

FAQ FREQUENTLY ASKED QUESTIONS ABOUT THE 3M™ COMBAT ARMS™ EARPLUGS

When do I set the rocker switch for either Open Mode or Closed Mode?

If you are firing a weapon (in training or in combat) and you have to maintain situational awareness and hear verbal communication, set the rocker switch in the Open Mode. In all other situations, including for steady/continuous noise (such as in a helicopter or tracked vehicle), set the rocker switch in the Closed Mode. Noise from weapons fire (i.e., impulse noises) will be attenuated in either mode, but only the Closed Mode provides protection from other noise, such as continuous noise.

How do the Combat Arms Earplugs protect my hearing from weapons fire or explosions in the Open Mode?

Impulse noise must pass through an acoustical filter. This acoustical filter reacts to sudden, loud sounds such as weapons fire. The louder the sound, the greater the response. In quiet, the acoustical filter allows sounds to pass through with as little reduction as possible.

How do I determine the correct size?

It is essential that someone with the appropriate training fits you with the correct size. Sizes are color-coded – small (green), medium (tan) and large (brown). The three pronged sizing tool may help

provide an approximation of the correct size, but the insertion of a trial earplug is needed to confirm. Approximately 1% of people will require a different size in each ear.

What is the best way to clean the earplug?

Use plain soap and water only, no harsh chemicals or detergents. Ensure the soap is thoroughly rinsed off so no holes are clogged. For best results, separate the plug from the plastic housing and clean the plug separately.

How do I know when to replace the Combat Arms Earplugs?

Replace if there are tears or cracks under any of the three flanges or if the plastic housing is damaged.

How should I store the earplug?

When not in use, keep in the plastic case provided or tie the cords to the helmet webbing for quick access.

Are any other modifications to the Combat Arms Earplugs recommended?

None are recommended. Any other modifications or alterations could invalidate CE approval or degrade the ability of the earplug to protect you from hazardous noise and/or interfere with your ability to maintain situational awareness and hear oral communications.

ORDERING INFORMATION

Product #	Abbreviated Description	Case Qty
370-1040	Combat Arms™ Earplug 4.1–Small	500 PR/CS
370-1041	Combat Arms™ Earplug 4.1–Medium	500 PR/CS
370-1042	Combat Arms™ Earplug 4.1–Large	500 PR/CS

⚠ WARNING!

1. Always be sure that the complete product is:

  - a) Suitable for the application
  - b) Fitted correctly
  - c) Worn during all periods of exposure
  - d) Replaced when necessary

2. This product may be adversely affected by certain chemical substances. Further information should be obtained from the manufacturer.

3. Earplugs fitted with a connecting cord should not be used where there is a risk that the cord may be caught up during use.

4. When used in the Open Mode against continuous noise, the product may not offer adequate protection in all operating environments which may lead to noise induced hearing loss.

5. Although test data from ISL laboratory for peak noise reduction shows that the product offers increasing level of protection against peak impulse noise up to 190 dB peak, it is recommended the product should be restricted to a maximum external level of 160 dB in order to ensure the level effective to the ear remains below the Peak Exposure Limit Value of 140 dB.

6. In the unlikely event of the earplug tip becoming lodged in the ear canal, seek medical attention.
7. Failure to follow all instructions on the use of these personal protection products and/or failure to properly wear the complete product during all periods of exposure may adversely affect the wearer's health, lead to severe or life threatening illness or permanent disability.

8. When shooting and exposed to impulse sounds, the severity of exposure is influenced by the weapon, ammunition, number of rounds fired, and numerous other variables. Proper selection, fit, use and maintenance of the hearing protector is very important. All of these factors make it difficult to predict the required and/or actual protection obtained. Regardless of the hearing protector being worn, the user should be alert to his or her own hearing. If during or after exposure, tinnitus (ringing or buzzing in the ears) is heard or the user's hearing seems muffled or dulled, or for any other reason the user suspects a hearing problem, the fit, condition or adequacy of the hearing protector should be carefully checked and/or a more protective device or combination of devices (such as earmuffs and earplugs together) should be worn. For those exposed to weapons fire on a regular basis, periodic hearing evaluations are advised.

9. If your hearing seems dulled or you hear a ringing or buzzing after shooting, your hearing may be at risk. See packaging and user instructions for additional information.



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3M Personal Safety Division

3M™ Combat Arms™ Earplugs – Generation 4.1

Detection Protection Validation



# Hearing Protection Solutions

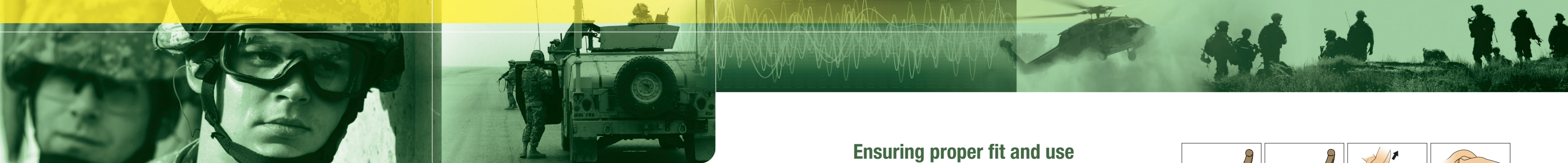
## Combat Arms Earplugs

3M Combat Arms™ Earplugs – Generation 4.1 meet the demanding hearing protection needs of those serving in the armed forces defense markets. Rest assured, 3M strives to protect the hearing of those who protect us.

The Power to Protect Your World.™







# Tactical hearing protection

3M understands that hearing protection can be an effective defense against noise-induced hearing loss. Military personnel conducting tactical operations rely on their ability to hear for survival and mission success. They encounter hazardous levels of noise from a variety of situations, including weapons fire, vehicles, aircraft, and shipboard operations. Protecting hearing for personnel without decreasing their ability to communicate requires specialized equipment.

## 3M™ Combat Arms™ Earplugs – Generation 4.1

The 3M™ Combat Arms™ Earplugs – Generation 4.1 contain a housing assembly featuring a rocker switch. When the tab featuring the 3M logo is pressed, the device is in the Closed Mode and acts as a conventional earplug. The Closed Mode provides protection against all types of noise, and should be the only mode used for steady noise such as aircraft, vehicle, generator and watercraft.

When the tab featuring the CAE logo with a tiny hole marking is pressed, the device is in the Open Mode and allows some sound to pass through. The Open Mode may assist the user with improved situational awareness in quiet environments while still helping protect hearing from impulse noise such as weapons fire.\*

- Available in small, medium and large tip sizes to fit most ear canals
- Designed to allow wearer to hear non-impulse, low-level sounds when in the Open Mode
- Soft, flexible retainer
- Ergonomic rocker switch – easy to switch while in ear, even when wearing gloves
- Easy to clean
- No batteries required



### Detection

Measuring noise exposure in military environments is the first step in identifying where hearing protection may be needed.



### Protection

Protecting hearing and enhancing communication require comfortable solutions with options that make it easy to select the right protection for every service member.



### Validation

Training on the proper use of protection and measurement of attenuation levels can help you validate that your personnel are protected.

\* **NOTE:** Although still protective, weapons fire is louder in the Open Mode than in the Closed Mode. When used in the Open Mode against continuous noise, the product may not offer adequate protection in all operating environments, which may lead to noise-induced hearing loss.

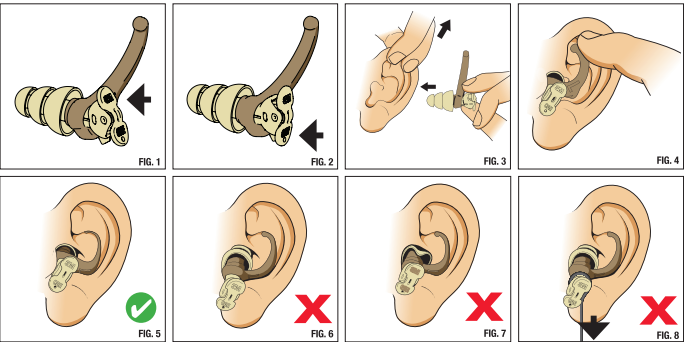
## Ensuring proper fit and use

Combat Arms Earplugs – Generation 4.1 is available in three sizes. In general, choose the smallest size that provides a good seal and a secure fit but is large enough that the outer flange seals the ear canal. Consult an audiologist, health care provider or the manufacturer for advice on selecting the best size to properly fit the ear canal. Next, follow these important steps for using the earplugs:

- Step 1.** Ensure that the plug labeled with an “L” is used for the left ear and the plug with an “R” is used on the right ear. Ensure the retainer is oriented generally as shown relative to the rocker switch. (see Figs. 1 and 2)
- Step 2.** Insert the plug into the ear canal while pulling the ear outward and upward with the opposite hand. Ensure the rocker switch is in the vertical position. (see Fig. 3)
- Step 3.** Use index finger to push and bend the retainer into the concha to help ensure the earplug is seated securely. (see Fig. 4)
- Step 4.** If properly inserted, the retainer should be fully secured in the concha and not protruding out of the ear at any point. (see Fig. 5)
- Step 5.** If the retainer or earplug doesn't fit properly it can be removed and reinserted. (see Figs. 6 and 7)

**Removing earplugs.** For greater comfort, twist the earplug gently to break the seal before removing it from the ear canal. **Caution: Rapid removal may damage the ear. It is not recommended to remove the earplugs by pulling the cord.** (see Fig. 8)

**Fit checking.** Choose smallest size that provides good seal and secure fit, but large enough that the outer flange seals ear canal at ear canal entrance. One quick and easy fit check is the pump test. The seal can be tested by gently pumping the plug in and out of the ear canal while the rocker switch is in the Closed Mode position. When a proper acoustic/pneumatic seal is present, the pumping motion will cause the pressure changes in the ear, which the wearer should be able to detect. The earplugs will be much less noticeable or totally absent while the rocker switch is in the Open Mode position. If no difference can be detected between the Open and Closed Modes, the plug is probably not sealing the ear. Also, the user's voice should sound louder and deeper when they speak or hum.



**Cleaning and disinfecting.** These earplugs are reusable and should be cleaned with mild soap and warm water only. Allow to dry at room temperature. Do not immerse the rocker switch assembly in water, as this can clog the filter. Do not use alcohol or other disinfectants, as these may damage the earplugs. Do not use heat to dry the product. Hard plastic parts may be wiped clean. Discard the product immediately if there is any sign of damage.

## Attenuation data

**Peak noise reduction values for all sizes, as determined by the Institute of Saint-Louis laboratory in France**

External peak sound level (dB)	110	130	150	170	190
Peak noise reduction (dB)	4.8	13.9	17.0	23.5	30.2
Standard deviation (dB)	1.8	0.4	0.5	0.6	0.7

*Note: Peak impulse noise reduction is the difference between maximum amplitude measured outside and inside the ear on an artificial head form against various types of impulse noises.*

**Subjective attenuation in accordance with EN352-2:2002 in the Closed mode**

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Mf (dB)	28.3	27.9	26.8	28.3	27.2	31.5	33.0	39.2
Sf (dB)	5.8	4.3	4.4	3.4	4.0	4.4	2.3	4.9
APVf (dB)	22.5	23.6	22.4	24.9	23.2	27.1	30.7	34.3

*SNR = 28dB H = 28dB M = 25dB L = 24dB APVf = Mf – Sf*

**Subjective attenuation in accordance with EN352-2:2002 in the Open mode**

Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Mf (dB)	5.7	5.8	7.9	10.1	17.3	23.9	23.3	28.3
Sf (dB)	2.5	2.8	3.1	2.3	2.6	3.4	2.7	5.4
APVf (dB)	3.2	3.0	4.8	7.8	14.7	20.5	20.6	22.9

*SNR = 16dB H = 20dB M = 12dB L = 7dB APVf = Mf – Sf*

**KEY**  
Mf = Mean attenuation  
Sf = Standard deviation  
APVf = Assumed protection value  
  
Approvals: 3M Combat Arms Reusable Ear Plugs (CAE) Version 4.1 are tested and CE approved against EN352-2:2002 (in the Closed Mode). The product has also been tested for peak noise reduction at the Institute of Saint Lois (ISL) in France against an internal test protocol developed by ISL. Full subjective attenuation measurements have also been carried out in the open mode for information only.