SEL2410E-C
D712	8-719-300-95	DIODE SEL2710K
D713	8-719-301-60	DIODE SEL2910A-C
D714	8-719-301-52	DIODE SEL2810A-C
D715	8-719-301-38	DIODE SEL2210S-C
D721	8-719-301-43	DIODE SEL2410E-C
D722	8-719-300-95	DIODE SEL2710K
D723	8-719-301-60	DIODE SEL2910A-C
D724	8-719-301-52	DIODE SEL2810A-C
D725	8-719-301-38	DIODE SEL2210S-C
D731	8-719-301-43	DIODE SEL2410E-C
D732	8-719-300-95	DIODE SEL2710K
D733	8-719-301-60	DIODE SEL2910A-C
D734	8-719-301-52	DIODE SEL2810A-C
D735	8-719-301-38	DIODE SEL2210S-C
D741	8-719-301-43	DIODE SEL2410E-C
D742	8-719-300-95	DIODE SEL2710K
D743	8-719-301-60	DIODE SEL2910A-C
D744	8-719-301-52	DIODE SEL2810A-C
D745	8-719-301-38	DIODE SEL2210S-C
D751	8-719-301-43	DIODE SEL2410E-C
D752	8-719-300-95	DIODE SEL2710K
D753	8-719-301-60	DIODE SEL2910A-C
D754	8-719-301-52	DIODE SEL2810A-C

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D755	8-719-301-38	DIODE SEL2210S-C
D761	8-719-301-43	DIODE SEL2410E-C
D762	8-719-300-95	DIODE SEL2710K
D763	8-719-301-60	DIODE SEL2910A-C
D764	8-719-301-52	DIODE SEL2810A-C
D765	8-719-301-38	DIODE SEL2210S-C
D771	8-719-301-43	DIODE SEL2410E-C
D772	8-719-300-95	DIODE SEL2710K
D773	8-719-301-60	DIODE SEL2910A-C
D774	8-719-301-52	DIODE SEL2810A-C
D775	8-719-301-38	DIODE SEL2210S-C
D781	8-719-301-52	DIODE SEL2810A-C
D782	8-719-301-52	DIODE SEL2810A-C
D783	8-719-301-52	DIODE SEL2810A-C
D784	8-719-301-52	DIODE SEL2810A-C
D791	8-719-901-62	DIODE HZ16-2L
D901	8-719-300-67	DIODE RB602F
D902	8-719-300-57	DIODE RB402
D904	8-719-911-19	DIODE 1SS119
D910	8-719-904-21	DIODE HZ12A1
D915	8-719-904-21	DIODE HZ12A1
D920	8-719-910-71	DIODE HZ7A1L
D1101	8-719-911-19	DIODE 1SS119
D1102	8-719-911-19	DIODE 1SS119
D1125	8-719-910-61	DIODE HZ6A1L
D1151	8-719-911-19	DIODE 1SS119
D1152	8-719-911-19	DIODE 1SS119
D1175	8-719-910-61	DIODE HZ6A1L
D1231	8-719-911-19	DIODE 1SS119
D1232	8-719-911-19	DIODE 1SS119
D1301	8-719-403-98	DIODE LM450YP

F901 Δ 1-532-285-00 FUSE, TIME-LAG, 1.25AF902 Δ 1-532-285-00 (EA3,E)...FUSE, TIME-LAG, 1.25A

IC011	8-759-602-54	IC CX20106A
IC101	8-759-600-02	IC M5218L
IC201	8-759-600-02	IC M5218L
IC202	8-759-801-63	IC LC7816
IC203	8-759-204-30	IC TC9176P
IC301	8-759-602-60	IC M50765-440SP
IC401	8-759-602-04	IC M5226P
IC402	8-759-602-04	IC M5226P
IC403	8-759-602-04	IC M5226P

IC601A 8-759-941-52 IC STK4152II

IC671 8-759-101-23 IC UPC1237H

IC711 8-759-913-80 IC IR2E31

IC721 8-759-913-80 IC IR2E31

IC731 8-759-913-80 IC IR2E31

IC741 8-759-913-80 IC IR2E31

IC751 8-759-913-80 IC IR2E31

IC761 8-759-913-80 IC IR2E31

IC771 8-759-913-80 IC IR2E31

IC1201 8-759-600-02 IC M5218L

IC1202 8-759-801-01 IC LC4966

IC1203 8-759-600-02 IC M5218L

IC1204 8-759-801-01 IC LC4966

J501 1-507-984-11 JACK (LARGE TYPE)(MIC)

J801 1-507-981-11 JACK (LARGE TYPE)(HEADPHONES)

ELECTRICAL PARTS

Ref.No.	Part No.	Description
OS301	1-527-532-00	OSCILLATOR, CERAMIC
PIN101	1-507-914-21	JACK, PIN 6P
Q201	8-729-600-08	TRANSISTOR 2SK381-E
Q251	8-729-600-08	TRANSISTOR 2SK381-E
Q301	8-729-606-33	TRANSISTOR 2SC2603F
Q302	8-729-117-54	TRANSISTOR 2SA1175
Q305	8-729-606-33	TRANSISTOR 2SC2603F
Q310	8-729-117-54	TRANSISTOR 2SA1175
Q311	8-729-117-54	TRANSISTOR 2SA1175
Q312	8-729-117-54	TRANSISTOR 2SA1175
Q320	8-729-117-54	TRANSISTOR 2SA1175
Q321	8-729-117-54	TRANSISTOR 2SA1175
Q322	8-729-117-54	TRANSISTOR 2SA1175
Q323	8-729-117-54	TRANSISTOR 2SA1175
Q324	8-729-117-54	TRANSISTOR 2SA1175
Q325	8-729-117-54	TRANSISTOR 2SA1175
Q326	8-729-606-33	TRANSISTOR 2SC2603F
Q501	8-729-606-33	TRANSISTOR 2SC2603F
Q601	8-729-108-05	TRANSISTOR 2SC1841PA
Q651	8-729-108-05	TRANSISTOR 2SC1841PA
Q671	8-729-117-54	TRANSISTOR 2SA1175
Q701	8-729-606-33	TRANSISTOR 2SC2603F
Q702	8-729-180-93	TRANSISTOR 2SD809
Q910	8-729-111-85	TRANSISTOR 2SD1288-Q
Q911	8-729-606-33	TRANSISTOR 2SC2603F
Q915	8-729-111-91	TRANSISTOR 2SB965-Q
Q916	8-729-117-54	TRANSISTOR 2SA1175
Q920	8-729-180-93	TRANSISTOR 2SD809
Q1101	8-729-600-27	TRANSISTOR 2SC634SP
Q1102	8-729-600-27	TRANSISTOR 2SC634SP
Q1125	8-729-117-54	TRANSISTOR 2SA1175
Q1151	8-729-600-27	TRANSISTOR 2SC634SP
Q1152	8-729-600-27	TRANSISTOR 2SC634SP
Q1175	8-729-117-54	TRANSISTOR 2SA1175
Q1231	8-729-900-85	TRANSISTOR DTC144WS
Q1232	8-729-900-69	TRANSISTOR DTA144WS
Q1233	8-729-900-85	TRANSISTOR DTC144WS
Q1234	8-729-900-69	TRANSISTOR DTA144WS
Q1235	8-729-900-69	TRANSISTOR DTA144WS
Q1236	8-729-900-85	TRANSISTOR DTC144WS
Q1237	8-729-900-69	TRANSISTOR DTA144WS
Q1238	8-729-900-85	TRANSISTOR DTC144WS
Q1239	8-729-900-69	TRANSISTOR DTA144WS
R011	1-247-775-00	CARBON 4.7 5%
R012	1-249-433-11	CARBON 22K 5%
R013	1-215-476-00	METAL 200K 1%
R101	1-247-891-00	CARBON 330K 5%
R102	1-247-831-00	CARBON 1K 5%
R103	1-247-873-00	CARBON 56K 5%
R104	1-247-831-00	CARBON 1K 5%
R105	1-249-437-11	CARBON 47K 5%
R106	1-247-901-00	CARBON 820K 5%
R111	1-247-831-00	CARBON 1K 5%
R115	1-247-891-00	CARBON 330K 5%
R116	1-247-843-00	CARBON 3.3K 5%


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ELECTRICAL PARTS

Ref.No.	Part No.	Description
R117	1-247-831-00	CARBON
R151	1-247-891-00	CARBON
R152	1-247-831-00	CARBON
R153	1-247-873-00	CARBON
R154	1-247-831-00	CARBON
R155	1-249-437-11	CARBON
R156	1-247-901-00	CARBON
R161	1-247-831-00	CARBON
R165	1-247-891-00	CARBON
R166	1-247-843-00	CARBON
R167	1-247-831-00	CARBON
R202	1-247-831-00	CARBON
R203	1-247-831-00	CARBON
R204	1-247-853-00	CARBON
R205	1-247-831-00	CARBON
R206	1-247-849-00	CARBON
R207	1-247-891-00	CARBON
R208	1-247-891-00	CARBON
R209	1-247-891-00	CARBON
R210	1-249-434-11	CARBON
R211	1-247-849-00	CARBON
R212	1-247-873-00	CARBON
R214	1-249-425-11	CARBON
R215	1-249-425-11	CARBON
R218	1-249-441-11	CARBON
R231	1-247-903-00	CARBON
R252	1-247-831-00	CARBON
R253	1-247-831-00	CARBON
R254	1-247-853-00	CARBON
R255	1-247-831-00	CARBON
R256	1-247-849-00	CARBON
R257	1-247-891-00	CARBON
R258	1-247-891-00	CARBON
R259	1-247-891-00	CARBON
R260	1-249-434-11	CARBON
R261	1-247-849-00	CARBON
R262	1-247-873-00	CARBON
R264	1-249-425-11	CARBON
R265	1-249-425-11	CARBON
R268	1-249-441-11	CARBON
R281	1-247-903-00	CARBON
R305	1-247-843-00	CARBON
R306	1-249-433-11	CARBON
R307	1-247-831-00	CARBON
R312	1-249-425-11	CARBON
R313	1-249-429-11	CARBON
R315	1-249-429-11	CARBON
R316	1-249-429-11	CARBON
R321	1-249-429-11	CARBON
R322	1-249-429-11	CARBON
R323	1-249-429-11	CARBON
R331	1-249-441-11	CARBON
R332	1-247-903-00	CARBON
R333	1-247-843-00	CARBON
R335	1-249-441-11	CARBON
R336	1-247-831-00	CARBON
R340	1-247-843-00	CARBON

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R341	1-247-843-00	CARBON
R342	1-247-843-00	CARBON
R343	1-247-843-00	CARBON
R345	1-249-429-11	CARBON
R346	1-249-429-11	CARBON
R347	1-249-429-11	CARBON
R348	1-249-429-11	CARBON
R350	1-249-441-11	CARBON
R351	1-249-429-11	CARBON
R352	1-249-429-11	CARBON
R353	1-249-429-11	CARBON
R354	1-249-429-11	CARBON
R355	1-249-429-11	CARBON
R356	1-249-441-11	CARBON
R357	1-247-891-00	CARBON
R358	1-249-441-11	CARBON
R361	1-249-429-11	CARBON
R362	1-249-429-11	CARBON
R363	1-249-429-11	CARBON
R371	1-249-429-11	CARBON
R372	1-249-429-11	CARBON
R373	1-249-429-11	CARBON
R380	1-249-429-11	CARBON
R381	1-249-425-11	CARBON
R382	1-247-873-00	CARBON
R385	1-249-429-11	CARBON
R386	1-249-425-11	CARBON
R391	1-249-414-11	CARBON
R392	1-249-414-11	CARBON
R394	1-247-831-00	CARBON
R395	1-249-429-11	CARBON
R396	1-249-429-11	CARBON
R397	1-249-429-11	CARBON
R398	1-249-429-11	CARBON
R399	1-249-429-11	CARBON
R411	1-249-425-11	CARBON
R412	1-249-437-11	CARBON
R413	1-249-425-11	CARBON
R421	1-249-425-11	CARBON
R422	1-249-437-11	CARBON
R423	1-249-425-11	CARBON
R461	1-249-429-11	CARBON
R491	1-247-823-00	CARBON
R501	1-249-429-11	CARBON
R502	1-249-414-11	CARBON
R503	1-249-432-11	CARBON
R504	1-249-440-11	CARBON
R505	1-249-425-11	CARBON
R506	1-247-831-00	CARBON
R601	1-247-873-00	CARBON
R602	1-249-421-11	CARBON
R603	1-249-421-11	CARBON
R604	1-247-873-00	CARBON
R605	1-247-717-11	CARBON
R606	1-247-717-11	CARBON
R607	1-217-151-00	METAL PLATE
R608	1-249-414-11	CARBON

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ELECTRICAL PARTS

Ref.No.	Part No.	Description	560	5%	1/6W
R609	1-249-414-11	CARBON	560	5%	1/6W
R611	△.1-247-192-00	CARBON	10	5%	1/2W F
R631	△.1-217-399-00	FUSIBLE	100	5%	1/4W F
R632	△.1-247-240-00	CARBON	1K	5%	1/2W F
R633	△.1-247-240-00	CARBON	1K	5%	1/2W F
R634	△.1-212-883-00	FUSIBLE	120	5%	1/4W F
R635	△.1-217-399-00	FUSIBLE	100	5%	1/4W F
R641	1-247-849-00	CARBON	5.6K	5%	1/6W
R651	1-247-873-00	CARBON	56K	5%	1/6W
R652	1-249-421-11	CARBON	2.2K	5%	1/6W
R653	1-249-421-11	CARBON	2.2K	5%	1/6W
R654	1-247-873-00	CARBON	56K	5%	1/6W
R655	△.1-247-717-11	CARBON	2.2K	5%	1/4W
R656	△.1-247-717-11	CARBON	2.2K	5%	1/4W
R657	△.1-217-151-00	METAL PLATE	0.22	10%	2W
R658	1-249-414-11	CARBON	560	5%	1/6W
R659	1-249-414-11	CARBON	560	5%	1/6W
R661	△.1-247-192-00	CARBON	10	5%	1/2W F
R671	1-249-433-11	CARBON	22K	5%	1/6W
R672	1-249-429-11	CARBON	10K	5%	1/6W
R673	1-249-433-11	CARBON	22K	5%	1/6W
R674	1-249-433-11	CARBON	22K	5%	1/6W
R675	1-247-881-00	CARBON	120K	5%	1/6W
R676	1-247-881-00	CARBON	120K	5%	1/6W
R677	1-249-441-11	CARBON	100K	5%	1/6W
R678	△.1-247-220-00	CARBON	150	5%	1/2W F
R679	1-249-429-11	CARBON	10K	5%	1/6W
R680	1-247-873-00	CARBON	56K	5%	1/6W
R691	1-247-849-00	CARBON	5.6K	5%	1/6W
R701	1-249-414-11	CARBON	560	5%	1/6W
R702	1-249-425-11	CARBON	4.7K	5%	1/6W
R703	1-249-435-11	CARBON	33K	5%	1/6W
R704	1-247-833-00	CARBON	1.2K	5%	1/6W
R705	1-249-419-11	CARBON	1.5K	5%	1/6W
R711	1-249-425-11	CARBON	4.7K	5%	1/6W
R712	1-247-875-00	CARBON	68K	5%	1/6W
R716	1-247-813-00	CARBON	180	5%	1/6W
R721	1-249-425-11	CARBON	4.7K	5%	1/6W
R722	1-247-875-00	CARBON	68K	5%	1/6W
R726	1-247-813-00	CARBON	180	5%	1/6W
R731	1-249-425-11	CARBON	4.7K	5%	1/6W
R732	1-247-875-00	CARBON	68K	5%	1/6W
R736	1-247-813-00	CARBON	180	5%	1/6W
R741	1-249-425-11	CARBON	4.7K	5%	1/6W
R742	1-247-875-00	CARBON	68K	5%	1/6W
R746	1-247-813-00	CARBON	180	5%	1/6W
R751	1-249-425-11	CARBON	4.7K	5%	1/6W
R752	1-247-875-00	CARBON	68K	5%	1/6W
R756	1-247-813-00	CARBON	180	5%	1/6W
R761	1-249-425-11	CARBON	4.7K	5%	1/6W
R762	1-247-875-00	CARBON	68K	5%	1/6W
R766	1-247-813-00	CARBON	180	5%	1/6W
R771	1-249-425-11	CARBON	4.7K	5%	1/6W
R772	1-247-875-00	CARBON	68K	5%	1/6W
R776	1-247-813-00	CARBON	180	5%	1/6W
R781	1-247-819-00	CARBON	330	5%	1/6W
R782	1-247-819-00	CARBON	330	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description	330	5%	1/6W
R783	1-247-819-00	CARBON	330	5%	1/6W
R784	1-247-819-00	CARBON	330	5%	1/6W
R785	1-247-819-00	CARBON	330	5%	1/6W
R786	1-247-819-00	CARBON	330	5%	1/6W
R787	1-247-831-00	CARBON	1K	5%	1/6W
R791	1-247-719-11	CARBON	3.3K	5%	1/4W
R792	1-247-719-11	CARBON	3.3K	5%	1/4W
R793	1-249-414-11	CARBON	560	5%	1/6W
R796	1-247-831-00	CARBON	1K	5%	1/6W
R797	1-249-429-11	CARBON	10K	5%	1/6W
R798	1-249-429-11	CARBON	10K	5%	1/6W
R799	1-249-429-11	CARBON	10K	5%	1/6W
R801	△.1-247-711-11	CARBON	680	5%	1/4W F
R802	△.1-247-711-11	CARBON	680	5%	1/4W F
R903	△.1-217-422-00	FUSIBLE	1	5%	1/2W F
R904	1-247-849-00	CARBON	5.6K	5%	1/6W
R905	△.1-217-422-00	FUSIBLE	1	5%	1/2W F
R906	△.1-217-482-00	FUSIBLE	12	5%	1W F
R910	△.1-207-934-00	WIREWOUND	120	10%	5W F
R911	1-249-425-11	CARBON	4.7K	5%	1/6W
R912	1-249-429-11	CARBON	10K	5%	1/6W
R915	△.1-207-686-00	WIREWOUND	100	10%	5W F
R916	1-249-425-11	CARBON	4.7K	5%	1/6W
R917	1-249-429-11	CARBON	10K	5%	1/6W
R920	△.1-213-131-00	METAL OXIDE	100	5%	1W F
R921	1-249-421-11	CARBON	2.2K	5%	1/6W
R1101	1-247-895-00	CARBON	470K	5%	1/6W
R1102	1-247-887-00	CARBON	220K	5%	1/6W
R1103	1-249-425-11	CARBON	4.7K	5%	1/6W
R1104	1-247-815-00	CARBON	220	5%	1/6W
R1105	1-249-440-11	CARBON	82K	5%	1/6W
R1106	1-247-857-00	CARBON	12K	5%	1/6W
R1107	1-247-851-00	CARBON	6.8K	5%	1/6W
R1108	1-247-831-00	CARBON	1K	5%	1/6W
R1109	1-247-869-00	CARBON	39K	5%	1/6W
R1110	1-247-845-00	CARBON	3.9K	5%	1/6W
R1111	1-247-875-00	CARBON	68K	5%	1/6W
R1112	1-247-833-00	CARBON	1.2K	5%	1/6W
R1113	1-247-895-00	CARBON	470K	5%	1/6W
R1114	1-247-903-00	CARBON	1M	5%	1/6W
R1115	1-247-841-00	CARBON	2.7K	5%	1/6W
R1116	1-249-433-11	CARBON	22K	5%	1/6W
R1117	1-247-815-00	CARBON	220	5%	1/6W
R1118	1-247-851-00	CARBON	6.8K	5%	1/6W
R1119	1-249-421-11	CARBON	2.2K	5%	1/6W
R1121	1-247-831-00	CARBON	1K	5%	1/6W
R1125	1-247-819-00	CARBON	330	5%	1/6W
R1126	1-247-831-00	CARBON	1K	5%	1/6W
R1127	1-249-429-11	CARBON	10K	5%	1/6W
R1128	1-249-405-11	CARBON	100	5%	1/6W
R1129	1-249-435-11	CARBON	33K	5%	1/6W
R1131	1-249-435-11	CARBON	33K	5%	1/6W
R1132	1-247-813-00	CARBON	180	5%	1/6W
R1133	1-247-706-11	CARBON	330	5%	1/4W
R1134	1-249-433-11	CARBON	22K	5%	1/6W
R1135	1-247-815-00	CARBON	220	5%	1/6W
R1136	1-247-809-00	CARBON	120	5%	1/6W

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R1137	1-247-903-00	CARBON	1M	5%	1/6W
R1138	1-247-831-00	CARBON	1K	5%	1/6W
R1148	1-249-441-11	CARBON	100K	5%	1/6W
R1149	1-249-405-11	CARBON	100	5%	1/6W
R1151	1-247-895-00	CARBON	470K	5%	1/6W
R1152	1-247-887-00	CARBON	220K	5%	1/6W
R1153	1-249-425-11	CARBON	4.7K	5%	1/6W
R1154	1-247-815-00	CARBON	220	5%	1/6W
R1155	1-249-440-11	CARBON	82K	5%	1/6W
R1156	1-247-857-00	CARBON	12K	5%	1/6W
R1157	1-247-851-00	CARBON	6.8K	5%	1/6W
R1158	1-247-831-00	CARBON	1K	5%	1/6W
R1159	1-247-869-00	CARBON	39K	5%	1/6W
R1160	1-247-845-00	CARBON	3.9K	5%	1/6W
R1161	1-247-875-00	CARBON	68K	5%	1/6W
R1162	1-247-833-00	CARBON	1.2K	5%	1/6W
R1163	1-247-895-00	CARBON	470K	5%	1/6W
R1164	1-247-903-00	CARBON	1M	5%	1/6W
R1165	1-247-841-00	CARBON	2.7K	5%	1/6W
R1166	1-249-433-11	CARBON	22K	5%	1/6W
R1167	1-247-815-00	CARBON	220	5%	1/6W
R1168	1-247-851-00	CARBON	6.8K	5%	1/6W
R1169	1-249-421-11	CARBON	2.2K	5%	1/6W
R1171	1-247-831-00	CARBON	1K	5%	1/6W
R1175	1-247-819-00	CARBON	330	5%	1/6W
R1176	1-247-831-00	CARBON	1K	5%	1/6W
R1177	1-249-429-11	CARBON	10K	5%	1/6W
R1178	1-249-405-11	CARBON	100	5%	1/6W
R1179	1-249-435-11	CARBON	33K	5%	1/6W
R1181	1-249-435-11	CARBON	33K	5%	1/6W
R1182	1-247-813-00	CARBON	180	5%	1/6W
R1183	1-247-706-11	CARBON	330	5%	1/4W
R1184	1-249-433-11	CARBON	22K	5%	1/6W
R1185	1-247-815-00	CARBON	220	5%	1/6W
R1186	1-247-809-00	CARBON	120	5%	1/6W
R1187	1-247-903-00	CARBON	1M	5%	1/6W
R1188	1-247-831-00	CARBON	1K	5%	1/6W
R1199	1-249-405-11	CARBON	100	5%	1/6W
R1231	1-247-833-00	CARBON	1.2K	5%	1/6W
R1232	1-247-815-00	CARBON	220	5%	1/6W
R1233	1-247-815-00	CARBON	220	5%	1/6W
R1235	1-249-433-11	CARBON	22K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R1236	1-249-433-11	CARBON	22K	5%	1/6W
R1237	1-249-433-11	CARBON	22K	5%	1/6W
R1238	1-249-429-11	CARBON	10K	5%	1/6W
R1239	1-249-433-11	CARBON	22K	5%	1/6W
R1241	1-247-831-00	CARBON	1K	5%	1/6W
R1245	1-247-831-00	CARBON	1K	5%	1/6W
R1246	1-247-831-00	CARBON	1K	5%	1/6W
R1247	1-247-831-00	CARBON	1K	5%	1/6W
R1501	1-247-688-11	(G-AEP)...CARBON	10	5%	1/4W
R1502	1-247-688-11	(G-AEP)...CARBON	10	5%	1/4W
RV401	1-230-813-31	RES, VAR, SLIDE 250K/250K (BALANCE), including D401			
RV402	1-237-243-31	RES, VAR, SLIDE 50K/50K (MIC LEVEL), including D402			
RV411	1-230-813-31	RES, VAR, SLIDE 250K/250K (63Hz), including D411			
RV412	1-230-813-31	RES, VAR, SLIDE 250K/250K (150Hz), including D412			
RV413	1-230-813-31	RES, VAR, SLIDE 250K/250K (400Hz), including D413			
RV414	1-230-813-31	RES, VAR, SLIDE 250K/250K (1kHz), including D414			
RV415	1-230-813-31	RES, VAR, SLIDE 250K/250K (3kHz), including D415			
RV416	1-230-813-31	RES, VAR, SLIDE 250K/250K (6kHz), including D416			
RV417	1-230-813-31	RES, VAR, SLIDE 250K/250K (14kHz), including D417			
RY601	1-515-503-00	RELAY			
SW701	1-554-303-21	SWITCH, KEY BOARD (VOLUME UP)			
SW702	1-554-303-21	SWITCH, KEY BOARD (VOLUME DOWN)			
SW703	1-554-303-21	SWITCH, KEY BOARD (MUTING-20dB)			
SW704	1-554-303-21	SWITCH, KEY BOARD (PHONO)			
SW705	1-554-303-21	SWITCH, KEY BOARD (TUNER)			
SW706	1-554-303-21	SWITCH, KEY BOARD (CD/AUX)			
SW707	1-554-303-21	SWITCH, KEY BOARD (TAPE)			
△SW1001	1-553-318-51	SWITCH, PUSH (AC POWER)(1 KEY), POWER			
△SW1002	1-526-576-51	(EA3,E)...SELECTOR, POWER VOLTAGE			
SW1201	1-554-419-00	SWITCH, PUSH (1 KEY)(AMFB)			
T1001△	1-448-133-11	(EA3,E)...TRANSFORMER, POWER			
T1001△	1-448-134-11	(G-AEP,AEP,UK,AED)...TRANSFORMER, POWER			

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

FH-150R
TA-177R