HEARING PROTECTION

SAFETY GUIDE

PRO CHOICE SAFETY GEAR

HEARING PROTECTION

HEARING LOSS DUE TO INDUSTRIAL NOISE IS ONE OF THE MOST WIDESPREAD YET PREVENTABLE WORKPLACE INJURIES.

Continual exposure to noise from machinery, tools, traffic and general workplace activity can cause significant, irreversible hearing loss. Hearing loss has a dramatic impact on quality of life and may contribute to other safety problems, such as lack of awareness and reduced concentration.

Correctly designed and fitted ear protection will keep industrial noise below harmful levels.The choice of the appropriate protection device for each job is also vitally important.

HEARING PROTECTION

Research and development by Pro Choice Safety Gear has resulted in hearing protection devices that offer the most effective protection available.
The types of hearing protection available give you a choice.

EARMUFFS
Suppress unwanted noise by completely covering the outer ear. Our styles come with a variety of features from adjustable headband to hard hat attachments to suit individual needs.

DISPOSABLE EARPLUGS
Made from PU foam and are designed to be compressed and then inserted into the ear canal, where they expand and seal against noise. These are economical, designed for single use and are available in uncorded and corded options.

POD EARPLUGS
Contoured for comfort and Class 3 for workplaces that require some level of hearing for safety. Pod earplugs provide a hygienic and effective option.

REUSABLE EARPLUGS
Pre-moulded from washable silicone to fit snuggly. Corded and uncorded options are supplied in handy resealable plastic case and can be reused.

BANDED EARPLUGS
A convenient, easily inserted option for those who are constantly in and out of noisy areas.

METAL DETECTABLE EARPLUGS
Contain a metal tab in each plug and a metalized cord that can be detected if they accidentally fall into processing lines.

What is a dB and Attenuation?

dB stands for Decibel, the unit of sound level and noise exposure measurement.

Attenuation is the reduction in sound pressure level incident upon the ear due to the application of a hearing protector or, specifically, the change in hearing threshold level that results when a hearing protector is worn.

How do I know when hearing protection is required?

Have a workplace noise assessment done. Exposure to noise levels above 85 dB can cause permanent hearing loss and therefore hearing protection is required.

What is the “Safe Noise Threshold” ?

85 dB (A) – at this level and above appropriate hearing protection MUST be worn.

What is Tinnitus?

Involuntary noises in the ear, such as ringing or hissing, often associated with hearing loss.

How can I protect my hearing at work?

The best method of preventing occupational deafness is to reduce noise at the source by engineering methods. However, in certain workplace conditions, there is very little or nothing one can do to reduce noise at the source. In these workplaces, workers must wear hearing protection to reduce the amount of noise reaching the ears.

What should I know about the fit of my hearing protection?

Follow manufacturers’ instructions. With ear plugs, for example, the ear should be pulled outward and upward with the opposite hand to enlarge and straighten the ear canal, and insert the plug with clean hands. Ensure the hearing protector tightly seals within the ear canal or against the side of the head. Hair and clothing should not be in the way.

Can I “toughen up” my ears?

No. If you think you have grown used to a loud noise, it probably has damaged your ears, and there is no treatment - no medicine, no surgery, not even a hearing aid - that completely restores your hearing once it is damaged by noise.

HEARING PROTECTION

When does noise become harmful to your hearing?

Exposure to sounds greater than 85 dB may cause hearing loss. General estimates of some work-related noises are listed in the chart below.

NOISE LEVEL EXAMPLES	CLASS	SLC80DB	ALLOWABLE NOISE LEVEL	
Ringing Telephone: 80dB	1	10 - 13	Less than 90dB	SAFE AREA
Loud Radio: 80dB	1	10 - 13	Less than 90dB	
Busy Traffic: 80dB	1	10 - 13	Less than 90dB	
Band Saws: 85dB	2	14 - 17	Less than 90dB	
Power Lawn Mower: 90dB	2	14 - 17	90 - 95dB	RISK AREA
Belt Sander: 93dB	2	14 - 17	90 - 95dB	
Tractor: 96db	3	18 - 21	95 - 100dB	
Electric Drill: 98dB	3	18 - 21	95 - 100dB	
Bulldozer: 105dB	4	22 - 25	100 - 105dB	
Blasting: 110dB	5	26 - 36	110 - 115dB	HARMFUL RANGE
Nail Gun: 110dB	5	26 - 36	110 - 115dB	
Chainsaw: 120dB	5	26 - 36	115 - 120dB	
Propeller Aircraft: 120dB	5	26 - 36	115 - 120dB	
Gun Shot: 130dB	5	26 - 36	125 - 130dB	
Rivetting Hammers: 130dB	5	26 - 36	125 - 130dB	
Jet Engine Aircraft: 140dB	5	26 - 36	135 - 140dB	

PLEASE NOTE: This table is a general guide only and is not an absolute basis for noise levels selection as some equipment may operate at different noise levels. Every worksite should be tested by OH&S.

How do I choose my hearing protection?

The choice of hearing protection depends on a number of factors including level of noise, comfort, and the suitability of the hearing protection for both the worker and the environment. Most importantly, the hearing protection should provide the desired noise reduction.

It is best where protection must be used, to provide a choice of a number of different types of hearing protection. Each hearing protection device is given a class rating from 1 to 5 to show the level of noise reduction achieved.

If the noise exposure is intermittent, earmuffs are more desirable, since it may be inconvenient to remove and reinsert earplugs.

How is hearing protection tested in Australia and New Zealand and what standards apply?

The SOUND LEVEL CONVERSION (SLC_{80}) rating as applied to hearing protection devices (HPD) is a simple number and class rating derived from a test procedure outlined in the Australian/New Zealand Standard, AS/NZS 1270:2002.

It provides a simple number guide to the level of noise attenuation that can be expected from a particular HPD.

Because humans are different, the level of protection achieved for each person could also be different and so a scientific formula is used to allow for differences.

The SLC value includes a correction to ensure that the stated degree of noise reduction is obtained on 80% of occasions. Hence the SLC_{80} rating. The SLC_{80} rating is the difference between the sound level of the environment in which the HPD is worn and the sound level reaching the wearer’s ears.

The testing procedure can be separated into 2 different areas:

1) Mechanical Testing: Where the device is subjected to physical forces, stretching, heating and concussion - to simulate real wearing conditions over a period of time.

2) Audiometric Testing: This is a subjective test. A minimum number of human test subjects are selected at random and given a hearing test to establish if they fall into the category of “normal hearing”, as outlined in the standard. The attenuation of the HPD is determined by measuring each subject’s hearing threshold with and without the HPD fitted. The difference between these two thresholds is the so called real ear attenuation of the HPD to a variety of frequencies.

In simplistic terms, from this data the mean real ear attenuation and standard deviation (variation) at each frequency is calculated. The mean minus standard deviation, when subtracted from the band level gives the attenuation.

HPD are also given a class rating, as outlined below, once the SLC_{80} rating is known, and refers to the level of noise attenuation achieved by each device. The higher the rating, the greater the efficiency of the hearing protection device.

CLASS	SLC80DB	FOR USE IN NOISE
1	10 to 13	less than 90dB(A)
2	14 to 17	90 to less than 95dB(A)
3	18 to 21	95 to less than 100dB(A)
4	22 to 25	100 to less than 105dB(A)
5	26 or greater	105 to less than 110dB(A)

The SLC_{80} is a rating only, by which in conjunction with the information contained in the Australian/New Zealand Standard AS/NZS 1269.3:2005 Occupational Noise Management - Hearing Protector, the problems of hearing loss due to noise exposure for a given environment are addressed.

A deeper understanding of the SLC_{80} rating or how to apply these ratings to your workplace can be obtained from the OH&S authority in your State.

What are the common problems of hearing protection?

Studies have shown that one half of the workers wearing hearing protectors receive one half or less of the noise reduction potential of their protectors because these devices are not worn continuously while in noise or because they do not fit properly.

A hearing protector that gives an average of 30 dB of noise reduction if worn continuously during an eight hour work day becomes equivalent to only 9 dB of protection if taken off for one hour in the noise. This is because decibels are measured on a logarithmic scale, and there is a ten fold increase in noise energy for each 10 dB increase.

How does hearing loss occur?

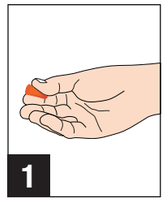
Permanent loss of hearing is the result of nerve destruction or damage to the hair cells which transfer sound waves within the ear.

Once these important parts of the hearing mechanism are damaged or destroyed, they can never be regenerated, resulting in slight to total hearing loss that is permanent.

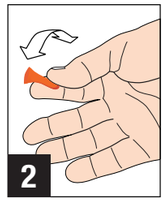
EARPLUG FITTING GUIDE

SINGLE USE - DISPOSABLE FOAM

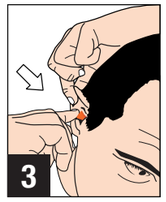
EPOU
ProBullet Uncorded
EPOC
ProBullet Corded
EPYU
ProBell Uncorded
EPYC
ProBell Corded
EPBDMC
ProBell Metal Detectable Corded



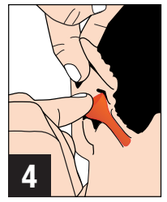
Hold the earplug between the thumb and forefinger.



Roll the full length of the earplug into a narrow, wrinkle free cylinder.



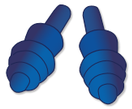
Using the opposite hand, reach across your head and pull ear up and back to maximise ear opening.



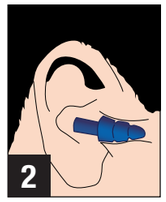
Gently work compressed plug well into ear canal, with end level with external ridges of ear.

Hold in for 50-60 seconds until the foam expands to fully seal the ear to maximize exclusion of noise.

MULTI-USE - REUSABLE SILICONE



EPSU
ProSil Uncorded
EPSC
ProSil Corded



1. Using the opposite hand, reach across your head and pull ear up and back to maximize ear opening.
2. Insert gently until all ripples are inside the ear canal.
3. The tip of the earplug should be visible when viewed from in front.

MULTI-USE - HEADBAND WITH REPLACEABLE PADS

HBEP
ProBand Folding Headband
HBEPA
ProBand Fixed Headband

With headband beneath chin, place plugs into each ear canal.

For maximum efficiency, use opposite hand to pull ear back and up to open ear canal for insertion.

Push each pad into the ear until you notice a significant lowering of noise level.

CHECKING CORRECT FIT

Proper Fit
Follow all earplug fitting instructions for maximum efficiency and durability. If either or both earplugs don't seem to be fitted properly, remove and re-insert following the correct steps as indicated above.

Correct Removal
Gently twist earplug while slowly pulling in an outward motion for removal.

Choose Correct Protection
Consider your need to communicate AND the correct protection level when choosing your hearing protection, especially in minimal noise level environments. Don't over protect if you need to communicate to work safely.

Maintenance
Before handling any earplugs, ensure hands are clean. Always check your earplugs and discard if damaged, worn or dirty. Silicone plugs can be washed if necessary. Single use ear plugs can cause health issues if used when dirty.

If kept clean and undamaged, silicone (reusable) ear plugs can be used many times over. Clean with mild soap/water and store in a case away from extreme heat and direct sunlight when not in use. On banded earplugs, clean and replace pads regularly as required.

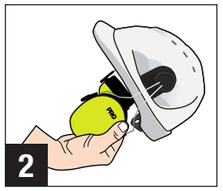
When properly inserted, the end of the earplugs should be located at opening of your ear canal.

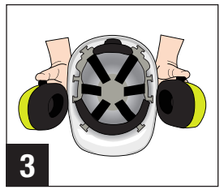
Test effectiveness in noisy location by cupping both hands over ears and release.

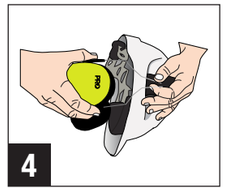
You should NOT notice significant difference in noise level.

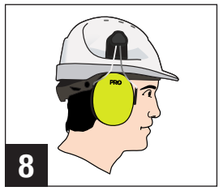
EARMUFFS FITTING GUIDE

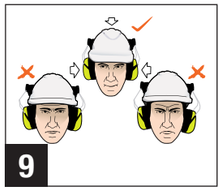
HARD HAT VERSION





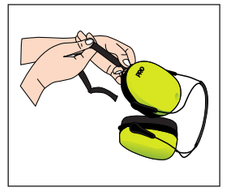


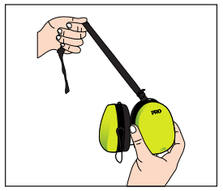


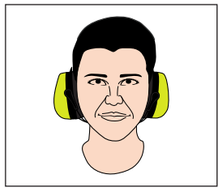


1. Hair should be moved away from your ears.
2. Push earmuff tongue into helmet slot, ensuring it is fully and firmly secure.
3. Expand the earmuff arms as wide as possible.
4. Slide earmuff cups to the bottom position on each side arm.
5. With the side earmuff arms still open as wide as possible, place the hard hat on your head.
6. Using both hands, press alternately on each earmuff arm, until you achieve a comfortable fit on the head and ears.
7. Slide earmuff cups up or down, until a comfortable fit is achieved, and ears are fully enclosed.
8. Earmuff arm should be vertical.
9. Ensure equal pressure all round for comfort and maximum protection.

NECKBAND VERSION







Adjust the length of the headband strap between the earcups so the earmuff fits well on top of the head. Place earcups over ears and make sure they fit snuggly to ensure equal pressure all round for comfort and max protection.

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