



ROBERT MORRISON

Founder

Stealth Engineering Group



▶ 24 patents spanning multiple industries

▶ SEG has 7 patents pending



SEG OBJECTIVE

- ▶ Identify and Solve the challenges related to weapon sound suppression
- ▶ Consult as the Leading Authority on Suppression
- ▶ Design solutions that exceed
- ▶ Over the next 20 minutes I aim to convince you that SEG is the leading authority in weapon sound suppression.
- ▶ First I would like to define WHY you should focus on the future of suppressors.



SUPPRESSION BENEFITS DEFINED

STOP HEARING LOSS

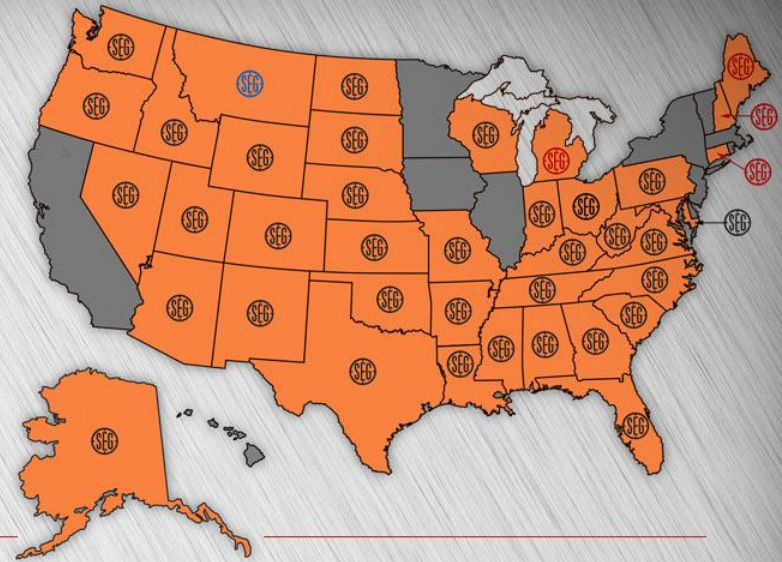
(You and others around you)

- ▶ OSHA, ASHA, NHCA, NORA and ANSI are actively involved with Occupational health requirements.
- ▶ Complaints and lawsuits are driving change.
- ▶ (www.Pubmed.com) has 300 articles related to hearing loss from firearms.



SUPPRESSION BENEFITS DEFINED

ENVIRONMENTALLY RESPONSIBLE



- ▶ Whether training, testing, or hunting, your neighbor may find those shots troubling. Some will let their imaginations get the best of them and others may resent the intrusion on their peaceful afternoon.
- ▶ 40 states and growing allow suppressors and almost all now allow the use for hunting.
- ▶ The DNR purchases suppressors from us to use when euthanizing injured animals.

SUPPRESSION BENEFITS DEFINED



COMMUNICATION

- ▶ Communicate more efficiently without hearing protection
- ▶ Improved situational awareness
- ▶ Hearing protection affects your senses
- ▶ Humans are our number one asset

SUPPRESSION BENEFITS DEFINED



SELF-PROTECTION

Firing a gun indoors is the equivalent to a flash-bang device.

- ▶ Those of you who believe in being prepared might keep a gun near where you sleep. Have you considered that firing a gun indoors would be the equivalent to a flash-bang device?
- ▶ A flash bang device is used by law enforcement to stun a perpetrator into thinking and reacting slower.

First shots fired are statistically misses.

- ▶ On purpose or by mistake, statistics say that most first shots fired are misses.
- ▶ The relevance is that this scenario can happen in any situation.

SUPPRESSION BENEFITS DEFINED



STEALTH

101 scenarios for military and law enforcement to benefit from stealth

▶ *Flash Reduction*

Taking out a light, a guard dog or even a human threat

▶ *Pressure Reduction*

Suppressors reduce the pressure that moves leaves, kicks up sand or dust creating a target.

▶ *Sound Reduction*

And of course sound reduction, all of these aid in overall signature reduction for the individual and team.





SUPPRESSION BENEFITS DEFINED



OTHER BENEFITS



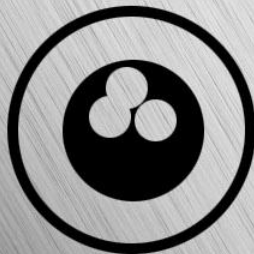
▶ **Recoil Reduction**

The bang, flash and kick of a gun evokes the reaction to protect yourself. Suppressors help train us to “trust the weapon.”



▶ **Reduced Muzzle Rise**

Suppressors reduce the kick of the gun; which in turn reduces muzzle rise to help re-acquire your target faster.



▶ **Improved Accuracy**

Some suppressors reduce range or make guns less accurate. However, *the SEG baffle design is the only fully symmetrical design on the market and does not reduce range or accuracy.*



The significance is in our baffle

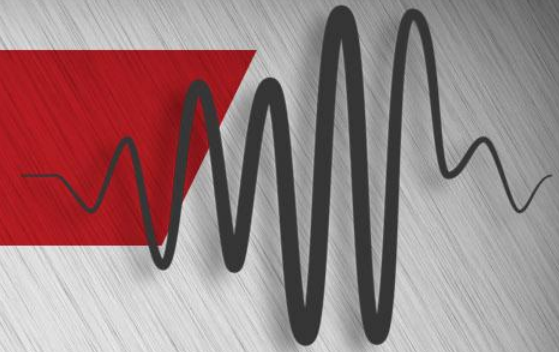
FACTS: DECIBEL METERING

- ▶ Decibel Metering or dB meters measure pressure and until now that was the closest metering system to simulate the human ear, however, our ears are more complex than only reading pressure.

We stumbled on this testing with another suppressor manufacturer using the highest quality \$20,000 dB meter in a controlled environment. We had two different suppressors that consistently registered the same dB number but one was noticeably quieter to the ear. I left there with an idea of why, but this new information could help me design better for the human ear.



FACTS: FREQUENCY



- ▶ Frequency is the short answer. Frequency is not all equal to the human. An example: A Corvette and a Viper at a racetrack both producing a dB number of 103, the low revving V10 engine of the Viper sounds much quieter than the high revving V8 engine of the Corvette, although the meter reads the same, we hear differently.
 - ▶ A better example, a **Dog whistle** will peg a dB meter and we don't even hear it.
 - ▶ **Shapes** change frequency
 - ▶ **Material** differences change frequency
 - ▶ **SEG** has a patent pending for a new metering **standard** that combines a dB pressure meter with a frequency meter and an algorithm that represents the average range that a human hears.

FACTS: USABLE STATS

▶ METER SPEED DIFFERENCES

The primary difference between a Radioshack dB meter and a \$20,000 meter is the speed it reads.

Even the best meter company will admit that what they offer is not fast enough for a gun shot. SEG has a solution for that as well.

▶ TRUSTED DATA

Speed differences, coupled with loose industry standards for measuring – and we have an enormous pile of data – none of which is good data for suppressor comparison.

▶ AMMO

Off the shelf ammo is too inconsistent: The industry standard fires only 10 shots to get an average decibel reading. If 1000 shot sample shows a 115 dB average, a 10 shot average will regularly get one that's 125 dB or one that's 110 dB. The sample is too small and inconsistent. Many of the companies embellish the data to use the low number rather than the average, or different ammo all together. Can we solve this problem, yes, SEG has the solution, but the point is that the current published numbers can't be trusted.



FACTS: MIL SPEC

▶ CHANGE REQUEST #1

When developing our products, we asked military buyers at the AUSA show what they would improve.

▶ SERVICEABLE SUPPRESSORS

Suppressors that can be cleaned. *“We have to throw out welded suppressors when they get dirty”.*

“With military budget cuts we don’t have the luxury to throw out expensive suppressors, but we have the manpower to clean them, just like we do the guns”.



FACTS: MIL SPEC

▶ Why are military suppressors welded shut?

The simple answer is that they were spec'd wrong.

- ▶ With good intentions the first mill-specs were concerned with Full Auto Durability. Unfortunately it forced suppressor manufactures to compromise the decibel reduction, weight, cost and serviceability to meet the demands of testing on a belt fed machine gun. To meet those demands the manufacturers needed to reduce baffle restriction to deal with the heat. ***Less restriction equals a louder suppressor.*** This might be acceptable if it was necessary, but it's a stretch that maybe 1% of the suppressors are used on belt fed machine guns.
- ▶ It's a fact that the military destroys welded suppressors when they become too dirty to function well. It's also a fact (given you have the proper size suppressor) that a dirty suppressor will not work as well as clean, so from day-1, a suppressor will start to work less if its not cleaned.

FACTS: MIL SPEC

▶ Why are military suppressors welded shut?

- ▶ **SEG cans are cheaper, lighter, quieter, serviceable suppressors** that you don't need to throw out. I would give these improved suppressors to the 99% percent of our troops, and throw out the 1% that gets used on a belt fed.
- ▶ *SEG has a breakthrough in serviceable suppressors that **will handle extended full auto, including belt fed** better than most if not all welded suppressors of equal dB reduction and size... And they cost much less.*
- ▶ *The core objective of a suppressor is to suppress the sound, flash and pressure!*

FACTS: MIL SPEC

▶ CHANGE REQUEST #2

A (QD) Quick Disconnect mounted suppressor that doesn't stick when they get hot.

"We have ruined equipment using the ground or a tree to knock loose a suppressor"



FACTS: MIL SPEC

▶ QC MAYBE, QD NOT SO MUCH

The existing “QD” mounts allow you to install a bit faster but removing them is a problem.

SEG discovered that the existing designs replace the high tolerance *threads* with a high tolerance *taper*. In the manufacturing industry that's called a machine taper or a Morse taper, invented in the 1860's to stick!

Another draw back is *decreased accuracy*, you can move many of the QD mounts and that doesn't promote repeatability. Barrett offers both and advertises the direct thread as more accurate.

Another disadvantage is that a QD takes up 2+” of the usable baffle space. An equal size thread-on suppressor is quieter. Or an equal sounding suppressor is smaller, lighter and less expensive. Its physics.

FACTS: THE SOLUTION

- ▶ *We're fond of our thread-on cans, but we needed a QD to meet mil-spec and this gave us the chance to address the existing problems*

The SEG Folding Suppressor Mount was developed.

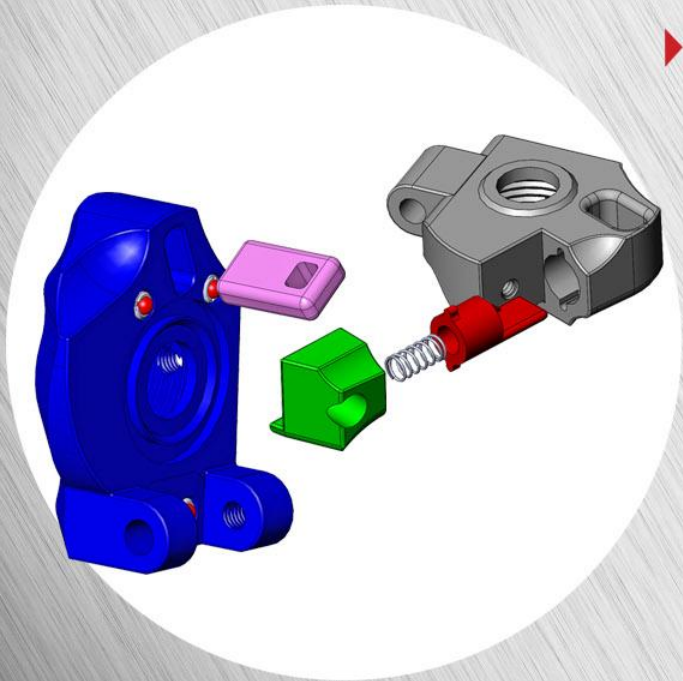
- ▶ The Design wasn't a simple task... The hinging surfaces are machined to a high tolerance, and fitted with a precision ground carriage bolt.

All moving assemblies have some play, however the SEG assembly has *very little* play

4 adjustable spring-loaded ball detents:

Two spring-loaded balls push directly on the centerline of the hinge pin – and the other two push symmetrically on the opposing side of the bore

*When closed, both halves are further aligned with a **male/female taper** that insures the concentricity of the two through holes*



The result is a mechanism that has no movement when checked by hand and **FANTASTIC REPEATABILITY.**



SEG SUPPRESSORS



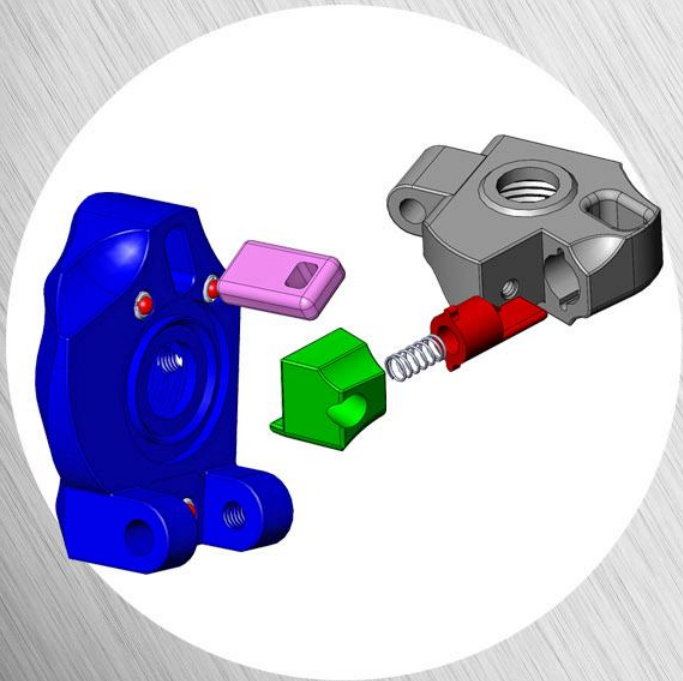


FACTS: THE SOLUTION

► *Construction Quality*

Since you don't have it in hand, I would like to describe it by comparing it to the hinge and latch of a fine break action shotgun, only holding a much lighter and shorter suppressor.

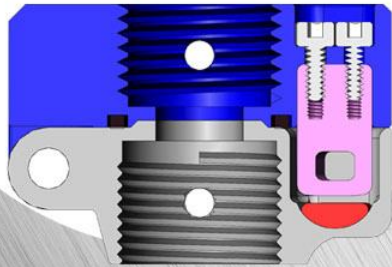
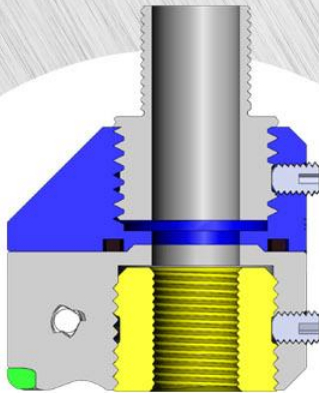
- All the parts are stainless, the plunger and latch are heat treated for added strength *and both replaceable.*
- *We were asked to pass a throw test.* No normal length suppressor will survive the throw test if the weight of the rifle lands on the suppressor wrong. With our mount the latch, plunger or both *will let go* to protect the mount, suppressor and gun. Both of those parts are replaceable with standard tools and only three bolts total.



The result is a mechanism that has no movement when checked by hand and **FANTASTIC REPEATABILITY**. Less movement than a Neilson device or QD.

FACTS: THE SOLUTION

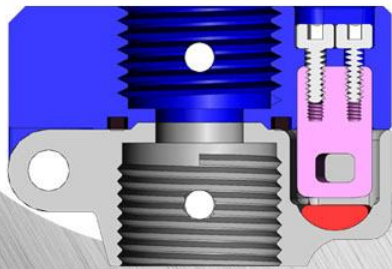
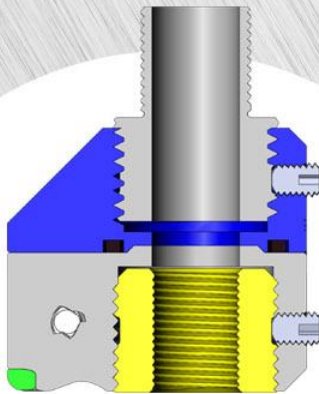
► *Construction Quality continued*



- The assembly incorporates a tongue and groove taper that was designed to align symmetrically as well as protect the **Viton double lip seal**. The tongue and groove insures there is no decibel difference with or without the seal. The seal only stops carbon creep.
- When folded, there are two dimples placed in line with the spring-loaded balls on the hinge centerline *(to better hold the suppressor when folded)*, the balls engage in the dimples at 180 degrees with the suppressor in the storage position.
- Both sides of the mount have **removable threaded inserts** to interchange any thread spec. They don't even need to be the same – one side can mount to a 1/2-28 gun and use your 5/8-24 suppressor of any brand.

FACTS: THE SOLUTION

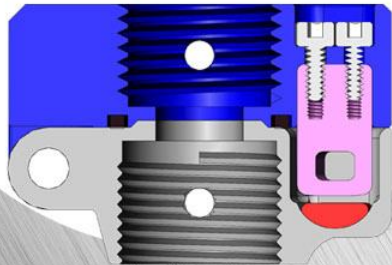
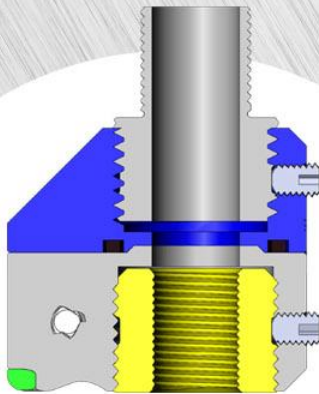
▶ *Not - So - Obvious Benefits of SEG Mounts*



- ▶ The SEG mount is quicker to deploy than any other mount
- ▶ The SEG mount solves the sticking QD mount
- ▶ The SEG mount is a more logical storage location
- ▶ The SEG mount gives a great place to store a near red-hot suppressor
- ▶ The SEG mount does not take 2+ inches away from the baffle like other mounts

FACTS: THE SOLUTION

▶ *Not - So - Obvious Benefits of SEG Mounts* Continued



- ▶ **You can leave a suppressor on and:**
your gun is long and clumsy in a number of situations
- ▶ **Not having your suppressor on and:**
You lose all the benefits
- ▶ **You can reduce your barrel length and:**
Compromise effective shooting distance
- ▶ **A shorter suppressor and:**
Have a louder signature
- ▶ **The SEG mount is simply the better solution for all these compromises**
- ▶ **The SEG mount supports the evolution of Mil Spec revision**

SEG BAFFLE DESIGN

- ▶ The core of our company is our baffle design and its evolution is one of the reasons why **SEG** is the leading authority in suppression today.
- ▶ We work with stacked cone, K, M baffles, billet, wire EDM, milled, waterjet, plasma, castings, and sheet.
- ▶ We have a US patent for the *first sheet metal baffle*.



SEG BAFFLE DESIGN



SYMMETRICAL BAFFLE DESIGN

WE HAVE THE ONLY FULLY SYMMETRICAL BAFFLE ON THE MARKET

Any precision rifle for a sniper or competition is crowned at the end of the barrel. Less for the shape of the crown and more to have a perfectly symmetrical exit.

Anything less causes bullet shift. *Not one* of the other suppressor manufacturers has a fully symmetrical baffle.

The projectile has to pass through 6 to 12 nonsymmetrical baffles



OTHER NEW INNOVATIONS

SEG TEMPERED FINISH PATTERNS

- ▶ Our finish is superior – suppressors get really hot, so even the metal has a hard time surviving. A thin paint just won't hold up. *SEG's patented finish* is not a coating – it's tempered the entire thickness of the metal.
- ▶ The SEG finish offers an extraordinary *natural camouflage*
- ▶ It handles *twice the heat* of any coating including ours.

THE PATTERN GOES ALL THE WAY THROUGH THE METAL AND IS SEEN ON THE INSIDE



OTHER NEW INNOVATIONS

SEG 3D ELECTRONIC HEARING PROTECTION

Why? because:

- ▶ No protection=Permanent damage (Remember OSHA)
- ▶ 100% earplugs=loss of a human sense that will affect performance
- ▶ Noise canceling=a split second delay that has proven long term damage with repetitive use.
- ▶ Full Time electronic isolation=is not fully 3D and still affects your performance
- ▶ SEG 3D technology allows your brain to determine distance and direction while still protecting your hearing.

NEW IN 2015

- ▶ **SEG Micro™ Suppressors** *(Half the length with minimal loss of function)*
- ▶ **SEG Law Enforcement .30 cal and 5.56/.223 Suppressors** *(Tiny in comparison to industry standards) This can only be done with our ability to handle heat.*
- ▶ **SEG Brand Suppressor Ammo** *(Optimized for use with suppressors) Like our suppressors, this ammo is focused on total performance, not just sound. We make ammo that has fantastic ballistics, cycles guns and is quiet. We also make calibers and projectiles that don't exist elsewhere.*
- ▶ **SEG M2 50BMG Suppressor** *(Full Auto)*
- ▶ **SEG Folding Suppressor Mount**



- ▶ **SEG Ultralight™ Handgun & Hunting Suppressors** *Developed to improve the performance of difficult to cycle handguns.*
- ▶ **SEG Liquid and Refrigerant Cooled Suppressors** *for larger caliber heavy duty and high cyclic rate light duty guns.*
- ▶ **SEG Light Enhanced Suppressors** *SEG has a patent on suppressors with a flashlight incorporated in the end, infra red illumination for night vision, laser sighting and targeting, actually any use of a light with a suppressor.*



THANK YOU!

**Contact us to quote any special projects
and for Mil Spec Consulting**

I will be here today and tomorrow or you can contact by phone or email.

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