



## Schuster Adjustable Gas Plug –

Fine tuning your M1A/M14

By: Sal Palma



No two weapon systems have inspired more enhancement accessories than the M16 and M14. Even the venerable 1957 Chevy pales by comparison.

The M14 replaced the M1 Garand as the standard issue battle rifle in 1959; serving distinguishably until replaced by the M16 in 1970. The M14, and its civilian counterpart the M1A, remained in the armories aboard Navy vessels and across the DoD well into 1975. But it



didn't retire then, it merely took a leave of absence until it became the engine for the M21 and M25

semiautomatic sniper platform. It still serves with great distinction in Afghanistan.



The civilian version of the M14, the Springfield M1A has a tremendous following, with hundreds of competitions nationally and internationally. It is still bringing home the beacon.

Companies, like Smith Enterprises Inc. or S.E.I., live and breathe the M1A and M14 rifles. With ingenuity and knowhow they've extended the viability of the M1A/M14 into 2013.

I was familiar with SEI's founder Ron Smith from my days at Varian Associates, in Palo Alto, CA. I was with the High Powered Microwave and Tube Division where I was honored to work with some of the best r.f. engineering talent in the world. Guys like Dick Gerlack, Hans Moore, Darrel Robinson and Pete "Skata" Spalas.

The intricacy of Ron Smith's machining was something to behold. I have to tell you; if you've ever seen what a high-powered r.f.

circulator looks like you know what I'm talking about. I'll leave S.E.I. by saying that today the company manages a slew of government contracts and if there is anything that you need to know about the M1A/M14; Ron Smith is the guy to talk to.

So, why do you need, or would need, a Schuster Adjustable Gas Plug? To best answer that question, you have to visit the WWII M1 Garand battle rifle. After it retired in 1959 the U.S. Government made these wonderful rifles available to the public for hunting and competition through the CMP. The Garand fired a 30-06 round, and once in civilian hands it took no time at all before hunters and marksmen began loading 30-06 ammunition with heavier bullets. Correspondingly, chamber and bore gas pressures increased. When that happened, the Garand's operating rod (op-rod) moved faster and with greater force than its original design called for; inevitably resulting in damaged op-rods and reduced longevity.

To correct the problem, Schuster Manufacturing, Inc. of Toledo, Oh, developed the Schuster Adjustable Gas Plug.



plug.

Installation was straight forward. Simply remove the standard issue gas plug (also referred to as gas nut) and replace it with an adjustable gas

plug. Once installed, the gas plug is adjusted using a hex key, provided, until the rifle operates reliably with its given load. Once the rifle locks open on the last round, chambers and ejects properly, the user can make finer adjustments to tune the weapon for tighter groups.

I digress. There is a great deal of shamanistic mumbo-jumbo about accuracy, barrel harmonics, etc. most of which is unsupported through science and falling under the fluff category. It is designed to get you to part with your hard-earned cash. It has been my experience that 98% of a rifle's accuracy is determined by tolerances, its chamber, bore and crown; everything else is minutia exhibiting varying degrees of diminishing returns. Back on topic.

Since the M14's operating system is similar (there are differences in the actual gas system) to the M1 Garand it only makes sense for Schuster Manufacturing to develop an adjustable gas plug for it as well.

Put succinctly, the reason for a Schuster Adjustable Gas Plug on your M1A or M14 is to tune the rifle for a specific load; keeping in mind that the M14 was designed for the NATO 7.62 x 51 147gr round, designated M80.

However, the M1A's bore has 1:11.5 twist so it's quite capable of stabilizing up to a 190 gr round, and if you plan on using something other than military grade M80 you'll want to tune your rifle's gas system for your specific load.

I know shooters that load a .308 with a 175 grain bullet to 2700 feet per second. A load of this nature creates higher gas pressures that act on the operating rod with greater force. Prolonged use of these loads will shorten your rifle's life span. Other events like the addition of a suppressor will alter bore gas pressure as well.

A suppressor's blast baffle provides a quantifiable backpressure that increases the duration of, and adds to, the initial blast pressure. If you're shooting M80 adding a

Suppressor alone should not be a driver for installing the adjustable gas plug. However, if your working load is M118 or M118LR with a suppressed rifle, installing an adjustable gas plug will afford tangible benefit.



What is a Schuster Adjustable Gas Plug and how does it work?

The Schuster Adjustable Gas Plug is a drop in replacement for the standard M1A gas plug. There is no special tool requirement. Simply remove the standard plug and replace it with the adjustable gas plug.

Functionally, it changes gas cylinder pressure by changing gas cylinder volume. The greater the gas cylinder volume the lower the gas pressure for a given amount of gas. To increase cylinder gas pressure turn the adjusting screw clockwise. To reduce gas cylinder pressure, turn the setscrew counterclockwise.

As shipped the Schuster gas plug is set to prevent the rifle from cycling. I say again, the rifle will not cycle.

So, you need to adjust the gas plug. To do so, simply rotate the set screw in a clockwise direction a quarter turn at a time. Schuster engineered detents to help you keep track of

where you're at; fire after each turn until the rifle functions reliably.

In testing, my objective was to dampen the effects of the suppressor. I was not tuning the rifle for a specific load, so I tweaked the gas system for unsuppressed M80.



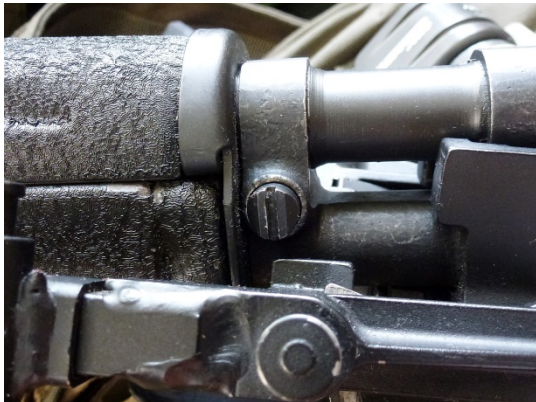
Once the rifle functioned reliably, I installed the suppressor and reduced (counterclockwise) gas pressure one-eighth of a turn at a time, when the rifle malfunction I stopped and increased gas pressure (clockwise) one-eighth. At this setting, the rifle worked reliably suppressed and unsuppressed. Furthermore, because M80 produces lower chamber and bore pressures than M118 or M118LR, you can be assured that your rifle will operate reliably across the full range of ammunition.

As a last step, Schuster ships the adjustable gas plug with a hollow locking setscrew. Once you've adjusted the gas block, install the hollow setscrew and tighten against the adjusting screw to prevent it from backing out.

A final word on suppressed operation.



Unless you're a devotee of the M1A/M14 platform, it's very simple to overlook the gas shutoff originally designed into the rifle. It was used in support of rifle launched grenades -the Yugoslavian SKS took a similar approach - simply turn off the gas to prevent the weapon from cycling prior to launching a rifle mounted grenade.



On the M1A/M14 you'll find the shut-off valve located on the starboard (right) side and aft (behind) of the gas plug. It looks like a set screw but functions like a ball valve. In the vertical position, gas is allowed to enter the gas cylinder. In the horizontal position, gas to the cylinder is shut off and the rifle will not cycle.

If you want to experience quiet, install a suppressor on your M1A, shut off the gas system and load a subsonic .308. It's extremely

quiet, but of course you'll have to manually charge the rifle.

You can use the same procedure for a full powered load. The difference in the two is the full powered load will have a loud sonic crack from the bullet flight.

In all cases, a suppressed or unsuppressed subsonic load cannot be relied upon to cycle the weapon's action.

The decision to install a Schuster Adjustable Gas Plug is, of course, ultimately yours. On one hand, you've added a single point of failure. However, this is a risk that is easily mitigated by carrying a spare standard issue gas plug. It can be replaced in 30 seconds or so.

On the other hand, if you want to reduce wear and tear on your rifle and retain the flexibility of tuning your M1A's gas system across a variety of loads, suppressed or unsuppressed, the Schuster Adjustable Gas Plug is effective. It is particularly useful for reloaders, who generally experiment with varying loads.

There are supplementary benefits as well; the most noticeable being a reduction in the amount of blowback the shooter's face will experience.

Individuals using the M1A platform in military and first responder roles, your interests are best served using an S.E.I. M14 SOCOM Gas Plug. It is a shorter gas plug but with more volume for gas.

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