



Basic Suppressor Information

Canadian Tactical

Hiram Maxim invented the first firearm suppressor in 1910. Maxim was also the man responsible for the first true machine gun. While a suppressor may greatly reduce the noise of the shot, the term "silencer" is technically incorrect because there is no way to effectively silence any firearm. The noise of the shot may be dampened or suppressed but there are no silent firearms in existence.

Sound Components of a Shot and how a Suppressor Works:

There are four distinct components that together make up the noise we perceive as a gunshot. In order of loudness, these are: Pressure Wave from rapidly expanding propellant gases, Sonic Crack of bullet, mechanical Action Noise and Flight Noise.

The pressure wave, produced by the rapidly expanding propellant gases is the only noise component that a suppressor can reduce. The suppressor reduces noise by two mechanisms. The first is it slows the release, through expansion and turbulence, of high-pressure propellant gases that we perceive as a "bang". The second is due to Newton's Law of Thermodynamics (Energy can neither be created or destroyed. It can only be converted from one form to another), where some of the kinetic energy of the noise impulse is converted to heat.

The only way to remove the sonic crack of a high velocity bullet is to utilize subsonic ammunition. Some cartridges are inherently subsonic, while most others can be downloaded to a velocity below the speed of sound. Some integral suppressors (like this STEN MKIIS to the right) utilize ported barrels to bleed off propellant gas and thus reduce the velocity of the bullet.



Bullet flight noise is not loud enough to be sensed by the shooter. However, even subsonic bullets can be heard if they pass close by a person. This noise resembles a whooshing or swishing sound as the bullet flies through the air. Flight noise is too quiet to be heard above a sonic crack.

Suppressor Performance:

The most common method of measuring sounds is the Decibel system. Decibels are a logarithmic scale; meaning the values are non-linear. Eg. A change from 100 to 200 dB does NOT represent a doubling of the noise level. It represents an increase of 1000 times.

Most suppressors for supersonic cartridges can realistically be expected to reduce the noise of firing by 18-32 dB depending on the design. This represents the limit imposed by the noise of the supersonic projectile. As the suppressor reduces the noise of the shot, the sonic crack becomes the dominant sound. In subjective hearing tests, a suppressed, supersonic cartridge will sound approximately as loud as an unsuppressed .22 rimfire rifle or about 139-141 dB.

Suppressors for subsonic cartridges may approach 40 dB of sound reduction however; this is the practical limit of sound reduction at this time. Subsonic systems can be as quiet as 115 dB, which is less than the action noise of a Sterling Submachine Gun (open bolt, blow back action). The dominant sound is the bullet striking the target.

Like firearms, different suppressor designs work best in different applications. Size and weight always work against noise reduction. As a result, one must find a balance between the size and weight of a suppressor and the degree of noise reduction desired for the mission. Suppressor designers are constantly trying to strike a balance between size and weight and noise reduction, which is why there are so many different designs available.

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BR-Tuote Reflex Suppressors offer light-weight and very short length for a slightly reduced level of noise attenuation compared to much larger and heavier units. The Reflex design maximizes the handling ease and maneuverability of the weapon. Independent tests with a 308 Winchester rifle confirm that Reflex Suppressors do reduce the sound pressure at the shooter's ear to well below the British Health and Safety Executive's "peak action level" of 140 dB.



On a 5.56mm carbine, the BR T8 suppressor (left) reduces the noise of the shot by approximately 82%, making it only a few decibels louder than a .22 rimfire rifle. This design is perfect for use by high mobility entry and tactical teams or by sniper teams where rugged equipment is needed without maximum sound reduction. The Reflex suppressor is also the best choice for large calibre rifles because it

is lightweight and does not extend the length of the barrel by more than a few inches when mounted. Large calibre rifles tend to be large enough without a long suppressor screwed onto the barrel.

If a greater degree of noise suppression is desired, the Ase Utra (AU Z-Jet) suppressors will fit the bill. Although the muzzle mounted AU suppressors are longer than the Reflex design; they are still very lightweight and provide very good noise attenuation. The AU CQB Compact suppressor (below) is the lightest suppressor Cantac sells. It is slightly quieter than the T8 Reflex but being muzzle mounted it extends the length of the weapon by several inches more. Larger AU Z-Jet suppressors increase the noise attenuation but the single point muzzle mount is not as rugged as the Reflex Suppressor's two point mount. The Z-Jet suppressor is the best choice where size and ruggedness are secondary to stealth.



Secondary Benefits:

Suppressors make very effective muzzle brakes. A suppressor reduces the recoil of any firearm by about 30% or as much as a muzzle brake. Unlike a conventional muzzle brake, the suppressor will not blow noise back towards the shooter or cause dust and debris to be blown up, giving away the shooter's location. Suppressors on tactical weapons allow more accurate and faster target engagement due to reduced muzzle jump and reduced flash in low light conditions.

Suppressors on very large calibre rifles (.338 Lapua or .50 BMG) greatly reduce recoil, muzzle flash, noise and blast. They increase the shooter's comfort level considerably over a conventional muzzle brake because the suppressor directs propellant gases forwards, away from the operator, in a very small arc.

The removal of painful muzzle blast can increase marksmanship as a result of a reduction in flinching, as well as increase the speed of follow up shots. Reduced muzzle blast can allow longer training sessions and more shooting practice. The muzzle blast from large calibre weapons can be so intense that ear defenders and earplugs may not be effective. In this case the suppressor is the best method of protecting the operator's health.



Suppressors practically eliminate muzzle flash so they are appropriate for use in dark conditions or where the atmosphere may contain explosive gases. A bit of tape over the muzzle of the suppressor will stop gases from entering the suppressor. Once the first shot has been fired, the suppressor is full of burnt propellant gases, thus providing a non-explosive atmosphere inside the tube.

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Types of Suppressors:

Suppressors can be divided into two main categories: Integral and Muzzle. Integral suppressors are designed as a permanent part of the firearm (see STEN MKIIS on page 1). Muzzle cans are designed to be fixed and removed easily and they do not affect the functioning of the firearm. Neither type of suppressor has an advantage in sound reduction. Integral systems are used where barrel porting is required to reduce the velocity of supersonic ammunition. Integral systems do not suffer point of impact changes as a result of the fitting or removal of the suppressor. They also tend to be more compact.

The BR-Tuote Reflex Suppressor is unique because it telescopes back over the exposed barrel allowing a larger muzzle mounted suppressor without a large extension in the length of the firearm. This is a muzzle-mounted suppressor that has the size, ruggedness and quick handling characteristics of an integral suppressor. The image below illustrates the difference in mounted length between the Reflex Suppressor (top) and a conventional muzzle mounted suppressor.



Mounting Systems:

There are many different ways to mount a suppressor. Two-point mounts are the sturdiest and the least likely to result in a misalignment. Mostly it is only integral suppressors that use two point mounts. The exception to this is the BR-Tuote Reflex Suppressor which is the only muzzle mounted suppressor to utilize a two-point mount thus reducing the mounted length compared to a conventional muzzle-mount suppressor.

Depending on the application BR-Tuote Reflex Suppressors can be mounted on muzzle threads, military flash-hiders or via a quick release "trilock" system. The AU Z-Jet Suppressor can be mounted on muzzle threads as well as military flash hiders. Custom mounting solutions are also available to fit any weapon.

Employment and Techniques of Suppressed Firearms:

It is desirable to suppress a gunshot for many reasons. For entry teams, suppressed weapons allow increased command and control, as operators do not have to wear hearing protection. Suppressed weapons allow operators to distinguish between shots fired by one of the team or a perpetrator. Suppressed shots are also more difficult to pinpoint, giving the operator an advantage over the perpetrator in the confusion of an armed encounter for greater survivability.

Military snipers can expect to be subjected to intense mortar or artillery fire should their location be inadvertently revealed. The suppressor could be the most important piece of "camouflage" used by a sniper team. The suppressor camouflages the rifle shot by almost eliminating muzzle flash and blast that can give away a sniper's location. Proper positioning of the shooter to cause the bullet to pass close by one or more hard objects can add to the enemy's confusion as the muffled shot will be veiled by the sonic crack which will seem to come from multiple locations as a result of it bouncing off hard objects.



Police snipers can also benefit from the use of suppressors to dampen the noise of the shot for public relations. Even experienced shooters view a quiet gunshot as being from a "less powerful" or "less dangerous" firearm. A full power sniper rifle fired in an urban location can attract unwanted public relations problems.

"Even when firing full power loads supersonically, a suppressor....so dramatically reduces a sniper's sound signature that I think ultimately we are going to see suppressors on all sniper rifles." (Maj. John Plaster - Advanced Ultimate Sniper video)

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Suppressors and Accuracy:

A properly designed and mounted suppressor should have no negative effect on the accuracy of the firearm. In fact there is some indication that suppressors actually increase accuracy by stripping the high velocity propellant gases from around the bullet. Without the suppressor, the gases push past the bullet, causing it to yaw slightly as it leaves the muzzle.

A muzzle-mounted suppressor will change the point of impact of any firearm it is attached to. However with testing this effect can be corrected for by adjusting the sights.

Potential Problems and Hazards Associated with the Use of Suppressors:

One of the biggest hazards comes from improperly mounted suppressors or a suppressor that loosens during use. This can cause the suppressor to lose alignment with the bore, possibly resulting in baffle contact which can tear the suppressor off the firearm or blow it to bits in a catastrophic failure. During use, all suppressors should be checked for proper tightness regularly.

Not all suppressors are designed to survive full-auto fire or even a high volume of semi-auto fire. A high volume of fire through a suppressor not designed for it can cause the suppressor to fail from baffle collapse or extensive baffle damage. It can also destroy the rifle's barrel from excessive heat buildup in as few as 200 rounds. The BR-Tuote Reflex Suppressor and the AU CQB Compact Suppressor are specifically designed to withstand extensive full-auto fire without damage to the suppressor or the firearm. The Reflex Suppressor has been extensively tested on belt-fed weapons for its compatibility with select fire.

Minor suppressor hazards include burns from a hot tube as well as propellant gases and unburnt powder blowing out the ejection port of semi-automatic firearms. Operators should take care to wear proper eye protection when using suppressed weapons.

Maintenance and Cleaning:

The BR-Tuote Reflex Suppressor is practically maintenance free. Normal fouling from powder and primers do not affect its functioning. Loose powder grains or carbon chips can be easily removed by shaking the suppressor vertically with the muzzle down. Compressed air may be used for cleaning and gun oil for preservation but washing with liquids and solvents is not recommended. After use, remove the suppressor or leave the action open to allow water to evaporate and to promote airflow. Give the suppressor a light coating of preservative oil inside and that is it.

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Canadian Tactical can offer departments a range of suppressors to fit almost any weapon, including .22 handguns and rifles, 9mm handguns, submachine guns, assault rifles and full sized battle rifles, as well as sporting and sniper rifles in any calibre from .22 to .50 BMG. Models are available in a variety of mounting systems. These include models designed to fit standard military flash hiders and a range of standard and custom thread sizes.



We carry the full line of BR-Tuote Reflex Suppressors, as well as Ase Utra Z-Jet Suppressors and SAK .22 rimfire suppressors and accessories.



Suppressors in stock, in Canada, can be delivered within 10 business days, upon receipt of the proper paperwork. Models, in stock, in Europe can be delivered within 4-6 weeks while custom applications can be delivered within 6-8 weeks.

Contact Cantac to find out how we can supply your department or unit with the best tactical suppressors in the world.



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