

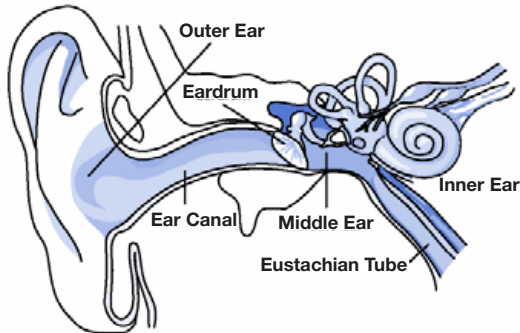
## CAUTION

**HEARING  
PROTECTION  
REQUIRED**

### Overview

Occupational noise is a common problem found in many workplaces. Research has shown that high levels of noise can damage hearing. Hearing loss is a gradual process and is less noticeable than other types of workplace injuries. However, it is a permanent handicap for those who are affected.

Hearing protection is important because your ears are composed of very delicate structures. Whenever a sound is produced, air is set in motion in the form of sound waves.



There are two different types of noise used for classifying the degree of auditory risk.

- Continuous noise, such as the constant noise of an engine, whether or not the sound is intermittent, such as the on-again, off-again noise of hand tools
- Impulse noise, such as the noise generated by gun fire or forging presses

### Using Hearing Protection



Workplace noise is measured in decibels (dB), and every hearing protection device has a Noise Reduction Rating (NRR) that is measured in decibels.

According to OSHA Regulation 29 CFR 1910.95, a worker shall not be exposed to a noise level of 85dB for more than 8 hours continuously. This noise level can increase or decrease as the length of exposure decreases or increases respectively.

To select the level of protection required the noise exposure level must be known then the NRR rating from the various earplugs and earmuffs can be subtracted from this level. This is the sound exposure value and this level must be within the permissible exposure limits set by OSHA.

The NRR values listed on the products are only good if the plugs or earmuffs are worn properly.

### Applications

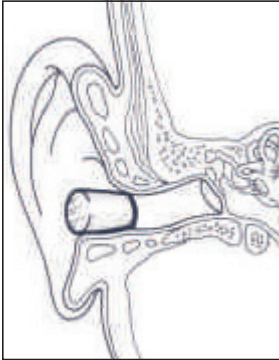


- Machine shops
- Airports
- Pump rooms
- Construction sites
- Sawmills
- Generator rooms
- Manufacturing plants

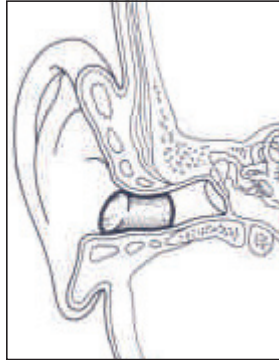
(1 of 6)

## Proper Fitting and Use

Early hearing protection devices were nothing more than cotton balls stuffed into the ear canal to reduce the noise. Modern hearing protection devices come in two basic types, those which are inserted into the ear canal (earplugs) and those which completely cover the ear ( earmuffs). Each type is available in a variety of designs. They are both government-regulated and are rated based on measured performance.



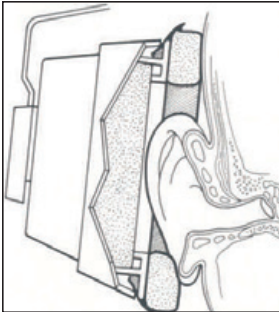
Incorrect



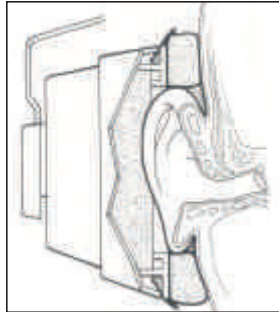
Correct

### Earplugs

Whether disposable or reusable earplugs are worn, care must be taken to insert them properly into the ear. The best way to insert an earplug is to roll it into a slender cylinder so it can easily be inserted into the ear canal. Lawson also offers pod plugs and cap-style hearing protectors that are designed so that they do not need to be rolled down.



Incorrect



Correct

### Earmuffs

When choosing an earmuff style, care must be taken to ensure that the ear fits completely into the cushion on the ear cup. Earmuffs are designed to be worn over the head to achieve the maximum NRR rating. Some styles can be worn with the headband behind the head or under the chin if they must be used with a hard hat. These styles will list a decreased NRR when they are worn under the chin or behind the head. This decreased value of the NRR will still provide adequate protection. Hair, glasses and jewelry must not interfere with the seal of the cushion against the side of the head.

## Foam Earplug Insertion

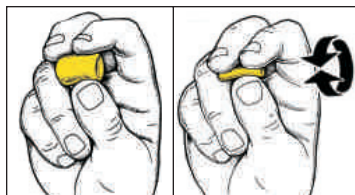


Fig. 1

Fig. 2



Fig. 3

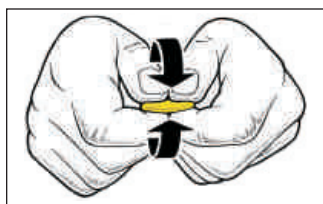


Fig. 4

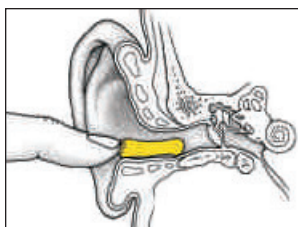


Fig. 5

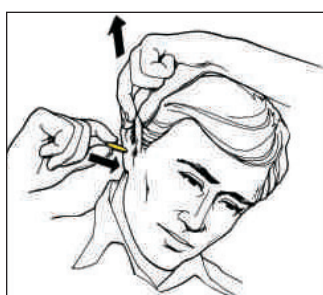


Fig. 6

Hands and plugs should be clean prior to use. Begin by rolling the plug into a very thin, crease-free cylinder. The cylinder diameter should be as small as possible, in other words, as tightly compressed as you can make it. Do not worry about damaging the plug – it is designed to be compressed in this way.

Crease-free rolling is accomplished by squeezing lightly as you begin rolling, then applying progressively greater pressure as the plug becomes more tightly compressed. Make sure you roll (not twist) the plug into a cylinder rather than into a cone or a ball. The plug is best rolled between the fingertips. One method is illustrated in Figs. 1 and 2, with an alternate method in Fig. 3. Another option, for those with less finger strength, is to use the thumbs and forefingers of both hands (Fig. 4).

Once the plug has been properly rolled and compressed, immediately insert it well into the ear canal. The reason for compressing the plug tightly is that insertion into the ear canal can only be achieved when the plug diameter is less than that of the ear canal. The plug then slides easily into place (Fig. 5). As with all earplugs, fitting is easier if the ear canal is straightened and enlarged by pulling the outer ear (pinna) outward and upward during insertion (Fig. 6). Pull the pinna firmly, usually in the direction the ear extends from the head. Do not press it flat against the skull.

Plugs should be inserted into the right ear using the right hand and into the left ear with the left hand. The pinna should be pulled with the opposite hand by reaching behind or over the head. This allows the hand inserting the plug to have the best line of approach for proper fitting.

After insertion, it may be necessary to hold the plug in place with a fingertip for a few moments until it begins to expand and block the noise. This is not intended to keep the plug from backing out of the ear canal, since properly inserted plugs will not back out, but to ensure that the plug does not slip or dislodge prior to enlarging enough to hold itself in place. Once a plug has begun to expand, neither pushing nor twisting it will improve its fit. If the initial fit is inadequate, remove the plug, reroll it and try again. Occasionally when a foam plug is first inserted, it may be slightly uncomfortable if fitted deeply. Because a rolled-down plug is longer than an uncompressed plug, it will shorten as it expands and withdraw from portions of the ear canal which may be causing discomfort. Therefore, instead of reacting by immediately withdrawing a deeply fitted plug, it is better to wait 30 seconds or so for it to expand to see if the discomfort subsides. If discomfort does not subside, withdraw the plug slightly.

### Premolded Earplug Insertion

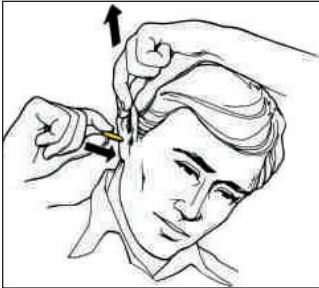


Fig. 7

Hands and plugs should be clean prior to use. As with all earplugs, fitting is easier if the ear canal is straightened and enlarged by pulling the outer ear (pinna) outward and upward during insertion (Fig. 7). Pull the pinna firmly, usually in the direction the ear extends from the head. Do not press it flat against the skull.

Plugs should be inserted into the right ear using the right hand and into the left ear with the left hand. The pinna should be pulled with the opposite hand by reaching behind or over the head. This allows the hand inserting the plug to have the best line of approach for proper fitting.

Insert the plug until you feel it sealing. This may seem tight at first, especially if you've never worn earplugs. Carefully twist the plug to break the seal for a slow, safe removal.

### Semi-Insert Earplug Insertion



Hands and plugs should be clean prior to use. Hold the large end of the plug and swivel it to direct the tip into the ear canal opening. Firmly push and wiggle the plug into the canal until a snug seal is obtained. Pulling on the outer ear while pushing on the plug will make insertion easier.

#### Pinna-Pulling Tip

A correct pinna pull is especially helpful. If the plug doesn't slide into the canal, keep trying to insert it as you continuously change the direction of pinna pull (up, out, back, etc.) until the plug slides into place.

### Earmuffs Use



Earmuffs must fully enclose the ears to seal against the head. Adjust the headband so the cushions exert even pressure around the ears to get the best noise reduction. Pull hair back and out from beneath the cushions. Don't store pencils or wear caps under cushions. Thick or poorly fitting eyeglass temples may also cause some loss of protection.



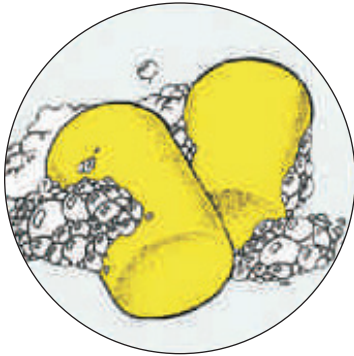
## Care of Hearing Protection Products

Properly changing and cleaning hearing protection devices is as important as wearing them. This keeps the ears clean and free from possible infection and also keeps the hearing protection in good condition.

Ideally, disposable earplugs should be changed twice a day. A new pair should be used at the start of the work shift and at the halfway point in the shift. Reuseable plugs should be cleaned with soap and water at the end of each work shift. The cushions and foam inserts of earmuffs should be cleaned weekly by wiping with soap and water or an alcohol pad.

### Foam Earplugs

Keep the plugs clean and free from material that can irritate the ear canal. They may be washed in mild liquid detergent and warm water. Squeeze excess water from the plugs and allow to fully air dry. These plugs may be washed several times, but discard them if they noticeably change their firmness or do not re-expand to their original size and shape.



### Premolded Earplugs

Premolded plugs will normally last several months or more depending on the type of plug and environmental factors. They should be replaced if they shrink or swell, harden or soften, tear, crack, or become permanently deformed. Wash them in warm, soapy water and rinse well. When dry, store them in a carrying case.



### Semi-Insert Earplugs

Most semi-inserts can be cleaned in the same way as premolded earplugs. Since the headband holds the tips in place to provide an acoustic seal, don't tamper with it or the protection the device provides may be reduced. Many manufacturers sell replacement tips.



### Earmuffs

Cushions can be cleaned with warm, soapy water and rinsed thoroughly. Do not use alcohol or solvents. Cushions normally need replacing at least yearly, or whenever they become stiff, cracked or no longer seal. Don't modify earmuffs in any way and never stretch or abuse the headbands as this will reduce your protection.



