

HOW TO USE YOUR FIRST HEARING AID

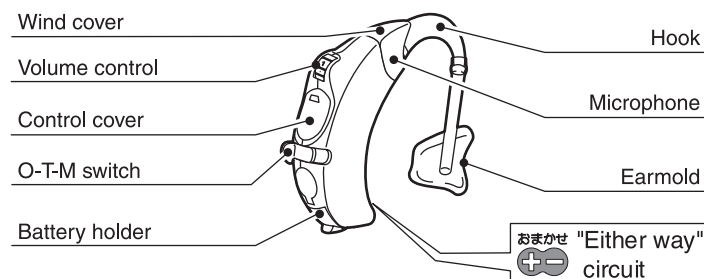
- Any hearing aid cannot return level of your hearing to normal or halt further hearing deterioration, but proper use of your hearing aid can help you hear what is going on around you and let you get more enjoyment of life.
- If this is your first hearing aid, you - like most new users - will probably be surprised at the loudness of the sounds, and after using it for a short while, you may even feel that it is too noisy. The following three tips are important in overcoming your concerns.
 - 1) Read this manual and become familiar with the hearing aid's various mechanisms and how to use them correctly.
 - 2) First, use your hearing aid in a quiet place and listen to quiet sounds and give yourself sufficient time to get accustomed to the sound of your hearing aid.
 - 3) If any physical problems develop, consult your doctor.

FOR KEEPING YOUR HEARING AID LONGER

- Always keep the hearing aid clean. Clean the hearing aid with dry cloth periodically and also remove earwax plugged in the earpiece or earmold using eybrush or toothbrush.
- Do not expose the hearing aid to the heat from stoves, etc. Also, avoid leaving it in places with high humidity.
- Operate the controls with care. Do not press hard.
- If the hearing aid is dropped in water, wipe with dry cloth and ask the dispenser for check.
- Do not pick the microphone with nail, pin, etc., because this may damage the microphone.
- Do not disassemble or attempt any repairs by yourself. Ask the dispenser for repair.

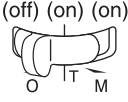
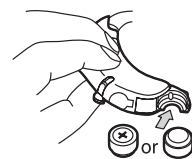
OPERATING INSTRUCTIONS

Parts and Controls



- Earmold shown above are not included as standard accessories.

Battery Placement

1. Set the O-T-M switch of the hearing aid to "O" (power off). 
2. Peel off the sticker on the positive side of battery (PR48 (13) or PR48P (13P) zinc-air battery).
3. Open the battery holder with the tip of your finger.
4. Insert a PR48 (13) or PR48P (13P) battery into the battery holder. You do not have to worry about the polarity. 
5. Close the battery holder.

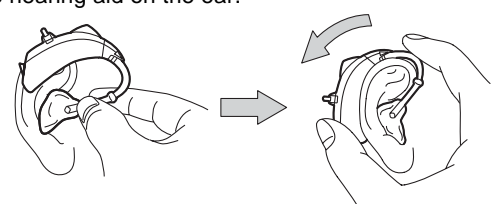
Battery life (For continuous use)

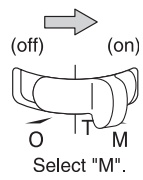
PR48 (13) : Approx. 210 hours

PR48P (13P) : Approx. 160 hours

- Battery life will change depending on the operating condition.

Putting on Hearing Aid

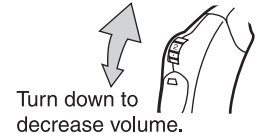
1. Place the hearing aid on the ear. 

2. Turn the power on. 

3. Adjust the volume control to a suitable level.

- Volume control

Higher numbers mean louder sound. Turn up to increase volume.



- * Adjust the volume according to the situation (volume of other voices, ambient noise, etc.).

- O-T-M switch

O: Hearing aid is turned off and no sound is heard.

T: Set to "T" when the hearing aid is used for telephone or loop system.

When the switch of the hearing aid is set to T, noise may be heard in the vicinity of electromagnetic fields, such as generated for example by electronically secured gates or similar.

M: Microphone for ordinary use. This is the normal operating position.

Removing Hearing Aid

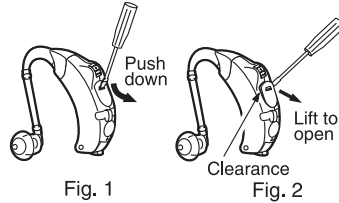
1. Set the switch to "O" (power off) before removing the hearing aid. If the switch is left in the "M" or "T" position, acoustic feedback (howling) may occur.
2. Be sure to set the switch to "O" and take out the battery, when not using the hearing aid.

Turn-on precaution

If you switch the hearing aid off and then immediately on again, there may be no sound, but this is not a defect. In such a case, return the switch to "O" (Off), wait for at least 10 seconds, and then set the switch to "M" or "T" again.

Opening / closing the control cover

1. Insert a screwdriver into the notch of the control cover, as shown in Fig. 1, and push the cover down.
(Only the top section of the cover will open.)



2. When the top of the cover opens, insert the screwdriver into the clearance, as shown in Fig. 2, and push the cover out to open it fully.
3. To close the cover, push the entire cover in with finger.

Adjusting the controls

The scales of the tone control (TONE H, TONE L) and output limiting control (OPC) are shown in the illustration. (Values shown in bold are printed on the unit.) Use the numbers given on a scale as a guide when adjusting the control. For information on volume control positions, see the section "Volume control positions for 2000 Hz hearing level".

Hearing level pattern		
A	B	C

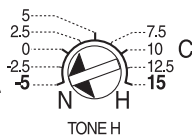
● Tone control (TONE H)

As you turn the control from "N" towards "H", the low range is attenuated and the high range is emphasized. To make the adjustment using numerical values, calculate the value as follows.

$$\text{TONE H setting} = \text{HL (2000 Hz)} - \text{HL (500 Hz)}$$

● Tone control (TONE L)

As you turn the control from "N" towards "L", the high range is attenuated and the low range is emphasized. Each increment of the



printed scale corresponds to a change of about 4 dB at 4000 Hz.

Normally, the control should be left in the factory-default position (N). If acoustic feedback (howling) is a problem or when the hearing level in the low range seems notably worse than in the high range, turn the control towards "L".

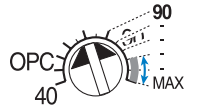
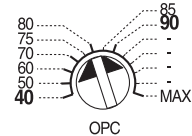
● Output limiting control (OPC)

Turning the control towards the left reduces the maximum output level of the hearing aid. Set the control to a position which matches the average hearing level. The average hearing level can be determined according to the following equation.

$$\text{Average hearing level} = \frac{\text{HL (500 Hz)} + \{2 \times \text{HL (1000 Hz)}\} + \text{HL (2000 Hz)}}{4}$$

* About batteries

The generally recommended battery type for the HB-41 is the PR48, but when the OPC control is set in the range indicated by the arrows in blue, the PR48P should be used. With the PR48, the sound may briefly be interrupted at high levels. The PR48P eliminates this problem, but this battery type has a slightly shorter service life.



Volume control positions for 2000 Hz hearing level

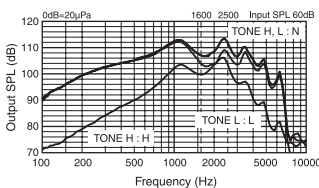
Hearing level	Volume	Hearing level	Volume	Hearing level	Volume
40 dBHL	1	60 dBHL	2	80 dBHL	3
50 dBHL	2	70 dBHL	3	90 dBHL	4

TECHNICAL DATA (According to ANSI standard S3.22 1996)

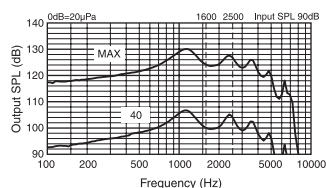
Maximum-OSPL90	130 dB (1200 Hz)
HFA-OSPL90	127 dB
HFA-full-on Acoustic Gain	52 dB
Reference Test Gain	50 dB
Frequency Range	100 Hz to 6800 Hz
Equivalent Input Noise Level	20 dB
Total Harmonic Distortion	500 Hz: 8.0% 800 Hz: 3.0% 1600 Hz: 3.0%
HFA-SPLIV	112 dB at 31.6 mA/m
AGC	OPC (Output AGC)
Attack/Recovery Time	Attack: 0.25 msec/Recovery: 32 msec
Operating Switch	O-T-M
Output Limiting Control	OPC (range: 24 dB)
Tone Control	TONE H, TONE L
Gain Control	Main VR (range: 38 dB)
Battery Type/Supply Voltage	13 (13P)/1.3 V
Battery Current/Battery Life	13: 1.24 mA/Approx. 210 h 13P: 1.24 mA/Approx. 160 h
Dimensions/Weight	3.75 x 1.27 x 0.88 cm/4.2 g (excluding battery)

(Typical value with E1 hook)

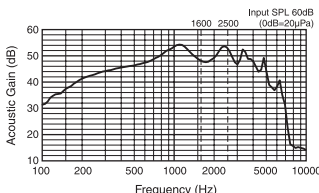
Frequency response curve and effect of tone control



OSPL 90 curve and effect of output limiting control



Full-on gain curve



Note:

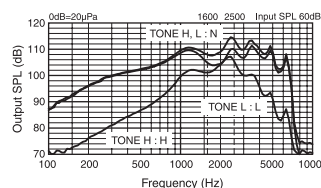
- (1) Production number (serial number) is indicated at the upper rear side of the unit.
- (2) Manufacturer's name is imprinted at the lower rear side of the unit.

TECHNICAL DATA (According to IEC standard Pub. 60118-0-1983 Amendment 1-1994)

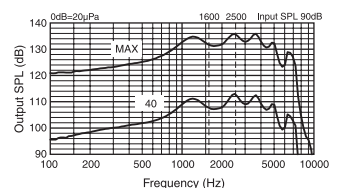
Reference Test Frequency	1600 Hz
OSPL90	131 dB
500 Hz	126 dB
Peak	136 dB
Full-on Acoustic Gain	55 dB
Equivalent Input Noise Level	17 dB
Total Harmonic Distortion	500 Hz: 2.0% 800 Hz: 1.0% 1600 Hz: 1.0%
Induction Coil Sensitivity	89 dB at 1 mA/m
AGC	OPC (Output AGC)
Attack/Recovery Time	Attack: 0.25 msec/Recovery: 32 msec
Operating Switch	O-T-M
Output Limiting Control	OPC (range: 24 dB)
Tone Control	TONE H, TONE L
Gain Control	Main VR (range: 38 dB)
Battery Type/Supply Voltage	PR48 (PR48P)/1.3 V
Battery Current / Battery Life	PR48: 1.24 mA/Approx. 210 h PR48P: 1.24 mA/Approx. 160 h
Dimensions/Weight	3.75 x 1.27 x 0.88 cm/4.2 g (excluding battery)

(Typical value with E1 hook)

Basic frequency response curve and effect of tone control



OSPL90 curve and effect of output limiting control



Full-on acoustic gain frequency response curve

