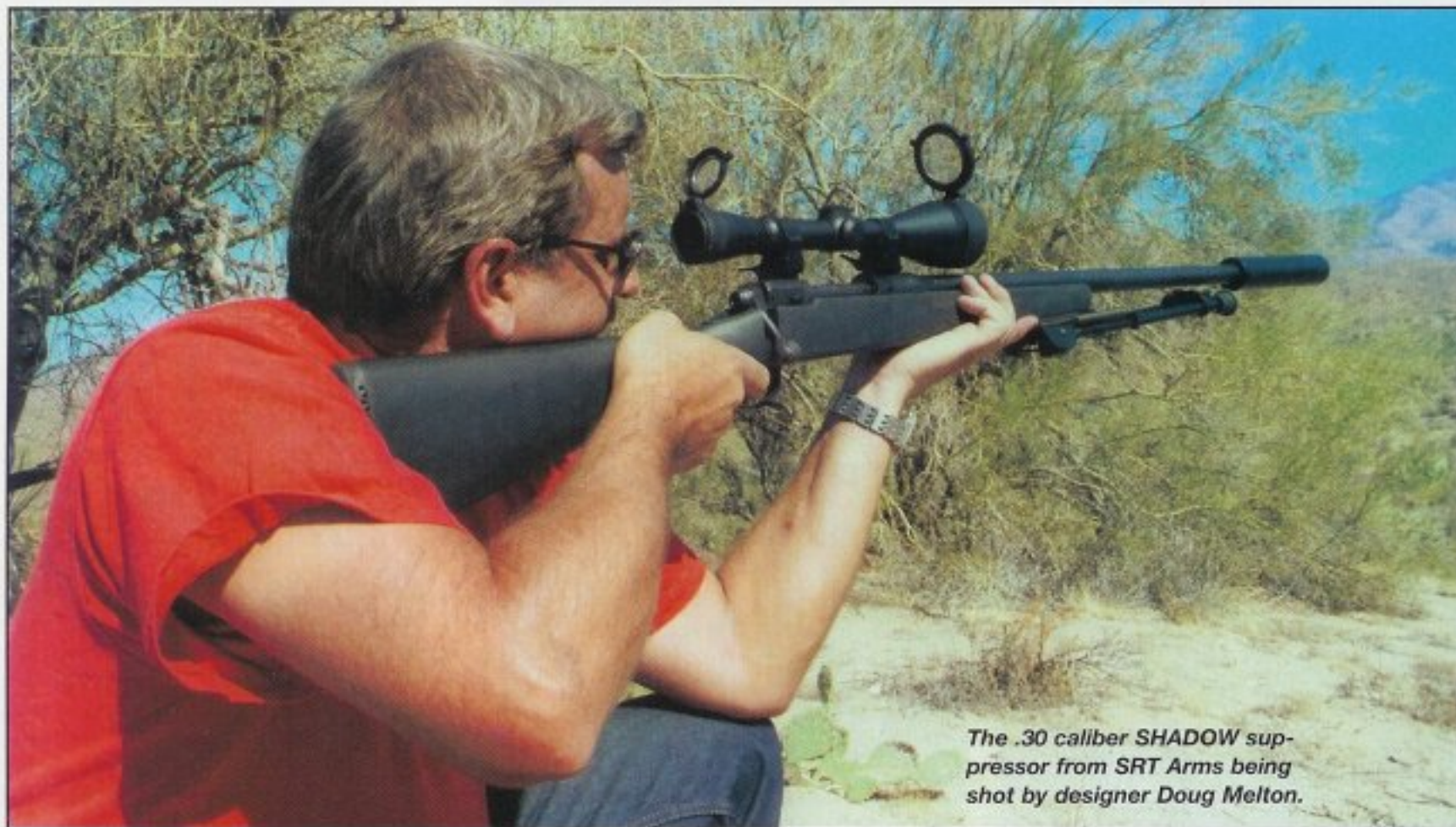


SRT ARMS SHADOW .308

Desert silencer torture test proves it's as quiet as an air gun!



The .30 caliber SHADOW suppressor from SRT Arms being shot by designer Doug Melton.

By Al Paulson

The new .30 and .338 caliber SHADOW silencers from SRT Arms feature just four baffles. Reducing the number of baffles saves weight and expense, which is a particularly good idea due to the complexity of the new AZTECH baffle that's the heart of the SHADOW system. I've watched this design evolve from the first doodles in an engineering notebook to the final production phase. The process took years of inspiration and perspiration, in a manner that Thomas Alva Edison would have appreciated deep in his bones. The AZTECH design is historic for its innovative approach at moving gases at times and places to maximize energy removal without adversely affecting accuracy, and for its unprecedented adaptability (which I cannot talk about until the patent is filed).

Once the concept was mature and proven, the challenge became how to

produce a sound suppressor based upon the AZTECH baffle at anything resembling an affordable price. This latter consideration was a kind of double whammy for SRT Arms, since the company has established a reputation for producing excellent products at competitive prices. Let's see how the SHADOW stands up to a hands-on torture test in the Sonoran Desert when the temperatures soared to 101 degrees Fahrenheit in the shade, and weapons left in the sun became blistering hot in minutes. If the SHADOW worked well under those grueling conditions, then the law enforcement sharpshooter could have an extra level of confidence in the sound suppressor's performance under more normal conditions.

Silencer Details

Fabricated from stainless steel alloys, the SHADOW .30 caliber silencer is 8 inches long and 1.5 inches

in diameter. It weighs 27 ounces. While the sound suppressor is available with either a 9/16x24 or 5/8x24 threads per inch (TPI) thread mount, I strongly advise using the 5/8-inch mount. This is because when metal is removed from the outside of a cylinder such as a barrel, the bore expands very slightly but measurably. Leaving more metal on the barrel minimizes this phenomenon and thereby provides a more uniform bullet passage, and a more rigid and robust suppressor/barrel interface. When given the option of several thread pitches, always pick the largest one compatible with your barrel profile. The suppressor is available in a non-reflective natural finish or in a flat black Molycote finish for an extra \$20.

When I saw the first sketches of what would evolve into the AZTECH baffle, the initial concept was quite interesting, but it had some teething problems, as initial concepts always

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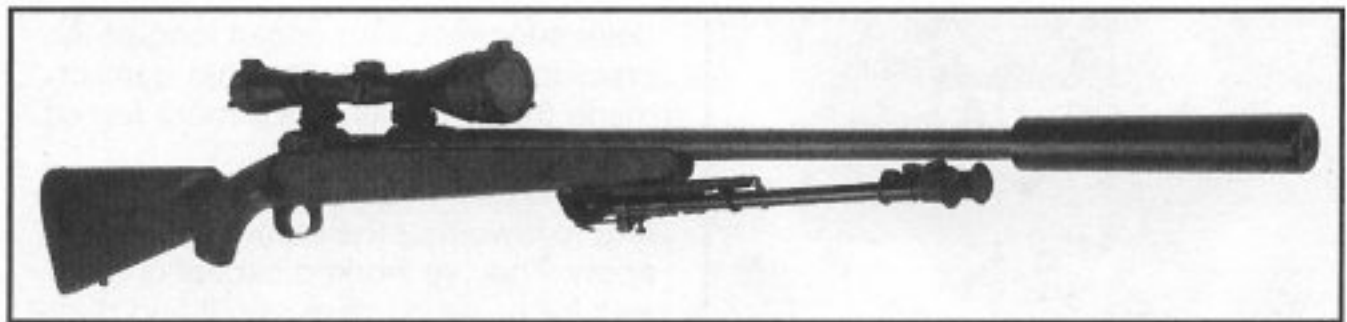
do. The first trick was to make the design both robust and light in weight. Then the baffle had to be improved to deliver better accuracy and ease of assembly into a baffle stack. Finally, a series of inspired design changes followed so quickly that it was almost like watching a row of dominos fall. The depth and breadth of fluidic and manufacturing insight revealed by this innovative cascade of achievements elevated the baffle from "quite interesting" to "brilliant." The result was a baffle of considerable complexity that could not be fabricated by most silencer companies.

Suppressor designer Doug Melton, who made his bones as an engineer for major corporations by simplifying designs and economizing extremely complex manufacturing processes, turned these rare skills to his own nearly perfected baffle design. The result is the AZTECH baffle tested in this study, which is available in a variety of alloys common to the suppressor industry as well as in at least one alloy used by his company alone, as far as I know. The future potential of the AZTECH baffle reminds one of an iceberg, with most of its potential hidden from view.

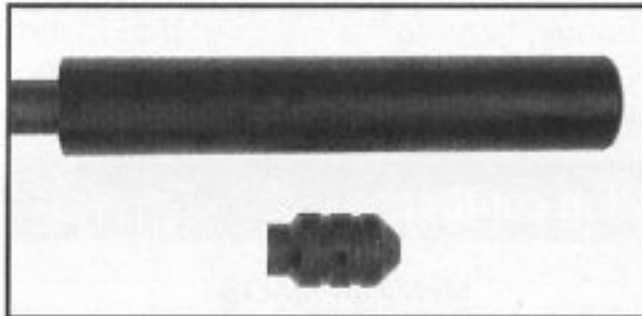
The .30 caliber silencer from SRT Arms is just the shadowy tip of this proverbial iceberg. While the .30 caliber SHADOW suppressor is designed for the .308 Winchester cartridge, it can also be used with the .30-06, .300 Winchester Magnum, and smaller calibers such as the .270 Winchester and 7mm Remington Magnum. The SHADOW variant designed specifically for the .338 Lapua Magnum is one inch longer than the .30 caliber variant.

The subsidiary of a larger corporation specializing in fluidics and materials engineering, SRT Arms is a relatively small company that has been in business for 15 years. SRT Arms produces a full line of carbine, rifle, submachine, and .22 rimfire silencers, integral and muzzle .22 rimfire suppressors, and custom work. SRT sound suppressors are quite unusual in this day and age in that some can be disassembled partially or completely (depending upon the design) for cleaning and maintenance. The SHADOW does not require disassembly for cleaning or maintenance, however.

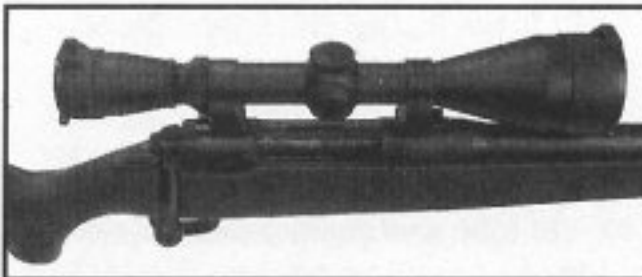
The SHADOW sound suppressor from SRT Arms was evaluated on a Savage Model 10FP rifle chambered in .308 Winchester (7.62x51mm). Four types of ammunition were used. As a standard duty round and reference standard, I use the Black Hills match round featuring a Sierra MatchKing



The .30 caliber SHADOW sound suppressor on Savage 10FP rifle delivered 1/2-MOA groups at 100 yards with Black Hills 168gr. HPBT ammunition.



The SHADOW silencer (with optional barrel thread protector & muzzle brake) significantly reduces recoil and muzzle flash in addition to gunshot noise.



Savage 10FP delivered 1/2-MOA with duty ammunition due to both the SHADOW sound suppressor and the flexible locking lug module on the Savage bolt.

168-grain HPBT projectile. Some animal-control professionals employ the Remington 180-grain CoreLokt, which is a common hunting round.

Black Hills 180-grain RNSP subsonic and Engel Ballistics Research 180-grain RN Thumper subsonic rounds were also used as benchmarks. EBR's Thumper match rounds are ballistically matched to the company's more expensive Precision Bonded Subsonic (PBS) round, which is a hollowpoint that expands reliably at subsonic velocities. All three subsonic rounds deliver pellet-gun quiet with a good sound suppressor. Individuals and departments can order Black Hills and EBR ammunition factory direct if it is not available locally.

Shooting Impressions

Shooting the Savage 10FP rifle was quite pleasant without hearing protection. As the accompanying table shows, even with the peppy Black Hills 168-grain HPBT round, the SHADOW sound suppressor dropped noise levels to well below the pain threshold (141 decibels [dB]), and far below the OSHA and European Risk Limit for hearing

loss from impulse noise (140 dB). Furthermore, the suppressed sound signature was far below bullet flight noise, which hides the location of the shooter. These are the three critical benchmarks for tactical users. Wait, there's more. The SHADOW reduces felt recoil by about 40 percent, and it significantly reduces muzzle flash as well.

Note that the weapon's unsuppressed sound signature is the same with both Black Hills tactical and Remington hunting loads. The suppressed sound signature is a bit less with the hunting load, however, the Remington round delivers better net sound reduction.

Using subsonic ammunition, the unsuppressed sound signature of the rifle is still very loud, a fact that surprises many uninitiated. With unsuppressed sound signatures of 152-153 dB, subsonic ammunition is about as loud as a 20-gauge shotgun. The SHADOW sound suppressor drops this to 122-123 dB. A Crossman American Classic Model 1377 .177 caliber air pistol has a 120-123 dB sound signature, depending upon the number of pumps. What does this mean in the real world? I have shot suppressed .308 rifles with Black Hills and EBR subsonic ammunition just outside of conventional frame homes without the occupants ever noticing the event.

In terms of velocity at these temperatures, we were careful to keep ammunition in the shade. If we were operating in the sun where ammunition can be heated far above air temperature, my own experience reveals that velocities can increase by 50-100 feet per second (fps). The subsonic velocities are already too high for my taste. It is important to note that ammunition storage history (e.g., being left to bake in a hot vehicle) can also have a significant effect on projectile velocity and consistency of velocity.

This problem is exacerbated by the freebore boost generated when a suppressor is added to the rifle barrel. Freebore boost is the amount of velocity gain frequently observed when a sound suppressor is added to a barrel.

Performance: SRT SHADOW on Savage Model 10FP .308

Load	Sound Pressure Levels		Net Sound Reduction	First Round Pop	Velocity		Freebore boost
	None	SHADOW			None	SHADOW	
Black Hills 168 HPBT	164	135	29	+4.0	2682	2678	-4
Remington 180 CoreLokt	164	133	31	+1.3	2636	2648	+12
Black Hills 180 subsonic	153	122	31	+0.5	1026	1058	+32
EBR 180 subsonic	152	123	29	+7.9	1022	1056	+34

Bullet weight measured in grains, velocity in feet per second (fps) and sound in decibels (dB). Tests were conducted at a temperature of 101 degrees Fahrenheit with ammunition kept at ambient temperature in a cooler in the shade until needed.

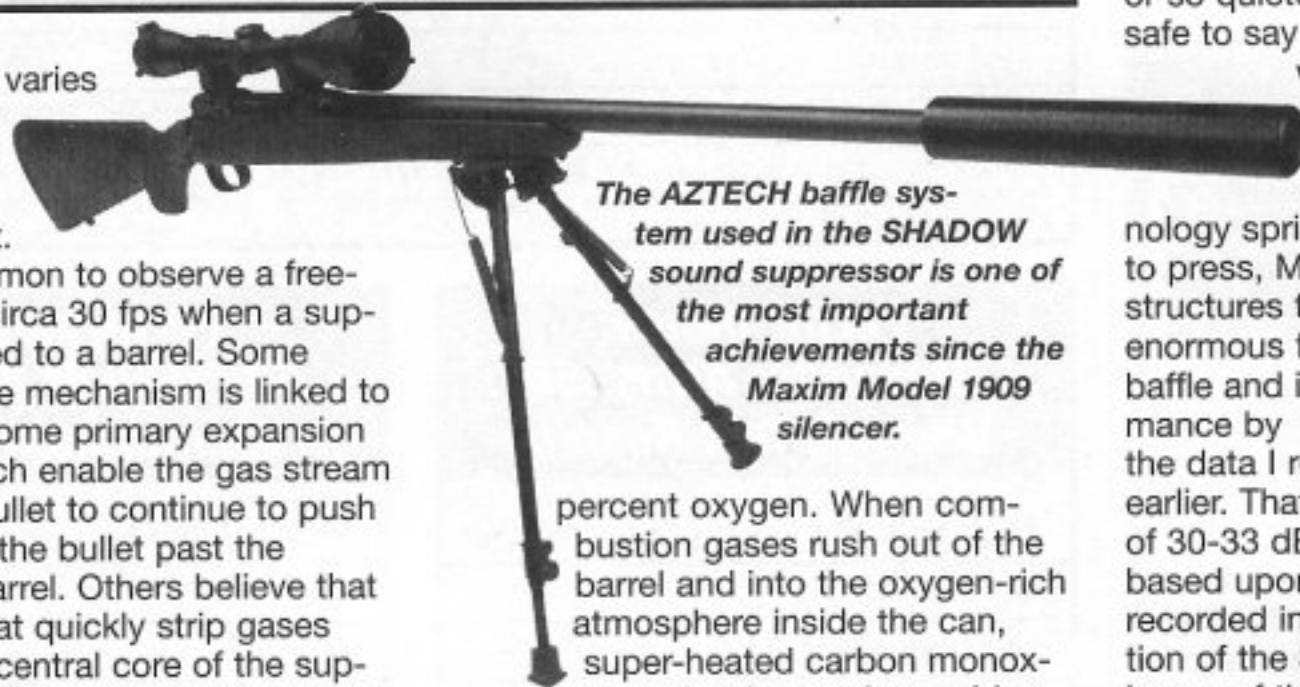
The magnitude varies with suppressor design, powder type, load, and bullet.

It is not uncommon to observe a freebore boost of circa 30 fps when a suppressor is added to a barrel. Some folks believe the mechanism is linked to the design of some primary expansion chambers, which enable the gas stream following the bullet to continue to push on the base of the bullet past the crown of the barrel. Others believe that suppressors that quickly strip gases away from the central core of the suppressor reduce the amount of so-called "dirty air" (turbulence) through which the projectile must travel. Both mechanisms may play a part.

Whatever the mechanism, freebore boost is a fact of life that is particularly significant in the practical employment of subsonic ammunition. If ammunition manufacturers could reduce projectile velocity by 50-75 fps and still maintain uniform ignition and thereby their outstanding accuracy, then subsonic performance may be better over a wide range of temperatures.

What about accuracy? Three-round groups of Black Hills 168-grain HPBT ammunition averaged 0.53 of an inch at 100 yards, while Remington 180-grain CoreLokt averaged 1.07 inches when the Savage Model 10FP rifle was fired with the SHADOW sound suppressor from SRT Arms. At the very least, I would expect that adding the SHADOW suppressor would have no adverse effect on accuracy when added to a barrel of proper thickness. It should improve accuracy in many, if not most, rifles.

First-round pop exhibited by the SHADOW silencer is minimal, which is to say, excellent. Some .30 caliber cans exhibit first-round pop of six or more decibels. First-round pop is the extra noise generated by the cold shot with a sound suppressor. The can is full of atmospheric air, which is roughly 20



percent oxygen. When combustion gases rush out of the barrel and into the oxygen-rich atmosphere inside the can, super-heated carbon monoxide, other incomplete oxides, and unburned particulates combine with the oxygen present to produce flame and noise. Once the first round (or sometimes two rounds with a large-volume can) consumes all of the oxygen in a sound suppressor, then the combustion gases can no longer ignite as they enter the can. This gives the internal structures in the can the optimum opportunity to slow and cool the gases to the point that they will no longer combust as they emerge from the sound suppressor into an oxygen-rich atmosphere. This reduces both the flash and noise of subsequent gunshots.

Operators during the Vietnam Era took advantage of this phenomenon by firing a round into the dirt before entering an AO (their rifle cans tended to have a huge first-round pop). They would immediately seal the front of the can with tape. With a chambered round and a taped front end cap, first-round pop would be eliminated for a half day or longer.

Final Notes

What's the bottom line here? How does the overall performance of the SHADOW sound suppressor stack up on the world stage? Most silencer cognoscenti currently conclude that any .30 caliber sound suppressor that

delivers 28 dB or better net sound reduction is a world-class performer. The SHADOW silencer from SRT Arms delivered 29-31 dB of sound reduction under hot, grueling conditions of 101 degrees in the shade. It's easier for the silencer to transfer accumulating heat from the silencer core to the outside atmosphere if the air is cool. Furthermore, the burning characteristics of gunpowder are more favorable at more benign temperatures. The SHADOW might prove to be a decibel or so quieter on a cool winter day. It is safe to say that we have conducted a worst-case torture test here.

Then there is the matter of technology marching on.

Or in Melton's case, technology sprinting on. As this was going to press, Melton added a series of structures to his baffle design that add enormous future design potential to the baffle and immediately improve performance by an average of 1.7 dB over the data I recorded just a few weeks earlier. That would work out to a range of 30-33 dB net sound reduction, based upon ammo used and data recorded in this study. This latest iteration of the SHADOW sound suppressor is one of the most inspired achievements since the Maxim Model 1909 design. By the time you read this, Melton will have applied for a patent on the improved AZTECH baffle design, which will be used in nearly all SRT Arms suppressors henceforth.

The new and highly innovative SHADOW sound suppressor from SRT Arms delivers excellent sound suppression and accuracy at a competitive price. It earns two enthusiastic thumbs up. ■

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