

THE HEARING LOOP

For people who are hearing impaired, a **HEARING LOOP** system is of great benefit. Very few people understand that hearing aid wearers do not always receive clear reception, even though good Public Address or Amplification Systems are present. Nor do they know that when a **HEARING LOOP** system is incorporated in the amplification system, a hearing aid wearer will benefit with clear reception.

PRINTACALL is the recognised specialist of **HEARING LOOP** systems and Hearing Augmentation. For over 25 years, Printacall has been supplying and installing systems under the direction of our Technical Manager who is hearing impaired and wears a hearing aid and a cochlear implant.

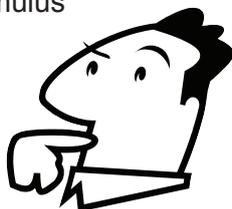
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QUESTIONS & ANSWERS

WHAT IS THE HEARING LOOP SYSTEM?

A hearing loop system consists of a microphone, an amplifier and, in the place of a loudspeaker, a coil of wire placed around the room. Sound waves from the speaker's voice going into the microphone are changed into an electric current, amplified, and then sent through the coil which emits a magnetic field in the room. The field is picked up by the "T" switch of a hearing aid, amplified, and converted back into sound. Hearing aid users sitting within the hearing loop system can pick up the speaker's voice or other auditory stimulus with a minimum of distortion and no background noise simply by turning on the "T" switch on their hearing aids. The hearing loop system is fully adaptable to television, radio, stereo, tape recorder or movie projector.



COCHLEAR IMPLANTS AND HEARING AIDS

The hearing loop system works with cochlear implants as well as with T-Switch equipped hearing aids.

HEARING AUGMENTATION – ALTERNATIVE ASSISTIVE LISTENING DEVICES

A hearing loop system is one type of Hearing Augmentation. The other types are infra-red and FM systems. These alternatives are an option, but tend to highlight the hearing impaired person within a group of people because the individual receivers are relatively large and visible. As one receiver is required for every user of the system, the costs quickly add up. Batteries must be kept fully charged, and loss or theft is another problem to be considered.

WHY ARE HEARING LOOP SYSTEMS PREFERRED?

The hearing loop system is preferred by hearing impaired clients as it requires no extra device which publicly labels the user as "deaf". As this label is often applied by the community, any assistive device without an additional receiver or headphones appeals greatly to the user.

Secondly, problems arise in obtaining and using an infra-red or FM receiver, including inadequate equipment maintenance and battery issues.

Signs indicate which areas are fitted with hearing loop systems, and staff are not tied up handing out, maintaining and collecting equipment. Hearing loop systems, when correctly installed and tuned, are equal in quality and performance to infra-red and FM systems.

HEARING LOOP SYSTEMS ARE ALSO KNOWN AS:

- Audio Frequency Induction Loop Systems (AFILS).
- Audio Induction Loop Systems (AILS)
- Hearing Aid Loop Systems (HALS)
- Hearing Induction Loop Systems (HILS)
- Powered Audio Induction Loop Systems (PAILS)

Hearing Loop systems are one type of Hearing Augmentation system; the others are infra-red and FM.

WHAT IS BEHIND THE HEARING AID "T" SWITCH?

Most hearing aids and cochlear implants have a "T" or "MT" switch. The "T" switch stands for telecoil, is additional to the microphone, and can be switched on or off. (MT for combined microphone and telecoil.)



INSTALLATION

WHERE CAN A HEARING LOOP SYSTEM BE FITTED?

Any buildings that use an amplification system or a microphone, such as meeting halls, theatres, senior citizens' clubs and churches are suitable for hearing loop system installation. In fact any building where a microphone and or a sound system is used can be fitted at a reasonable cost if an amplification system is already in use. The hearing loop system does not affect the efficiency of the existing amplification system.

Printacall is able to provide hearing loop systems in locations without any amplification system, and also portable systems where required.

HOW CAN THE HEARING LOOP SYSTEM BE INSTALLED?

The whole room or hall is normally covered, with the cable under the floor, in the ceiling, under the carpet etc. The best method will be determined when quoting.

WHEN SHOULD A HEARING LOOP SYSTEM BE INSTALLED?

For new or renovated buildings with public access, there may be a legal requirement to install a hearing loop system for the benefit of hearing impaired people who access the venue. Refer to the Australian Building Codes D3.7 with respect to hearing augmentation for further details and/or consult your building professional.

Hearing loop systems should form part of the planning process for all new buildings. Churches, councils, and all people in charge of public buildings should consider installing hearing loop systems to assist people wearing hearing aids to receive better sound reproduction. In addition, installation in older buildings is standard and can be accomplished with minimum interruption to current activities.

WHY SHOULD A HEARING LOOP SYSTEM BE INSTALLED?

It will encourage hearing aid wearers to attend functions at buildings where it is available. You don't have to plug into the hearing loop system, you just have to be seated within the magnetic field it produces, so permitting any number of people to benefit at the same time. The person's own hearing aid does the work. No additional receiver is required for those with hearing aids with a "T" switch. Hearing loop system receivers are available for those that don't have hearing aids or "T" switch and for testing the hearing loop system.

The hearing loop system will give most hearing aid wearers fuller enjoyment of live theatre, films, concerts, lectures, meetings and church services, as switching to "T" switch greatly reduces background noise. This is due to the direct magnetic transmission bypassing the indistinct sound caused principally by building acoustics such as reverberation time, the frequency response of the interior space and excessive echo.

By incorporating hearing loop systems into your Disability Action Plan you are providing hearing impaired people with access to your services and facilities.

ISN'T A PA SYSTEM GOOD ENOUGH?

Sound from the speakers reflects off the room walls and a person with normal hearing can easily pick out the direct signal from the reverberation. For a person with hearing loss however, the sound is virtually unintelligible.

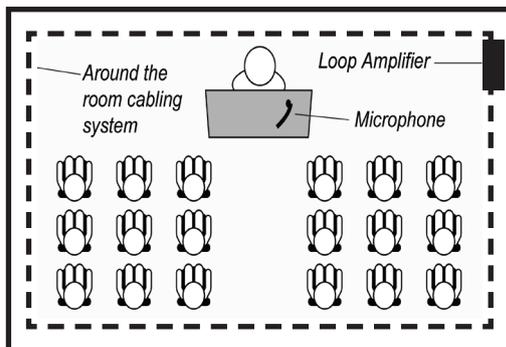
The resulting blurred sound for the hearing impaired often causes the complaint that, "it's loud enough, but I can't understand what is being said."

The hearing loop system overcomes these problems and provides the best possible signal to the hearing impaired user.

TYPES OF HEARING LOOP SYSTEM LAYOUTS

Hire Systems

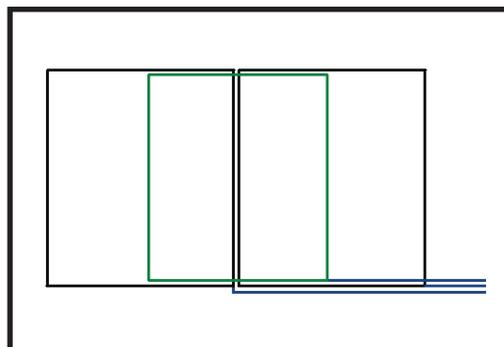
Low Spill Phased Array Systems



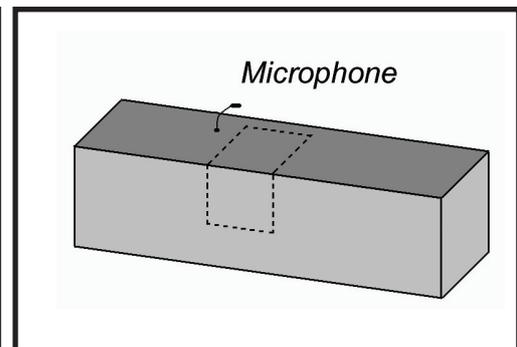
PERIMETER HEARING LOOP SYSTEMS

Portable Systems

Cancellation Loops (Low spill in one direction)



PHASED ARRAY SYSTEM



COUNTER HEARING LOOP SYSTEMS



PRINTACALL - THE LEADING HEARING LOOP SYSTEM INSTALLERS

WHY HAVE PRINTACALL INSTALL YOUR HEARING LOOP SYSTEM?

Printacall has over 25 years of research and development of hearing loop system design and installation with the objective of providing hearing impaired people with correctly functioning hearing loop systems.

OUR TECHNIQUES INCLUDE THE FOLLOWING:

PREQUOTE INSPECTION

We check the client's end uses, size of the hall, ceiling height, building construction, metallic influences and background magnetic fields.

DESIGN & EQUIPMENT

Our amplifiers are purpose built loop drive modules and incorporate a Limiter/Compressor Module, specifically configured for hearing impaired users.

On installation, we set the level of the compressor for a softly spoken person. Any person speaking or music above this level will come through the hearing loop system at the same volume as the softly spoken person. The Hearing Aid "T" switch can pick up magnetic interference caused by electrical sub-stations, some dimmers and some electrical cabling.



In most cases this can be improved by boosting the level of the hearing loop system, thus improving the signal to noise ratio.

Also note that electric guitars may pick up the hearing loop system. Should you expect this to be a problem, please contact Printacall to discuss solutions.

INSTALLATION

Our installation procedures include a consideration of aesthetics. We spare no reasonable practical effort to ensure wires are concealed. Where possible, we prefer to mount the hearing loop system drive amplifiers in a secure place to avoid tampering and all controls are preset.

We adjust, tune and test the installation and circuitry to theoretical and practical standards using modern equipment and check the actual audio-magnetic fields over the area of the hearing loop system with modern engineered audio inductive field strength testers.

SIGNAGE INCLUDED

We provide A4 signs with the international "ear" symbol to notify the hearing impaired of the presence of a hearing loop system. These are supplied at all our installations at no charge.

HEARING LOOP SYSTEM RECEIVERS

Hearing loop system receivers are extremely useful for testing the integrity of the Hearing Loop system and are also available for those people who do not have the "T" switch" to gain the advantages of the hearing loop system.

ACT NOW! CALL AND ASK FOR AN OBLIGATION FREE QUOTE.

Contact our Customer Service Desk for further information on (02) 9809 2392

Printacall is a specialist in hearing loop systems and has installed over 1000 hearing loop systems into major public buildings in New South Wales, ACT, Victoria, Queensland and South Australia.



TECHNICAL CONSIDERATIONS

BUILDING CHARACTERISTICS

An examination of most public buildings will reveal some or all of the following factors which may need Printacall's expertise.

BUILDING ACOUSTICS AND PA SYSTEMS

Optimum sound conditions for partially deaf people with or without hearing aids require minimum echo or reverberation. Hearing aids actually compound the problem due to the sensitive omnidirectional microphone in the hearing aid. In most public locations the walls are acoustically hard and some ceilings are also prone to echo. Most floors are "hard" but given an average audience may provide minimal echo. Carpets and soft seating are the preferred option.

Louder is not better. Multiple lower level speakers are more effective for the hearing impaired than the usual louder two front of house type that can exacerbate existing acoustic problems. These may include reverberation time, poor frequency response and excessive echo.

Hearing loop systems can only perform as well as the quality of the audio input provided to them. Omnidirectional microphones pick up much more of the acoustic limitations of a building than the preferred close working directional microphones.

INTERFERENCE

Hearing Aids can be affected by magnetic interference that can occur when the aid is operating on the "T" switch, normally in the form of a low frequency (100Hz or 150Hz) buzz radiated from sub-stations, some dimmers and some cabling. This can be improved somewhat by boosting the level of the hearing loop system, thereby improving the signal to noise ratio.

The "T" switch will pick up this buzz regardless of whether a hearing loop system or a neckloop (with the infra-red or FM system) is used. Note that it is not Hearing Loop systems that are affected by interference, but the "T" switch on the hearing aid which picks up the buzz from the other sources.

HEARING LOOP SYSTEM LAYOUT ISSUES

A factor which is not always understood is that a narrow null zone of low signal level occurs directly over the hearing loop system cable location (when installed in the floor) and under the hearing loop system cable location (when installed in the ceiling).

Printacall designs aim to ensure this effect is minimised for the user, but some professional building designers, architects etc sometimes designate hearing loop system cable locations that take no account of this effect.

METAL LOSSES - EFFECTS OF STEEL AND OTHER METALS

Buildings with concrete slabs include large amounts of steel reinforcement. Steel framed floors also incorporate significant amounts of steel, as do steel framed ceiling grids. Over time, as standards change, the amount of steel required in new buildings tends to increase.

The steel results in dramatically lower loop level and poor frequency response for the user unless considered as part of the overall hearing loop system design. Moving the hearing loop system cabling away from the steel only partially reduces the effect of the steel on the hearing loop system.

Printacall addresses these issues at the design stage to ensure clear sound through the hearing loop system.

LARGE AREAS

Where substantial areas need to be covered, Printacall can design multi-loop systems to cover large areas. In some cases, Printacall may recommend a Wide Area FM solution, such as in sport or entertainment arena sized venues. Printacall also supply these systems as required.

SPECIAL PURPOSE CUSTOM DESIGNED HEARING LOOPS SYSTEMS

Call Printacall to discuss your particular problems or concerns. A one off custom design may be just what you need for your situation.

DISABILITY DISCRIMINATION ACT – DDA

- Hearing loop systems assist meeting the requirements of the DDA
- Hearing loop systems should be included in the Disability Action Plan
- Hearing loop systems reduce the risks of DDA complaints

BUILDING CODES OF AUSTRALIA - BCA

- BCA requirements from 1st May, 2011 require a minimum of 80% coverage for hearing loop systems
- Compliant with the Disability Discrimination Act



PRINTACALL'S SERVICE

HEARING LOOP SYSTEMS HAVE BEEN DESIGNED AND INSTALLED IN THE FOLLOWING LOCATIONS BY PRINTACALL

Art Gallery, Sydney
Australian Deafness Council, ACT Balmain
Better Hearing Aust, Concord
Deafness Forum, ACT
Goulburn Gaol, Recreation Room (3)
Guardianship Board, Glebe
Manning Entertainment Centre, Taree
Parent Council for Deaf Education, NSW
Qantas Airport Lounges
Sydney Power House Museum
State Transit – Buses
Sydney Cricket Ground
Sydney Observatory
Sydney Opera House

Auditoriums
Churches
Cinemas
Civic Theatres
Council Chambers
Council Meeting Rooms
Cultural Centres
Day Care Centres
Entertainment Venues
Foyers
Hospital, Day Room
Library Meeting Rooms
Library Counters

Live Theatre
Municipal Councils
Nursing Homes
Public Venues
Rates Counters
Retirement Villages
Synagogues
Theatres
Theatrettes
Town Halls
University Lecture Theatres
University Halls
Youth Centres

PORTABLE HEARING LOOP SYSTEMS

Printacall will custom design and configure a portable hearing loop system to suit your individual requirements. The system comes with wheels and pull-out handle. Please contact us for a quotation.

Options include, but are not limited to:

- One lapel and one handheld radio microphone
- One lapel and three handheld radio microphones
- Tuner and CD player
- Extra input/output sockets for external connectivity.

Also available is a portable PA with wheels and pull-out handle for situations where some sound reinforcement is desirable.

COUNTER HEARING LOOP SYSTEMS

Printacall supply and install small hearing loop systems designed to be used on public access reception counters and other service desks, usually known as counter hearing loop systems.

- The system is permanently fixed in place, usually under the desk with a microphone fixed to the counter top. The microphone is typically a gooseneck style, but can be varied to accommodate users who may require an unobtrusive microphone for a specific need.
- A special 3-dimensional hearing loop system cable layout under the counter negates what would otherwise be a dead zone for the user.
- Special hearing loop system layouts are also possible for varied requirements. Examples are specially shaped zones for long desks or where the receptionist is hearing impaired and needs to be able to hear the customer.

HEARING LOOP SYSTEM HIRE

- Printacall provides a full hearing loop system hire service for hearing impaired people for your next conference or seminar.
- We deliver, setup, pack up and return the equipment for one or more days in the Sydney Metropolitan area.
- Special arrangements can be made for rural or interstate hire, please contact us for details.
- We can connect to your audio-visual system directly or provide radio microphones for connection to the hire hearing loop system.
- We also can provide a portable PA where sound reinforcement is needed.
- Typically the hire hearing loop system will cover an area of 8m x 15m, but bigger areas can be covered if required; call Printacall for details.
- Booking a hearing loop system hire is as easy as faxing a purchase order or equivalent 14 calendar days before the required date.

PRINTACALL ALSO SUPPLIES:

- Wide area FM Systems
- Infrared Systems
- Integrated FM radio microphones
- Oticon Amigo Personal FM Systems
- Visual Alert Systems
- Public Address Systems

