MDR-NC50

SERVICE MANUAL

Ver. 1.3 2006.08

US Model
Canadian Model
AEP Model
UK Model
E Model
Tourist Model

SPECIFICATIONS

General

Type	Dynamic, closed
Driver units	40 mm, dome type
Power handling capacity	100 mW
Impedance	40 Ω at 1 kHz (when the power is on) 100 Ω at 1 kHz (when the power is off)
Sensitivity	102 dB/mW (when the power is on) 100 dB/mW (when the power is off)
Frequency response	14 – 22,000 Hz
Frequency range of active noise attenuation	40 – 1,500 Hz, more than 14 dB at 300 Hz
Power source	DC 1.5 V, 1 × R03 (size AAA) battery
Mass	Approx. 290 g (11 oz) including battery

Battery life

Battery	Approx. hours*1
Sony alkaline LR03/AM-4 (N) (size AAA) battery	30 hours*2
Sony manganese R03/ UM-4 (NU) (size AAA) battery	15 hours*2

*1 1 kHz, 1 mW + 1 mW input
*2 Time stated above may vary, depending on the temperature or conditions of use.

When to replace the battery

Replace the battery with a new one when the POWER indicator dims.
The noise canceling feature may not work correctly if battery power is low.

Supplied accessories

Connecting cord (0.5 m, gold-plated stereo mini plug (1) (Tourist only), 1.5 m, gold plated L type stereo mini plug (1)), R03 (size AAA) dry battery (1) (Tourist only), Carrying case (1), Plug adaptor for in-flight use* (single/dual) (1), Gold-plated unimatch plug adaptor (stereo phone plug ⟷ stereo mini jack) (1), Operating Instructions (1)

* May not be compatible with some in-flight music services.

Design and specifications are subject to change without notice.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 ˚C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350 ˚C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscou-s (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

Note on chip component replacement

- Never reuse a disconnected chip componet
- Notice that the minus side of a teamtalum capacitor may be damaged by heat

NOISE CANCELING HEADPHONES

9-879-314-04
2006H05-1

Sony Corporation
Personal Audio Division
Published by Sony Techno Create Corporation

SONY

TABLE OF CONTENTS

This section is extracted from instruction manual.

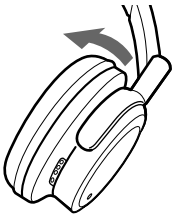
SECTION 1 GENERAL

Features

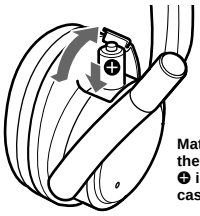
- Noise cancelling headphones reduce ambient noise, and provide a quieter environment to enhance audio entertainment.
  Ambient sound is synthesized with an anti-sound signal produced by the noise cancelling circuit, and reduced. (Over 14 dB is reduced at 300 Hz.)
- Slim, folding design for easy portability.
- Neodymium magnets for powerful sound.
- Passive operation when noise-canceling circuit is not activated.
- Built-in monitor function to hear surrounding sound without taking off the headphones.
- Supplied plug adaptor for easy connectivity to stereo or dual jack of in-flight music services.

Installing a battery

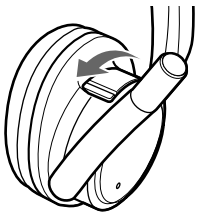
1 Open the right housing, as illustrated.



2 Open the lid of the battery box of the headphone to insert one size AAA battery.



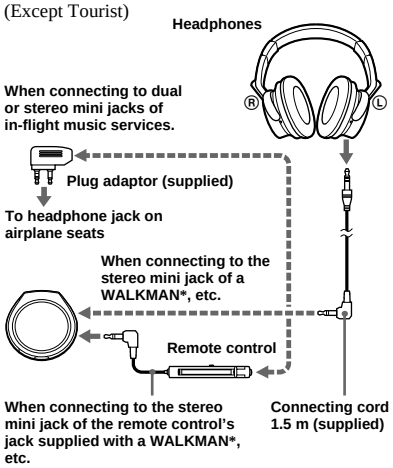
3 Close the lid.



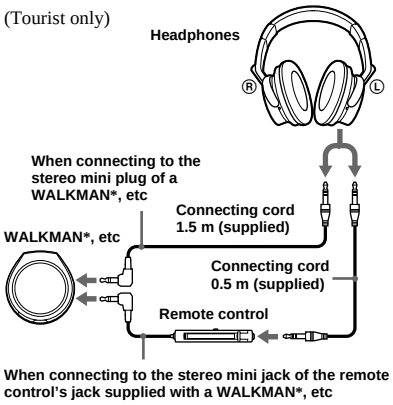
Listening to music

1 Connect the headphones to the AV equipment.

(Except Tourist)



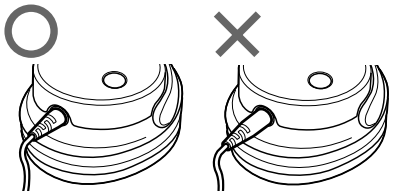
(Tourist only)



* "WALKMAN" is a registered trademark of Sony Corporation to represent Headphone Stereo products.

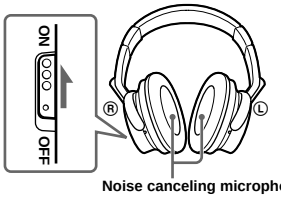
Note

- Insert the plug in the jack until you hear a click.



- To disconnect the cord, pull it out by the plug, not the cord, as the inner conductors may break.

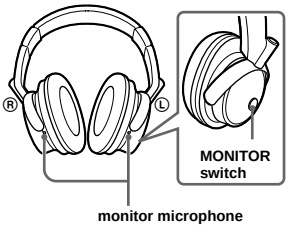
2 Turn on the power on the right side of the headphones.
The POWER indicator lights in red. When the power is turned on, ambient noise is reduced, and you can listen to music more clearly at a lower volume.



3 Put on the headphones so that the ear pads cover your ears.

4 Turn on the power of the AV equipment.

Hearing environmental sound for safety.
Playback is muted while the MONITOR switch is pushed so you can hear the surrounding environment.

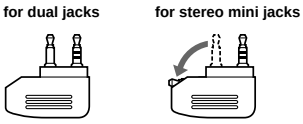


Note

The environmental sound might not be heard if the microphone is covered with your fingers.

Notes on using on the airplane

- The supplied plug adaptor can be connected to dual and stereo mini jacks.



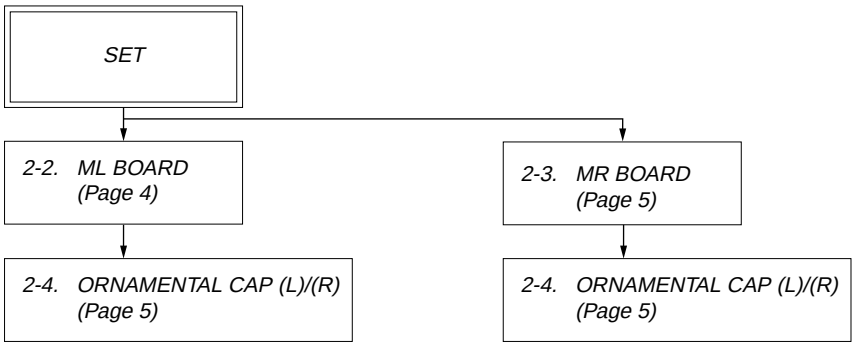
- Do not use the headphones when use of electronic equipment is prohibited or when use of personal headphones for in-flight music services is prohibited.

If you have any questions or problems concerning the system that are not covered in this manual, please consult the nearest Sony dealer.

SECTION 2
DISASSEMBLY

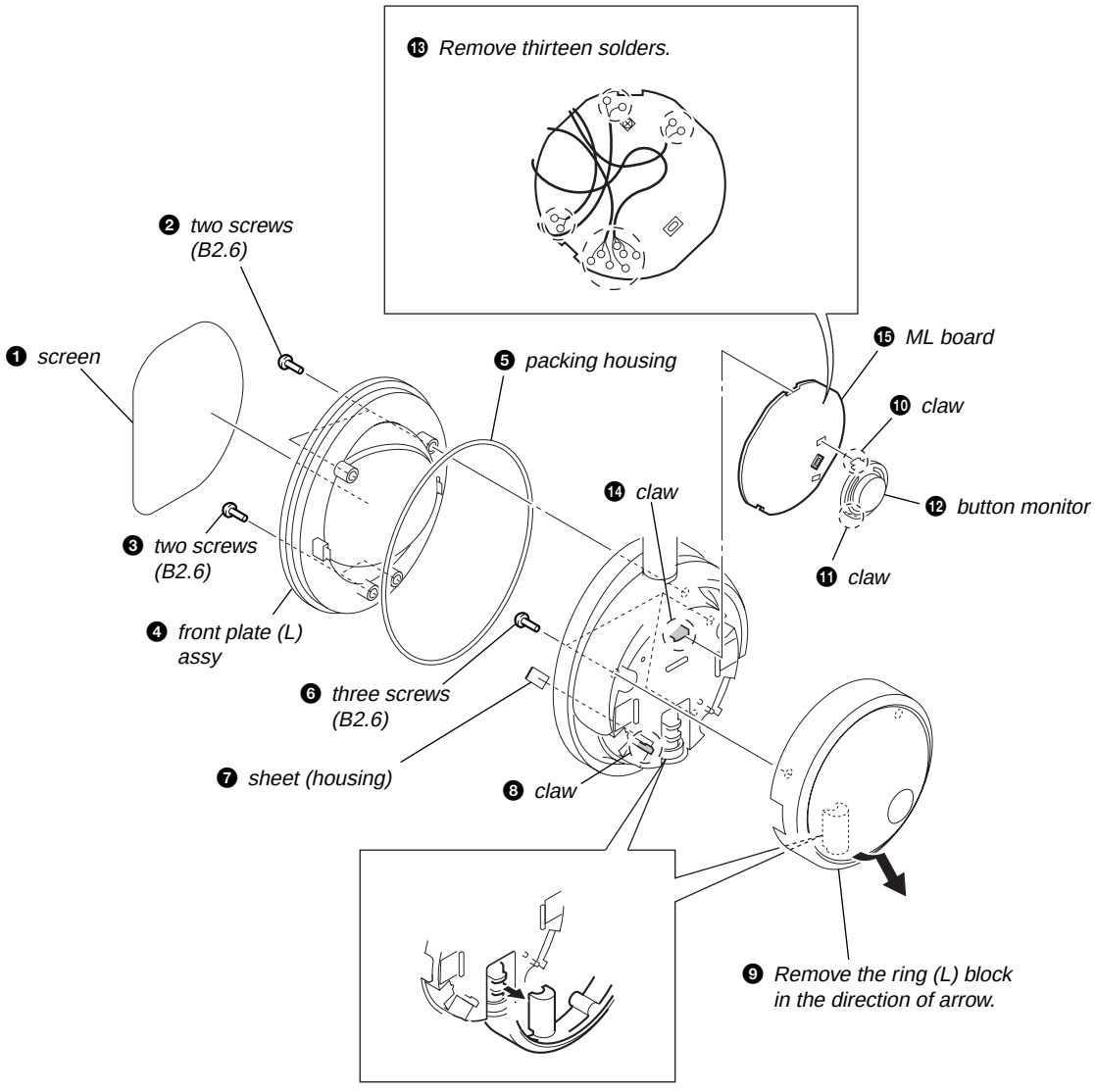
Note: Follow the disassembly procedure in the numerical order given.

2-1. DISASSEMBLY FLOW

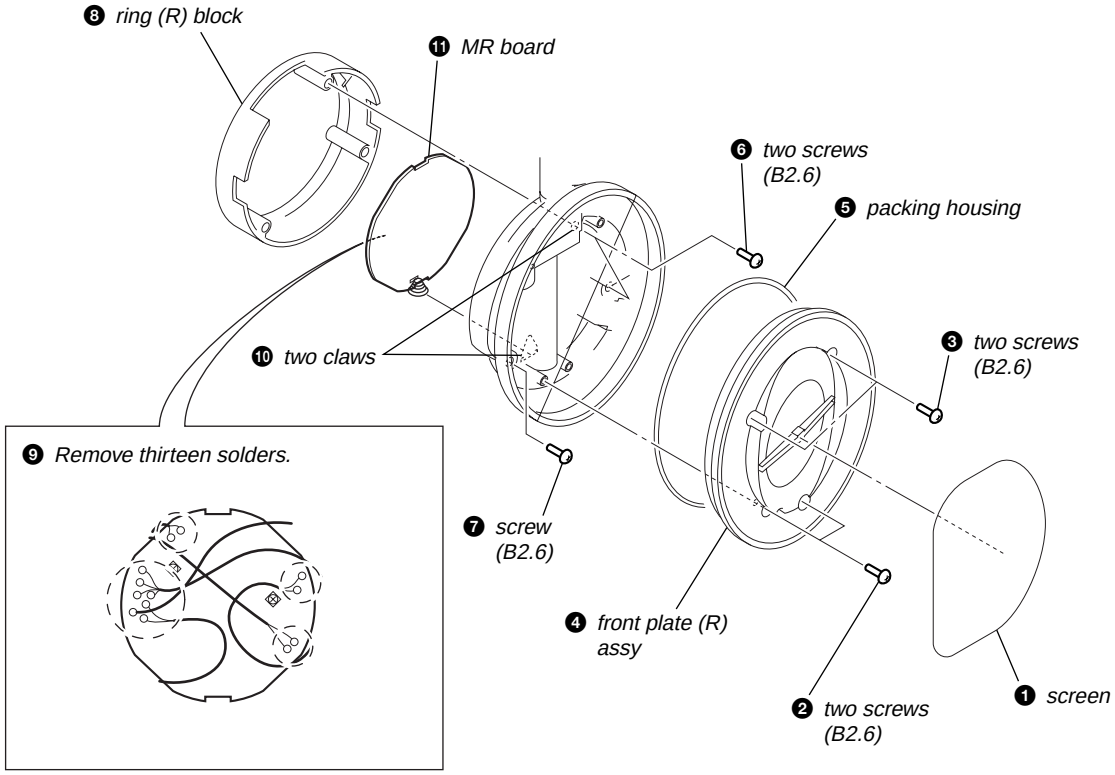


Note: Follow the disassembly procedure in the numerical order given.

2-2. ML BOARD

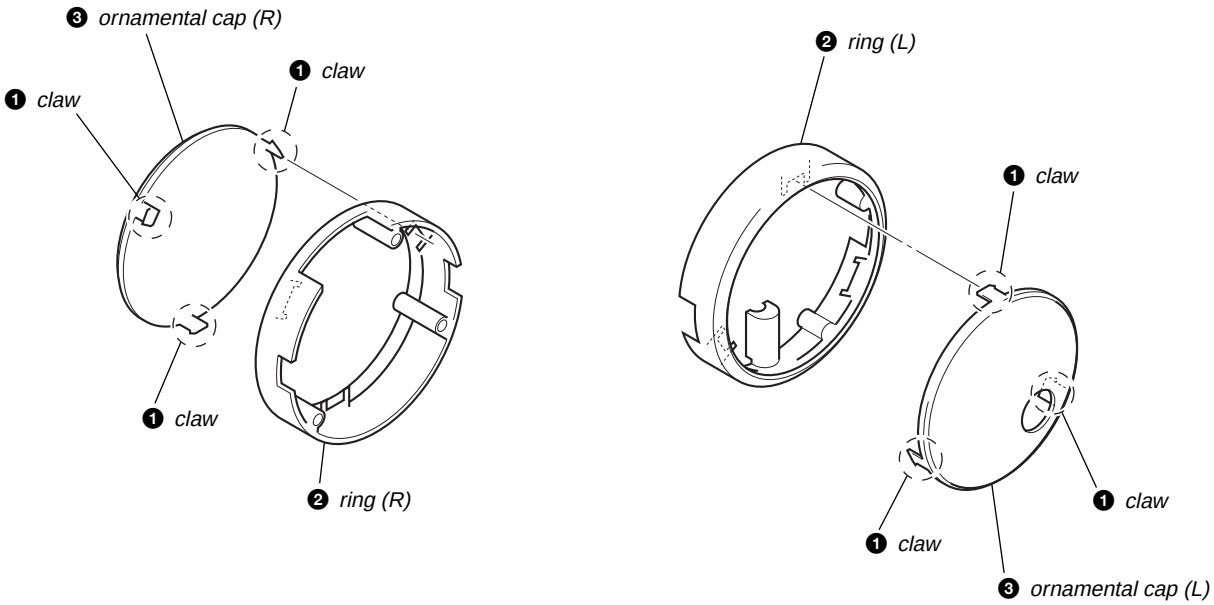


2-3. MR BOARD



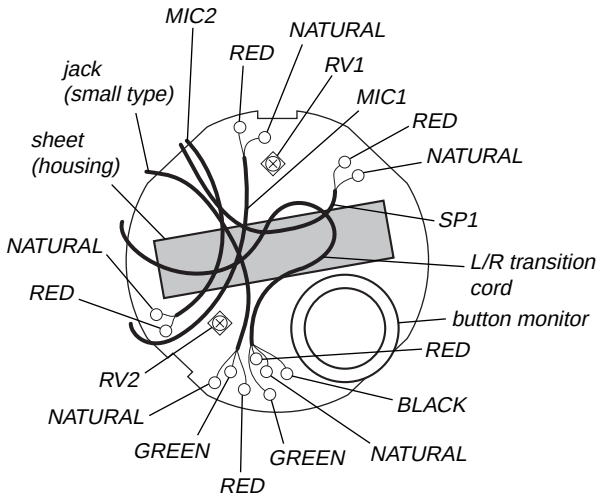
2-4. ORNAMENTAL CAP (L)/(R)

Take care not to break the claw when mounting or demounting the ornamental cap (L)/(R).

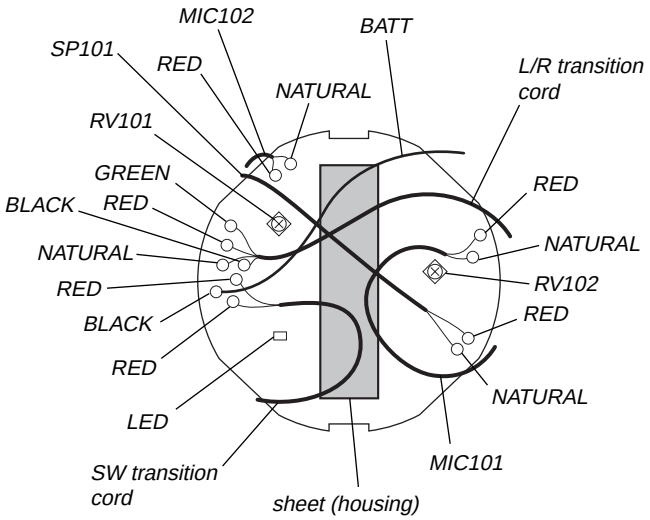


2-5. POSITION OF LEAD WIRES

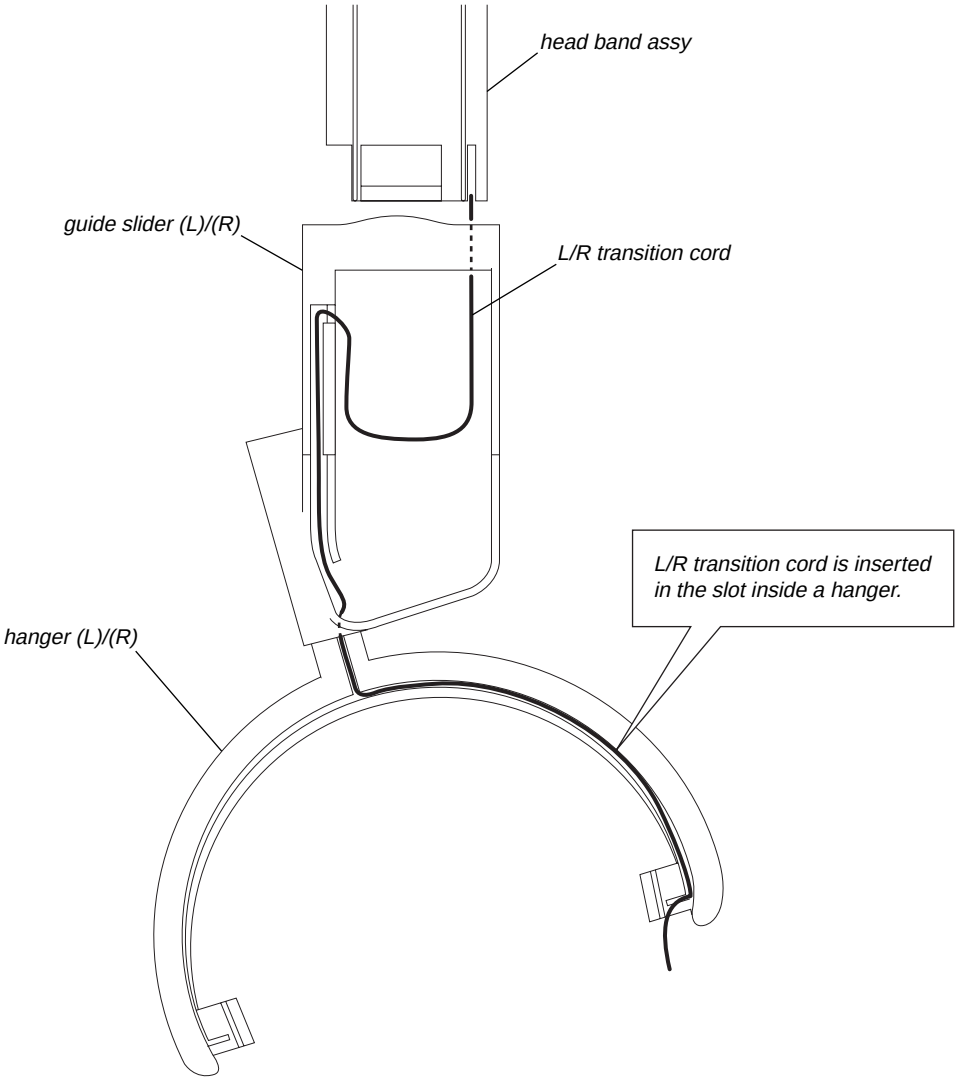
– ML board –



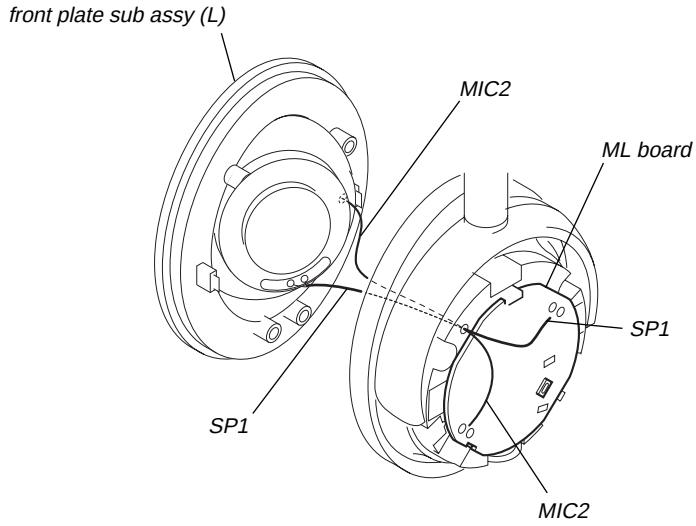
– MR board –

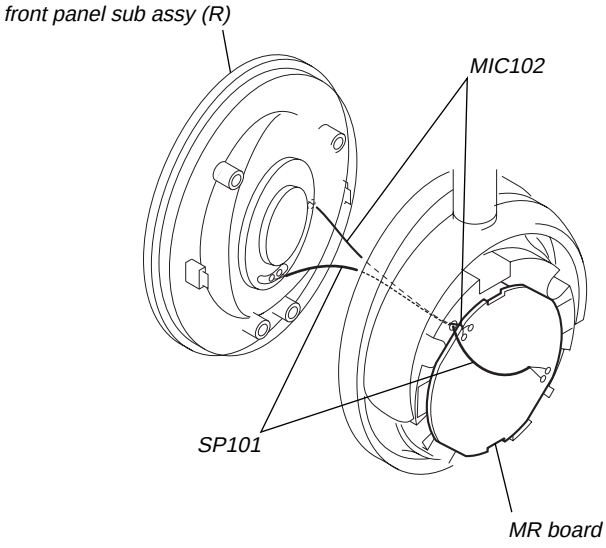


2-6. L/R TRANSITION CORD LOCATION



2-7. POSITION OF LEAD WIRES AT FRONT PLATE (L)/(R) SUB ASSY

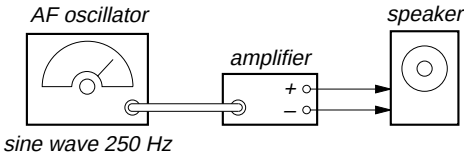




SECTION 3
ELECTRICAL ADJUSTMENT

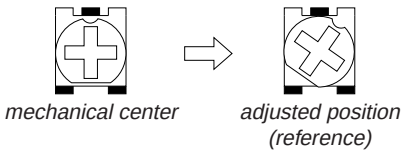
NOISE CANCELING VOLUME ADJUSTMENT

Preparation:



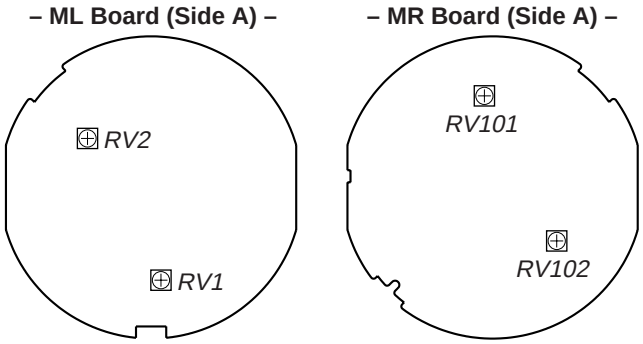
Procedure:

1. Generate a sine wave of specific frequency (250 Hz) from a AF oscillator, and output it from a speaker placed at the forward position.
2. Remove the ORNAMENTAL CAP.
3. Mount this set on the head, and turn on the POWER switch.
4. With this set mounted, rotate the RV1 (Lch) and RV101 (Rch) so that the volume from the speaker becomes lowest aurally. Adjust the RV1 (L-CH) or RV101 (R-CH) to the position by rotating 30 to 45 degrees clockwise from the mechanical center.



5. After adjustment, push and detach the ear receivers to and from your ears, and use the ear receivers at the position a little away from your ears to check that a peep howling does not occur.
   If a howling occurred, rotate the RV2 (L-CH) or RV102 (R-CH) counterclockwise to reduce the volume. As a result of the reduced volume on either side (RV2 or RV102), if you feel that the left and right balance is disordered, reduce the volume on another side until your feeling that something is wrong is eliminated, so that both sides are balanced.

Adjustment Location:



SECTION 4
DIAGRAMS

• Note for Printed Wiring Boards and Schematic Diagrams

Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ▭ : panel designation.
- ▬ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 1.5 V and fed with regulated dc power supply from battery terminal.
- Voltages and waveform is dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveform is taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveform.
- Signal path.
  - ⇨ : Audio signal (power off)
  - ⇨ : Audio signal (power on)
  - ▷ : Monitor

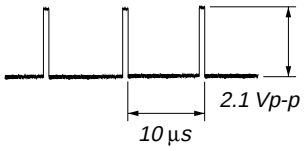
Note on Printed Wiring Boards:

- o——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▬ : Pattern from the side which enables seeing.

(The other layer's pattens are not indicated.)

• Waveform

① **ML Board IC52 ⑤ (EXT),**
MR Board IC152 ⑤ (EXT)

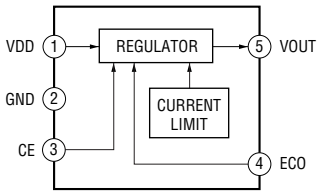


1 V/DIV, 5 µs/DIV

• IC Block Diagrams

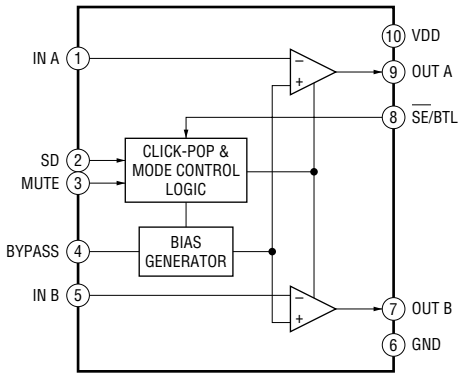
ML Board IC1
MR Board IC101

R1160N101B-TR-FA



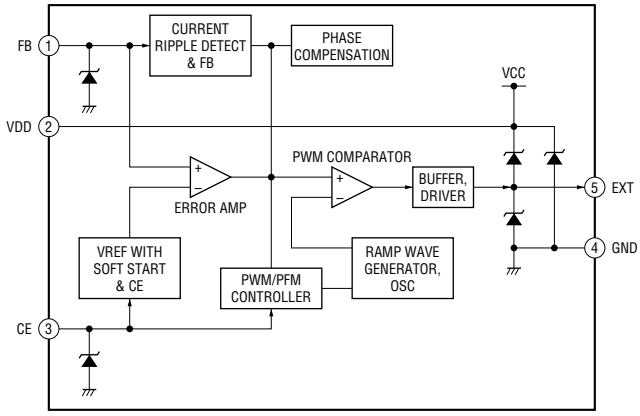
ML Board IC6
MR Board IC106

LM4916LDX/NOPB



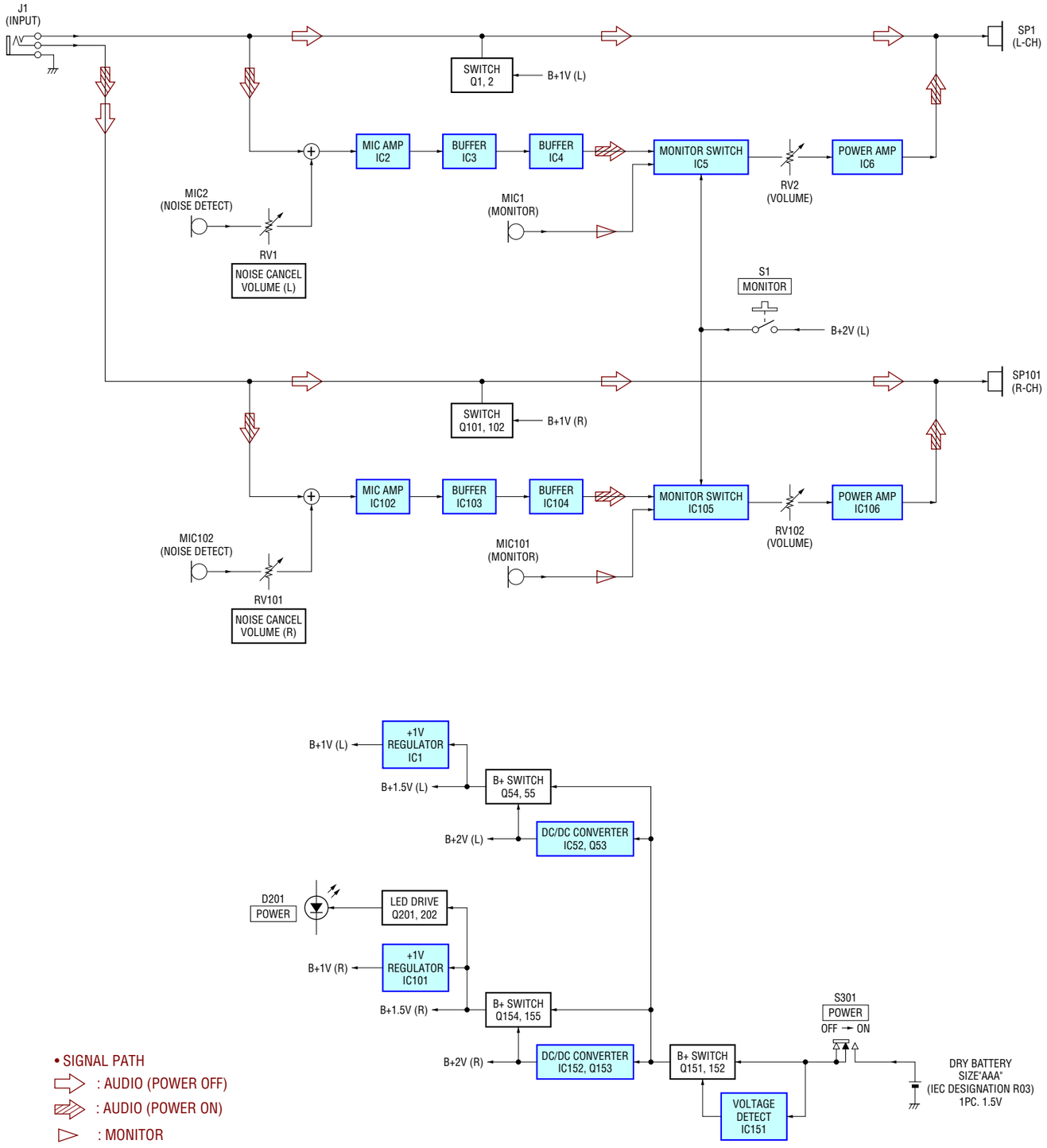
ML Board IC52
MR Board IC152

XC9103D091MR



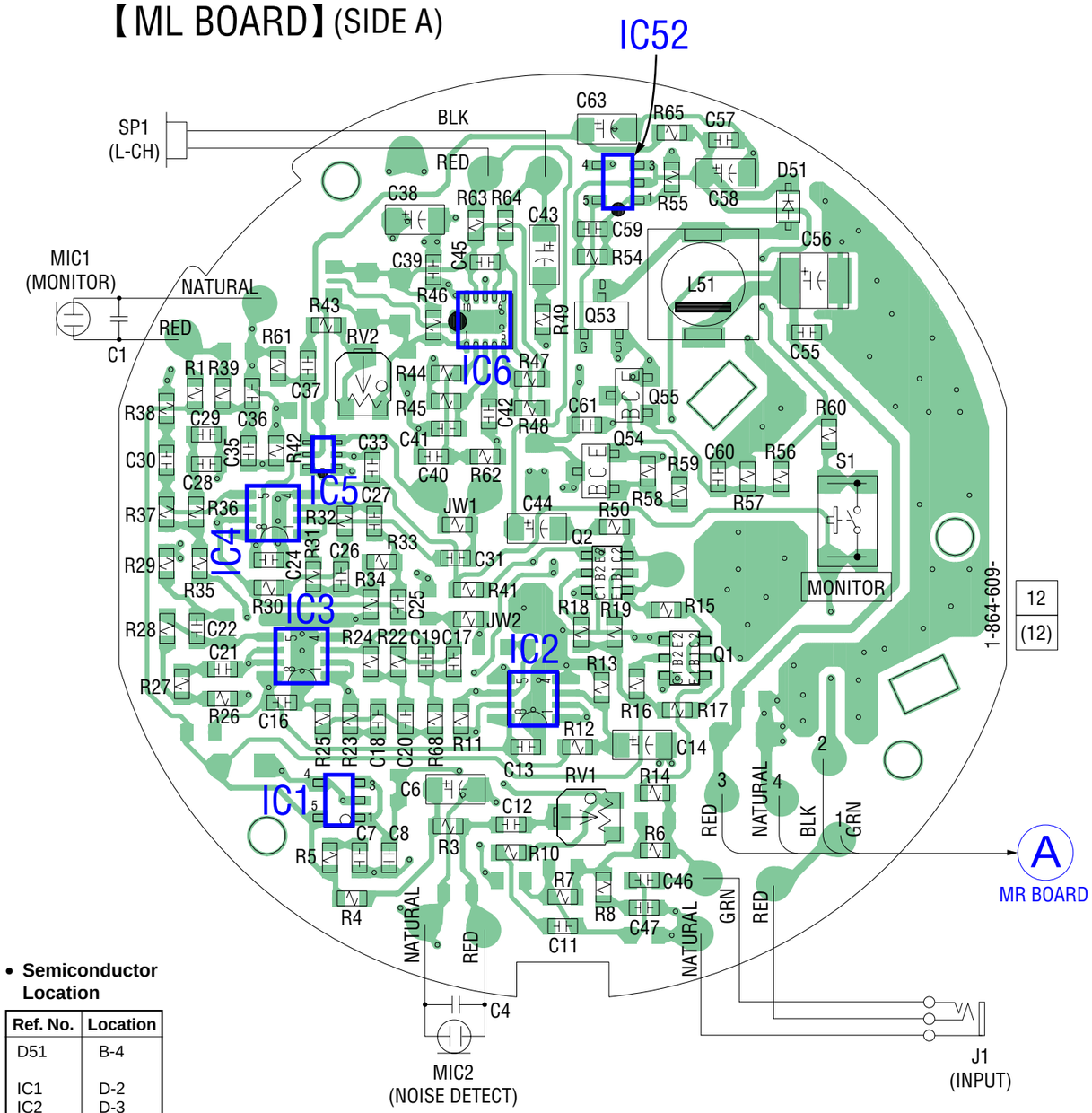
MEMO

4-1. BLOCK DIAGRAM

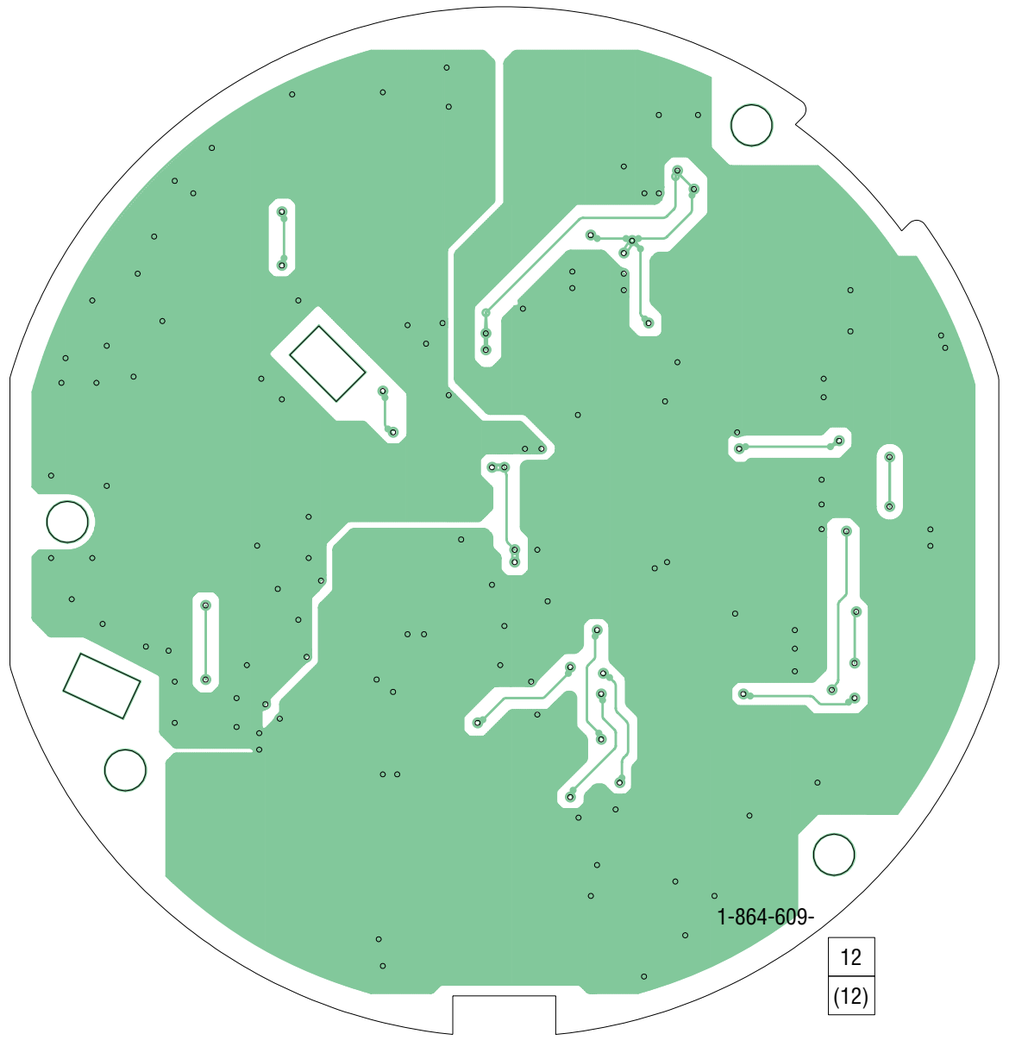


4-2. PRINTED WIRING BOARD – L-CH Section – : Uses unleaded solder.

【ML BOARD】(SIDE A)



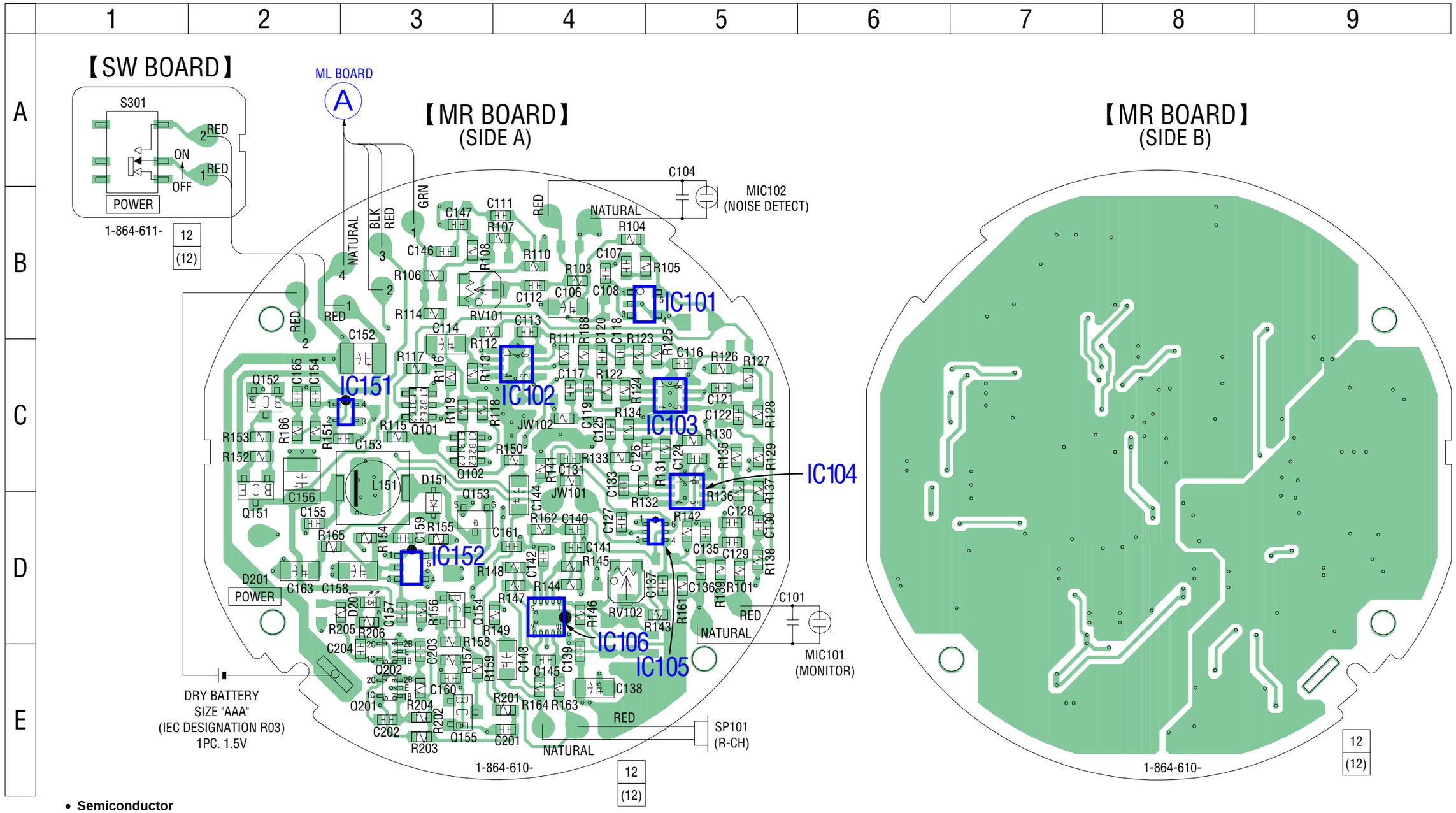
【ML BOARD】(SIDE B)



- **Semiconductor Location**

Ref. No.	Location
D51	B-4
IC1	D-2
IC2	D-3
IC3	C-2
IC4	C-2
IC5	C-2
IC6	B-3
IC52	A-3
Q1	D-4
Q2	C-3
Q53	B-3
Q54	C-3
Q55	B-3

4-3. PRINTED WIRING BOARDS – R-CH Section – : Uses unleaded solder.

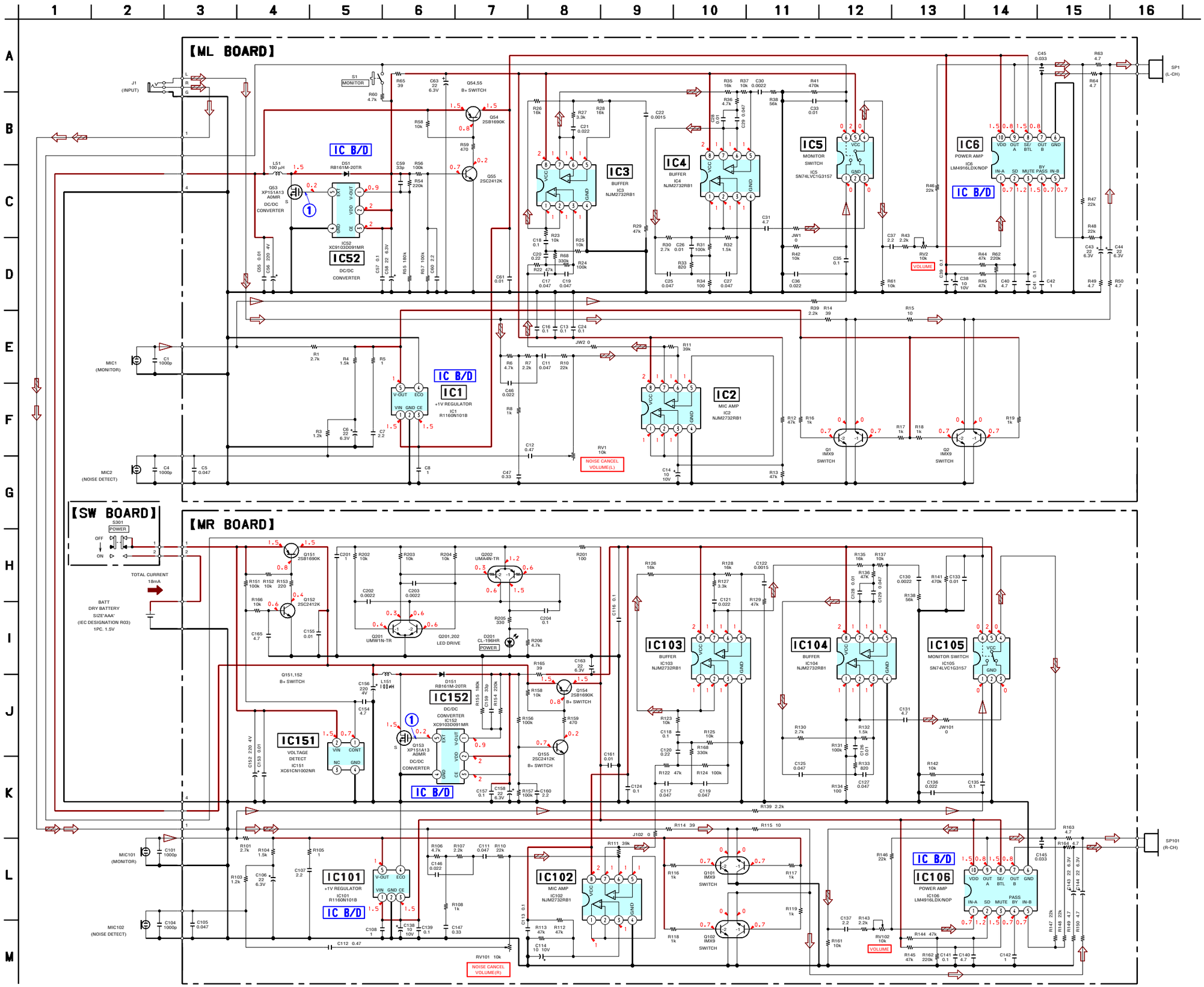


- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D151	D-3	Q101	C-3
D201	D-3	Q102	C-3
		Q151	D-2
IC101	B-5	Q152	C-2
IC102	C-4	Q153	D-3
IC103	C-5	Q154	D-3
IC104	D-5	Q155	E-3
IC105	D-5	Q201	E-3
IC106	D-4	Q202	E-3
IC151	C-3		
IC152	D-3		

4-4. SCHEMATIC DIAGRAM

• See page 10 for Waveforms. • See page 10 for IC Block Diagrams.

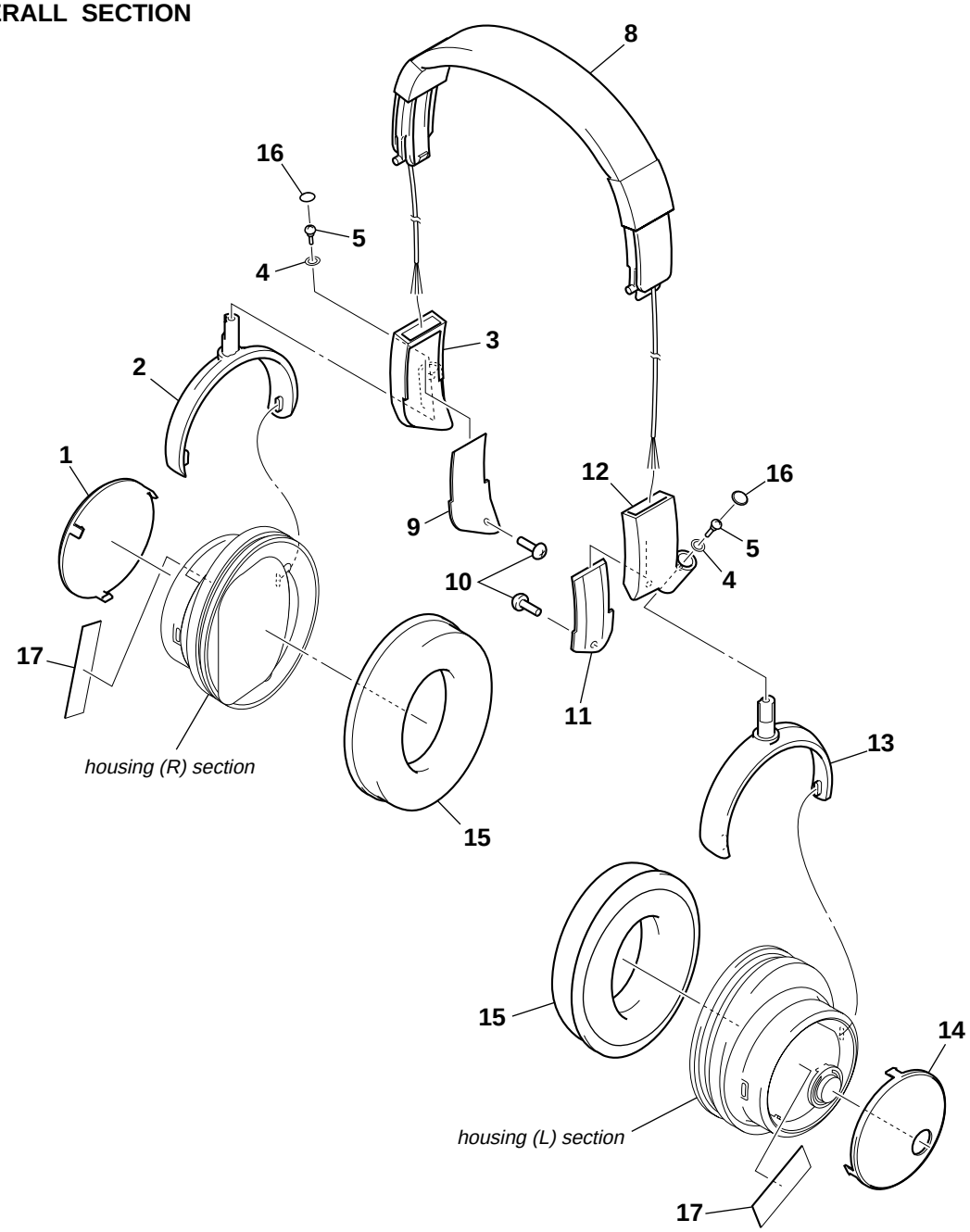


SECTION 5
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.

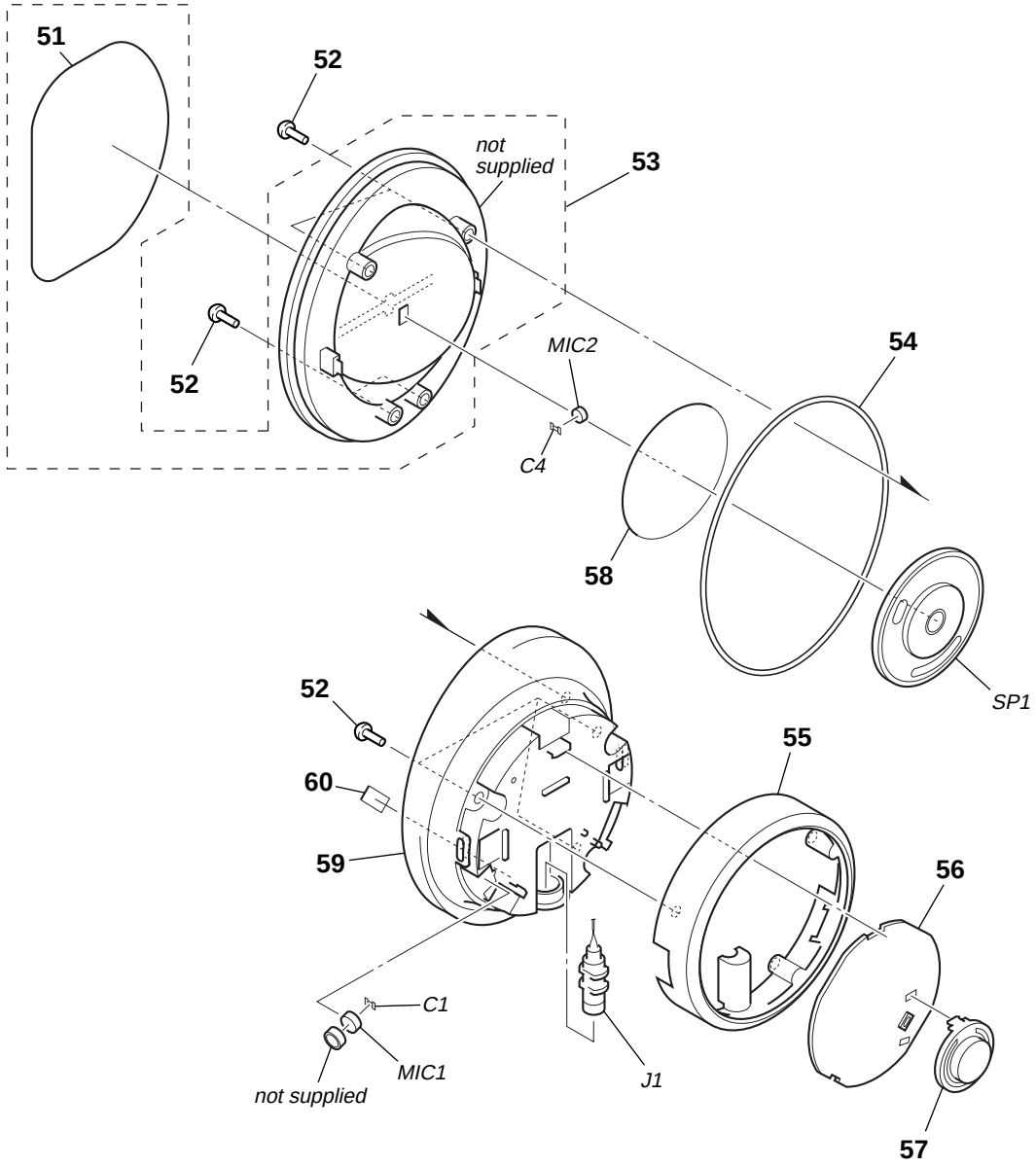
5-1. OVERALL SECTION



Ref. No.	Part No.	Description	Remark
1	2-318-949-01	ORNAMENTAL CAP (R)	
2	2-318-936-01	HANGER (R)	
3	2-318-943-01	GUIDE SLIDER (R)	
4	2-348-229-01	WASHER	
5	2-547-580-01	SCREW (SWIVEL)	
8	A-1084-772-A	BAND ASSY, HEAD	
9	2-318-945-02	LID (R), GUIDE	
10	3-253-143-01	SCREW (B2.6), (+) P TAPPING	

Ref. No.	Part No.	Description	Remark
11	2-318-944-01	LID GUIDE (L)	
12	2-318-942-01	GUIDE SLIDER (L)	
13	2-318-935-01	HANGER (L)	
14	2-318-948-01	ORNAMENTAL CAP (L)	
15	2-190-702-02	PAD, EAR	
16	X-2025-449-1	SWIVEL ASSY	
17	2-547-581-01	HIMERON (HOUSING)	

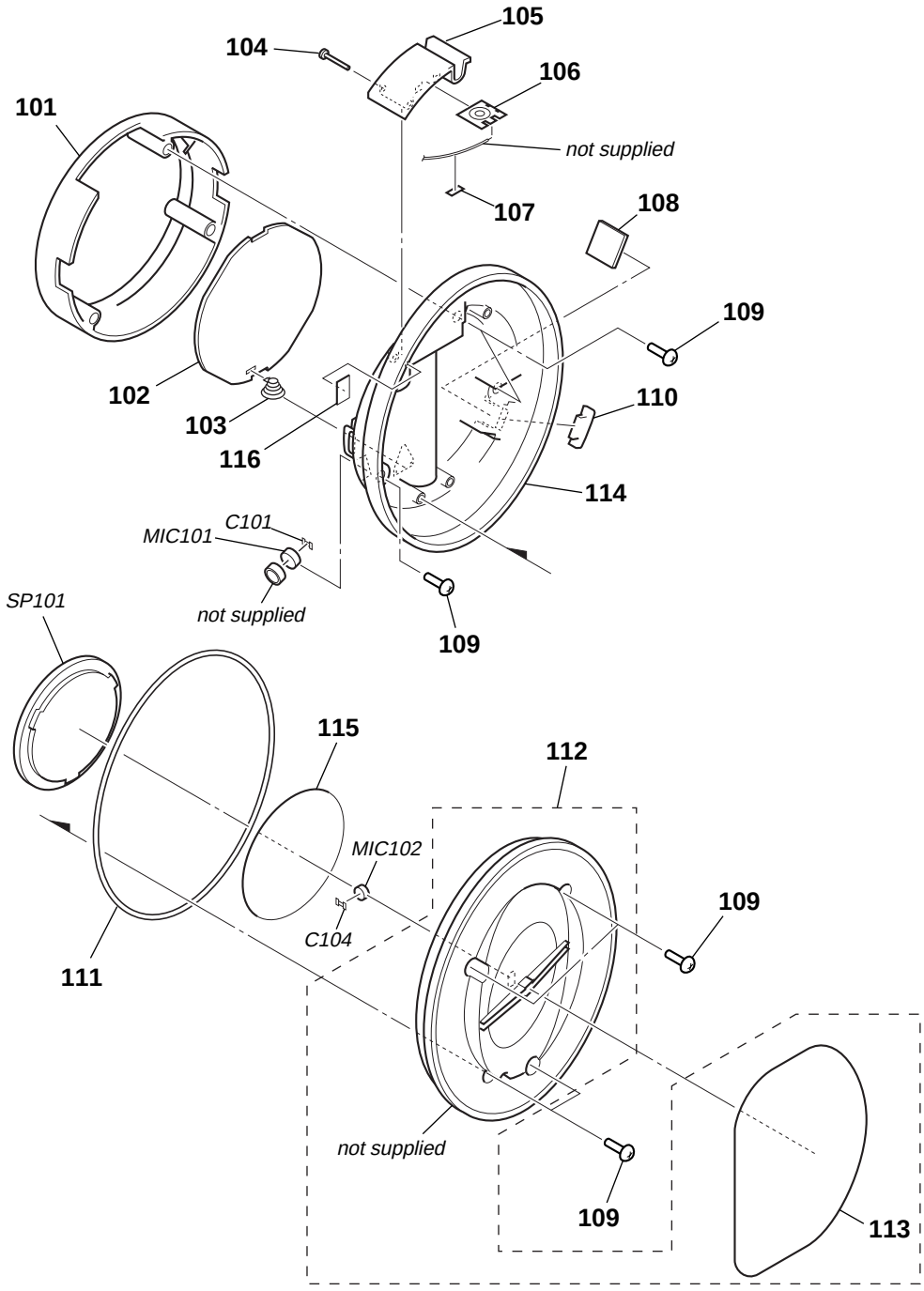
5-2. HOUSING (L) SECTION



Ref. No.	Part No.	Description	Remark
51	2-348-232-01	SCREEN	
52	3-253-143-01	SCREW (B2.6), (+) P TAPPING	
53	X-2024-714-1	PLATE (L) SUB ASSY, FRONT	
54	2-318-964-01	PACKING HOUSING	
55	2-318-937-01	RING (L)	
56	A-1080-483-A	ML BOARD, COMPLETE	
57	2-318-963-01	BUTTON MONITOR	
58	2-548-817-01	SHEET (DRIVER)	
59	2-318-950-01	HOUSING (L)	

Ref. No.	Part No.	Description	Remark
60	2-547-578-01	SHEET (HOUSING)	
C1	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C4	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
J1	1-794-152-11	JACK (SMALL TYPE) (INPUT)	
MIC1	1-542-270-11	MICROPHONE, ELECTRET CONDENSER	(MONITOR)
MIC2	1-542-270-11	MICROPHONE, ELECTRET CONDENSER	(NOISE DETECT)
SP1	1-542-429-11	DRIVER (040F018) (L-ch)	

5-3. HOUSING (R) SECTION



Ref. No.	Part No.	Description	Remark
101	2-318-938-01	RING (R)	
102	A-1080-484-A	MR BOARD, COMPLETE	
103	2-318-966-01	TERMINAL (-), BATTERY	
104	2-348-228-01	SHAFT	
105	2-318-961-01	LID BATTERY CASE	
106	2-318-965-01	TERMINAL (+), BATTERY	
107	2-586-206-01	SHEET (BATTERY CASE LID)	
108	A-1080-485-A	SW BOARD, COMPLETE	
109	3-253-143-01	SCREW (B2.6), (+) P TAPPING	
110	2-318-962-01	SWITCH POWER	
111	2-318-964-01	PACKING HOUSING	

Ref. No.	Part No.	Description	Remark
112	X-2024-715-1	PLATE (R) SUB ASSY, FRONT	
113	2-348-232-01	SCREEN	
114	2-318-951-01	HOUSING (R)	
115	2-548-817-01	SHEET (DRIVER)	
116	2-547-578-01	SHEET (HOUSING)	
C101	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C104	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
MIC101	1-542-270-11	MICROPHONE, ELECTRET CONDENSER	(MONITOR)
MIC102	1-542-270-11	MICROPHONE, ELECTRET CONDENSER	(NOISE DETECT)
SP101	1-542-429-11	DRIVER (040F018) (R-ch)	

ML

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA... : µA... uPA... : µPA...
  uPB... : µPB... uPC... : µPC...
  uPD... : µPD...
- CAPACITORS
  uF: µF
- COILS
  uH: µH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-1080-483-A	ML BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C5	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C6	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C7	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C8	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C11	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C12	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C13	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C14	1-104-851-11	TANTALUM CHIP	10uF	20%	10V
C16	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C17	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C18	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C19	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C20	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C21	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C22	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C24	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C25	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C26	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C27	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C28	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C29	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C30	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C31	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C33	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C35	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C36	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C37	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C38	1-104-851-11	TANTALUM CHIP	10uF	20%	10V
C39	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C40	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C41	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C42	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C43	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C44	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C45	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C46	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C47	1-128-934-11	CERAMIC CHIP	0.33uF	20%	10V
C55	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C56	1-137-859-11	TANTALUM CHIP	220uF	20%	4V
C57	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C58	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C59	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C60	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C61	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C63	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
		< DIODE >			
D51	6-500-220-01	DIODE RB161M-20TR			
		< IC >			
IC1	6-705-145-01	IC R1160N101B-TR-FA			
IC2	6-706-906-01	IC NJM2732RB1 (TE2)			
IC3	6-706-906-01	IC NJM2732RB1 (TE2)			
IC4	6-706-906-01	IC NJM2732RB1 (TE2)			
IC5	6-707-207-01	IC SN74LVC1G3157DCKR			
IC6	6-707-110-01	IC LM4916LDX/NOPB			
IC52	6-707-206-01	IC XC9103D091MR			
		< SHORT >			
JW1	1-216-864-11	SHORT CHIP	0		
JW2	1-216-864-11	SHORT CHIP	0		
		< COIL >			
L51	1-419-861-21	INDUCTOR	100uH		
		< TRANSISTOR >			
Q1	8-729-043-90	TRANSISTOR	IMX9T110		
Q2	8-729-043-90	TRANSISTOR	IMX9T110		
Q53	8-729-052-37	FET	XP151A13A0MR		
Q54	6-550-363-01	TRANSISTOR	2SB1690KT146		
Q55	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R		
		< RESISTOR >			
R1	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R3	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R4	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R5	1-218-446-11	METAL CHIP	1	5%	1/10W
R6	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R7	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R8	1-216-821-11	METAL CHIP	1K	5%	1/10W
R10	1-216-837-11	METAL CHIP	22K	5%	1/10W
R11	1-216-840-11	METAL CHIP	39K	5%	1/10W
R12	1-216-841-11	METAL CHIP	47K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R13	1-216-841-11	METAL CHIP	47K	5%	1/10W
R14	1-216-804-11	METAL CHIP	39	5%	1/10W
R15	1-216-797-11	METAL CHIP	10	5%	1/10W
R16	1-216-821-11	METAL CHIP	1K	5%	1/10W
R17	1-216-821-11	METAL CHIP	1K	5%	1/10W
R18	1-216-821-11	METAL CHIP	1K	5%	1/10W
R19	1-216-821-11	METAL CHIP	1K	5%	1/10W
R22	1-216-841-11	METAL CHIP	47K	5%	1/10W
R23	1-216-833-11	METAL CHIP	10K	5%	1/10W
R24	1-216-845-11	METAL CHIP	100K	5%	1/10W
R25	1-216-833-11	METAL CHIP	10K	5%	1/10W
R26	1-218-291-11	METAL CHIP	16K	5%	1/10W
R27	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R28	1-218-291-11	METAL CHIP	16K	5%	1/10W
R29	1-216-841-11	METAL CHIP	47K	5%	1/10W
R30	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R31	1-216-845-11	METAL CHIP	100K	5%	1/10W
R32	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R33	1-216-820-11	METAL CHIP	820	5%	1/10W
R34	1-216-809-11	METAL CHIP	100	5%	1/10W
R35	1-218-291-11	METAL CHIP	16K	5%	1/10W
R36	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R37	1-216-833-11	METAL CHIP	10K	5%	1/10W
R38	1-216-842-11	METAL CHIP	56K	5%	1/10W
R39	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R41	1-216-853-11	METAL CHIP	470K	5%	1/10W
R42	1-216-833-11	METAL CHIP	10K	5%	1/10W
R43	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R44	1-216-841-11	METAL CHIP	47K	5%	1/10W
R45	1-216-841-11	METAL CHIP	47K	5%	1/10W
R46	1-216-837-11	METAL CHIP	22K	5%	1/10W
R47	1-216-837-11	METAL CHIP	22K	5%	1/10W
R48	1-216-837-11	METAL CHIP	22K	5%	1/10W
R49	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R50	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R54	1-216-849-11	METAL CHIP	220K	5%	1/10W
R55	1-216-848-11	METAL CHIP	180K	5%	1/10W
R56	1-216-845-11	METAL CHIP	100K	5%	1/10W
R57	1-216-845-11	METAL CHIP	100K	5%	1/10W
R58	1-216-833-11	METAL CHIP	10K	5%	1/10W
R59	1-216-817-11	METAL CHIP	470	5%	1/10W
R60	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R61	1-216-833-11	METAL CHIP	10K	5%	1/10W
R62	1-216-849-11	METAL CHIP	220K	5%	1/10W
R63	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R64	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R65	1-216-804-11	METAL CHIP	39	5%	1/10W
R68	1-216-851-11	METAL CHIP	330K	5%	1/10W
		< VARIABLE RESISTOR >			
RV1	1-225-901-21	RES, ADJ, CERMET (3 TYPE)	10K		
RV2	1-225-901-21	RES, ADJ, CERMET (3 TYPE)	10K		
		< SWITCH >			
S1	1-771-884-31	SWITCH, TACTILE (MONITOR)			

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Ref. No.	Part No.	Description			Remark
	A-1080-484-A	MR BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C105	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C106	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C107	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C108	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C111	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C112	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C113	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C114	1-104-851-11	TANTALUM CHIP	10uF	20%	10V
C116	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C117	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C118	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C120	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C121	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C122	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C124	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C125	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C126	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C127	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C129	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C130	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C131	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C133	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C135	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C136	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C137	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C138	1-104-851-11	TANTALUM CHIP	10uF	20%	10V
C139	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C140	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C141	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C142	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C143	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C144	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C145	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C146	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C147	1-128-934-11	CERAMIC CHIP	0.33uF	20%	10V
C152	1-137-859-11	TANTALUM CHIP	220uF	20%	4V
C153	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C154	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C155	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C156	1-137-859-11	TANTALUM CHIP	220uF	20%	4V
C157	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C158	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C159	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C160	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-119-750-11	TANTALUM CHIP	22uF	20%	6.3V
C165	1-100-507-91	CERAMIC CHIP	4.7uF	20%	6.3V
C201	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C202	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C203	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C204	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

MR

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D151	6-500-220-01	DIODE RB161M-20TR			
D201	8-719-077-09	LED CL-196HR-CD-T (POWER)			
		< IC >			
IC101	6-705-145-01	IC R1160N101B-TR-FA			
IC102	6-706-906-01	IC NJM2732RB1 (TE2)			
IC103	6-706-906-01	IC NJM2732RB1 (TE2)			
IC104	6-706-906-01	IC NJM2732RB1 (TE2)			
IC105	6-707-207-01	IC SN74LVC1G3157DCKR			
IC106	6-707-110-01	IC LM4916LDX/NOPB			
IC151	8-759-690-96	IC XC61CN1002NR			
IC152	6-707-206-01	IC XC9103D091MR			
		< SHORT >			
JW101	1-216-864-11	SHORT CHIP	0		
JW102	1-216-864-11	SHORT CHIP	0		
		< COIL >			
L151	1-419-861-21	INDUCTOR	100uH		
		< TRANSISTOR >			
Q101	8-729-043-90	TRANSISTOR	IMX9T110		
Q102	8-729-043-90	TRANSISTOR	IMX9T110		
Q151	6-550-363-01	TRANSISTOR	2SB1690KT146		
Q152	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R		
Q153	8-729-052-37	FET	XP151A13A0MR		
Q154	6-550-363-01	TRANSISTOR	2SB1690KT146		
Q155	8-729-901-81	TRANSISTOR	2SC2412K-T-146-R		
Q201	8-729-050-11	TRANSISTOR	UMW1NTR		
Q202	8-729-055-39	TRANSISTOR	UMA4N-TR		
		< RESISTOR >			
R101	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R103	1-216-822-11	METAL CHIP	1.2K	5%	1/10W
R104	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R105	1-218-446-11	METAL CHIP	1	5%	1/10W
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R107	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R108	1-216-821-11	METAL CHIP	1K	5%	1/10W
R110	1-216-837-11	METAL CHIP	22K	5%	1/10W
R111	1-216-840-11	METAL CHIP	39K	5%	1/10W
R112	1-216-841-11	METAL CHIP	47K	5%	1/10W
R113	1-216-841-11	METAL CHIP	47K	5%	1/10W
R114	1-216-804-11	METAL CHIP	39	5%	1/10W
R115	1-216-797-11	METAL CHIP	10	5%	1/10W
R116	1-216-821-11	METAL CHIP	1K	5%	1/10W
R117	1-216-821-11	METAL CHIP	1K	5%	1/10W
R118	1-216-821-11	METAL CHIP	1K	5%	1/10W
R119	1-216-821-11	METAL CHIP	1K	5%	1/10W
R122	1-216-841-11	METAL CHIP	47K	5%	1/10W
R123	1-216-833-11	METAL CHIP	10K	5%	1/10W
R124	1-216-845-11	METAL CHIP	100K	5%	1/10W
R125	1-216-833-11	METAL CHIP	10K	5%	1/10W
R126	1-218-291-11	METAL CHIP	16K	5%	1/10W
R127	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R128	1-218-291-11	METAL CHIP	16K	5%	1/10W
R129	1-216-841-11	METAL CHIP	47K	5%	1/10W
R130	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R131	1-216-845-11	METAL CHIP	100K	5%	1/10W
R132	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R133	1-216-820-11	METAL CHIP	820	5%	1/10W
R134	1-216-809-11	METAL CHIP	100	5%	1/10W
R135	1-218-291-11	METAL CHIP	16K	5%	1/10W
R136	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R137	1-216-833-11	METAL CHIP	10K	5%	1/10W
R138	1-216-842-11	METAL CHIP	56K	5%	1/10W
R139	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R141	1-216-853-11	METAL CHIP	470K	5%	1/10W
R142	1-216-833-11	METAL CHIP	10K	5%	1/10W
R143	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R144	1-216-841-11	METAL CHIP	47K	5%	1/10W
R145	1-216-841-11	METAL CHIP	47K	5%	1/10W
R146	1-216-837-11	METAL CHIP	22K	5%	1/10W
R147	1-216-837-11	METAL CHIP	22K	5%	1/10W
R148	1-216-837-11	METAL CHIP	22K	5%	1/10W
R149	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R150	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R151	1-216-845-11	METAL CHIP	100K	5%	1/10W
R152	1-216-833-11	METAL CHIP	10K	5%	1/10W
R153	1-216-813-11	METAL CHIP	220	5%	1/10W
R154	1-216-849-11	METAL CHIP	220K	5%	1/10W
R155	1-216-848-11	METAL CHIP	180K	5%	1/10W
R156	1-216-845-11	METAL CHIP	100K	5%	1/10W
R157	1-216-845-11	METAL CHIP	100K	5%	1/10W
R158	1-216-833-11	METAL CHIP	10K	5%	1/10W
R159	1-216-817-11	METAL CHIP	470	5%	1/10W
R161	1-216-833-11	METAL CHIP	10K	5%	1/10W
R162	1-216-849-11	METAL CHIP	220K	5%	1/10W
R163	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R164	1-216-793-11	METAL CHIP	4.7	5%	1/10W
R165	1-216-804-11	METAL CHIP	39	5%	1/10W
R166	1-216-833-11	METAL CHIP	10K	5%	1/10W
R168	1-216-851-11	METAL CHIP	330K	5%	1/10W
R201	1-216-809-11	METAL CHIP	100	5%	1/10W
R202	1-216-833-11	METAL CHIP	10K	5%	1/10W
R203	1-216-833-11	METAL CHIP	10K	5%	1/10W
R204	1-216-833-11	METAL CHIP	10K	5%	1/10W
R205	1-216-815-11	METAL CHIP	330	5%	1/10W
R206	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
		< VARIABLE RESISTOR >			
RV101	1-225-901-21	RES, ADJ, CERMET (3 TYPE)	10K		
RV102	1-225-901-21	RES, ADJ, CERMET (3 TYPE)	10K		

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	A-1080-485-A	SW BOARD, COMPLETE
		**********
		< SWITCH >
S301	1-771-337-21	SWITCH, SLIDE (POWER)

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Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
C1	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C4	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C101	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C104	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
J1	1-794-152-11	JACK (SMALL TYPE) (INPUT)	
MIC1	1-542-270-11	MICROPHONE, ELECTRET CONDENSER (MONITOR)	
MIC2	1-542-270-11	MICROPHONE, ELECTRET CONDENSER (NOISE DETECT)	
MIC101	1-542-270-11	MICROPHONE, ELECTRET CONDENSER (MONITOR)	
MIC102	1-542-270-11	MICROPHONE, ELECTRET CONDENSER (NOISE DETECT)	
SP1	1-542-429-11	DRIVER (040F018) (L-ch)	
SP101	1-542-429-11	DRIVER (040F018) (R-ch)	
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		ACCESSORIES	
		**********	
	1-477-125-12	ADAPTOR, PLUG (DUAL) (for in-flight use)	
	1-566-410-21	ADAPTOR, PLUG (GOLD-PLATED UNIMATCH PLUG ADAPTOR)	
	1-829-890-12	CORD (WITH PLUG) (GOLD-PLATED STEREO MINI PLUG 0.5m) (Tourist)	
	1-829-891-12	CORD (WITH PLUG) (GOLD-PLATED L TYPE STEREO MINI PLUG 1.5m)	
	2-514-450-02	CASE, CARRYING	
	2-514-451-02	MANUAL, INSTRUCTION (JAPANESE) (Tourist)	
	2-514-451-13	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (Tourist)	
	2-514-451-22	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (EXCEPT Tourist)	
	2-514-451-32	MANUAL, INSTRUCTION (GERMAN, ITALIAN, PORTUGUESE, RUSSIAN) (AEP)	
	2-514-451-42	MANUAL, INSTRUCTION (POLISH, CZECH, HUNGARIAN, SLOVAKIAN) (AEP)	

REVISION HISTORY

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Ver.	Date	Description of Revision
1.0	2004.11	New
1.1	2005.01	Addition of US, AEP, UK and E models
1.2	2005.02	Addition of Canadian model
1.3	2006.08	Change of form for Ref. No. 8 on EXPLODED VIEWS (SPM-06102)