

ShootForum.com's Mammoth Hearing Protection Test 2009



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Introduction

Welcome to ShootForum.com's mammoth hearing protection test.

Here we have gathered together as many types of shooting hearing protection as we can – 18 in total. These devices have then been subjected to testing in as many shooting scenarios as possible. As a minimum, each piece of kit has been rifle shooting on a range, clay pigeon shooting and stalking.

Testing these devices is not as easy a task as you would imagine and ultimately relies upon the subjective opinion of the tester. Actually quantifying the exact level of hearing protection using instrumentation is almost impossible – try shooting with a microphone in your ear canal with hearing protection on top of that all day long! No thank you.

Here is something to remember when your favourite magazine starts waving sound meters about - the peak sound pressure of gunfire itself is impossible to measure outside a laboratory. It is not the "volume" but the incredibly short pressure rise time that causes issues – in fact it is so short that there are no sound meters which can accurately measure gunfire. In the lab, gunfire can only be measured accurately using material stress tests.

Due to the above, testing was limited to our dB meter – the MK1 earhole of the testers. To limit any bias toward one brand or another and to test with different head / ear shapes, trials were carried out not only by myself, but with friends who were handed various devices over the last few months – all were keen to give their opinion.

Compiling the data for this test has taken far longer than expected – simply finding time to test all these models in each scenario took many months and I did not want to take any shortcuts here. All the devices deserved a thorough and methodical test. Apologies to the manufacturers for borrowing kit longer than agreed! While I remember, many thanks to Peltor and Napier who provided demo models for testing.

I'd hope you find this a useful test. If you or your company have another model not included in the test, please contact me by the forum and we can arrange to include it.

As always, please give us feedback in the forum for future tests.

Best regards,
Kevin of ShootForum.com. May 2009.

Scoring

Each device is marked out of a total of 100 points. This is split into the following categories to make a total. Some categories I consider are more important than others and therefore have a higher possible mark.

- **Gunfire sound reduction** – 25 possible marks.
 - Ultimately how much protection did we feel the device gave. Some devices are suited to heavier, more sustained fire than others. Marked by the good old MK1 earhole in extended testing (with a few resulting headaches!).
- **Ambient sound quality** – 20 possible marks.
 - When wearing the hearing protection, can normal sounds around you still be heard? In many shooting disciplines the ability to hear the environment around you can provide a sporting advantage. Think of the rough shooter, wildfowler or stalker who needs to hear their prey or their footsteps. When game, clay or range shooting it can be safety critical hear your environment or instruction from those around you. Clay shooters participating in Olympic disciplines with a computerised trap delay can hear the trap launch a clay, so this gives a competitive advantage. In almost every shooting situation, being able to hear the world around you while wearing the protection is preferable and a far more natural experience. This section is again marked by the MK1 earhole.
- **Practicality / design** – 20 possible marks.
 - The size, weight and ergonomics of the device. If a device is a pain to wear, carry, stow or difficult to use then you are less likely to take them out and actually make use of them. How many of us take the “odd shot” without protection as the devices you use take too long to put on or are just a pain? It just takes the one shot to cause permanent hearing damage.
- **Comfort** – 15 possible marks.
 - Can they be worn for long periods? Depending on the sport you may have to wear them for hours on end, so they had better be comfortable!
- **Style** – 10 possible marks.
 - When choosing safety gear this category shouldn't be a major part of our buying decision, but let's face it, it is. If it makes you look like a prat on the peg or firing line then you aren't going to use them, are you?
- **Value for money** – 10 possible marks.
 - How do they perform against competition in the same price bracket? Are they built well and likely to last a while?

Puretone CENS Digital

“Street price” approximately £400 - £550 depending on the model



Overview

In-ear, moulded to fit, electronic, soft material.

The CENS hearing protectors are an in-ear type and custom made for each individual user. You cannot just go into a shop and buy these – they require fitting to your ears which involves a visit to your local hearing aid supplier. Here they take a cast of your ear which only takes 5 minutes and is totally painless. In my case, it was carried out by a pretty young thing who made the whole process highly enjoyable. Unfortunately the manufacturer cannot guarantee pretty girls everywhere! ☺

Once you have the moulds, they are sent to PureTone who manufacture the plugs to your exact ear. The protection offered is an electronic type where natural sounds are electronically transmitted to the ear, but noises above a certain dB threshold are automatically muted.

The plugs come supplied with a comprehensive manual, a hard carry case, soft carry case, shotgun / FAC wallet and several batteries. As the plugs are moulded to the individual, they even arrive with the owners name laser engraved into them which is a nice touch.

PureTone also supply a passive module (clear plastic in the pic above) which replaces the electronic modules. Unless you had the electronic modules off for servicing, I cannot think of a reason to use them.

4 different models are available:

- CENS Digital 1 – hard plastic, one operation mode, approximately £400
- CENS Digital 1 Flex – soft silicone, one operation mode, approximately £450
- CENS Digital 2 – hard plastic, two operation modes, approximately £500
- CENS Digital 2 Flex – soft silicone, two operation modes, approximately £550

Any which way you look at it, that is a lot of money and they had better be good! Here we tested the top of the range CENS Digital 2 Flex.

Gunfire sound reduction

The “CENS Digital 2 Flex” offers 3 modes of operation. The first mode of operation is with all the electronics turned off and they operate as a simple ear plug. Noise reduction was impressive due to their custom ear fit – good to know if the batteries run out.

The second mode is described as useful for clay shooting and the third for game shooting. These modes are accessed by first turning the volume control on, activating the electronics, and pressing the mode button – one beep confirms “clay” mode and two confirms “game” mode. The blurb accompanying the CENS gives all sorts of technical differences between the two modes, but in reality the “game” mode appears to allow higher frequencies to be heard more naturally while the “clay” mode seems to shut down the protection

for slightly longer between shots. The protection was so good that in use I tended to leave the device on “game mode” all the time.

Overall, the gun sound protection was excellent and even after a full day’s clay shooting with a couple hundred shots fired my hearing felt completely fresh. Likewise, large magnum calibres were no problem.

Score 24 from 25

Ambient sound quality

2nd best in the test after the large Plexor Tactical XP ear muffs and they were not far behind at all.

Especially when in “game” mode, these have a natural sound quality which, once you have worn them for a few moments, becomes completely natural and unnoticed.

Natural conversation is effortless, speech is amplified which can actually make it easier to hear others when wearing the plugs!

The lower midrange frequencies and particularly bass response is somewhat reduced from reality, but other sounds are positively intensified. It remains easy to pinpoint the direction in which a sound originates from with these units too.

Standing in the line on a game shoot, you can hear a pheasant approach earlier than with an unaided ear.

When stalking, hill and woodland sounds become more acute. You are more aware of your surroundings, the noise you make and those of your quarry. For any type of game or hunting use, these devices give a real advantage.

The only detail that knocks points off these units is the occasional wind noise which is amplified and intrusive. However, I know the designer is working on this small problem for future models – hopefully I’ll be able to update this test soon ;)

Score 17 from 20

Practicality / design

CENS are tiny things and can fit in the smallest pocket. They come with both a hard and soft case to keep them in and weigh virtually nothing. As such, you never have an excuse not to have them with you at all times.

On the design side, I only have the following negative comments and these are really minor:

1. The lack of a fixed “on volume”. Setting the volume requires you to turn a knob in each ear individually and this takes a few moments to “balance” between ears.
2. The size of the mode button - so small that it can be difficult to find and impossible to use with gloves.
3. Battery life seems fairly short – the batteries that came with the unit (small 312 size hearing aid units) did not last too long at about 8 hours continuous use – however, this should be more than enough for a full days shooting and the batteries are cheap.

In reality, I’m clutching at straws here as you tend to set the device once each day and wear it for the duration of the event – more of that in the comfort score.

Had it not been for the above 3 items, these would have scored 20 from 20 in this section!

Score 17 from 20

Comfort

This is the only device tested that you can put on / stick in your ears and then completely forget about. The soft silicone type material these are made from fill your ear perfectly and have no sharp edges or pressure points.

These are so comfortable that on several occasions I found myself out in the field for several hours and on returning home, forgetting to remove them!

My only criticism (and this is a small one) is that inserting the protectors is a little tricky and takes a few moments to have them sitting “just right” in your ear. This may be due to the unique shape of my ear canal

and as already stated, these are so comfortable that you are unlikely to remove them for the duration of your sport anyway.

Score 14 from 15

Style

These look great. Not only are they barely visible unless someone is up close and looking in your ear, but even if noticed they look special – obviously electronic and cool ☺

Score 10 from 10

Value for money

Here are no two ways about it - at £550 these are not cheap. You may argue that a foam plug can protect your hearing just as well and question my score in this category. However, consider this – these protectors scored pretty much top marks in virtually all categories and they are the only protector I would be happy to wear for all day long without feeling discomfort, inconvenience or having my natural hearing impaired. They are also the only device which work equally well for game shooting, clay shooting, range shooting and hunting.

Yes, they are expensive, but as a package they do everything better than all the competition no matter what your shooting discipline. You never feel that wearing these protectors is in any way a burden – therefore, unlike some, they are always in your ear for each and every shot. Yes, £550 is a lot of money, but I value my hearing way above that and these are the best of the best.

Score 7 from 10

Total score = 89 from 100.

Peltor Tactical XP

“Street price” approximately £130



Overview

Full size earmuffs, electronic. Electronic voice guided menu system.

No two ways about it – these are big beefy ear muffs! However, don't let that put you off.

The Tactical XP's are an electronic type where natural sounds are transmitted to the ear, but noises above a certain dB threshold are automatically muted.

The earmuffs come supplied with a comprehensive manual and a set of AA batteries to power them with.

After extensive use, I'm still on the first set of batteries, so I can only assume they will last some considerable time. Peltor claim 1000 hours runtime in their product literature!

Like all Peltor products, these are quality items, designed and built to last. They feel as if they could put up with years of rattling round in the back of a Land Rover.

Gunfire sound reduction

The Tactical XP's offer 2 modes of operation – on and off ☺

When off, these protectors make you feel like you have just gone deaf. They block out almost all ambient noise.

When on, they perform very similarly to the CENS units and shutdown instantly so that the gunfire is heard as a distant dull thud.

Ultimately these worked better than all other electronic muffs in this test. When sitting alongside a friend's 300 WSM on the range while doing load development with over 100 rounds, these are the protectors you wanted.

Very impressive.

Score 25 from 25

Ambient sound quality

The Tactical XP's are just outstanding in this respect. Their pure sound quality is ultimately the best in this test and your environment sounds more natural than with any other.

Distant / quiet noises are amplified in a completely natural way – you can actually miss having them on.

While shooting on my range, I'd left the radio on in my barn which sits 200 odd yards away. I was shooting away and happily listening to the lunchtime news. Upon finishing the group I took the XP's off and found I couldn't hear the radio at all anymore. They went back on ☺

Obviously conversation was effortless and like the CENS game becomes easier to hear. Wind noise is better controlled than the CENS and is almost never heard.

Possibly as they have more “room” to operate in and larger drive units, the XP's lower mid-range and bass performance was superior to the CENS.

Balance and frequency response are adjustable with the big, easily accessible buttons.

Only in 2 areas are these beaten – sound source location and a feeling of spaciousness. While you can still hear the direction in which a sound has come from, it is not as precise as with the CENS. Likewise, the

sound also feels a little closed in and controlled – a feeling you just don't get with the CENS. I can't decide if this is just due to having two cans pushed against my head or if it's something in the digital processing.

Score 19 from 20

Practicality / design

As mentioned, they are big. However, that said, I was surprised to find that they don't get in the way while actually shooting.

The problem with them, like all muffs, is what you do with them when not shooting. If you are target shooting, on a range etc, then it's obviously not a problem. For rough shooting, stalking etc they are really too big to comfortably either wear round your neck or stick in a pocket. As such, they just tend to get in the way a bit.

In terms of use, these are great – big chunky buttons that are just as easy to operate wearing gloves as without.

Score 13 from 20

Comfort

Surprisingly, considering their size, these are amazingly comfortable to wear. Of all the headphones in the test, these are made from the best materials and have obviously been designed for wearing for extended periods. Although heavier than other headphones on the scales, when actually wearing them you cannot tell. Of all the headphone types in this test, these are the pair I'd choose to wear for any length of time.

Score 10 from 15

Style

Considering their size, these are pretty cool and even from a distance it is obvious that they are not just another pair of earmuffs but something special. If only they could be made a little thinner...

Score 5 from 10

Value for money

These are expensive for headphones, but not overly expensive for electronic headphones. In my mind they are certainly worth the additional £30-£40 over standard electronic earmuffs.

These are exceptionally well built, a joy to use and I would love to own a pair.

Score 8 from 10

Total score = 80 from 100.

Peltor SportTac

“Street price” approximately £90



Overview

Slim-line earmuffs, electronic

These are a neat and slim-line pair of electronic earmuffs which appear to have been designed specifically for the shooting market.

Like other electronic devices they are designed to transmit natural sounds while muting gunfire.

The earmuffs come supplied with a comprehensive manual and a set of AAA batteries to power them with.

Oddly they come with interchangeable red and black plastic sides. Not being the fashionable sort, I immediately fitted the black ones! I guess they may be useful in countries where red garb is insisted upon for hunting – eg. certain US states.

Peltor claims an impressive 600 hours runtime per set of AAA batteries.

Like the Tactical XP's, these are quality items. Perhaps not quite the same “bomb proof” feel as the XP's, but much better than most.

Unlike the XP's, these units have microphones and wind protection fitted internally rather than sticking out.

Gunfire sound reduction

The SportTac's offer 2 modes of operation – on and off.

When off, these earmuffs function much like any slimline passive protection. No worse, no better.

When turned on, the electronics amplify normal noises but shutdown instantly upon gunfire. Like all the other electronic devices, shutdown and continuation of normal operation is so quick, you just don't really notice it working – you only hear the dull thud of gunfire.

When compared (using my MK1 earholes) to the XP's or CENS, these were not quite as efficient in cutting down the noise. However I have to stress that this was only in a side by side test and in no way am I inferring that they are less safe to use. I shot 100 clays in 30 minutes wearing these and not for one second did I think I may need more protection.

Score 22 from 25

Ambient sound quality

The SportTac initially feels even better than the XP's however, this feeling is short-lived and primarily brought about by an over amplification of the upper mid-range and treble regions. This gives a nice “open” feel to the sound, but one which ultimately feels a little wearing. Bass response was positively lacking in comparison to the XP's.

Overall, it never really sounds completely natural and the sound directional pinpointing ability is not particularly great either.

That said, your surroundings are well amplified and you will hear a clay trap operating or pheasant rising before you would with bare ears. Conversations can be held completely naturally.

Wind noise is well controlled, perhaps not to the same level as the XP's, but it should never be intrusive.

Perhaps I've been spoiled with the XP and CENS models in this test, but in a direct comparison, they are just not as good. However, you have to remember they are cheaper than both models and they still sound

better than the Deben electronic muffs, Academy devices and a many, many times better than mechanical or passive devices.

Score 15 from 20

Practicality / design

No better or worse than any other slimline ear-muff – which to me means they always seem to get in the way when that are not actually on your head! ☺

One specific criticism of this model is that the buttons on these are nowhere near as good as on the larger XP model. While wearing them, I found the buttons difficult to find and to differentiate between the volume and on/off switches. You can forget about trying it with gloves. Strange design choice as there appears to be plenty of space to employ big chunky buttons.

Score 10 from 20

Comfort

Great quality materials and a headband that, while secure, does not attempt to pulp your brains make these easy to wear. The ear cushion is made from the same quality material as other Peltor's and is very comfortable no matter what the weather.

The inner cup is a little shallower than I would have liked. I don't have particularly sticky-out ears, but could still feel them touch the inside of the cup. Not a problem, but it makes the earmuffs feel a little more closed in than they might be.

Score 8 from 15

Style

At first glance these just look like any other pair of earmuffs, but look again and it is obvious these are electronic jobs and therefore instantly cool. Slimmer than the XP model too.

Score 7 from 10

Value for money

Great value in a competitive market segment. Ultimately, I'd have these over others of a similar price.

Score 8 from 10

Total score = 70 from 100.

Peltor Bull's Eye III

"Street price" approximately £18



Overview

Earmuffs, passive

Big chunky earmuffs with the sole purpose of blocking out as much sound as they can.

Gunfire sound reduction

The Bull's Eye II's are much like the Tactical XP's in off position – the world suddenly goes silent with them on! Much, much better protection than any of the slim line models. However – do you need hearing protection from thermonuclear explosions?

Score 25 from 25

Ambient sound quality

Eh – no. You wear these when you want to hear nothing. Nothing at all.

So little noise comes through that hearing range instructions or hearing the whistle at the end of a drive can become an issue. Useful for a nagging wife though.

Score 1 from 20

Practicality / design

These really are quite big. Still, in use they never got in the way of mounting a gun.

Therefore, I've marked them the same as all other passive earmuffs. That is, they will get in the way whenever you are not using them!

Score 9 from 20

Comfort

Much like all the other Peltor's - great quality materials and a well weighted headband made them easy to wear.

The inner cup is spacious giving a feeling of "freedom" missing in some ear-muffs.

Score 10 from 15

Style

At first glance these just look like any other pair of earmuffs – they are. And big too.

Score 4 from 10

Value for money

More expensive than other passive models in this test. They are just overkill for shooting in unless you work in an indoor MOD range or similar.

Score 4 from 10

Total score = 53 from 100.

Peltor Bull's Eye II

"Street price" approximately £18



Overview

Standard size earmuff, passive

Gunfire sound reduction

Nearly as effective as the Bull's Eye III's, but allow you to hear that the gun has at least gone off! 😊
Better protection than slim line models.

Score 24 from 25

Ambient sound quality

WHAT WAS THAT? SPEAK UP MAN!

Not quite as bad as the Bull's Eye III's, but still you are not going to have any conversations, even shouted, with these on.

I would worry about hearing range instructions or the whistle at the end of a drive.

Score 2 from 20

Practicality and ease of use

While larger than a slimline earmuff, these did not get in the way of mounting a gun or rifle. Therefore, I've marked them the same as all other passive earmuffs. That is, they will get in the way whenever you are not using them! 😊

Score 9 from 20

Comfort

Much like all the other Peltor's - great quality materials and a well weighted headband made them easy to wear.

The inner cup is spacious giving a feeling of "freedom" missing in some ear-muffs.

Score 10 from 15

Style

Just a pair of earmuffs.

Score 4 from 10

Value for money

More expensive than some other passive models in this test. Worth it for the comfort.

Score 4 from 10

Total score = 53 from 100.

Peltor Bull's Eye I

"Street price" approximately £15



Overview

Earmuffs, passive

Slim line earmuffs supplied in a "loose me now" green colour ☺

Gunfire sound reduction

More than enough protection in the real world

Score 22 from 25

Ambient sound quality

While you can hear more than the Bull's Eye II's, not by much. These still really do dull your senses.

Score 3 from 20

Practicality and ease of use

No better or worse than any other slimline ear-muff – which to me means they always seem to get in the way when that are not actually on your head! ☺

Score 9 from 20

Comfort

Much like all the other Peltor's - great quality materials and a well weighted headband made them easy to wear.

The inner cup is a little shallower than I would have liked. I don't have particularly sticky-out ears, but could still feel them touch the inside of the cup. Not a problem, but it makes the earmuffs feel a little more closed in than they might be. Still, this is the price you pay for the slim-line size.

Score 8 from 15

Style

Just a pair of earmuffs.

Score 4 from 10

Value for money

Cheap, efficient and comfortable if you don't want or need to hear much.

Score 7 from 10

Total score = 53 from 100.

Deben Slim Electronic

“Street price” approximately £95



Overview

Slim-line earmuffs, electronic

These are a neat and slim-line pair of electronic earmuffs which appear to have been designed specifically for the shooting market. The electronics are in the top half of the muff which allows the lower to be slimmer – potentially helping gun mount.

Like other electronic devices they are designed to transmit natural sounds while muting gunfire.

The earmuffs come supplied with a manual and ‘N’ type / LR1 batteries – strange choice of battery type which may prove difficult to find in a hurry if they run out. Deben do say they will last 300 hours though. These units have internal microphones and wind protection.

Gunfire sound reduction

When off, these earmuffs function much like any slimline passive protection. No worse, no better.

When turned on, the electronics amplify normal noises but shutdown instantly upon gunfire. Like all the other electronic devices, shutdown and continuation of normal operation is so quick, you just don’t really notice it working – you only hear the dull thud of gunfire.

Sound reduction was very similar to the Peltor slimline model – i.e. very impressive.

Score 22 from 25

Ambient sound quality

While these “do what they say on the tin”, I have to say that they were a real disappointment in this area. There is no problem in holding conversations, or hearing traps / birds, but when compared to the Peltors they have 3 essential flaws:

- 1) The sound quality is like a poor quality MP3 – overly digital and harsh. Not pleasant to listen to for any length of time
- 2) Pinpointing the direction of the sound is difficult – sometimes determining whether it is coming from in front or behind is impossible! This may be due to the location of the microphones.
- 3) If you have the volume up quite high, wind noise or other loud noises seem to induce feedback and you get strange screechy noises which really cause you to lose focus.

Even with the problems above, I’d still prefer these over passive devices.

Score 10 from 20

Practicality / design

No better or worse than any other slimline ear-muff – which to me means they always seem to get in the way when that are not actually on your head! ☺

Decently sized volume buttons allow you to use these with gloves on.

Score 12 from 20

Comfort

The rubbery material between the inner cup and outer shell is of a harder and smoother material than that used in the Peltors. This lead to them feeling hot and sweaty in prolonged use.

They felt overly tight on my head too – they just need to stay there Deben, not reshape my skull!

Score 6 from 15

Style

Slimline and electronic – therefore cool.

Score 7 from 10

Value for money

Material quality is not as nice as the Peltor models. Headband material in particular feels cheap and plastic – the type you just know is going to split in a few years.

Score 3 from 10

Total score = 59 from 100.

Deben "Slim Passive Protection"

"Street price" approximately £19



Overview

Earmuffs, passive

Gunfire sound reduction

Poor compared to all other earmuffs. The rubbery material between the inner cup and outer shell on my model began to part after only a few hours use. This allowed small airgaps to form and allow additional noise in. I don't know if this allowed the noise to become dangerous (I doubt it) however they were noticeably louder than others.

Score 5 from 25

Ambient sound quality

The best of all passive earmuffs, but as above – I'm not sure this was by design!

Score 5 from 20

Practicality and ease of use

No better or worse than any other slimline ear-muff – which to me means they always seem to get in the way when that are not actually on your head! ☺

Score 9 from 20

Comfort

The rubbery material between the inner cup and outer shell is of a harder and smoother material than that used in the Peltors and they felt hot and sweaty in prolonged use.

The headband seemed well weighted, but when wearing a cap suddenly became very tight.

The inner cup is well sized – better than the Peltor's slim line models in this respect (and this respect only!)

Score 7 from 15

Style

Just a pair of earmuffs.

Score 4 from 10

Value for money

Cheap, cheap and cheap. Given the fact that they were beginning to fall apart so soon into their test, I'm not even sure they would be safe after a few more hours of use.

Score 1 from 10

Total score = 31 from 100.

Napier Pro9

"Street price" approximately £23



Overview

Earmuffs (or are they?), passive with "sound chamber"

These are unlike anything you have seen before! Like earmuffs, you wear them over your head, but unlike earmuffs, you don't have the great big earmuff bit. Did that make sense? Thought not – look at the picture. I'm told that these work by directing the sound wave energy up the hollow legs, or "sound chambers" and this gives over 32 dB of protection from gunfire. Impressive claims that standard passive protection struggles to match.

Since this test Napier has released the "Pro 10" model which will be sold alongside the Pro9. Apparently it is much the same thing, just a bit bigger with *"3 times more protection from damaging noise levels"* at 36 dB of protection.

Gunfire sound reduction

I don't mind admitting that initially these did not feel like they were going to protect my ears. They were so light compared to traditional muffs. Their ability to pass ambient sounds also made me nervous. So, unlike the others and to my shame I started with a blank firer using short blanks before working up to shotguns and rifles. I needn't have bothered being such a coward – these Pro9's work brilliantly!

To my MK1 lugholes, they appear to give similar protection as standard slimline passive earmuffs. I was honestly astounded.

Brilliant!

Score 22 from 25

Ambient sound quality

Great; a million times better than any other non-digital device on test.

While your hearing is still dulled a little wearing these it's not by much. It is still possible to conduct conversations easily and there is no issue in hearing range instructions or game whistles.

What you are not going to get is the positively heightened hearing which digital devices grant. However, this product is not designed to provide that.

Highly impressed – note I rate the sound quality as better than the Deben Slim Electronic model.

Score 12 from 20

Practicality and ease of use

Much better than any of the ear-muffs as when not in use as they fold and fit in your pocket, even a small shirt pocket! Alternatively, they can hang round your neck without getting in the way like muffs do.

Napier will also sell you a small belt pouch to keep them in if you want.

One advantage they have over the ear-plugs is that while they are small and neat, they are not so small that you have to dig about in your pockets to find them. They always appear to be to hand, they fit on your head in an instant, even with one hand and no buttons need to be found and pressed.

It doesn't get more practical than that!

Score 20 from 20

Comfort

Due to the fact they are light and therefore don't need 500 pounds of force to be held against your head, they are easy to wear, even with a hat. In fact when worn properly you can forget they are even on. I prefer the feel of them resting against my ears over either the earmuffs push or the earplugs "fullness" in the ear. Only the CENS could I describe as more comfortable to use.

Score 13 from 15

Style

Strange looking things, but the look grows on you. They seem to be a conversation piece at the clay ground every time you put them on.

Score 5 from 10

Value for money

Cheap, cheap and cheap. If that is all you want..... err OR NOT!

These things sell for peanuts but perform incredibly well. They also feel well enough made to give years of service.

These have to be the value for money best buy of the test.

Score 10 from 10

Total score = 82 from 100.

Academy unbranded electronic in-ear

“Street price” approximately \$35



Overview

In-ear, electronic - \$35 (note, US dollars)

These plugs were bought from a large sports / shooting chain in the US, “Academy”. They were unbranded and cheap, but promised protection as well as amplification of environmental noise.

UK shooters can buy these over the internet – but don’t bother ;)

Gunfire sound reduction

After shooting a hundred clays I had a sore head which is never a good sign.

I would not recommend you use this with a particularly powerful magnum rifle.

Score 4 from 25

Ambient sound quality

Not what you would describe as natural, but amplified certainly! To be fair, these are better for hearing ambient sound than passive earmuffs, and in certain hunting situations they do offer an advantage. They are very prone to wind noise, feedback and screeching digital noise.

Score 9 from 20

Practicality / design

Much the same as other in-ear plugs in that they are easy to stick in a clean pocket when not in use. The case provided is too fiddly to use in the field though – you would end up just chucking them in a pocket resulting in them getting covered in whatever gunk is in there.

The controls are difficult to operate and as the batteries (quickly) drain they have to be frequently adjusted to maintain equal volume in each ear. Batteries are tricky to replace, and invariably need to be, in the field.

Score 8 from 20

Comfort

They are supplied with 3 sizes of rubber insert for your ears. All are painful, some just less so than others.

Score 2 from 15

Style

Being in-ear and electronic they should be cool. Going deaf wearing them is less cool.

Score 5 from 10

Value for money

Cheap, but rubbish. They also broke and needed to be glued back together after the 2nd battery change. If this happened in the field you could be forced to go home.

Score 2 from 10

Total score = 32 from 100.

Surefire EarPro “Sonic Defenders” EP3 / EP4

“Street price” approximately £14



Overview

In-ear, “Hocks Noise Braker filter”. Supplied in a neat case. Colour coded for left and right ears. Available in various sizes.

Gunfire sound reduction

Not particularly impressive. After one session developing a load for a rifle, I had to stop and change for another type of protection. They felt OK with the shotgun, but other models are better for less price.

Score 12 from 25

Ambient sound quality

These protectors have a small grommet that can be taken out – apparently to give better natural hearing. I honestly couldn’t tell much difference either way. They slightly better than a slim line passive earmuff.

Score 5 from 20

Practicality / design

Much the same as other in-ear plugs in that they are easy to stick in a clean pocket when not in use. They come with a good snap open / close case which protects them from dirt in your pocket.

It is difficult to open the grommet without removing them from your ears and fitting them in your ears is fiddlier than it should be.

Score 9 from 20

Comfort

Although I tried the various sizes available, I never got one that I would describe as comfortable. The nearest I got was this medium size but even it didn’t feel great after a while. After they were cleaned and passed between friends everyone thought much the same.

Score 4 from 15

Style

Quirky, I quite like the look of them.

Score 6 from 10

Value for money

Shame, I liked the design, but the comfort and hearing protection just wasn’t there. Even at the price I couldn’t call them good value for money.

Score 2 from 10

Total score = 38 from 100.

Hoppes #9 ear plugs

"Street price" approximately £3



Overview

In-ear, "flanged internal protection".

Supplied in a neat case.

I've owned a few pairs of these over the years and generally have the odd pair kicking about in the car or jacket pocket just in case.

Gunfire sound reduction

These work great – not the best out there as after shooting 150 clays one afternoon I had a bit of a sore head. Fine for any normal use though.

Score 15 from 25

Ambient sound quality

These do allow you to hold a shouted conversation and you can just about hear a trap launch a clay. There is no chance of hearing a pheasant rise though.

Score 6 from 20

Practicality / design

Much the same as other in-ear plugs in that they are easy to stick in a clean pocket when not in use. They come with a good snap open / close case which protects them from dirt in your pocket.

No buttons to press and they can just be wiped clean.

Score 20 from 20

Comfort

These are fine for up to an hour in my ears, but after that they do get a bit annoying and need to be taken out for a few minutes rest. That's okay for a lot of shooting disciplines though.

Score 6 from 20

Style

Not much to see really – which is a good thing.

Score 8 from 10

Value for money

They work well enough and are cheap enough to have a few pairs lying around. A good buy as a "spare set".

Score 7 from 10

Total score = 62 from 100.

Sonic II ear plugs

"Street price" approximately £13



Overview

In-ear, mechanical valve
Supplied in a neat case.

Gunfire sound reduction

Not the best – especially for rifle shooting I wanted to change to use something better. OK for game shooting, but even for a heavy clay shooting session you would want something better.

Score 9 from 25

Ambient sound quality

Overall quite good for ear-plugs. Conversations can be held and the environment sounds pretty natural if heavily muted.

Score 9 from 20

Practicality / design

Much the same as other in-ear plugs in that they are easy to stick in a clean pocket when not in use. They come with a good snap open / close case which protects them from dirt in your pocket.

No buttons to press and they can just be wiped clean.

Score 20 from 20

Comfort

These are as comfortable as sticking needles in your eyes. Who did they test these on? Ouch.

They have made these things from a hard unyielding material – I suspect it's the same stuff Wilkinson Sword use for their blades.

Really, don't bother.

Score 1 from 15

Style

Like the Hoppes, not much to see really.

Score 8 from 10

Value for money

I suspect these were designed for the music industry rather than shooters – abet musicians with strangely shaped ears.

Score 2 from 10

Total score = 49 from 100.

Howard Leight – “Laser Lite”

“Street price” approximately £25 for 200



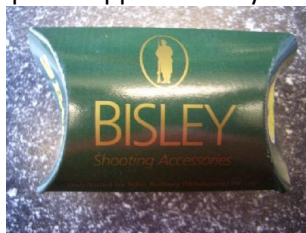
Howard Leight – “Max Lite”

“Street price” approximately £25 for 200



Bisley foam plugs

“Street price” approximately £17 for 50



E.A.R “Classic Soft”

“Street price” approximately £23 for 200



E.A.R. “Soft Neons”

“Street price” approximately £25 for 250



Overview

In-ear, foam disposable. For the reasons given below I’ve lumped them all together.

Gunfire sound reduction

As far as my ears can tell, all the foam type plugs on test were equal in their sound reduction and all performed very well. I wouldn’t have a problem shooting any calibre with these in place. My only concern is when shooting for extended periods they, even when properly fitted, tend to work loose and need refitter or replaced.

Score 20 from 25

Ambient sound quality

As far as my ears can tell, all the foam type plugs on test were equal in their ambient sound quality – pretty poor.

Although the frequency reduction is reasonably linear, the overall reduction makes it hard to converse freely with them in. Saying that, shouted range sounds shouldn’t be too much of a problem.

Score 5 from 20

Practicality / design

All these foam plugs are use once and throw away. Keep several in your pocket and use them thought the day. Practical, if not environmentally friendly.

They do take a few seconds to fit properly and they certainly can't be fitted with gloves on.

Score 15 from 20

Comfort

These tend to be a one size fits all and in general they do just that. To my ears, I found the E.A.R. "Soft Neons" slightly more comfortable to wear for long periods – however, that may just be down to the shape of my ears.

They all do tend to give you that "ear full" feeling which I don't find particularly pleasant.

Score 9 from 15

Style

It's a bit of disposable foam shoved in your ear which is about as cool as a knotted hankie on your head.

Score 2 from 10

Value for money

Cheap for a single use, but what is the cost over 5 years? Not so cheap. Over that time you would certainly spend enough to fund something a little more permanent.

I think these are mainly freebies for industrial use and for clay grounds. They work perfectly well at that price point.

Score 5 from 10

Total score = 56 from 100.

Overall scores

Device	Sound Reduction (from 25)	Sound Quality (from 20)	Practicality / design (from 20)	Comfort (from 15)	Style (from 10)	Value (from 10)	Total (from 100)
PureTone CENS Digital 2 Flex	24	17	17	14	10	7	89
Napier Pro9	22	12	20	13	5	10	82
Peltor Tactical XP	25	19	13	10	5	8	80
Peltor SportTac	22	15	10	8	7	8	70
Hoppes #9 ear plugs	15	6	20	6	8	7	62
Deben Slim Electronic	22	10	12	6	6	3	59
Howard Leight – “Laser Lite” disposable plugs	20	5	15	9	2	5	56
Howard Leight – “Max Lite” disposable plugs	20	5	15	9	2	5	56
Bisley foam plugs disposable plugs	20	5	15	9	2	5	56
E.A.R “Classic Soft” disposable plugs	20	5	15	9	2	5	56
E.A.R. “Soft Neons” disposable plugs	20	5	15	9	2	5	56
Peltor Bull’s Eye III	25	1	9	10	4	4	53
Peltor Bull’s Eye II	24	2	9	10	4	4	53
Peltor Bull’s Eye I	22	3	9	8	4	7	53
Sonic II ear plugs	9	9	20	1	8	2	49
Surefire EarPro	12	5	9	4	6	2	38
Academy unbranded electronic in-ear	4	9	8	2	7	2	32
Deben “Slim Passive Protection”	5	5	9	7	4	1	31

Conclusion

This test has been an eye opener for me with some products performing far better and some far worse than I would have thought.

The ugly – Deben's "slim passive protection" and the Academy in-ear electronics were the worst performers in this test and by some margin. Both I would consider as unsuitable for the task in hand. Avoid.

The bad – Sonic's and Surfire's ear-plugs. Did you guys actually try wearing these? They are truly painful to wear! This is not just my conclusion, but that of several shooters.

The indifferent – All the disposable plugs performed pretty much the same which was a surprise. I wasted an entire weekend figuring that one out! Bang performance of the passive earmuffs were all good (other than the Debens) but these were all pain to cart about. Ultimately both types of device are suitable for most shooting tasks, but really are restrictive for natural hearing. If you run a pistol range, this may just be the ticket – in which case, have a look at the Peltor Bull's Eye III's.

The good – It is difficult to pick a winner, as there were 3 quite different options that came out head and shoulders above all the others:

- **Peltor Tactical XP** – fabulous sound quality, fantastic protection, bomb proof build and great ergonomics. The fact that they are earmuffs may put off some shooters for some disciplines. However for any sort of range work, they really unbeatable. Having never been an earmuff fan before these have changed my mind.
- **Napier Pro9** – the big surprise of the test. Having seen the magazine adverts and then picked them up, I thought there was no way they were going to work effectively. They just felt too delicate. I couldn't have been more wrong – for all shooting, bar perhaps heavy range shooting, I can strongly recommend these. Amazing value for money and much more user friendly than either disposable plugs or passive muffs.
- **PureTone CENS Digital 2 Flex** – Wow! Just wow. Then you look at the price and it's wow again! Forgetting the price for a second, they're truly amazing. Because they are custom moulded and made from a soft material, they really are fit and forget. Properly full day comfortable without the "full ear" feeling you get from other in-ear devices. Sound quality wise, these are second only to the Peltor Tactical XP's and even then there is not a huge amount in it. If you look at the scoring matrix on the previous page you see these devices score pretty much top marks in every single category and that is what sets them apart – they have no obvious flaws. If Puretone manage to fix the (small) wind noise issue, they could have the perfect product.

I have to confess a personal interest in this test, in that after years of using cheap and disposable protection I was looking for something a bit better myself and had decided before the test to buy whatever won.

I've put my money where my mouth is and purchased the PureTone CENS Digital 2 Flex. For all-round comfort, convenience and performance they simply cannot be beat. Expensive, yes, but cheap compared to the loss hearing.

Ultimately, you would not go wrong with any of the 3 winning products.