

Using the Sights of the Model 03-A3 Rifle

Objective:

The objective of this document is to provide a reference for the proper use of the sighting system on the Model 03-A3 rifle. This document is valid for both the Remington and Smith-Corona manufactured rifles. While this system is somewhat simpler than the M1905 sight on the older Model 1903 rifle, it is still useful to have a complete understanding of how to set up and use the sights.

This document isn't intended to be a collector's guide or a history lesson. Nor is it meant to extol the benefits or detriments of the sight compared to other systems. Hopefully it will give the new shooter the knowledge to use the sights with confidence. This document will not discuss sight picture, hold, marksmanship, or other accurizing topics.

Identification:

Perhaps the best place to start is with the identification of the various aspects and features of the sight system. Your particular sight might be missing some of the features or look slightly different than the illustrations here. Those differences are irrelevant to the normal operation and use the sight.



Rear Sight On Rifle



Front Sight On Rifle

Figure 1 along with the associated reference key illustrates the major mechanical parts of the sights. While numerous components make up the full assemblies, only the features germane to the set-up, function, and use of the sights are detailed.

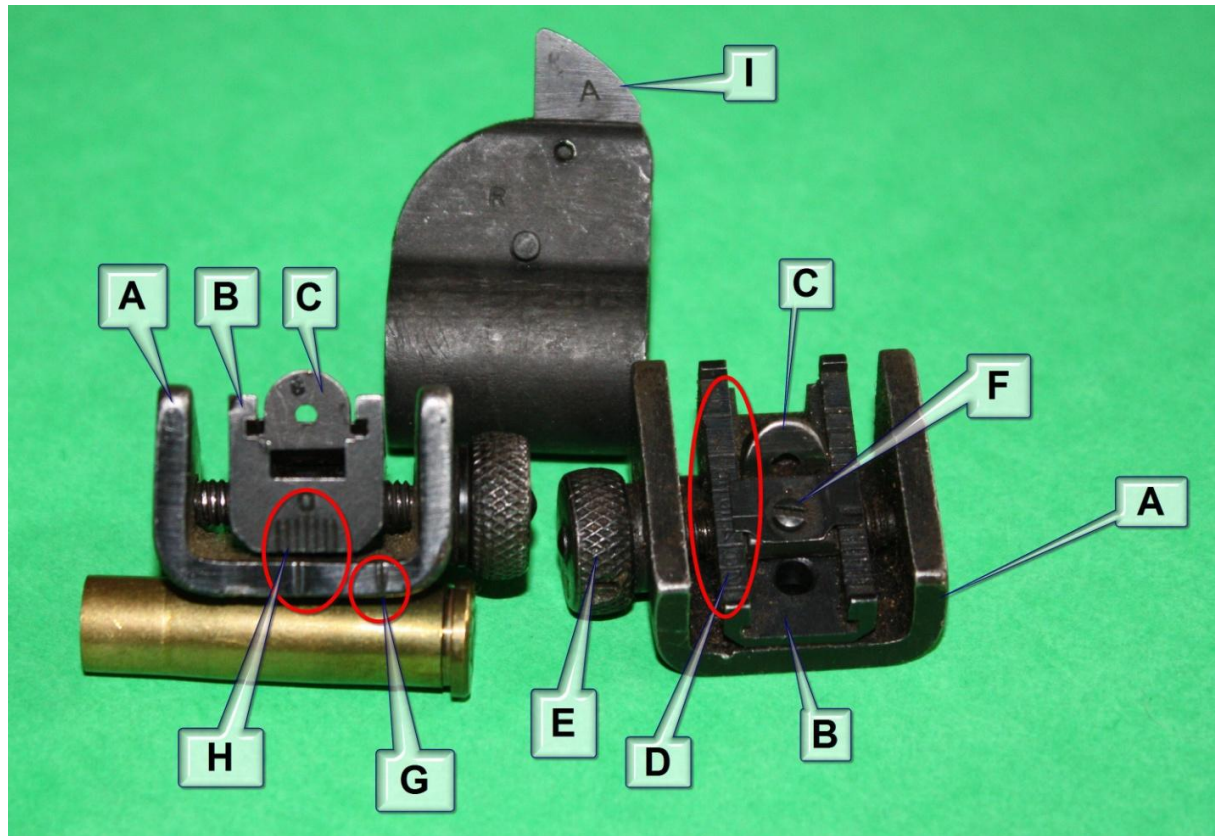


Figure 1

Figure 1 Key:

A=Base	F=Elevation Aperture spring and screw
B=Windage Yoke	G=Base index mark (not always present)
C=Slide Aperture	H=Windage Scale
D=Elevation Scale	I=Sight Blade with height designation letter visible
E= Windage Knob	

Initial Set-Up:

It is relatively easy to understand that a combination of manufacturing tolerances, rapid assembly, and a wood stock, would result in variations to the point of impact for a 03-A3 rifle as it left the factory. This wasn't particularly problematic other than the elevation scale is marked in yardage and it is desirable to have the rifle print at the correct point on the scale. The answer was to simply provide a series of front sight blades of different heights. An armorer could test fire the rifle and choose a front sight blade that brought the point of impact close to the correct elevation scale indication. Shorter front sight blades raise the point of impact while taller blades lower the impact point. The result may not be perfect, but suitable for the intended purpose.

Without delving too far into “collector” details, it suffices to say that there were 5 different heights of blades produced. Early production blades were marked with a designation letter that was hidden by the front sight base when installed. Later production had the letter designator above the base so that it was visible when installed. Table 1 below shows the different blade heights and letter designations.

Early Production Low Marking		Late Production High Marking	
No Mark	0.537	"A"	0.537
"A"	0.522	"B"	0.522
"B"	0.507	"C"	0.507
"C"	0.492	"D"	0.492

Table 1

The blades increment in height by .015 inches which correlates to approximately 1.8 MOA elevation change based on the sight radius of the 03-A3 family of rifles. Surplus or aftermarket blades can be obtained to correctly set up a rifle such that it prints close to the indicated elevation range. Even though this is considered initial setup, it does require firing the rifle enough to be confident in the point of impact. Again the taller the sight Blade, the lower the point of impact will be.

Initial set up of the rear sight is fairly straightforward. The sight Base (A) is mounted on the rear receiver bridge dovetail and is secured to the receiver with a punch peen or a set screw. Be sure there is no play in the base at all. Some bases have an index mark that aligns with an index mark on the receiver which provides an easy visual indicator of base position. The rear sight Yoke (B) is carried by the windage screw. A spring loaded plunger in the base of the Yoke (not visible when assembled) ensures the Yoke does not rotate backwards when the screw is turned. Check to ensure the spring returns the sight correctly. The Windage Knob (E) should turn both directions freely but firmly with notable detents. The rear sight Slide Aperture (C) should be movable with your fingers by applying firm force up or down the scale. The Aperture spring (F) should provide crisp detents that can hold the Aperture in place during firing.

Using and Adjusting the Sights:

Aiming the rifle using the sights is straightforward. The shooter simply peers through the Slide Aperture (C) and aligns the top of the front sight Blade (I) in the center of the Aperture (C). The shooter then moves the rifle to place the top of the Blade (I) on the target.

Windage (right and left) corrections to the point of impact are made using the Windage Knob (E). Rotating the knob clockwise moves the sight (and point of impact) to the right. A counterclockwise rotation of the knob will move the sight to the left. Each detent click of the knob represents a 1 MOA adjustment, roughly one inch at 100 yards. Each mark of the Windage Scale (H) correlates to 4 MOA or about 4 inches at 100 yards.

It is important to understand that the rear sight assembly was specifically calibrated (scaled) for military M2 Ball ammunition. Other types of ammunition may fire to a different point of impact.

Elevation is adjusted by sliding the Aperture (C) up or down the Elevation Scale (D) to the desired shooting distance. The Elevation Spring (F) has a small mark adjacent to the scale that points to the elevation setting listed in hundreds of yards from 200 to 800. Detent positions in the Slide Aperture allow the Elevation Slide to be positioned at 50 yard increments. For example, if the mark is positioned

between the 3 and 4, then the rifle is nominally sighted for 350 yards. Figure 2 shows a sight scale set for 400 yards. Note the relative position of the pointer and the scale.



Figure 2

Advanced Sight Use:

More advanced knowledge is useful as a shooter becomes proficient with the firearm. This section will provide some additional information about using the sights to their full potential.

The Windage Yoke (B) traverses left and right on a threaded screw, with the Yoke assuming the role of a nut. Any simple threaded shaft/ nut system must have enough clearance to operate without binding. Backlash resulting from these clearances can cause the sight to not traverse the full distance expected on the first adjustment. However, subsequent adjustments in the same direction will be full value. Therefore the simple solution for precise windage adjustments is to always move in the same direction when approaching the desired sight setting.

For example, if you have been walking the point of impact from left to right by moving the sight and went one click too far, you should move back two clicks left, and then one click right to get to the final position. Furthermore, it can be theorized that windage adjustments should always be made from right to left (counter clockwise) to minimize the effect of the adjustment knob detent spring too.

It stands to reason that surplus M2 Ball ammunition will eventually be used up, or become just as expensive as modern factory ammo. Also, many gun ranges are limited to 100 yards. These two factors will make it likely that the elevation scale just isn't going to match the point of impact. The simple solution then is to know how much elevation change in MOA is present between each scale detent. Table 2 below illustrates the relative change between each elevation setting. This information will allow the shooter to predict the point of impact change.

Range Change	MOA
200 to 250	1.5
250 to 300	1.7
300 to 350	1.9
350 to 400	2.1
400 to 450	2.1
450 to 500	2.1
500 to 550	2.4
550 to 600	2.6
600 to 650	2.8
650 to 700	3.0
700 to 750	3.3
750 to 800	3.8

Table 2

Appendix A: Reference Documents

TM 9-1270 U.S. Rifles, Cal .30, M1903, M1903A1, M1903A3, M1903A4 Sniper
Ordnance Maintenance Manual

Steinberg, Bob Empirical data on rear sight elevations in Table 2

Appendix B: Revisions

Jan 18, 2013 Draft
Jan 31, 2013 Public release