6. DISASSEMBLY

Wooden Cover

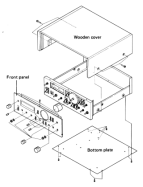
Remove the two screws on each side of the wooden cover.

Bottom Plate

Remove the nine screws to detach the bottom plate.

Front Panel

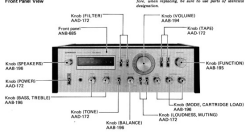
Loosen the set screws of VOLUME knob with a hexagonal wrench. Remove all the knobs by pulling. Remove the three screws from the top edge of the front panel. Remove the two nuts from the control shafts.



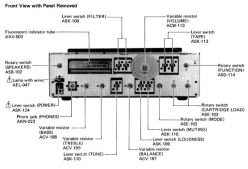
7. PARTS LOCATION

NOTE:
• *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

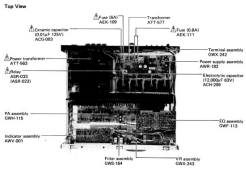
Front Panel View



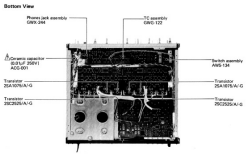
Front View with Panel Removed



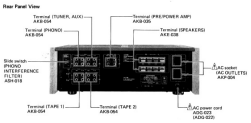
Top View



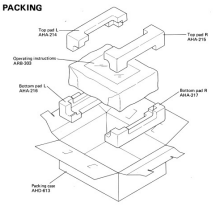
Bottom View



Rear Panel View



8. PACKING



9. ADJUSTMENTS

Power Amplifier

Turn VR_{1} (L) and VR_{2}, VR_{3} (R) fully upward in the counter-clockwise direction, but set VR_{1} (L) and VR_{3} (R) to the center positions. Without any load or input signal, turn the POWER switch ON.

DC Balance

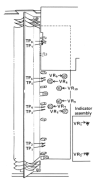
1. Adjust VR_{1} (L) for 0V (to within ±30mV) between terminal No.13 and ground.
2. Adjust VR_{3} (R) for 0V (to within ±30mV) between terminal No.27 and ground.

Idle Current

1. Adjust VR_{1} (L) for 5mV between terminals TP_{1} (+) and TP_{2} (-). The potential difference between terminals TP_{3} (+) and TP_{4} (-) should register about 5mV at this time.
2. Adjust VR_{2} (L) for 5mV between terminals TP_{5} (+) and TP_{6} (-). The potential difference between terminals TP_{7} (+) and TP_{8} (-) should register about 5mV at this time.
3. Adjust VR_{2} (L) for 70mV between terminals TP_{1} (+) and TP_{2} (-). The potential difference between terminals TP_{3} (+) and TP_{4} (-) should register about 70mV at this time.
4. Adjust VR_{3} (R) for 70mV between terminals TP_{5} (+) and TP_{6} (-). The potential difference between terminals TP_{7} (+) and TP_{8} (-) should register about 70mV at this time.

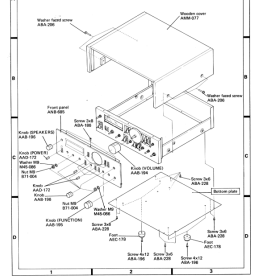
Output Power Indicator Calibration

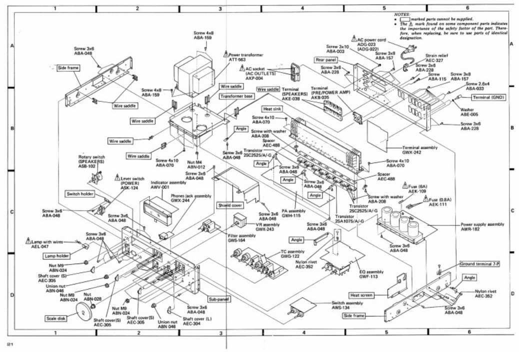
1. Apply a 1kHz signal to the POWER AMP IN terminals from any other input power amplifier (tape) terminals.
2. Adjust the level of this input signal so that the voltage on the output terminals (SPEAKERS) read 8.9V (AC).
3. Adjust VR_{1} (L) and VR_{3} (R) so that the output power indicator read 10 watts.



10. EXPLODED VIEW

NOTES:
- *Not marked parts cannot be supplied.*
- *The ⚠ mark listed on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of designated designations.*





NOTES:

- ▭ marked parts cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

11. SCHEMATIC DIAGRAMS, P.C. BOARD PATTERNS AND PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561 . . . .*	*RD¼PS 561 J*
47kΩ	*47 × 10³*	*473 . . . .*	*RD¼PS 473 J*
0.5Ω	*0R5 . . . .*		*RN2H 0R5 K*
1Ω	*010 . . . .*		*RSIP 010 K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621 . . . .*	*RN¼SR 5621 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

11.1 MISCELLANEA

Miscellaneous Parts

P. C. BOARD ASSEMBLIES

Part No.	Description
AWV-001	Indicator assembly
AWS-134	Switch assembly
AWR-182	Power supply assembly
GWH-115	PA assembly
GWG-122	TC assembly
GWS-164	Filter assembly
GWX-243	VR assembly
GWX-244	Phones jack assembly
GWF-113	EQ assembly
GWX-242	Terminal assembly

LAMP AND FUSES

Part No.	Symbol & Description	
⚠AEL-047	PL1	Lamp with wires
⚠AEK-109	FU1	Fuse (6A)
⚠AEK-111	FU2, FU3	Fuse (0.8A)

SEMICONDUCTORS

Part No.	Symbol & Description
2SC2525/A/-G	Q1–Q4
2SA1075/A/-G	Q5–Q8

SWITCHES

Part No.	Symbol & Description	
ASB-102	S13	Rotary (SPEAKERS)
⚠ASK-124	S14	Lever (POWER)

CAPACITORS

Part No.	Symbol & Description		
⚠ACG-001	C1	Ceramic	0.01/250V
CKDYF 473Z 50	C2, C4		
CCDSL 221K 50	C5, C6		

OTHERS

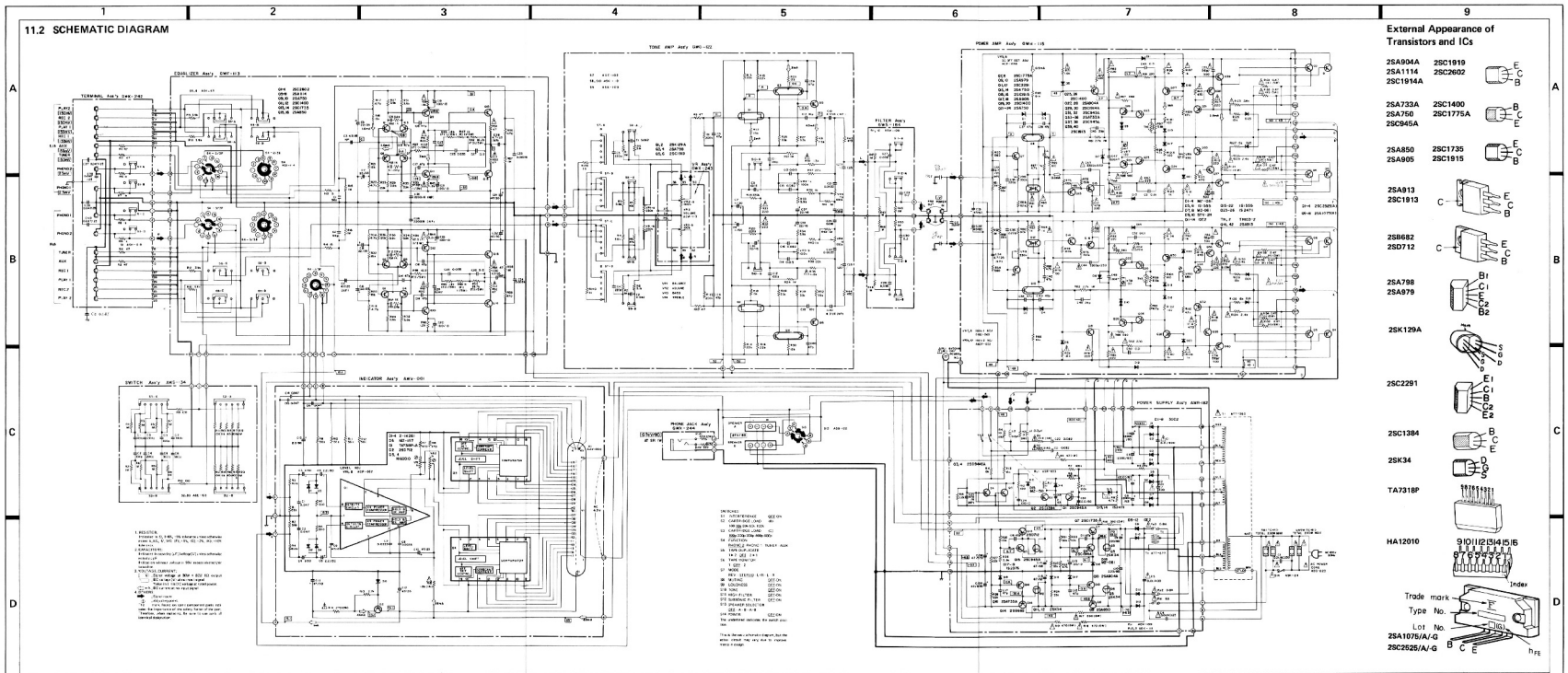
Part No.	Symbol & Description	
⚠ATT-563	T1	Power transformer
⚠ADG-023		AC power cord
⚠(ADG-022)		
⚠AKP-004		AC socket (AC OUTLETS)
AKE-038		Terminal (SPEAKERS)
AKB-035		Terminal (PRE/POWER AMP)

List of Changed Parts for Factory Modification

List of changed parts information will be furnished whenever necessary and you are requested to amend parts number in this parts list.

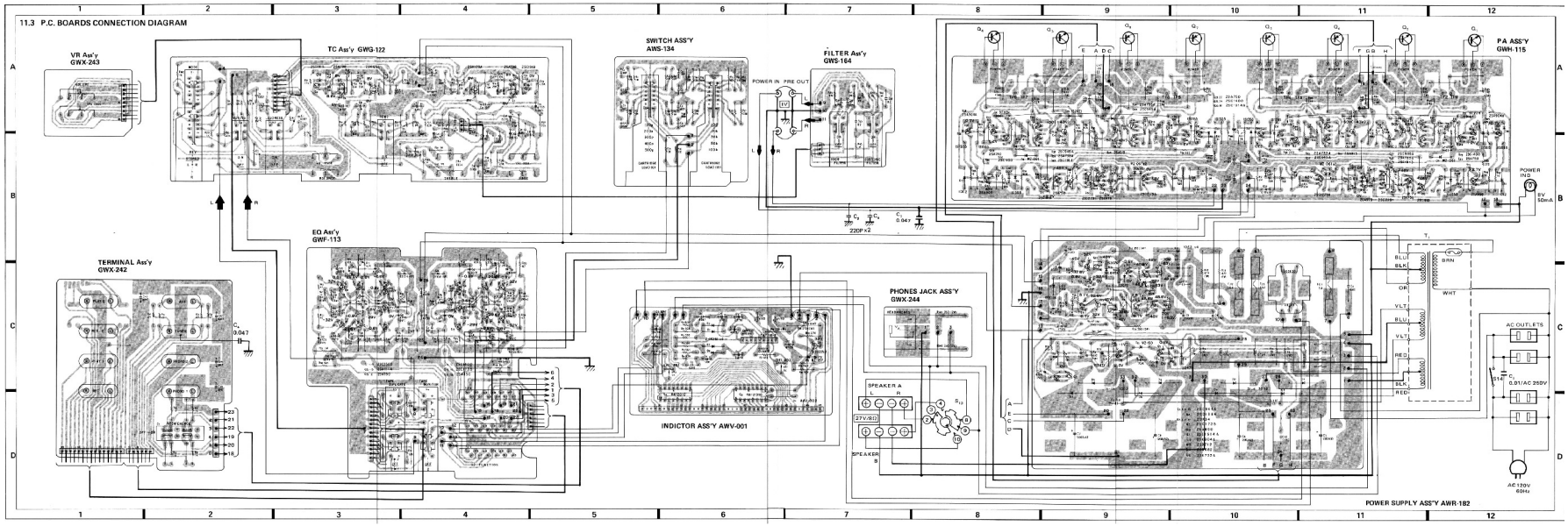
Symbol	Part No.	Description

11.2 SCHEMATIC DIAGRAM

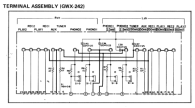


External Appearance of Transistors and ICs

11.3 P.C. BOARDS CONNECTION DIAGRAM



11.4 TERMINAL ASSEMBLY (GWX-242)



Parts List

CAPACITORS

Part No.	Symbol & Description
CKCBC 472Z 25	C31*CH8 ●

Note: When ordering resistors, convert the resistance value into code three, and then rewrite the part no. as follow.

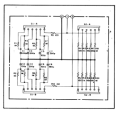
RESISTORS

Part No.	Symbol & Description
RSVPM 1222-4	R1–R8

OTHERS

Part No.	Symbol & Description	
ASH-016	01	Slide switch (PHONES INTERFERENCE) Terminal (INPUT, TAPE)
AKB-004		

11.5 SWITCH ASSEMBLY (AWS-134)



Parts List

SWITCHES

Part No.	Symbol & Description	
AMS-102	S1, S2	Rotary (CARTRIDGE LOAD)

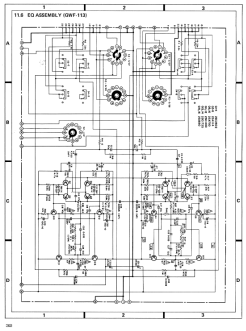
CAPACITORS

Part No.	Symbol & Description
CQBX 6014 50	C1, C2
CQBX 6014 50	C3, C4
CQBX 6014 50	C5, C6
CQBX 6014 50	C7, C8

Note: When ordering resistors, convert the resistance value into code three, and then rewrite the part no. as follow.

RESISTORS

Part No.	Symbol & Description
RSVPM 1222-4	R1–R28


11.6 EQ ASSEMBLY (GWF-113)

Parts List of EQ Assembly (GWF-113)

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

SWITCHES

Part No.	Symbol & Description	
ASD-114	S2	Rotary (FUNCTION)
ASK-113	S3	Lever (DUPLICATE)
ASK-113	S4	Lever (MONITOR)

RESISTORS

Part No.	Symbol & Description
RD¼PM □□□ J	R9–R34, R55–R58, R63–R66
RN⅙SQ □□□□ F	R35–R38, R45–R50
⚠RD¼PSF □□□ J	R39–R44, R51–R54

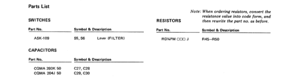
CAPACITORS

Part No.	Symbol & Description		
CQSH 560K 50	C1, C2		
ACH-318	C3, C4, C29, C30	Electrolytic 4.7/25 (NP)	
CEA 220P 35	C5–C8		
CCDSL 470K 50	C13–C18		
CEA 101P 10	C19–C22		
CKDYB 331K 50	C9–C12		
CQMA 473K 50	C23, C24		
CQPA 353G 50	C25, C26		
CQPA 124G 50	C27, C28		
CEA 470P 50	C31, C32		
CQMA 392J 50	C33, C34		
ACH-339	C35, C36	Electrolytic	2200/6V (NP)

SEMICONDUCTORS

Part No.	Symbol & Description
2SC2602	Q1–Q4
2SA1114	Q5–Q8
2SA750	Q9, Q10
2SC1400	Q11, Q12
2SC1735	Q13, Q14
2SA850	Q15, Q16

11.7 FILTER ASSEMBLY (GWS-164)



Parts List

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

SWITCHES

Part No.	Symbol & Description	
ASK-109	S5, S6	Lever (FILTER)

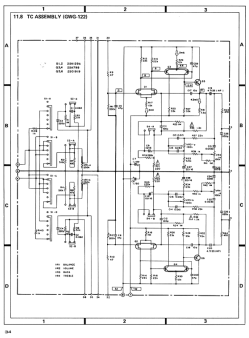
RESISTORS

Part No.	Symbol & Description
RD¼PM □□□ J	R45–R50

CAPACITORS

Part No.	Symbol & Description
CQMA 393K 50	C27, C28
CQMA 204J 50	C29, C30

11.8 TC ASSEMBLY (DWG 123)



Parts List of TC Assembly (GWG-122)

SWITCHES

Part No.	Symbol & Description	
ASE-102	S1	Rotary (MODE)
ASK-109	S2	Lever (LOUDNESS)
ASK-110	S3	Lever (MUTING)
ASK-110	S4	Lever (TONE)

CAPACITORS

Part No.	Symbol & Description		
COMA 823J 50	C1, C2, C15, C16		
CCDSL 221K 50	C3, C4,		
CCDSL 470K 50	C5, C6, C59, C60		
CEA 010P 50	C7, C8		
CEANL 100M 16	C9, C10		
CCDSL 101K 50	C11, C12		
COMA 153J 50	C13, C14		
CCDSL 100F 50	C17, C18		
ACH-318	C19, C20	Electrolytic	4.7/25(NP)
COMA 332J 50	C21, C22		
CCDSL 681K 50	C25, C26		
COMA 183J 50	C23, C24		
CEANL 220M 16	C57, C58		

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description	
ACV-187	VR1	Variable (BALANCE)
ACV-198	VR3	Variable (BASS)
ACV-199	VR4	Variable (TREBLE)
RD¼PM □□□ J	R1–R20, R23–R34, R37–R44, R139, R140	
⚠RD¼PSF □□□ J	R21, R22, R35, R36	

SEMICONDUCTORS

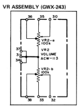
Part No.	Symbol & Description
2SK129A	Q1, Q2
2SA798	Q3, Q4
2SC1919 (2SC1400)	Q5, Q6

List of Changed Parts for Factory Modification

List of changed parts information will be furnished whenever necessary and you are requested to amend parts number in this parts list.

Symbol	Part No.	Description

11.9 VR ASSEMBLY (GWX-243)



Parts List

Part No.	Symbol & Description
ACW-113	Variable resistor (VOLUME)

11.10 PA ASSEMBLY (GWH-115)

Parts List

CAPACITORS

Part No.	Symbol & Description
CEA 470P 63	C31, C32
ACH-318	C33, C34 Electrolytic 4.7/25V (NP)
CCDSL 221K 50	C35, C36
CCDSL 470K 50	C37–C40
CCDSL 470K 50	C41, C42
⚠ CQMA 332K 250	C43, C44
CCDSL 390K 50	C45, C46
CQMA 472K 50	C47, C48
CQMA 103K 50	C49–C52
⚠ CCDSL 560K 500	C53–C56
⚠ CKDYF 103Z 500	C61, C62

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description
ACP-068	VR5, VR6 Semifixed 330k-B
C92-063	VR7, VR8 Semifixed 100-B
ACP-002	VR9, VR10 Semifixed 68k-B
RD¼PM □□□ J	R51–R54, R57–R60, R65–R68, R73–R76
RD¼PM □□□ J	R95–R98, R101–R104, R109, R110
RD¼PM □□□ J	R125–R128
⚠ RD¼PSF □□□ J	R61–R64, R69–R72, R77–R80, R83–R90
⚠ RD¼PSF □□□ J	R91–R94, R99, R100, R105–R108
⚠ RD¼PSF □□□ J	R111–R120, R123, R124, R129, R130
RS1P □□□ J	R81, R82
⚠ RD½PSF □□□ J	R121, R122
⚠ ACN-041	R131–R138 Wire wound 0.47/5W

SEMICONDUCTORS

Part No.	Symbol & Description
2SC1775A-E*	Q7, Q8
or -F*	
2SA979-F*	Q9, Q10
or -G*	

*hfe of Q7 and Q8 should have the E-rank, if Q9 and Q10 have the F-rank.
*hfe of Q7 and Q8 should have the F-rank, if Q9 and Q10 have the G-rank.

Part No.	Symbol & Description
2SC2291	Q11, Q12
2SA750	Q13, Q14
(2SA726S)	
2SC1915	Q15, Q16
2SA905	Q17, Q18
2SC1400	Q19, Q20, Q25, Q26
2SA750	Q21–Q24
2SA904A	Q27, Q28
2SC1914A	Q29, Q30
2SC945A	Q31, Q32, Q37, Q38
2SA733A	Q33–Q36

Part No.	Symbol & Description
2SC1913-R**	Q39, Q40
or -Q**	
2SA913-R**	Q41, Q42
or -Q**	

**hfe of Q39–Q42 should have the same value.

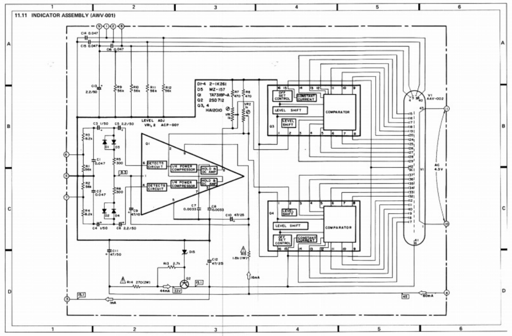
Part No.	Symbol & Description
1S1555	D5, D6, D15–D22
(1S2473)	
10E2	D11–D14
1S2471	D23–D26
MZ-061	D1–D4, D7, D8
(WZ-061)	
STV2H	D9, D10
TH103-2	Th1, Th2

List of Changed Parts for Factory Modification

List of changed parts information will be furnished whenever necessary and you are requested to amend parts number in this parts list.

Symbol	Part No.	Description

11.11 INDICATOR ASSEMBLY (AWV-001)



Parts List of Indicator Assembly (AWV-001)

CAPACITORS

Part No.	Symbol & Description
CQMA 473K 50	C1, C2
CEA 010P 50	C3, C4
CEA 2R2P 50	C5, C6, C13
CQMA 332K 50	C7, C8
CEA 470P 10	C9
CEA 470P 25	C10, C12
CEA 470P 50	C11
CKDYF 473Z 50	C14–C16

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description		
ACP-007	VR1, VR2	Semifixed	1k-B
⚠ RS2P □□□ J	R14		
⚠ RS1P □□□ J	R15		
RD¼PM □□□ J	R1–R3		

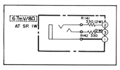
SEMICONDUCTORS

Part No.	Symbol & Description
TA7318P-A	Q1
2SD712	Q2
HA12010	Q3, Q4
2-1K261	D1–D4
MZ-157	D5
(WZ-157)	

OTHERS

Part No.	Symbol & Description	
AAV-002	V1	Fluorescent indicator tube
ABA-048		Screw 3x6

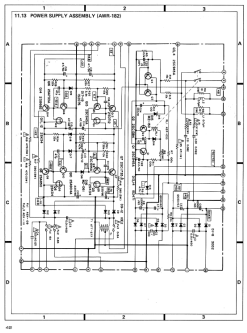
11.12 PHONES JACK ASSEMBLY (GWX-244)



Parts List

Part No.	Symbol & Description	
RS2P 331J	R141, R142	
AKN-023		Phone jack (PHONES)

11.13 POWER SUPPLY ASSEMBLY (A905.102)



Parts List of Power Supply Assembly (AWR-182)

CAPACITORS

Part No.	Symbol & Description		
CQMA 103K 400	C1–C3		
⚠ ACG-003	C4	Ceramic	0.01/125V
ACH-209	C5–C8	Electrolytic	12000/63V
CEA 221P 80	C9, C10		
CCDSL 470K 50	C11, C12, C16, C17		
CEA 101P 10	C13		
CEA 470P 63	C14, C15		
CEA 470P 50	C18, C19		
CQMA 823K 50	C20, C21		
CEANL 2R2M 50	C22		
CEA 010P 63	C23		
CEA 101P 16	C24		
ACH-340	C25		

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

RESISTORS

Part No.	Symbol & Description
⚠ RN1H □□□ K	R1, R2
RS1P □□□ J	R3, R4, R8
⚠ RS1P □□□ J	R5
⚠ RT5B □□□ K	R16–R19
RD¼PM □□□ J	R6, R7, R9, R11–R15, R20–R28

SEMICONDUCTORS

Part No.	Symbol & Description
2SC945A	Q1, Q3, Q4, Q15
2SC1384	Q2
2SK34	Q5, Q6, Q11, Q12
2SC1735	Q7
2SA850	Q8
2SC1914A	Q9
2SA904A	Q10
2SD712	Q13
2SB682	Q14
2SA733A	Q16
30D2 (GP-25D)	D1–D8
10E2 (SIB01-02)	D9–D12
1S2471	D13, D14
WZ-150	D15
WZ-061	D16
1S2076 (1S1555)	D17–D19

OTHERS

Part No.	Symbol & Description	
ATT-677	T1	Transformer (for FL)
⚠ ASR-033	RL1	Relay
⚠ (ASR-023)		
⚠ AEC-279		Capacitor cover
ABA-048		Screw 3x6
ABA-051		Screw 3x12
ABE-020		Washer

List of Changed Parts for Factory Modification

Symbol	Part No.	Description