

Personal Protective Equipment



FIG 38-8c - Fluid-filled cushion-type muff



FIG 38-9 - Earmuffs being worn around noisy equipment

Medical authorities say that anything over a 90 decibel sound level may endanger a person's hearing. A single decibel represents the smallest change in volume of sound which can be detected by the human ear. A 130-decibel sound is so intense that it produces a sensation of pain in the ear.

The American Academy of Ophthalmology and Otolaryngology has recommended a rule for the estimation of the "percentage impairment" of hearing, patterned after a similar guide developed by the Committee on Medical Rating of Physical Impairment of the American Medical Association. This rule is based on the arithmetic mean of hearing threshold measurements made at 500, 1000, and 2000 Hz. (See Chapter 45, "Industrial Noise," for details of sound and of hearing impairment.)

Only after all engineering and mechanical methods of reducing or limiting noise have been considered should consideration be given to the wearing of ear protectors by workmen.

Ear protectors in general use fall into two groups, the plug or insert type and the cup or muff type (see Figs 38-8a and -8b).

Insert type

The insert type, placed into the ear canal, varies considerably both in design and material. Materials used are rubber, soft or hard plastic, wax, and cotton ("Swedish wool"). Rubber and plastic types are popular because they are easy to keep clean, inexpensive and give good performance.

Since ear canals vary in size, these inserts come in several sizes. In some cases an individual will require a different size plug for each ear. It is important that ear plugs be fitted individually by proper personnel (Fig 38-10). Plugs must fit properly and remain correctly seated (Fig 38-10 inset), as even the slightest leakage will lower the attenuation by as much as 15 dB (decibels) in some frequencies.

Unless inserts made of hard materials are custom molded to the shape of an individual's ear canal, they may be uncomfortable to wear because of the pressure which must be developed in order to get a good acoustical seal against the tender inner lining of the ear canals. Soft plastic plugs give more comfort than hard types and hold their shape better.