

# MDR-RF950

## SERVICE MANUAL

Ver 1.0 1998.06

*US Model  
Canadian Model*



MDR-RF950 is headphones  
in MDR-RF950RK.

### SPECIFICATIONS

#### General

Carrier frequency 913.0 – 915.0 MHz  
Channel Ch1, Ch2, Ch3  
Modulation FM stereo  
Frequency response 18 – 22,000 Hz

#### Headphones

Power source DC 3 V: 2 × R6 (size AA) battery or  
2 × supplied  
NC-AA-HJ Ni-Cd  
rechargeable battery  
Mass Approx. 265 g (9.4 oz.) incl.  
Ni-cd batteries

Design and specifications are subject to change without  
notice.

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#### Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

WIRELESS STEREO HEADPHONES



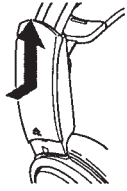
**SONY**®

## SECTION 1 GENERAL

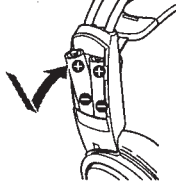
### ▶ Operating the system

#### Setting up the headphones

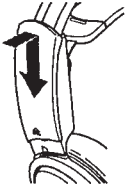
- 1 Open the battery compartment lid on the left outer side of the head band.



- 2 Insert two charged NC-AA-HJ batteries by matching the  $\oplus$  and  $\ominus$  on the batteries to the  $\oplus$  and  $\ominus$  in the battery compartment.



- 3 Close the battery compartment lid.



**Using the headphones with a commercially available size AA (R6) dry batteries**  
Install the batteries in the manner as described in "Setting up the headphones."

#### Battery life

| Battery                        | Approx. hours* |
|--------------------------------|----------------|
| Sony alkaline battery SG (LR6) | 60             |
| Sony battery SR (R6P)          | 30             |

\* at 1 kHz, 1 mW + 1 mW output

#### Notes on batteries

To avoid damage to the system caused by battery leakage and corrosion,

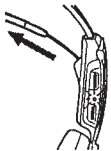
- Install the batteries with the correct polarity.
- Do not try to recharge dry batteries.
- Remove the batteries if the system is not to be used for a long period of time.

In case of battery leakage, wipe off any deposit in the battery compartments before installing new batteries.

#### Check the remaining power of the headphones' battery

Pull up the self adjusting band, and check that the headphones' power indicator lights in red. You can now use the headphones.

Charge the battery or install a new dry battery, if the power indicator light is weak or turned off and the sound become distorted or has a lot of noise.

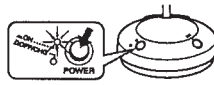


#### Notes

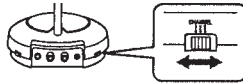
- \* During recharging, the transmitter is turned off.
- \* When the life of the rechargeable batteries are shortened by half even after a proper recharging, replace them with new NC-AA-HJ batteries.

#### Listening to a program

- 1 First turn on the audio/video equipment, then the transmitter.



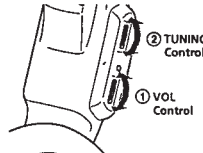
- 2 Select the radio frequency with the CHANNEL selector switch.



- 3 Put on the headphones and the power turns on automatically.



- 4 Turn up the volume to a moderate level with the VOL control, then tune the headphones to the transmitte frequency with the TUNING control until you can hear the audio signal loud and clear.



Try the above steps 2 and 4 until the receiving performance becomes better.

#### Sending RF signals from the Transmitter

The transmitter starts sending the RF signals automatically, when the transmitter power is turned on, and audio signals from the connected equipment is detected.

If it does not detect an audio signal for more than approximately five minutes, the transmitter will stop sending RF signals.

But the Power indicator remains lighting. When the transmitter receives an audio signal again, it starts sending the RF signals.

If the audio signal is very weak, the transmitter does not send RF signals automatically. In this case, make sure the volume of the equipment connected is set to 5 - 6.

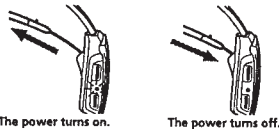
You may not hear the beginning of the sound from the headphones until the transmitter starts sending the RF signals after detecting an audio signal.

#### Note

If the transmitter is connected to the headphones jack of the source equipment, set the volume of that equipment as high as possible without distorting the audio signal.

#### Auto power on/off function

When you remove the headphones, the power turns off automatically. Do not allow the self adjusting band to be pulled up, otherwise the headphones will be switched on.



#### Mute function

If a hissing noise is heard when the headphones are used outside of the effective range (see the next section), the mute function will be activated and the sound will not be heard from the headphones. To restore the sound, move near toward the transmitter.

#### After listening to a program

Take the headphones off and rest them away on the holder of the transmitter as shown below.

Holder Self adjusting band



#### Note

Do not hang the headphones by the self adjusting band, otherwise, the self adjusting band will be pulled up and the headphones will be switched on.

#### The effective areas of the transmitter

The optimum distance is up to approximately 150 feet (46 m) without the system picking up some interference. However, the distance may vary according to the surroundings and environment. If the system picks up some noise while using it within the above mentioned distance, reduce the distance between the transmitter unit and the headphones, or select the other channel.

#### Notes

- \* When you use the headphones inside the effective areas of the transmitter, the transmitter can be placed in any direction from the listener.
- \* Even within the signal reception area, there are some spots (dead spot) where the RF signal can not be received. This characteristics is inherent to RF signals, and does not indicate malfunction. By slightly moving the transmitter, location of the dead spot can be changed.

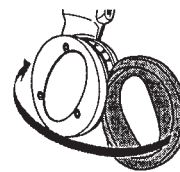
#### Replacing the ear pads

When the ear pads become dirty or damaged, you can get replacements from your Sony dealer. Replace them as illustrated below.

- 1 Remove the old ear pad by pulling it out of the groove on the housing.



- 2 Place the new ear pad on the driver unit and insert the edge of the pad into the groove as illustrated.



Make sure that the entire edge of the ear pad is securely inserted into the groove.

### ▶ Additional information

#### Precautions

- \* When the headphones are not to be used for a long period of time, remove the batteries to avoid damage caused by battery leakage and subsequent corrosion.
- \* When the transmitter is not to be used for a long period of time, disconnect the AC power adaptor from the AC outlet holding the plug. Do not pull on the cord. Also remove the batteries to avoid damage caused by battery leakage and subsequent corrosion.
- \* Do not leave the wireless stereo headphone system in a location subject to direct sunlight, heat or moisture.

#### Notes on headphones

##### Preventing hearing damage

Avoid using headphones at high volume. Hearing experts advise against continuous, loud and extended play. If you experience a ringing in your ears, reduce the volume or discontinue use.

##### Caring for others

Keep the volume at a moderate level. This will allow you to hear outside sounds and to be considerate to the people around you.

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

Be sure to bring the headphones and the transmitter to the Sony dealer when requiring repair work.

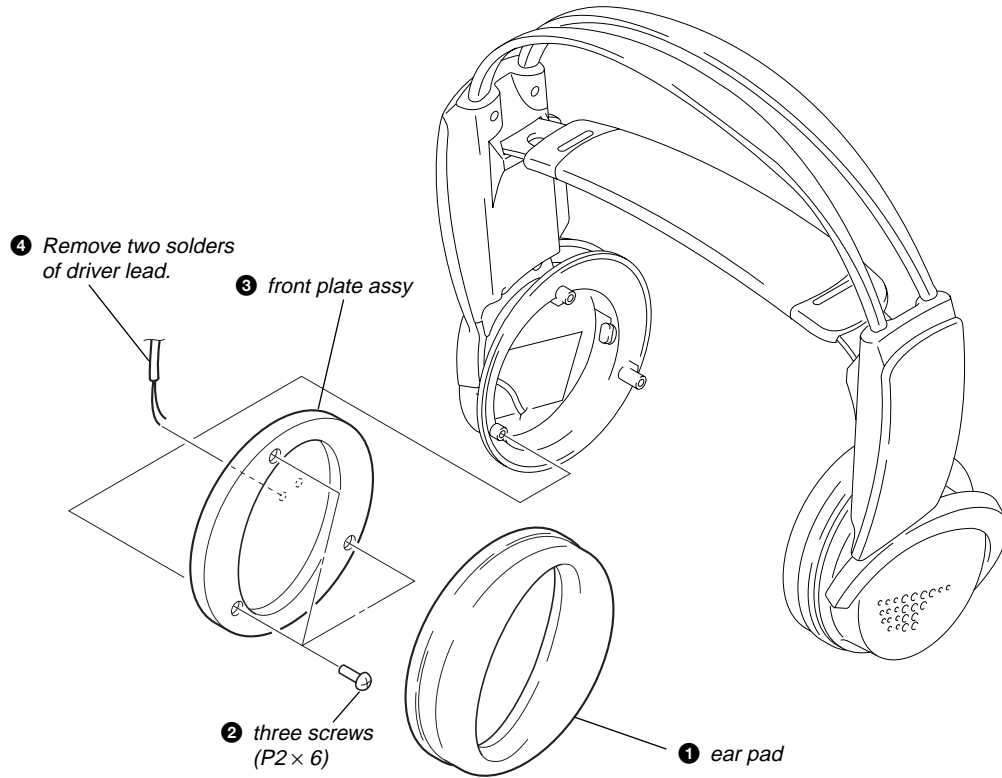
## SECTION 2 DISASSEMBLY

- This set can be disassembled in the order shown below.

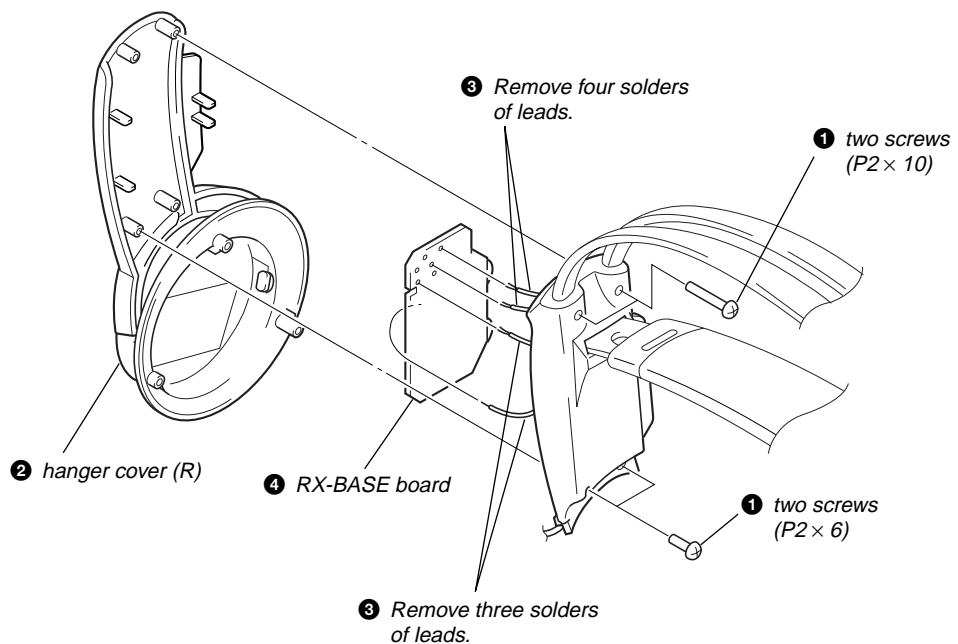


**Note:** Follow the disassembly procedure in the numerical order given.

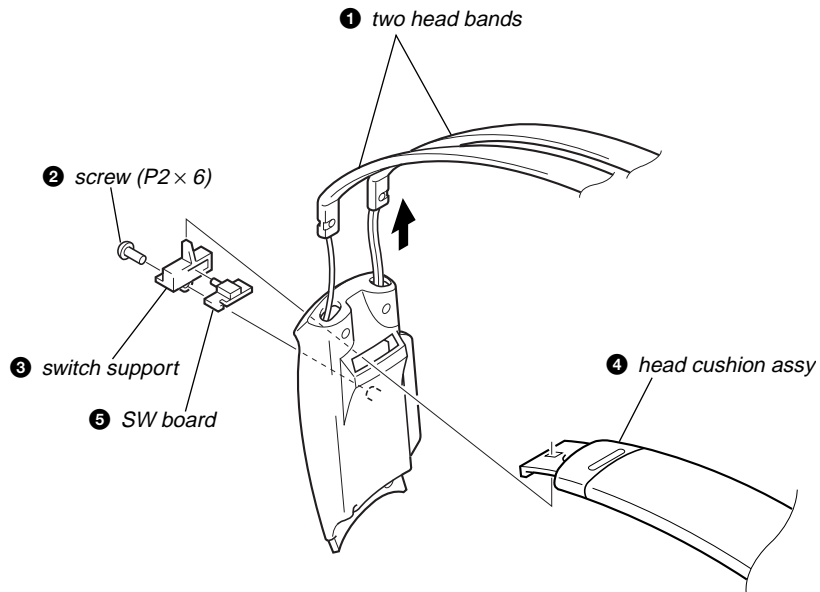
### FRONT PLATE ASSY



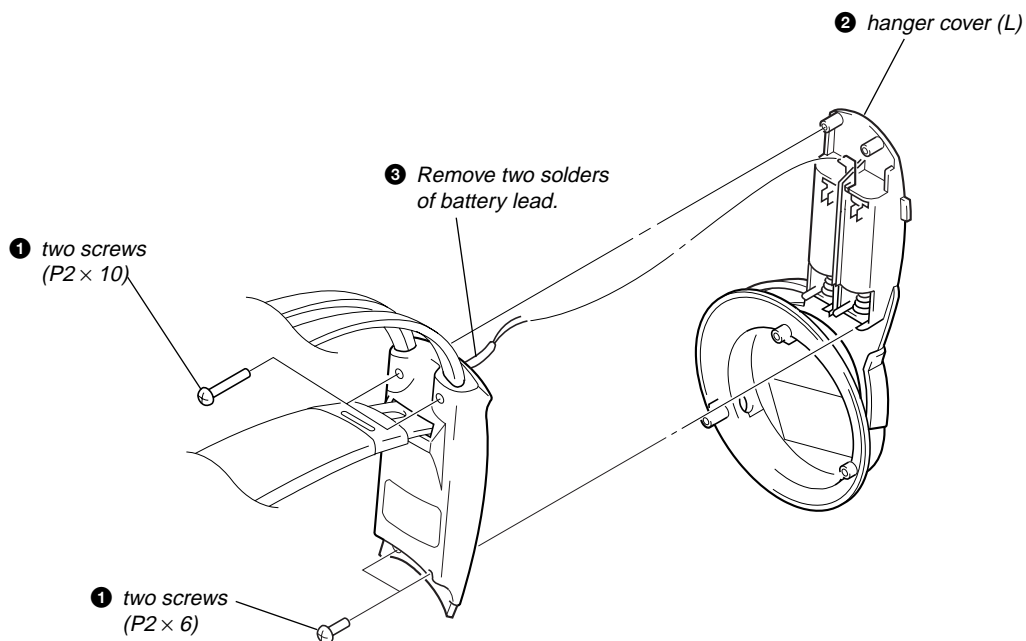
### RX-BASE BOARD



## SW BOARD



## HANGER COVER (L)



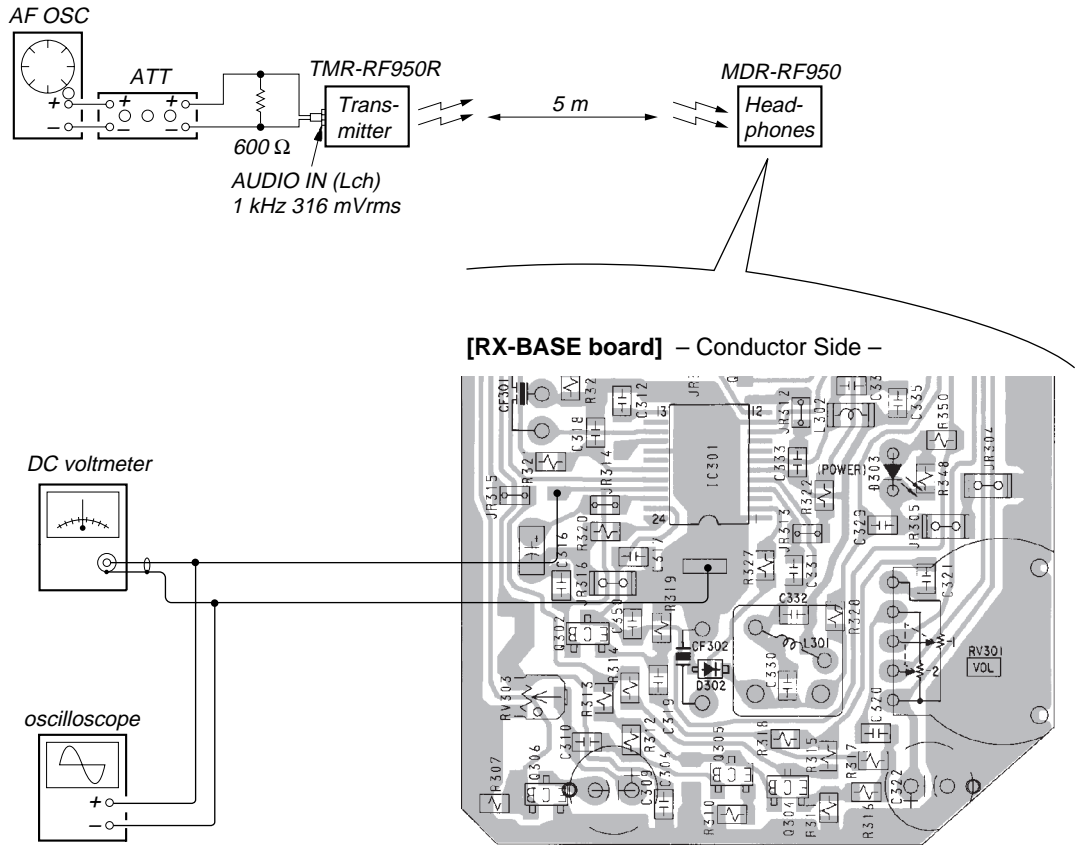
## SECTION 3 ELECTRICAL ADJUSTMENTS

**Note:**

1. The adjustments should be performed in the order given.
2. The transmitter (TMR-RF950R) already checked and adjusted should be used.

### 3-1. Receiving Frequency Check and Adjustment

**Preparation:**



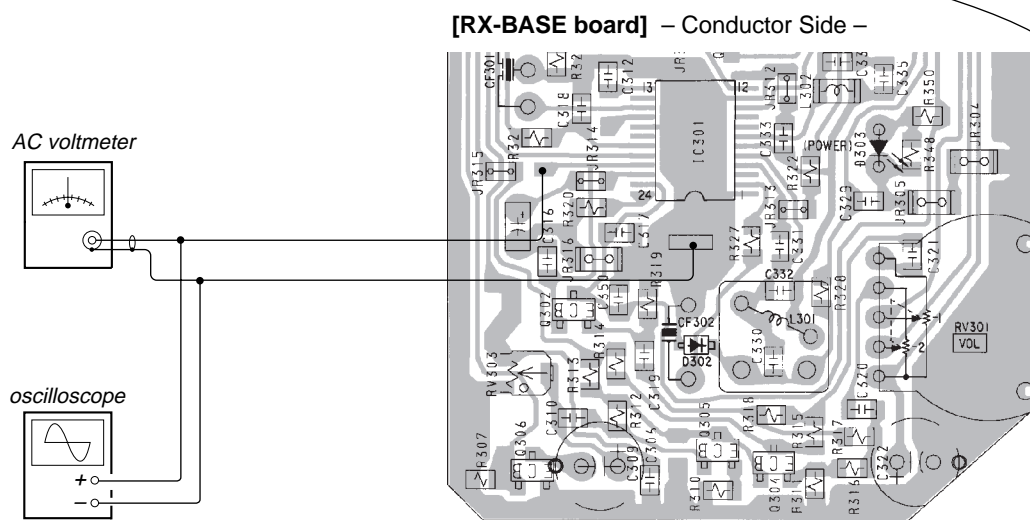
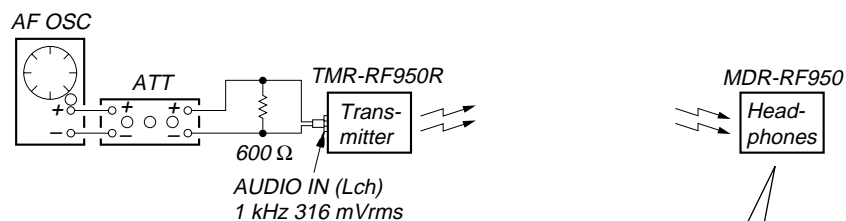
**Procedure:**

1. Set the channel of the transmitter to CH2.
2. Turn OFF the noise filter switch on the transmitter.
3. Enter 1 kHz 316 mVrms signal only to the Lch on the transmitter.
4. Place the transmitter away from the headphone (MDR-RF950) more than 5 m.
5. Set the volume control (RV301) on the RX-BASE board to the minimum position.
6. Set the tuning control (RV302) on the RX-BASE board to the center position.
7. Connect a DC voltmeter and an oscilloscope between IC301 pin ② and ground on the RX-BASE board.
8. After confirming that demodulated 1 kHz waveform (about 13 mV) appears on the oscilloscope, check that the DC voltmeter indicates DC1 V to 1.2 V.
9. If demodulated 1 kHz waveform does not appear on the oscilloscope, or if the voltage is out of the specified value, adjust the air-core coil (L301) on the RX-BASE board so that the demodulated 1 kHz waveform appears on the oscilloscope, and under this condition, adjust finely the air-core coil (L301) so that the DC voltmeter indicates DC1.1 V.
10. Finally, check that signals are received when the channel is changed over to CH1/CH3 on the transmitter, then when the tuning control (RV302) on the RX-BASE board is rotated.

**Adjustment Location:** RX-BASE board (See page 9.)

### 3-2. Degree of Modulation of Main Carrier (L + R) Check and Adjustment

#### Preparation:



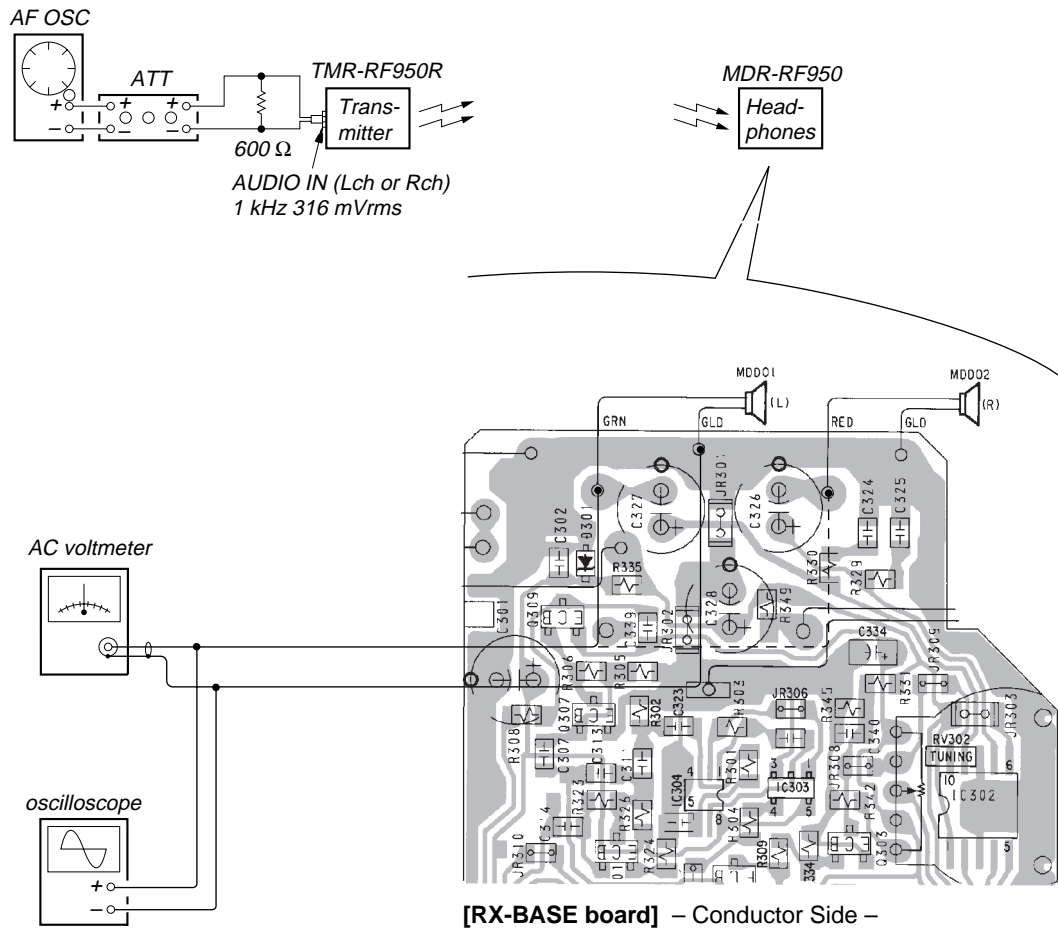
#### Procedure:

1. Set the channel of the transmitter to CH2.
2. Turn OFF the noise filter switch on the transmitter.
3. Enter 1 kHz 316 mVrms signal only to the Lch on the transmitter.
4. Set the volume control (RV301) on the RX-BASE board to the minimum position.
5. Connect an AC voltmeter and an oscilloscope between IC 301 pin ② and ground on the RX-BASE board.
6. Rotating the tuning control (RV302) on the RX-BASE board, receive signals.
7. After confirming that demodulated 1 kHz waveform appears on the oscilloscope, check that the AC voltmeter indicates 12 mVrms to 15 mVrms.
8. If out of the specified value, rotate RV404 on the TX-BASE board in the transmitter (TMR-RF950R) so as to attain 13.5 mVrms.

**Adjustment Location:** TX-BASE board in the transmitter (TMR-RF950R) (See page 8.)

### 3-3. Separation Check and Adjustment

#### Preparation:



#### Procedure:

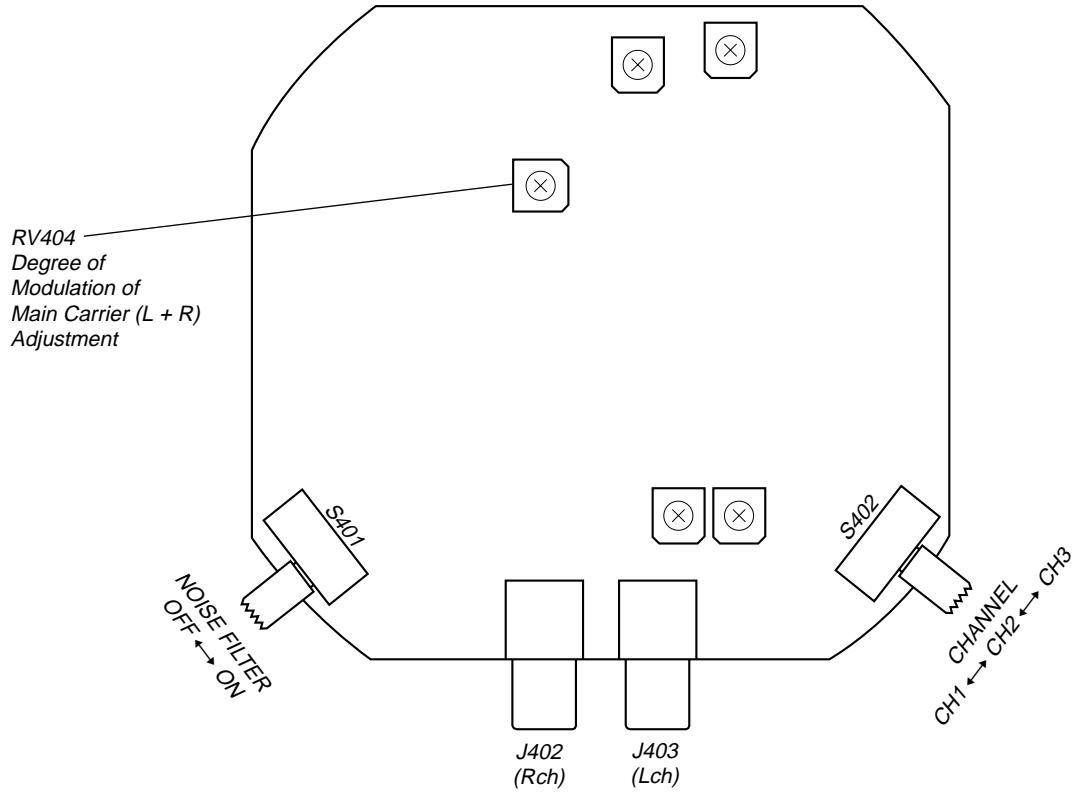
1. Set the channel of the transmitter to CH2.
2. Turn OFF the noise filter switch on the transmitter.
3. Enter 1 kHz 316 mVrms signal only to the Lch on the transmitter.
4. Connect an AC voltmeter and an oscilloscope to the Lch speaker output (both ends of MDD01) on the RX-BASE board.
5. Rotating the tuning control (RV302) on the RX-BASE board, receive signals.
6. Adjust the volume control (RV301) on the RX-BASE board so that the Lch speaker output (both ends of MDD01) on the RX-BASE board becomes 155 mVrms.
7. Connect an AC voltmeter and oscilloscope to the Rch speaker output (both ends of MDD02) and measure voltage.
8. Check that a difference in speaker output level between Lch and Rch (i. e., separation) is over 20 dB. If not over 20 dB, rotate RV302 on the RX-BASE board to minimize the Rch output, then reconfirm that a difference in speaker output level between Lch and Rch is over 20 dB.
9. Enter 1kHz 316 mVrms signal only to the Rch on the transmitter.
10. Adjust the volume control (RV301) on the RX-BASE board so that the Rch speaker output (voltage across MDD02) on the RX-BASE board become 155 mVrms.
11. Connect an AC voltmeter and oscilloscope to the Lch speaker output (both ends of MDD01) and measure voltage.
12. Check that a difference in speaker output level between Lch and Rch (i.e., separation) is over 20 dB.

**Adjustment Location:** RX-BASE board (See page 9.)

**Adjustment Location:**

**Transmitter (TMR-RF950R)**

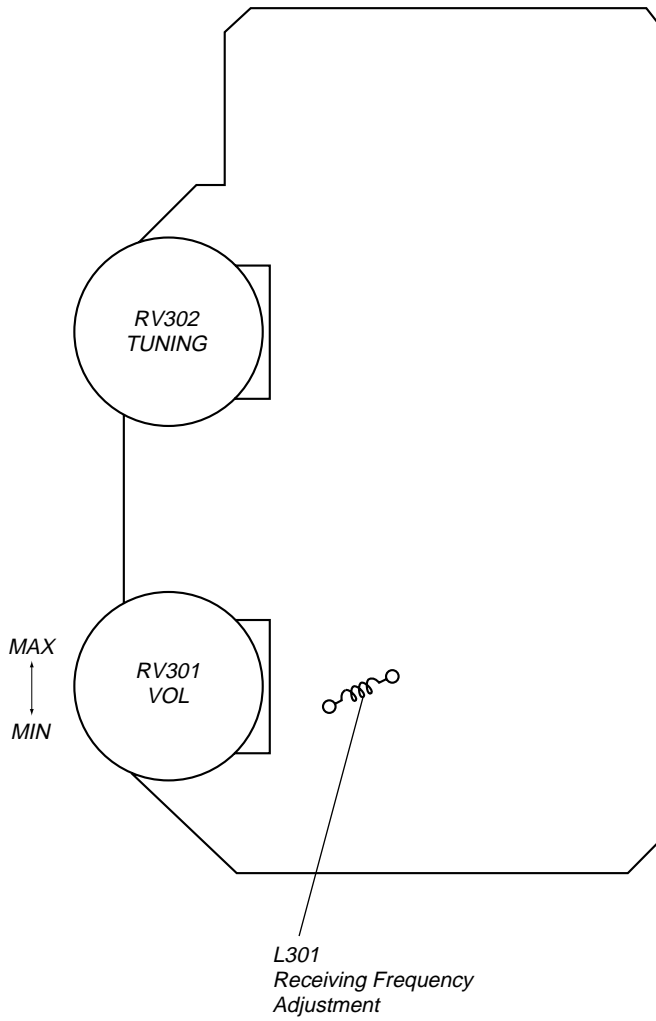
**[TX-BASE board] – Component Side –**



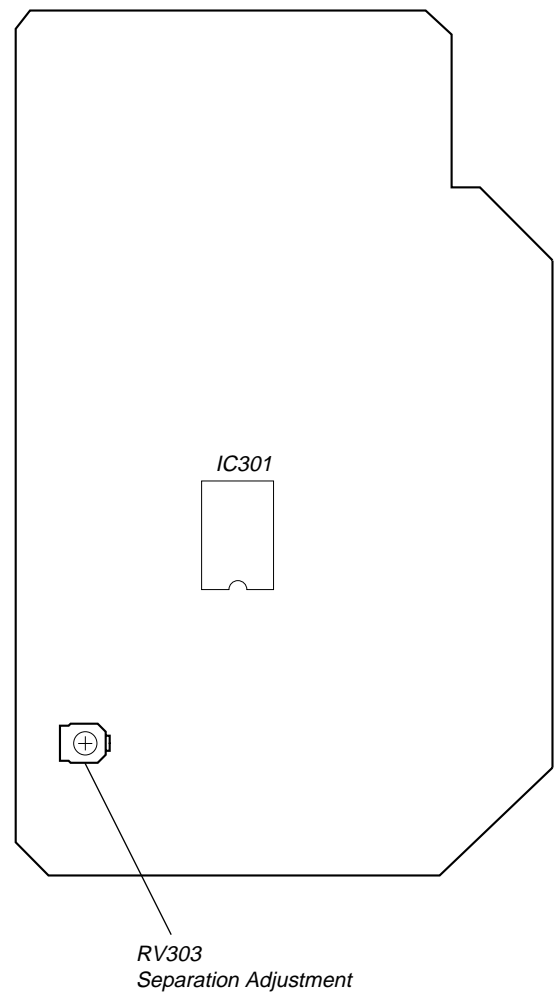


Headphone (MDR-RF950)

[RX-BASE board] – Component Side –



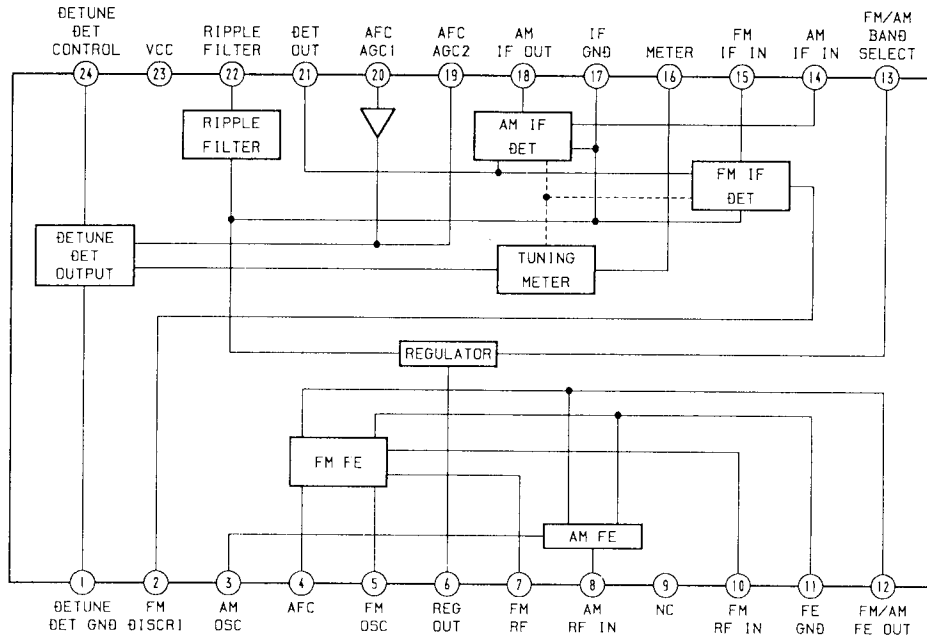
[RX-BASE board] – Conductor Side –



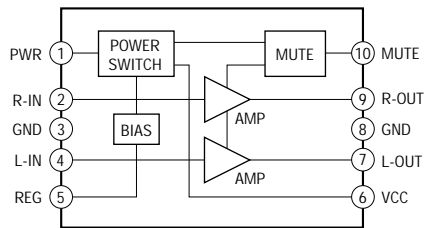
# SECTION 4 DIAGRAMS

## • IC Block Diagrams

### IC301 CXA1611N-T4

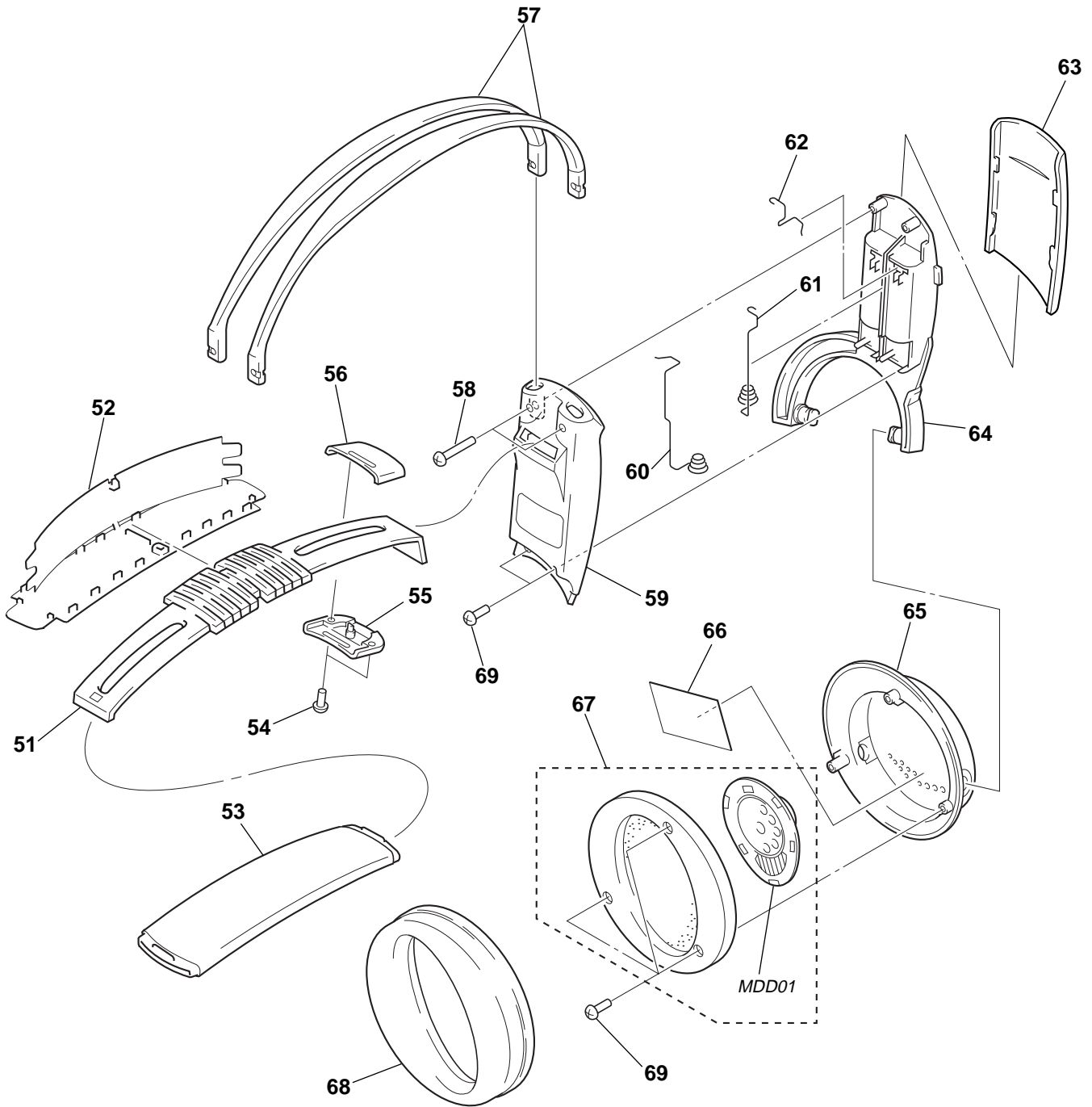


### IC302 LA4533M





(2) HEADPHONE (L) SECTION



| Ref. No. | Part No.     | Description                  | Remark | Ref. No. | Part No.     | Description                 | Remark |
|----------|--------------|------------------------------|--------|----------|--------------|-----------------------------|--------|
| 51       | 4-999-771-01 | SUSPENDER                    |        | 61       | 4-210-257-01 | TERMINAL (-), BATTERY       |        |
| 52       | 4-978-518-02 | BASE, SUSPENDER              |        | 62       | 4-210-256-01 | TERMINAL (+), BATTERY       |        |
| 53       | 4-978-519-01 | CUSHION, HEAD                |        | 63       | 4-999-770-11 | LID, BATTERY CASE           |        |
| 54       | 3-318-203-62 | SCREW (B1.7X4), TAPPING      |        | 64       | 4-999-768-01 | COVER (L), HANGER           |        |
| 55       | 4-966-792-11 | STOPPER (LOWER)              |        | 65       | 4-999-772-01 | HOUSING (L)                 |        |
| 56       | 4-966-791-11 | STOPPER (UPPER)              |        | 66       | 4-999-774-01 | REGISTER, HOUSING           |        |
| 57       | 4-999-765-01 | BAND, HEAD                   |        | 67       | X-4950-189-1 | PLATE (L) ASSY, FRONT       |        |
| 58       | 7-685-106-19 | SCREW +P 2X10 TYPE2 NON-SLIT |        | 68       | 4-971-700-01 | PAD, EAR                    |        |
| 59       | 4-999-766-11 | HANGER (L) (US)              |        | 69       | 7-685-104-19 | SCREW +P 2X6 TYPE2 NON-SLIT |        |
| 59       | 4-999-766-21 | HANGER (L) (Canadian)        |        | MDD01    | 1-505-117-21 | DRIVER (L-CH)               |        |
| 60       | 4-210-258-01 | TERMINAL (MIDWAY), BATTERY   |        |          |              |                             |        |

# SECTION 6 ELECTRICAL PARTS LIST

|    |         |
|----|---------|
| FE | RX-BASE |
|----|---------|

**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:  $\mu$ , for example:  
uA. . :  $\mu$ A. .      uPA. . :  $\mu$ PA. .  
uPB. . :  $\mu$ PB. .    uPC. . :  $\mu$ PC. .  
uPD. . :  $\mu$ PD. .
- CAPACITORS  
uF:  $\mu$ F
- COILS  
uH:  $\mu$ H

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

| Ref. No. | Part No.     | Description                                                | Remark             | Ref. No. | Part No.     | Description             | Remark          |
|----------|--------------|------------------------------------------------------------|--------------------|----------|--------------|-------------------------|-----------------|
|          |              | FE BOARD<br>*****<br>(Included in RX-BASE BOARD, COMPLETE) |                    |          |              |                         |                 |
|          |              | < CAPACITOR >                                              |                    |          |              |                         |                 |
| C1       | 1-162-906-11 | CERAMIC CHIP                                               | 1.5PF 50V          | L2       | 1-469-237-21 | INDUCTOR                | 0.68uH          |
| C2       | 1-162-927-11 | CERAMIC CHIP                                               | 100PF 5%           | L3       | 1-414-665-11 | INDUCTOR CHIP           | 12nH            |
| C3       | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        | L4       | 1-414-665-11 | INDUCTOR CHIP           | 12nH            |
| C4       | 1-162-908-11 | CERAMIC CHIP                                               | 3PF 0.25PF         | L5       | 1-414-660-11 | INDUCTOR CHIP           | 4.7nH           |
| C5       | 1-162-918-11 | CERAMIC CHIP                                               | 18PF 5%            | L6       | 1-414-660-11 | INDUCTOR CHIP           | 4.7nH           |
| C6       | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        |          |              | < TRANSISTOR >          |                 |
| C8       | 1-162-910-11 | CERAMIC CHIP                                               | 5PF 0.25PF         | Q1       | 8-729-046-22 | FET                     | 3SK240 (TE85L)  |
| C9       | 1-162-920-11 | CERAMIC CHIP                                               | 27PF 5%            | Q3       | 8-729-230-81 | TRANSISTOR              | 2SC3606         |
| C10      | 1-162-905-11 | CERAMIC CHIP                                               | 1PF 0.25PF         | Q4       | 8-729-232-73 | TRANSISTOR              | 2SC4320 (TE85L) |
| C12      | 1-162-915-11 | CERAMIC CHIP                                               | 10PF 0.5PF         |          |              | < RESISTOR >            |                 |
| C13      | 1-162-905-11 | CERAMIC CHIP                                               | 1PF 0.25PF         | R1       | 1-216-845-11 | METAL CHIP              | 100K 5% 1/16W   |
| C14      | 1-162-925-11 | CERAMIC CHIP                                               | 68PF 5%            | R4       | 1-216-853-11 | METAL CHIP              | 470K 5% 1/16W   |
| C15      | 1-162-927-11 | CERAMIC CHIP                                               | 100PF 5%           | R5       | 1-216-845-11 | METAL CHIP              | 100K 5% 1/16W   |
| C16      | 1-162-906-11 | CERAMIC CHIP                                               | 1.5PF 0.25PF       | R7       | 1-216-809-11 | METAL CHIP              | 100 5% 1/16W    |
| C17      | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        | R8       | 1-218-293-11 | RES,CHIP                | 24K 5% 1/16W    |
| C20      | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        | R10      | 1-216-845-11 | METAL CHIP              | 100K 5% 1/16W   |
| C21      | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        | R11      | 1-216-810-11 | METAL CHIP              | 120 5% 1/16W    |
| C23      | 1-162-906-11 | CERAMIC CHIP                                               | 1.5PF 0.25PF       | R12      | 1-216-809-11 | METAL CHIP              | 100 5% 1/16W    |
| C24      | 1-162-906-11 | CERAMIC CHIP                                               | 1.5PF 0.25PF       |          |              | < CAPACITOR >           |                 |
| C28      | 1-162-917-11 | CERAMIC CHIP                                               | 15PF 5%            | THC1     | 1-104-511-51 | CERAMIC                 | 0.001uF         |
| C30      | 1-162-921-11 | CERAMIC CHIP                                               | 33PF 5%            | THC2     | 1-111-231-43 | CERAMIC                 | 2PF 99%         |
| C39      | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        | THC3     | 1-111-231-43 | CERAMIC                 | 2PF 99%         |
| C40      | 1-162-909-11 | CERAMIC CHIP                                               | 4PF 0.25PF         |          |              | < SAW RESONANTOR >      |                 |
| C41      | 1-162-910-11 | CERAMIC CHIP                                               | 5PF 0.25PF         | X1       | 1-767-906-11 | RESONANTOR, SAW         |                 |
| C43      | 1-162-964-11 | CERAMIC CHIP                                               | 0.001uF 10%        | *****    |              |                         |                 |
| C44      | 1-162-927-11 | CERAMIC CHIP                                               | 100PF 5%           | *        | A-4542-518-A | RX-BASE BOARD, COMPLETE |                 |
|          |              | < IC >                                                     |                    |          |              | *****                   |                 |
|          |              | < RESISTOR >                                               |                    |          |              | (Including FE BOARD)    |                 |
| IC1      | 8-759-469-63 | IC                                                         | S-81215SGUP-DQK-T1 |          |              | < CAPACITOR >           |                 |
| JR1      | 1-216-864-11 | METAL CHIP                                                 | 0 5% 1/16W         | C301     | 1-126-154-11 | ELECT                   | 47uF 20% 6.3V   |
| JR2      | 1-216-864-11 | METAL CHIP                                                 | 0 5% 1/16W         | C302     | 1-164-489-11 | CERAMIC CHIP            | 0.22uF 10% 16V  |
|          |              | < COIL >                                                   |                    | C303     | 1-163-239-11 | CERAMIC CHIP            | 33PF 5% 50V     |
| L1       | 1-469-237-21 | INDUCTOR                                                   | 0.68uH             | C306     | 1-163-037-11 | CERAMIC CHIP            | 0.022uF 10% 25V |
|          |              |                                                            |                    | C307     | 1-163-121-11 | CERAMIC CHIP            | 150PF 5% 50V    |
|          |              |                                                            |                    | C309     | 1-126-572-11 | ELECT                   | 4.7uF 20% 35V   |
|          |              |                                                            |                    | C310     | 1-164-004-11 | CERAMIC CHIP            | 0.1uF 10% 25V   |

# RX-BASE

| Ref. No. | Part No.     | Description         | Remark          | Ref. No. | Part No.     | Description    | Remark         |
|----------|--------------|---------------------|-----------------|----------|--------------|----------------|----------------|
| C311     | 1-163-243-11 | CERAMIC CHIP        | 47PF 5% 50V     | JR311    | 1-216-295-00 | SHORT          | 0              |
| C312     | 1-163-021-00 | CERAMIC CHIP        | 0.01uF 10% 50V  | JR312    | 1-216-295-00 | SHORT          | 0              |
| C313     | 1-163-113-00 | CERAMIC CHIP        | 68PF 5% 50V     | JR313    | 1-216-295-00 | SHORT          | 0              |
| C314     | 1-163-125-00 | CERAMIC CHIP        | 220PF 5% 50V    | JR314    | 1-216-295-00 | SHORT          | 0              |
| C315     | 1-124-233-11 | ELECT               | 10uF 20% 16V    | JR315    | 1-216-295-00 | SHORT          | 0              |
| C316     | 1-163-023-00 | CERAMIC CHIP        | 0.015uF 5% 50V  | JR316    | 1-216-296-00 | SHORT          | 0              |
| C317     | 1-163-021-00 | CERAMIC CHIP        | 0.01uF 10% 50V  |          |              | < COIL >       |                |
| C318     | 1-164-346-11 | CERAMIC CHIP        | 1uF 16V         |          |              |                |                |
| C319     | 1-164-505-11 | CERAMIC CHIP        | 2.2uF 16V       | L301     | 1-416-796-11 | COIL, AIR-CORE |                |
| C320     | 1-164-346-11 | CERAMIC CHIP        | 1uF 16V         | L302     | 1-412-933-11 | INDUCTOR       | 0.33uH         |
| C321     | 1-164-346-11 | CERAMIC CHIP        | 1uF 16V         |          |              | < TRANSISTOR > |                |
| C322     | 1-124-242-00 | ELECT               | 33uF 20% 25V    | Q301     | 8-729-230-49 | TRANSISTOR     | 2SC2712-YG     |
| C323     | 1-163-243-11 | CERAMIC CHIP        | 47PF 5% 50V     | Q302     | 8-729-230-49 | TRANSISTOR     | 2SC2712-YG     |
| C324     | 1-164-004-11 | CERAMIC CHIP        | 0.1uF 10% 25V   | Q303     | 8-729-230-49 | TRANSISTOR     | 2SC2712-YG     |
| C325     | 1-164-004-11 | CERAMIC CHIP        | 0.1uF 10% 25V   | Q304     | 8-729-230-49 | TRANSISTOR     | 2SC2712-YG     |
| C326     | 1-124-434-00 | ELECT               | 220uF 20% 4V    | Q305     | 8-729-230-49 | TRANSISTOR     | 2SC2712-YG     |
| C327     | 1-124-434-00 | ELECT               | 220uF 20% 4V    | Q306     | 8-729-920-31 | TRANSISTOR     | DTC343TK       |
| C328     | 1-124-434-00 | ELECT               | 220uF 20% 4V    | Q307     | 8-729-230-49 | TRANSISTOR     | 2SC2712-YG     |
| C329     | 1-164-346-11 | CERAMIC CHIP        | 1uF 16V         | Q308     | 8-729-040-78 | TRANSISTOR     | DTA124GKA-T146 |
| C330     | 1-163-009-11 | CERAMIC CHIP        | 0.001uF 10% 50V | Q309     | 8-729-027-36 | TRANSISTOR     | DTA143XKA-T146 |
| C331     | 1-163-224-11 | CERAMIC CHIP        | 7PF 0.25PF 50V  |          |              | < RESISTOR >   |                |
| C332     | 1-163-113-00 | CERAMIC CHIP        | 68PF 5% 50V     | R301     | 1-216-121-00 | RES,CHIP       | 1M 5% 1/10W    |
| C333     | 1-163-021-00 | CERAMIC CHIP        | 0.01uF 10% 50V  | R302     | 1-216-101-00 | METAL CHIP     | 150K 5% 1/10W  |
| C334     | 1-124-233-11 | ELECT               | 10uF 20% 16V    | R303     | 1-216-081-00 | METAL CHIP     | 22K 5% 1/10W   |
| C335     | 1-163-245-11 | CERAMIC CHIP        | 56PF 5% 50V     | R304     | 1-216-061-00 | METAL CHIP     | 3.3K 5% 1/10W  |
| C336     | 1-163-245-11 | CERAMIC CHIP        | 56PF 5% 50V     | R305     | 1-216-103-00 | RES,CHIP       | 180K 5% 1/10W  |
| C337     | 1-163-021-00 | CERAMIC CHIP        | 0.01uF 10% 50V  | R306     | 1-216-113-00 | METAL CHIP     | 470K 5% 1/10W  |
| C338     | 1-163-037-11 | CERAMIC CHIP        | 0.022uF 10% 50V | R307     | 1-216-097-00 | RES,CHIP       | 100K 5% 1/10W  |
| C339     | 1-164-489-11 | CERAMIC CHIP        | 0.22uF 10% 16V  | R308     | 1-216-073-00 | METAL CHIP     | 10K 5% 1/10W   |
| C340     | 1-164-346-11 | CERAMIC CHIP        | 1uF 16V         | R309     | 1-216-089-00 | RES,CHIP       | 47K 5% 1/10W   |
| C341     | 1-164-161-11 | CERAMIC CHIP        | 2200PF 5% 50V   | R310     | 1-216-041-00 | METAL CHIP     | 470 5% 1/10W   |
| C350     | 1-163-021-00 | CERAMIC CHIP        | 0.01uF 10% 50V  | R311     | 1-216-049-11 | RES,CHIP       | 1K 5% 1/10W    |
|          |              | < CERAMIC FILTER >  |                 | R312     | 1-216-113-00 | METAL CHIP     | 470K 5% 1/10W  |
| CF301    | 1-577-588-11 | FILTER, CERAMIC     |                 | R313     | 1-216-061-00 | METAL CHIP     | 3.3K 5% 1/10W  |
| CF302    | 1-567-163-11 | FILTER, CERAMIC     |                 | R314     | 1-216-051-00 | RES,CHIP       | 1.2K 5% 1/10W  |
|          |              | < DIODE >           |                 | R315     | 1-216-067-00 | METAL CHIP     | 5.6K 5% 1/10W  |
| D301     | 8-719-045-99 | DIODE RD2.2M-T1B    |                 | R316     | 1-216-061-00 | METAL CHIP     | 3.3K 5% 1/10W  |
| D302     | 8-719-002-81 | DIODE 1T363         |                 | R317     | 1-216-061-00 | METAL CHIP     | 3.3K 5% 1/10W  |
| D303     | 8-719-066-69 | LED BR2434D (POWER) |                 | R318     | 1-216-067-00 | METAL CHIP     | 5.6K 5% 1/10W  |
|          |              | < IC >              |                 | R319     | 1-216-061-00 | METAL CHIP     | 3.3K 5% 1/10W  |
| IC301    | 8-752-066-93 | IC CXA1611N-T4      |                 | R320     | 1-216-097-00 | RES,CHIP       | 100K 5% 1/10W  |
| IC302    | 8-759-802-75 | IC LA4533M          |                 | R321     | 1-216-093-00 | METAL CHIP     | 68K 5% 1/10W   |
| IC303    | 8-759-195-02 | IC TC7S86F-TE85L    |                 | R322     | 1-216-093-00 | METAL CHIP     | 68K 5% 1/10W   |
| IC304    | 8-759-096-87 | IC TC7WU04FU(TE12R) |                 | R323     | 1-216-125-00 | METAL CHIP     | 1.5M 5% 1/10W  |
|          |              | < SHORT >           |                 | R324     | 1-216-025-00 | RES,CHIP       | 100 5% 1/10W   |
| JR301    | 1-216-296-00 | SHORT               | 0               | R325     | 1-216-057-00 | METAL CHIP     | 2.2K 5% 1/10W  |
| JR302    | 1-216-296-00 | SHORT               | 0               | R326     | 1-216-061-00 | METAL CHIP     | 3.3K 5% 1/10W  |
| JR303    | 1-216-296-00 | SHORT               | 0               | R327     | 1-216-025-00 | RES,CHIP       | 100 5% 1/10W   |
| JR304    | 1-216-296-00 | SHORT               | 0               | R328     | 1-216-077-00 | METAL CHIP     | 15K 5% 1/10W   |
| JR305    | 1-216-296-00 | SHORT               | 0               | R329     | 1-216-001-00 | METAL CHIP     | 10 5% 1/10W    |
| JR306    | 1-216-295-00 | SHORT               | 0               | R330     | 1-216-001-00 | METAL CHIP     | 10 5% 1/10W    |
| JR308    | 1-216-295-00 | SHORT               | 0               | R331     | 1-216-097-00 | RES,CHIP       | 100K 5% 1/10W  |
| JR309    | 1-216-295-00 | SHORT               | 0               | R334     | 1-216-097-00 | RES,CHIP       | 100K 5% 1/10W  |
| JR310    | 1-216-295-00 | SHORT               | 0               | R335     | 1-216-029-00 | METAL CHIP     | 150 5% 1/10W   |
|          |              |                     |                 | R342     | 1-216-062-11 | RES,CHIP       | 3.6K 5% 1/10W  |
|          |              |                     |                 | R345     | 1-216-089-11 | METAL CHIP     | 47K 5% 1/10W   |

| Ref. No. | Part No.     | Description |      |    | Remark |
|----------|--------------|-------------|------|----|--------|
| R348     | 1-216-069-00 | METAL CHIP  | 6.8K | 5% | 1/10W  |
| R349     | 1-216-001-00 | METAL CHIP  | 10   | 5% | 1/10W  |
| R350     | 1-216-053-00 | METAL CHIP  | 1.5K | 5% | 1/10W  |

< VARIABLE RESISTOR >

|       |              |                                |
|-------|--------------|--------------------------------|
| RV301 | 1-223-968-11 | RES, VAR, CARBON 20K/20K (VOL) |
| RV302 | 1-225-641-11 | RES, VAR, CARBON 10K (TUNING)  |
| RV303 | 1-238-857-11 | RES, ADJ, CERMET 22K           |

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\* 1-670-527-11 SW BOARD  
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< SWITCH >

|     |              |                              |
|-----|--------------|------------------------------|
| SW1 | 1-572-467-61 | SWITCH, PUSH (1 KEY) (POWER) |
|-----|--------------|------------------------------|

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MISCELLANEOUS  
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|       |              |               |
|-------|--------------|---------------|
| MDD01 | 1-505-117-21 | DRIVER (L-CH) |
| MDD02 | 1-505-117-21 | DRIVER (R-CH) |

