

Firing Military Bolt Action Rifles In The CMP Games Matches.

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Warning

Opinions stated here are mine, not those of the CMP. "Your mileage may vary". I can not be responsible for the results you get, and neither can the CMP. Be careful of regular **firearms safety**. Be sure you **use correct ammunition**. Understand the functioning of the rifle you use.

Get a **clear chamber indicator** (CCI) for your rifle, if you do not already have one. The CCI shows a flag out the side of the rifle AND inserts the attached "flag pole" into the chamber. If the CCI is in the rifle, it guarantees there is no cartridge in the chamber. Also, get a copy of the **latest rule book** if you do not already have one. It may be downloaded from www.odcmp.com.

Overview

This covers the Springfields, the US M1917 Enfield, and foreign bolt actions, including Mausers, British Lee-Enfields, and Moisin-Nagants. Springfields are fired in the Springfield Match, and the others are fired in the Vintage Military Rifle match.

If you do not already have a military bolt action, get a Springfield 03A3. The 03A3 has the most useable rear sight of any military bolt action. The CMP Rules now allow you to install a thicker front sight blade than the one that comes in the rifle, if you wish (Rule book number 12, 2008, see 6.3.3 subpart (4) on page 23).

You will need to reload your bolt rifle during rapid fire. Get at least four clips suitable for the rifle and caliber (one to load with, one to reload with, a spare reload, and one to lose).

You will also need to adjust the issue sights. A magnifying glass may help you adjust the sights, and verify that they are set correctly, especially if you need reading glasses for close vision.

If you take the rifle to a gunsmith, **make sure he or she understands that the sights, trigger, stock, and caliber must remain as-issued**. Specifically, the CMP rules do not allow replacing the trigger with an after-market trigger such as a Timney, and do not allow glass-bedding the stock. The rules DO require that the stock remain full-length with issue hardware in place. You may replace the stock with another one of issued military configuration, such as replacing a straight Springfield stock with a pistol-grip type C stock. You may install a commercially manufactured clone of the military stock and re-install the issue hardware on it.

The rules allow you to bring ammunition for calibers other than 30-06, including handloads. Try to verify before match day that the ammunition you plan to bring groups decently and functions smoothly in the rifle. Feed it from the magazine in practice, to verify that the magazine works.

Zeroing Military Bolt Rifles For the CMP Games Matches

The distance is always 200 yards for the games matches. Find a sight setting that hits the center of the standard target at 200 yards, with the ammunition to be used in the match. If you use a 30-06 bolt rifle, you must shoot the issued ammunition in CMP matches. Buy some of that ammunition to zero a 30-06 rifle with. Foreign rifles in foreign calibers are allowed to shoot handloads. Zero foreign rifles with the ammunition you plan to shoot in the match.

If possible zero your rifle before the match, in case you need time-consuming changes to sights, that you would not have time for in the match. Emergency aiming methods are shown here, in case you enter a games match with a rifle you have never fired before, and cannot easily adjust the rear sight, to hit the center with the recommended aiming method.

Do your final zeroing prone in the sling. The pressures on the rifle, and the point you look through your glasses, need to be the same as they will be in the match. On a bench rest they are not. Re-check your zero on several different days, (for example, one bright, another overcast, one with sun at three o'clock, one with sun at nine o'clock), to determine effect on your zero, if any.

To zero the rifle elevation at two hundred yards with the rear sight elevation set where you want it, you may need to change the height of the front sight, either by changing sight blades or by filing down the sight blade that is in the rifle. Parts vendors sometimes have issue front sights of different heights.. You want to zero with some room remaining to lower the rear sight slightly, if you later need to. That is, do not zero with the rear sight bottomed out.

Some of these rifles do not have convenient windage adjustment, and you may need to move the front sight over in its base to make the rifle hit the center with a center sight picture. After you have it adjusted to hit the center, experiment with favoring slightly to see what the effect is, and to build your confidence that you can hit the ten ring while favoring. You may later need to favor slightly if your basic zero is not hitting the center that day.

The A3 Springfield

The CMP Rules now allow you to install a thicker front sight blade than the one that comes in the rifle, if you wish (Rule book number 12, 2008, see 6.3.3 subpart (4) on page 23). The rules allow the blade to be up to one hundred thousandths (.100) thick. In my opinion about seventy-five thousandths to eighty thousandths (.075 to .080) is good.

The M1903A3 Springfield has the issue rear sight mounted on the receiver above the trigger. (See picture 1). The elevation provides adjustment notches spaced according to the ballistic curve of military ball ammunition, and marked on the right side of the ramp, in hundreds of yards: 2, 3, 4, 5, 6, 7, and 8. There are unmarked in-between notches for 250, etc. The windage knob provides one minute clicks which move the point of impact two inches at two hundred

yards. The ten ring is seven inches across. You want your basic 200 yard zero to be with the rear sight close to the bottom of the ramp because the notches are closer together there. Moving one notch will not move you too far, if you later need to adjust away from your basic elevation zero,

To start zeroing, make these adjustments. Turn the windage knob until the two longest lines on the scale on back of the sight line up. That is mechanical wind zero. Push the elevation slide all the way down the ramp and pull it back up to the third notch you feel. Fire prone with sling at the official target, at two hundred yards, with the issue ball ammunition if available. You may find that a slight line of white sight picture lets you see it better, because the front sight is so thin. Fire three shots to get an average and move as needed. If you hit the elevation center with the elevation set at the second, third, or 4th notch up from dead bottom call it good. That is your elevation for that issue ammunition. Zeroing two to four notches up from the bottom gives you a chance to come down later if you need to. If you hit the windage center with your windage within one or two clicks of mechanical wind zero call it good, and do NOT try to relocate the whole rear sight assembly on top of the receiver to make it zero at mechanical wind zero. Record the rear sight positions that you hit the center with. Look at the zeroed rear sight through your magnifying glass. Take note of what it looks like. It is easy to bump the A3 rear sight and move it along the ramp when shooting. You need to recognize when this has happened.

If the elevation will not zero where you want the rear sight to be, you can change the height of the front sight to adjust the point of impact. This may be done by installing a higher front sight to lower the point of impact, by installing a lower front sight to raise the point of impact, or by filing down the front sight you have, to raise the point of impact. [See below section Calculating Front Sight Change.]

If the rifle will not zero for windage where you want it, you can move the rear sight sideways on top of the receiver. There are two types of A3 rear sights. One has a screw in the bottom of the base. The other is just peened tight on the receiver dovetail. Move the rear sight windage to the left and look for a set screw under the windage yoke. If you find a screw, loosen it, move the rear sight in the direction you want to move the point of impact and re-tighten it. Shoot again to verify the new zero, AND tighten the screw hard. If there is no screw, the rear sight is a VERY tight fit on the dovetail, and is very difficult to move.

Springfield stripper clips are five shot. The best to use are the stainless ones now sold as "308 size". The pre-WWII brass GI clips are another good type of clip. The tin WWII clips are not so good. M14 stripper clips must be modified to work in a Springfield.

The 03 Springfield

The M1903 Springfield has a rear sight mounted on the barrel above the chamber, which folds up to use its aperture. (See Picture 2). Elevation and windage are both continuously adjustable, with no clicks. The rear sight elevation scale has yard marks for ranges with M1906 ball

ammunition. Each line on the windage scale is worth four minutes of angle and was called a "point."

To start zeroing, make these adjustments. Note that you want to aim with the aperture that is visible when you hinge up the rear sight leaf to vertical. Turn the windage knob until the two longest lines on the scale on back of the rear sight base line up. That is mechanical wind zero. For elevation, loosen the binding screw that is on the right side of the slide. Position the slide such that its index mark lines up on the middle mark between the 200 and 300 yard marks. Retighten the binding screw. Be careful; it is a small screw. If you twist it off, you have a problem.

Adjust as needed. You want to zero for elevation with the rear sight somewhere between the 200 and 300 marks, not all the way at the bottom. You may need to change the height of the front sight by changing front sight blades or by filing down the blade you have.

The CMP rules allow you to have a rear sight aperture larger in diameter than the common fifty thousandths (.050), not larger than one hundred(.100). The CMP rules allow you to have a front blade thicker than the common fifty thousandths of an inch (.050), but not larger than one hundred thousandths (.100). The larger aperture and thicker blade may help you see the sight picture better. One way to achieve this is to install the Marine Corps insert set, which consists of a rear sight slide with a larger aperture and a thicker front sight blade. A way to get the larger rear sight aperture is to drill out the one you have.

The O'Hare type micrometer slips on the rear sight leaf and provides clicking elevation adjustments. The device is taken off after the sight has been moved and the binding screw tightened. It is not left on while shooting RayVin sells a modern-made clone [see below section, Sources]. You can also use a dial caliper for making fine elevation adjustments.

The 03 Springfield uses the same stripper clips as the A3.

Other Military Bolt Rifles

Overview

Most of these do not have a convenient windage adjustment. Zeroing them for wind may require moving the front sight. Devices that push the front sight by turning a screw jack against it are available. Most of these rifles have a notch rear sight with elevation adjustable according to the trajectory curve for a particular ammunition. Picture 3 shows the recommended sight alignment and sight picture to use with a notch rear sight. On quite a few rifles the lowest rear sight elevation still hits too high at 200 yards with the recommended sight alignment and sight picture shown in Picture 3. On those, you will need to get a higher front sight to hit the bulls eye at 200 yards.

You should try to get a 200 yard zero with the recommended sight alignment and sight picture

before you come to the match, because these rifles' sights can be difficult to adjust quickly during the match. Pictures 4, 5, 6 and 7 show ideas for other sight pictures. Read and understand the below section on favoring.

Some of the ammunition sold for foreign military calibers may not group well in your rifle. The CMP rules allow you to handload foreign military calibers. You should use ammunition that groups well. Sierra does make Matchking bullets in 6.5 mm, 7mm, 8mm and 303/7.65 calibers. Give your rifle and yourself a chance with decent ammunition.

Some of that foreign ammunition may be primed with corrosive primers. If you use it, you must clean with a fluid that will dissolve the salt deposited. Hot water does very well.

US M1917 Enfield

You must fire this rifle with the CMP issue 30-06 ammunition, in CMP matches.

This rifle has a receiver sight above the trigger, that folds up. When folded up, it has one hundred yard notches from 200 through 900 yards. The peep slide is locked and unlocked with the small lever on the right side. It does not have a windage adjustment, so windage zero must be adjusted by moving the front sight.

The 1917 Enfield has a very good bolt handle. But, it cocks on the closing (forward) motion of the bolt. Therefore, it is less convenient for a left-handed shooter to operate by reaching across.

To zero, stand up the rear sight leaf and set the rear sight at the 300 yard mark and shoot with the ammo to be issued in the match. Adjust as needed. You may need to change the height of the front sight to make it zero with the rear sight elevation set where you want it.

The 1917 Enfield uses the same stripper clips as the A3 and 03 Springfields.

The British Pattern 14 rifle is essentially the same rifle. However, it is in 303 caliber and uses the same 303 stripper clips as the Lee Enfield.

Swede M1896 Mauser

These rifles are in the Swedish 6.5mm caliber. This takes a 6.5mm-Swedish-specific stripper clip and **will not work with 30-06** or 8mm Mauser clips. Some merchants have Swedish clips, including Numrich/GPC [see below section, Sources].

The front sight is a flat topped post and the rear sight is a square notch. Often, the rifle zeroes at 300 meters with the rear sight all the way down. You may need to install a higher front sight to make it zero at 200 yards. Numrich/GPC has higher front sights.

The long-barreled M96 Swedes have the sling swivel at six o'clock, suitable for shooting prone with sling. The CMP rule book specifically allows a United States sling to be used on foreign military bolt rifles.

If you are a right handed shooter and feel you must have a foreign rifle, the Swede M96 is a good one. Many shoot quite well. The long-barreled M96 configuration may allow you to focus the front sight better than the shorter-barreled M38 version. The Swedish marksmanship program held their military ammunition to a good grouping standard, and the Swedish-made ammunition is non-corrosive. The 6.5 x 55 cartridge is a foreign caliber, so the CMP rules allow you to bring your own ammunition, including handloads.

The M96 cocks on closing motion of the bolt and thus is less convenient for a left handed shooter reaching across.

Swiss K-31

The Swiss K-31 uses a six-shot stripper clip that is unique for the Swiss 7.5 cartridge. 308 clips will not work. The Swiss K-31 can also be reloaded by changing magazines. If you use the stripper clips, load with four and reload with a clip of six, to complete your ten shot string. If you use magazines, load with a magazine of five and reload with another magazine of five. Notice that the K-31 stripper clip is one-way; the correct edge must be down in order to strip it.

The issued K-31 swivel is not at six o'clock, so it is clumsier to shoot with a sling. The Swiss 1911 long rifle has the sling swivel at six o'clock, and takes the same GP-11 cartridge as the K-31.

The Swiss marksmanship program held their 7.55 x 55 GP-11 military ammunition to a good grouping standard, and GP-11 is non-corrosive. The 7.5 x 55 cartridge is a foreign caliber, so the CMP rules allow you to bring your own ammunition, including handloads. Note that this rifle mechanism requires perfectly-sized brass because it has little camming action.

The straight-pull bolt can be worked left handed by reaching across.

Model 1898 Mausers

Model 1898 Mausers load with five shot stripper clips. The stainless steel clips sold as 308 size will work well on M98 models. The 8mm, 7.65, and 7mm Mauser cartridges will all work with 308 clips. The 8mm, 7.65, and 7mm Mauser cartridges are foreign calibers, so the CMP rules allow you to bring your own ammunition, including handloads. Sierra makes MatchKing bullets in those calibers.

Get a model 98 Mauser which has a forward sling swivel at six o'clock to accommodate the sling. The CMP rule book specifically allows a United States sling to be used on foreign

military bolt rifles. A 98 Mauser with a twenty-nine inch barrel will allow many people to focus the front sight better

The 98 Mauser cocks on opening of the bolt and can be worked left handed by reaching across.

Most of these Mausers have notch rear sights and no windage adjustment. Windage zero must be adjusted by moving the front sight sideways in its dovetail. Picture 3 shows recommended aiming with a notch rear sight.

I do not recommend shooting any Mauser model earlier than the Swedish M96.

British Lee Enfields

British Lee Enfields are in .303 British caliber which requires its own special stripper clips because it is a rimmed cartridge. Clips for 30-06 will not work.

Select a No. IV mark I or No 4 Mark 2 Lee-Enfeld with an aperture rear sight that is click adjustable for elevation. They have the forward sling swivel at six o'clock. The CMP rule book specifically allows a United States sling to be used on foreign military bolt rifles.

I do not recommend firing Lee_Enfields earlier than the No. IV.

Moisin Nagant

Moisin Nagants are in 7.62 Russian caliber which requires its own special stripper clips because it is a rimmed cartridge. Clips for 30-06 will not work.

The Finnish M-39 is probably the best of these because it has a pistol grip stock, and the sights are well made, and the front sight blade is thick, with a square top. It has a sling swivel at six o'clock. Also, the model 91/30 has a good reputation for accuracy.

Moisin Nagant rifles are difficult to work left - handed by reaching across because the bolt handle is so far forward.

Favoring

Favoring means aiming as if you wanted to hit a different place on the target, to offset the fact that the sights hit the wrong place with the recommended sight alignment and sight picture.

Favoring is done when the sight is not adjustable, or when there is not time to adjust sights. In matches where coaching is allowed the coach can tell you to favor during a rapid fire string, if your first two or three shots are not centered. For example, if the first two shots hit on the right edge of the black, the coach should tell you to favor left. To start with, think of a favor as

changing your aim by one-fourth the diameter of the bull, a hard favor as one-half the diameter of the bull, and a hold as the diameter of the bull.

Pictures 4 and 6 show favors for elevation and windage, respectively. Pictures 5 and 7 show extreme, emergency sight pictures that you might need to use if you have not had a chance to zero the rifle ahead of time, and the rear sight cannot be adjusted enough. If you must use an emergency sight picture, correct the rifle as soon as possible thereafter, if it belongs to you.

Calculating Front Sight Height Change To Change Elevation Zero

Remember, change the front sight opposite to the direction that you want the impact to move.

For one minute of angle (two inches at 200 yards) the change in front sight height in thousandths of an inch is equal to the rifle's sight radius divided by 3600. Sight radius is the distance from the rear sight to the nearcorner of the front sight blade. For example for the A3 Springfield:

Radius = 28 inches

Change in sight height = $28/3600 = .00778$ = about eight THOUSANDTHS of an inch.

Tip: For comparison, a sheet of typing paper mikes. If you are filing down a sight blade to make the rifle hit higher, take off a little less than you calculate and shoot it. It is difficult to glue filings back on.

The relationships and derivation are:

One inch at one hundred yards is one minute of angle motion on target.

One hundred yards equals thirty-six hundred inches.

The change in the sight for one minute of angle is what we want to find, call it CIS.

The sight radius is the distance between the rear sight and front sight aiming elements, call it SR..

The ratios are $CIS/\text{one inch} = SR/3600$. Multiplied out CIS times 3600 equals SR times one.

Divide both sides by 3600 and get $CIS = SR / 3600$

In words, CIS for one minute of angle on target equals sight radius of your rifle divided by thirty-six hundred.

Sources Of Parts And Accessories

Amherst Depot 345 W. Dearborn St., Englewood, FL 34223 1-941-475-2020 www.amherst-depot.com Source of parts for A3 Springfields.

Champions Choice, Inc. 201 International Blvd LaVergne, TN 37086. 1-800-345-7179.

www.champchoice.com Source of shooting equipment, including stainless steel stripper clips in "308" size which work for 30-06, 8mm Mauser, etc., Military style leather slings etc.

Creedmoor Sports, Inc. 14-5 S. Coast Hwy Oceanside, CA 92054. 1-800-273-3366
www.creedmoorsports.com Source of shooting equipment, including stainless steel stripper clips in "308" size which works for 30-06, 8mm Mauser, etc., military style slings, shooting jackets, gloves, etc.

Firing Pin Enterprises P. O. Box 1158 Pima, Az 85543. 978-485-0437. www.firingpin.com
(Yes, its name is spelled with a Z.) Source of low cost reprints of Military Technical Manuals, including TM 9-1270 for the Springfield models.

Dan Stone. 33386 N. Valley View, Round Lake, IL 60073 1-847-546-5085. Makes a clone of the Marine Corps sight insert set for the 03 Springfield.

Numrich / GPC 226 Williams Lane, West Hurley, New York 12491. 1-866-686-7424, www.e-gunparts.com Source of parts for obsolete military bolt rifles, including different height front sights, 6.5 Swedish stripper clips, Swiss K-31 stripper clips, and 303 British stripper clips. Also, their catalog contains drawings and parts lists of rifles.

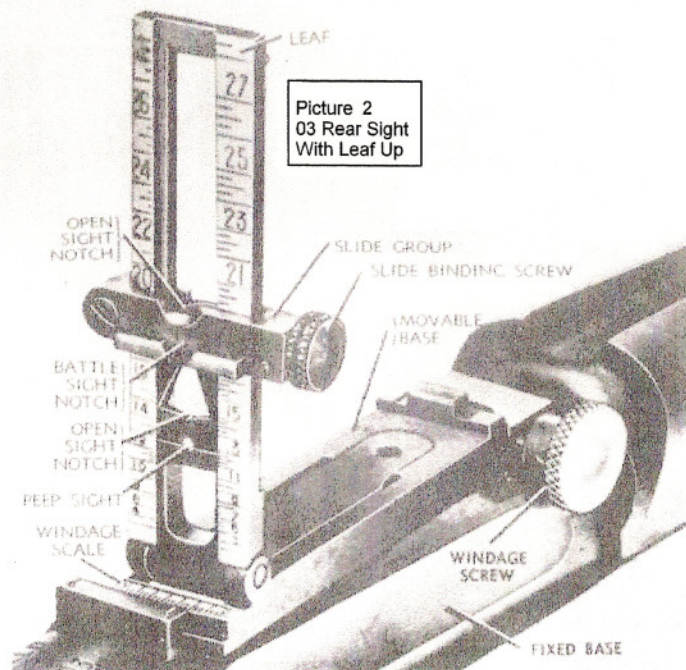
Some Affordable References

Description and Rules For The Management Of The United States Rifle, Caliber .30, Model of 1917, Government Printing Office, January 16, 1918. How to operate the rifles. Low-cost reprint is available from Firing Pin Enterprises.

FM 23-10 U. S. Rifle, Caliber 30, M1903, M1903A3, and M1903A4, Sept., 1943. How to operate the rifles. Low-cost reprint is available from Amherst Depot.

TM 9-1270 Ordnance Maintenance - U. S. Rifles, Cal. 30, M1903, M1903A1, M1903A3 and M1903A4, 1943. Maintaining the rifles. Low-cost reprint is available from Firing Pin Enterprises.

INTRODUCTION



RA PD 84295

Figure 6 — Rear Sight Group Showing a Setting for Range and Windage — U.S. Rifles, cal. .30, M1903 and M1903A1

100-yard divisions, the longer of the short lines 50-yard, and the shorter lines 25-yard divisions. The drift slide, which may be moved up or down on the leaf, has two notches called open sights and a circular hole called the peep sight. With the leaf raised to the vertical position, the lines on either side of the peep sight and on either side of the lower open sight notch enable the user to set the drift slide accurately at any desired graduation on the leaf. With the leaf and slide in the down position, and using the battle sight notch which is cut in the slide cap, the sights are set for 547 yards.

(b) The rear end of the rear sight movable base is marked with wind gage graduations. Each graduation corresponds to a lateral deviation in the point of impact of the bullet of 4 inches for each 100 yards of range to the target.

(3) **RATE OF FIRE AND EFFECTIVE RANGE.** The maximum rate

ORDNANCE MAINTENANCE — U.S. RIFLES, CAL. .30, M1903, M1903A1, M1903A3 AND M1903A4

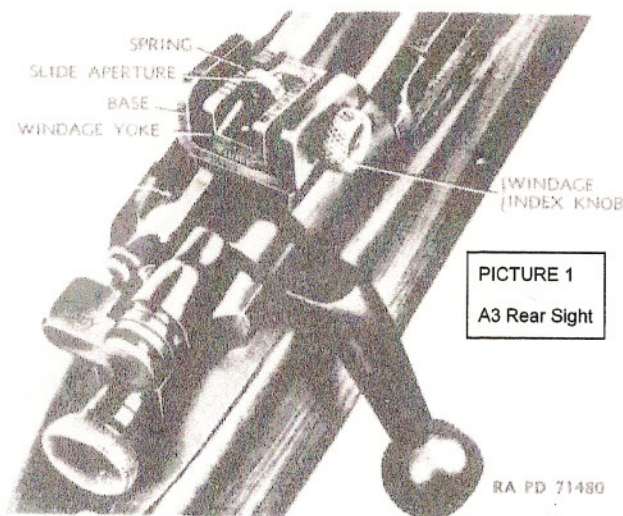


Figure 7 — Rear Sight Group — U.S. Rifle, cal. .30, M1903A3

of accurate fire with this weapon depends upon the skill and the position of the operator and the visibility of the target. It varies from 10 to 15 shots per minute. The effectiveness of rifle fire during combat decreases as the range to the target increases. Its use at ranges greater than 600 yards is unusual.

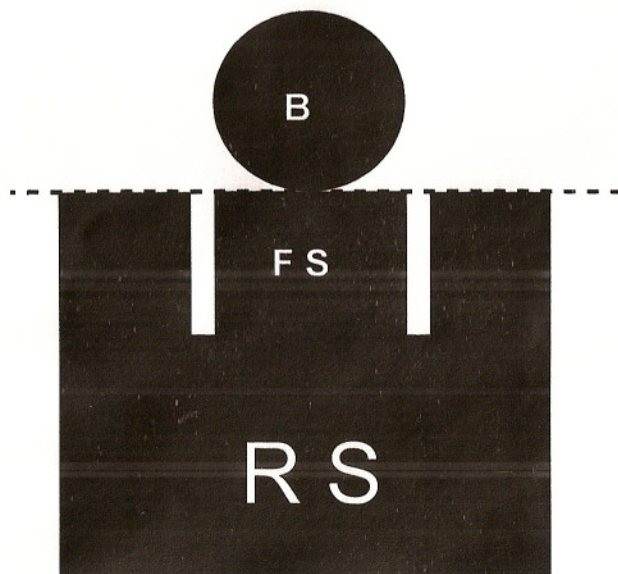
(4) **BORING.** Originally the barrel of this rifle was bored with four grooves with a right-hand twist, and 1 turn in 10 inches. Recently manufactured barrels are bored similarly but with only two grooves instead of four. This change in boring applies to all models of this rifle covered in this manual.

b. **U. S. Rifle, Cal. .30, M1903A1.** This rifle is identical with the Rifle M1903 described in subparagraph a, above, with the exception of the stock assembly. The Rifle M1903A1 has a pistol grip type stock whereas the Rifle M1903 has a straight grip type stock.

c. **U. S. Rifle, Cal. .30, M1903A3.** This rifle is basically identical with the Rifle M1903 described in subparagraph a, above. Principal variations are in the front and rear sight groups and the design of a few parts as explained below. Like parts are not all interchangeable, and replacements should be made according to parts listed in SNL B-3.

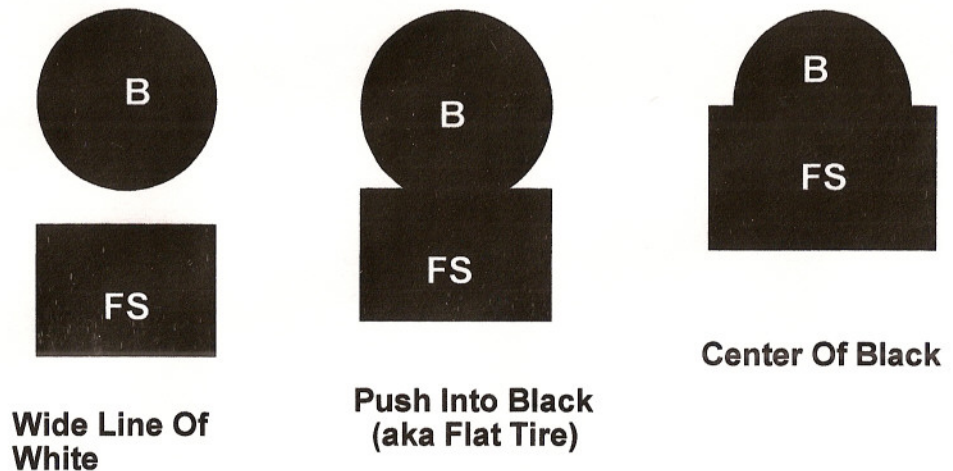
NOTE: Parts of the Rifle M1903A3 which vary in design may be found in recently manufactured M1903 and M1903A1 Rifles, provided they are interchangeable.

Picture 3. Notch Sight Picture

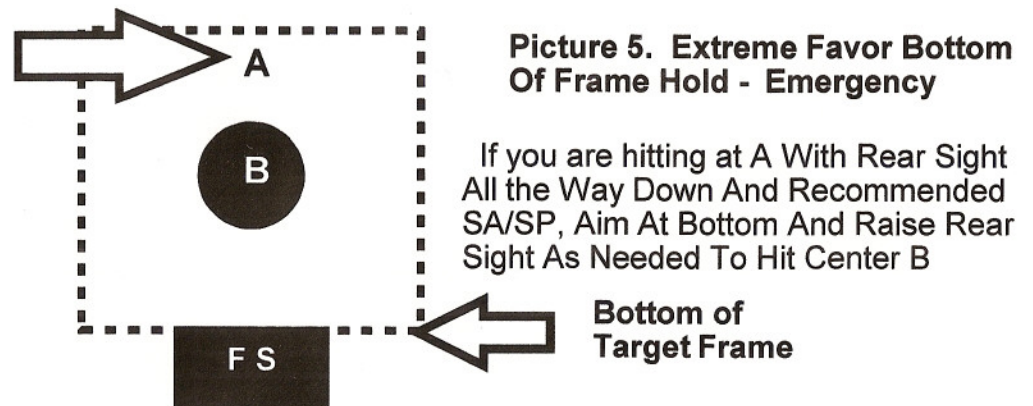


Recommended Sight Alignment (RS, FS) and Sight Picture (FS, B) For Rifles Which Must Be Fired With Issue Notch Rear Sights

Picture 4. Favors For Elevation



Maintain Sight Alignment (RS, FS) With Changed Sight Picture

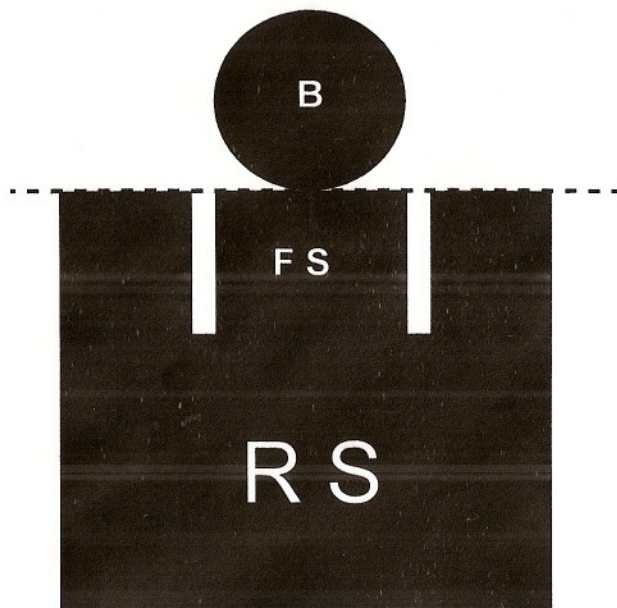


Picture 5. Extreme Favor Bottom Of Frame Hold - Emergency

If you are hitting at A With Rear Sight All the Way Down And Recommended SA/SP, Aim At Bottom And Raise Rear Sight As Needed To Hit Center B

Bottom of Target Frame

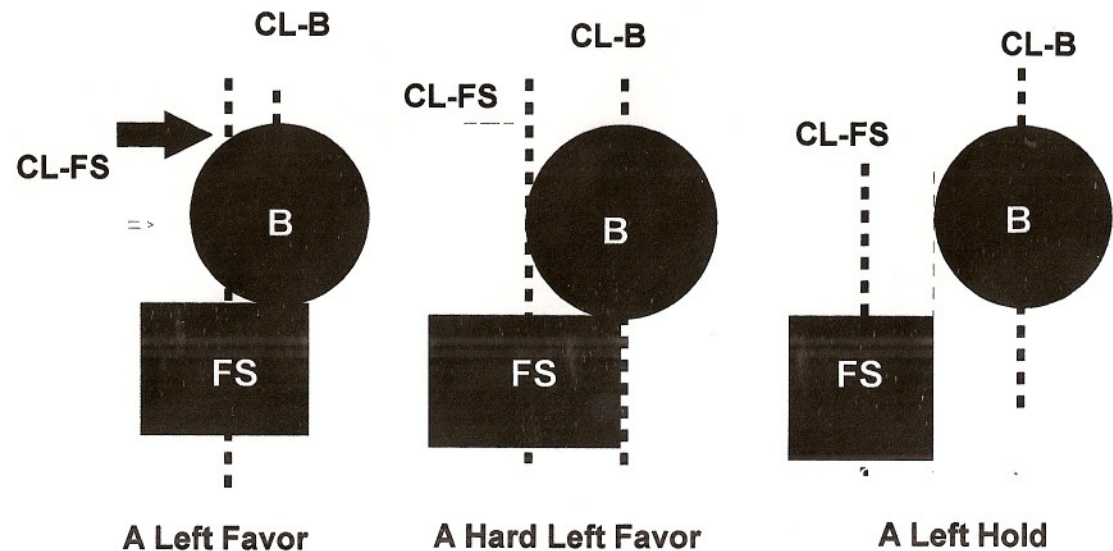
Picture 3. (Repeated)



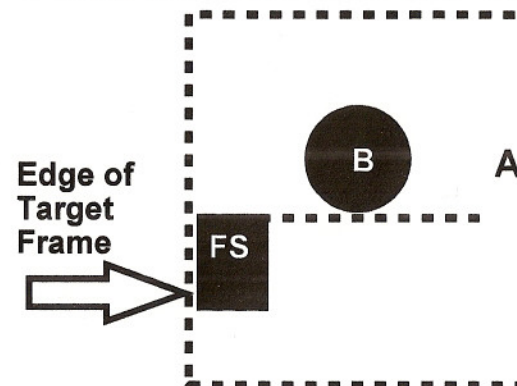
Recommended Sight Alignment (R, F) and Sight Picture (F, B) For Rifles Which Must Be Fired With Issue Notch Rear Sights

Picture 6. Favors For Windage

(Note: Here, CL means Centerline)



Maintain Sight Alignment With Changed Sight Picture



Picture 7. Extreme Left Hold - Emergency

If you hit at A with the rear sight all the way to the left, aim at the far left