

## PRODUCT FOCUS



On Geissele Hi-Speed units, the trigger position is  $\frac{1}{8}$  inch further forward than on the SSA or standard triggers.



This SSA model uses a standard-mass hammer, while the Hi-Speed line (far right) features a lighter-weight, skeletonized hammer.

BY STANTON L. WORMLEY, JR.

# GEISSELLE AUTOMATICS' AR TRIGGERS



Geissele triggers are favored by top shooters such as 2008 National High Power Champion Carl Bernosky.

Today's competitive shooters have a wide selection of match-grade AR parts and accessories to choose from and qualified gunsmiths can make these rifles shoot nearly as well as bolt guns. The stock AR15 trigger, however, has been problematic.

SEE DETAIL A



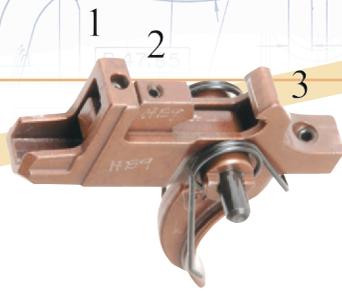
Each Geissele Hi-Speed trigger comes with all that is needed for installation, including hex wrenches, hammer and trigger pins (including an oversize hammer pin), an assembly pin, lubricant and full instructions (not shown).

Based on designs by Eugene Stoner of the Fairchild ArmaLite Corporation, the AR15 (ArmaLite Model 15) is the common name for the widely-owned, semi-automatic rifle that led to the fully automatic M16 and M4 assault rifles used by the U.S. military. Now trademarked by Colt Industries, the AR15 and its clones have become a very popular addition to NRA's high power and long range matches.

Rule 3.1.2 of the NRA high power rifle rulebook allows "U.S. Rifle, caliber 5.56 mm M16 series as issued by the U.S. Armed Forces, or the same type and caliber of commercially procured rifle, having not less than a  $4\frac{1}{2}$ -pound trigger pull..." to be used in high power competition. Rule 3.3.1(a) goes on to read: "... M16s or commercially equivalent rifles, configured or customized as NRA *match* rifles, are exempt from the  $4\frac{1}{2}$ -pound trigger weight requirement." By design, a match rifle will typically come with an excellent two-stage trigger. If you choose to shoot a *service* rifle, however, replacing the stock trigger should be high on your list in preparation for competitive shooting.

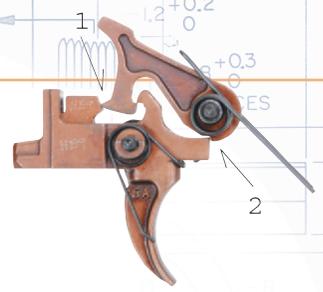
Factory triggers tend to be heavy with excessive creep, and many aftermarket triggers lack the reliability, durability, adjustability or light weight desired for exacting target work. Bill Geissele, an engineer and Distinguished Marksman from Norristown, PA, recognized these issues and tested several "drop-in" triggers. Geissele found those triggers lacking in some way and so, in the best engineering tradition, began building his own.

Geissele wanted his trigger to be a two-stage design, believing that two-stage triggers are easier to control during rapid-fire strings, as the initial take-up makes the shooter less likely to prematurely fire a shot than with a feather-light, single-stage trigger. A two-stage trigger also reduces the chance of an inadvertent double discharge produced during



Hex screws on the Geissele Hi-Speed triggers allow adjustment of (1) sear engagement, (2) second-stage pull and (3) over-travel.

On both SSA and Geissele Hi-Speed (shown) models, second-stage weight is controlled by pressure of hammer on disconnecter at (1). Hammer/sear engagement is at (2).



recoil. Finally, a properly designed two-stage trigger can yield a second-stage pull weight of mere ounces, less than what can safely be achieved with a single-stage trigger. After initial testing of several prototypes, Geissele introduced his Hi-Speed triggers to the shooting public in 2004.

Geissele's Hi-Speed triggers originally came in two variants: Match Rifle (1.3 to 2.5-pound first-stage pull and 4 to 14 ounce second stage pull), and Service Rifle (3.2 to 5 pound first-stage pull and 0.5 to 1.5 pound second-stage pull). Later, he added the Designated Marksman Rifle model, which combined the 1.3 to 3 pound first-stage pull of the Match Rifle trigger with the 0.5 to 1.5 pound second stage weight of the Service Rifle unit. All models are available in both small and large-pin versions.

In addition to a two-stage operation, Geissele incorporated several other novel features into his triggers. For example, the hammer and trigger are precision-cut from tool steel by wire EDM (electrical discharge machining), polished to the proper smoothness for minimum friction and carburized to a hardness of 60 Rockwell C for a long-wearing surface over a tough inner core. Carburizing also makes a part more shock-resistant and gives Geissele triggers exceptional durability. In automated test fixtures, sample triggers have successfully survived more than 150,000 cycles.

The Hi-Speed line also has a lighter-weight, skeletonized hammer which, when used with the supplied standard-power hammer spring, retains ignition reliability while shortening lock time by about 50 percent over stock triggers. Trigger lock time is the time between the trigger sear's disengagement and when the firing pin strikes the primer. The hammer is designed so that it contacts the firing pin when aligned with the firing pin axis, thus reducing the shock and vibration that occur when the hammer falls. A further welcomed change is the relocation of the trigger  $\frac{1}{8}$  inch further forward than on standard triggers, giving what many shooters believe is an improved trigger-finger position.

One of the hallmarks of the Hi-Speed trigger design is its wide adjustment range. Adjusting the tension of the trigger spring controls first-stage pull weight. Sear engagement, second-stage weight and overtravel are each set by using easily accessible adjustment screws as illustrated above.

The disconnecter in the Geissele design performs two functions. First, when the trigger is pulled and the recoiling bolt carrier cocks the hammer, the disconnecter holds the hammer back and transfers it to the sear when the trigger is released. The disconnecter also presses against the hammer when the trigger is engaged. The level of tension in the disconnecter spring, adjusted with a screw in the disconnecter, controls the second-stage pull weight.

Each Geissele Automatics Hi-Speed trigger is provided with everything needed for a successful 20 to 30-minute installation.

While the Geissele Hi-Speed triggers are excellent for competitive shooters, military users wanted a two-stage trigger with a simpler design, a 4-pound total pull weight, and selective automatic-fire capability. Geissele developed the SSF (Super Select-Fire) trigger in response to these specifications, also adding a semi-auto-only SSA (Super Semi-Automatic) variant.

Although similar to the Hi-Speed triggers in materials and construction, the SSF and SSA lack the trigger adjustments of that line, and also feature greater sear engagement, a conventional trigger location, heavier hammer and enhanced service life in excess of 250,000 cycles in factory testing. This robustness is gained, however, at the cost of a slightly less crisp trigger break.

## RANGE TESTING

I installed Geissele DMR and SSF triggers in two DPMS rifles, an LR-6.5 in 6.5 Creedmoor, and an LR-260 in .260 Remington. The DMR was set to give a 1.8-pound first-stage and 12-ounce second-stage pull, while the SSA dropped in with 2 $\frac{1}{4}$ -pound and 2-pound first- and second-stage weights, respectively. The DMR's second-stage break was crisp with no creep. The SSA was, as expected, slightly less crisp, but still more than adequate for competitive shooting.

There were no malfunctions with either unit over several hundred rounds of testing. Accuracy and performance were notably enhanced by the triggers. Particularly with the DMR model, the two-stage operation and ultra-light second stage pull improved my trigger control, virtually eliminating the flyers I sometimes experience with light single-stage triggers. Both guns are sub-MOA performers—the LR-6.5 around 0.6 MOA with the Hornady 140-grain 6.5 Creedmoor factory load.

But don't just take my word for it. Geissele Hi-Speed triggers are used by service and match rifle shooters on both Army and Marine Corps shooting teams and hi-master competitors like nine-time National Champion Carl Bernosky and 2008 National Trophy winner Shawn McKenna. Moreover, the SSF and SSA units are in service with military special operations units and various law enforcement agencies.

Geissele Automatics triggers are available through the company website, which also lists several distributors. Hi-Speed models retail for \$279, while the SSF and SSA run \$250 and \$170, respectively. Not inexpensive, perhaps, but worth every penny for those seeking the ultimate AR match trigger. Contact Geissele Automatics LLC; (610) 272-2060; [www.geissele.com](http://www.geissele.com). ☺

**Editor's Note:** For additional information on stock trigger modifications for the AR15, see David Sams' Q&A Section on page 13.