

**MONTANA VINTAGE ARMS
“A” SERIES RIFLE SCOPE
INSTRUCTIONS FOR ADJUSTMENT AND USE**

Montana Vintage Arms would like to thank you for purchasing this rifle scope. We are confident the optics and performance of this product will live up to your expectations. By following these guidelines, you will be able to mount the scope, adjust the focus and parallax correctly and properly maintain your new scope to keep it functioning properly. While reading, please refer to the included diagrams.

MOUNTING THE SCOPE

Your rifle may already be drilled and tapped for scope blocks. The hole spacing on our scope blocks were designed to match that of the Unertl blocks so that they are interchangeable. The rear block has a hole spacing of .860" center to center, using a 6-48 screw. The front block has a hole spacing of .5625" center to center, also using a 6-48 screw. If your rifle is equipped with Unertl mounts and the spacing is correct for your new MVA scope, you will still need to install MVA scope blocks to insure proper fit with our mounts. The MVA scope blocks are designed to be mounted on either round barrels or flat.

If your barrel is not already drilled for scope mounts, there are some things you need to consider before doing so. The first consideration is your eye relief (distance between the eyepiece lens and your eye). The scope has almost two inches of eye relief, which is sufficient for eyeglasses to be worn while shooting. The placement of the front mount is key to insuring a properly mounted scope, one that is easy to adjust and use.

The front mount must be positioned close to the objective end of the scope with at least three inches of the Pope rib behind it. During recoil of the rifle, the scope will slide forward in the mounts. The Pope rib is there to prevent the scope from rotating in the mounts. If the front mount is positioned too close to the rear of the rib, the rib will come out of the mount during recoil and damage the finish of the scope. Once this happens, the rib is also difficult to get back into the mount while on a rifle, especially during a timed relay.

While we have recommendations for mount placement and spacing, you may want to check that the spacing will work for you before you drill your gun. The best way to set this up is to have someone help you. First, position the front mount about one inch from the objective bell of the scope and slide the rear mount forward to about the middle of the scope. Then, get yourself into a comfortable shooting position, preferably laying down prone with the rifle resting in your cross sticks, or sitting at a bench with the rifle on a rest. Now have your helper set the scope on top of the rifle and move it back and forth until you can obtain the optimum sight picture through it without changing position. The position of your front mount at this time is where it needs to be mounted. If, by chance, this procedure places your front mount right at the transition of your barrel from octagon to round, you may move the mount along the Pope rib the distance required to place it on one surface or the other.

As stated earlier, the front mount placement is limited by your eye relief at a comfortable shooting position. The placement of your rear mount, however, is determined by you. A rule of thumb regarding this decision is that the farther apart your mounts are, the finer the adjustment is, but the result is a decrease in total elevation change available in the mounts. Included with these instructions is a chart showing the elevation change, in inches, required to move your point of impact one minute of angle (MOA) depending on your sight radius (distance from center of front mount to center of rear mount). The graduations around the base of the elevation adjustment knob and the windage adjustment knob on the rear mount represent .001" movement per line. The rear mount has a total of .650" of elevation change available from bottom to top.

As an example of how to read the chart and what it means to the shooter, if your mounts are spaced 7.00 inches apart, moving your elevation knob two lines would change your point of impact one MOA. However, the elevation change from the bottom position of the rear mount to the top would envelope 325 MOA, or about 5.4 degrees.

On the other extreme, if your mounts are spaced 21.00 inches apart, it would require traversing six lines on the elevation knob to move one MOA, as it requires .0061" and each line is .001". This makes it easier to make fine adjustments. It also changes your total elevation adjustments to 108 MOA, or about 1.8 degree. Depending on the individual rifle and loads being used, the longer spacing may limit the ultimate range you will be able to shoot.

On the "A" series scope, mount spacing may vary from 7.00" to 12.00" at the extremes. We recommend using 10.34" or 7.2" depending in the mount configuration. This will give you .003" per MOA, or .002" per MOA.

For all applications, we suggest placing the rear mount so that the rear face of the base is about .750-1.00" from the front of the action. This value may vary though, due to the placement of the front mount for proper eye relief. We do not recommend placing the block any closer than .750" from the front of the action. Once again, if the placement of the front mount is on the transition of the barrel from octagon to round, we recommend you place the front either on the round or the octagon, keeping in mind the spacing of the rear block from the front of the action. The height transition from octagon to round generally will not affect the performance of the scope, but will give you an additional elevation. When mounting on a .22 caliber, or a gun which will be used for gallery shooting, this may pose a problem due to the close proximity of the target. Your point blank

sight setting will be higher, due to the rear mount being higher than the front when the mount is placed at the lowest setting.

When drilling and tapping the barrel for the scope blocks, make sure the barrel is level and the mounts are centered on the barrel. The screws for the blocks are a 6-48 thread and at least .140" of complete threads are required in the barrel for them to bottom in the blocks. The hole spacing for the rear block is .860" and for the front is .5625". If you are at all uncomfortable with this operation, you should have a gunsmith perform it rather than take the chance of ruining your rifle barrel.

ADJUSTING THE SCOPE FOR PARALLAX

Parallax occurs in a telescope when both the target and eyepiece are not focused exactly on the reticle. When there is parallax present, moving the eye across the field of view in the scope will cause the reticle to move across the target. The movement is very slight and probably not noticeable without the rifle on a rest, but the associated loss of precision is drastic when shooting long ranges. Parallax may be avoided by first adjusting the eyepiece and THEN focusing for range. Two steps are necessary because the human eye's ability to refocus quickly can cause errors in parallax adjustment. Apparent sharpness of reticle and target does not alone ensure correct parallax adjustment, please follow the procedure below.

ADJUSTING THE EYEPIECE

When the scope is assembled, the eyepiece is positioned so that the lockring is .250" from the end thread on the scope tube (see attached diagrams). This is where the lens should be if your vision is perfect. Due to manufacturing variation and the differences in the human eye, there may be some adjustment necessary for each individual. To make this adjustment, look through the scope at the clear sky. While doing this, keep both eyes open and focused on nothing. This focuses both eyes at infinity. At this time, the reticle should be in sharp focus instantly for your eye. If it is not, loosen the lockring and rotate the eyepiece in and out until the reticle comes into focus as soon as you look into the scope. When this is achieved, lock the eyepiece with the lockring to prevent movement. This adjustment should only need to be done once and not changed unless your eyesight changes.

FOCUSING FOR RANGE

The range adjustment is the knurled sleeve at the objective end of the scope. After adjusting the scope so that the reticle is in focus, you will need to adjust the scope to bring the target into focus. To do this, loosen the objective lock ring. This will allow the adjustment sleeve to move in and out. To focus for farther range turn the sleeve counter clockwise, and for closer range turn the sleeve clockwise. Once adjusted tighten the objective lock ring.

ADJUSTING THE RETICLE FOR LEVEL

Once the scope is mounted on the rifle, the reticle may not be perfectly level with the view. To adjust this, place your rifle on a rest, or in a vise that will hold the barrel level horizontally. If the reticle is out of level, loosen the screw in the sleeve close to the eyepiece. DO NOT back it all the way out. This sleeve also has o-rings in it. Once the screw is loose, rotate the ring until the reticle is level to the target.

At this time, the scope should be properly adjusted and ready to use. If you have problems with your groupings, check for parallax. As stated before, this can be seen by placing the rifle on a rest with the scope focused on an object in the distance. Without touching the rifle, move your eye around the scope's field of view and watch the reticle in regards to the object in focus. The reticle should stay on the same spot on the object no matter how you move. If it does not, repeat the adjustments in these directions.

USING YOUR MALCOLM STYLE MOUNTS

The Malcolm style mounts are designed after the original Malcolm mounts, but a few changes were incorporated to make operating them easier. These mounts are precision made on CNC machining centers to extremely tight tolerances and, with proper care, will provide you with very precise adjustment.

We offer two variations of the Malcolm mount: the Silhouette model and the Schuetzen model. The Silhouette version has the elevation knob and engraving on the left side of the mount. This allows right handed shooters to see adjustments without getting out of shooting position. This model also has thread pitches that allow movements consistent with our Soule sights. Clockwise rotation of the elevation screw will move point of impact up, and clockwise rotation of the windage screw will move point of impact right.

The Schuetzen mount has the elevation knob and engraving on the right side of the mount. This mount may be more user friendly to left handed shooters. It also has thread pitches that allow movements consistent with the Unertl or Lyman style turret mounts. Clockwise rotation of the elevation screw moves point of impact down, and clockwise rotation of the windage screw moves point of impact left.

You may notice very slight backlash in the threaded adjustments. This is necessary for any threads to ensure that they do not bind up during operation. As long as any adjustments made are in the same direction of rotation of the screw, there will be no correction required for the backlash. If your correction requires going from one direction of rotation to the other, the technique for eliminating backlash is fairly simple.

By observing where your point of impact occurred, you should be able to judge the amount of elevation change that is required. Before changing the elevation, note the position of the elevation slide in regards to the tic marks on the sight. Next, observe where the tic marks will line up after the elevation change. If you are changing rotation of the screw and you go straight to that point, the backlash in the threads will be incorporated into the motion. This will cause your move to be up to .001" off from what you want it to be. To eliminate this, move the slide past the mark you want to go to, then reverse the rotation and come back to the mark. This will eliminate the backlash from the move and put you exactly where you want to be.

Before adjusting the elevation on the rear mount, loosen the large, knurled knob on the left side of the Schuetzen mount or the lever nut on the right side of the Silhouette mount. This allows the elevation to slide freely. Once your adjustment is made, retighten the nut. Failure to do so may allow the elevation slide to pivot slightly, affecting accuracy.

The front mount also has windage adjustment. This is more of a coarse adjustment and is used to zero the scope after mounting it or when wind conditions are exceptionally bad. Each tic mark on the screws represents .005" and is treated the same as rear movements for your sight radius. To adjust the front mount to the left, loosen the left thumbscrew a few revolutions. Tightening the right screw will then push the slide to the left. When you achieve the desired position, retighten the left screw. Going to the right is the reverse of this procedure.

When shooting the rifle, the scope will slide forward under recoil. When the scope is first mounted to the rifle, you should set your battery stop. This is the clamp in front of the front mount. To do this, slide the scope in the mounts until the eye relief is comfortable. Then, while holding the scope from moving, loosen the thumbscrew on the battery stop and slide it up against the face of the front mount. Now retighten the thumbscrew. After firing the rifle, you can pull the scope back until the stop contacts the front mount and be ready to fire again.

#2 SCOPE MOUNTS

The front scope mount has a plunger with a convex tip to ride in the groove along the bottom of the scope tube. This is what allows the scope to slide, yet not rotate. There is no adjustment in the front mount. Elevation and windage adjustments are made with the rear mount, which has a spring opposite of each knob to eliminate backlash in the threads. There is also a pressure screw in the corner of the mount which allows the shooter to adjust the amount of tension on the threads of the adjustment screws.

The front and rear mounts are mounted on 7.2 inch center to center spacing. Windage and Elevation adjustment knobs have the same threads, so adjustments are the same. To move the bullet's point of impact up, rotate the elevation knob Counter Clockwise. To move the impact to the right, rotate the windage knob Counter Clockwise.

The tic marks on the elevation and windage knobs for the #2 mount will move point of impact $\frac{1}{2}$ MOA ($\frac{1}{2}$ inch at 100 yards). There are 25 tic marks, spaced at .001", on the windage and elevation knobs. A full revolution will adjust the knob .025", which will move point of impact a total of 12.5 MOA. The tic marks on the post are .025" spacing. Therefore, one revolution will move the knob from one tic mark on the post to the next tic mark.

Adjustable Front Mount

The Adjustable Front Mount will allow you to use the front mount as a coarse adjustment and fine tune with the rear mount. By doing this the scope elevation will stay centered in the rear mount. The farthest range is when the front mount is at its lowest adjustment.

When adjusting settings for first time set front mount at 0 for Rams, Then adjust rear mount until on target (see other sheet). Then take the MOA change between each animal. For example of its 14 MOA between Ram and Turkey raise front mount .042" ($14 \times .003$). This should put the shooter at the Turkey setting. You

may adjust the front mount in full revolutions, ie .025" and take the balance up in the rear mount.

Proper use of the front mount will minimize the movement (change) necessary on the rear mount, thereby allowing the shooter to maintain a more consistent cheek weld throughout the course of fire when shooting silhouette. See spreadsheet example for adjustment notes..

REMOVING THE SCOPE AND MOUNTS

While the scope blocks are meant to be attached permanently to the rifle barrel, the mounts themselves were designed to be easily removable for shooting with iron sights. This is accomplished by loosening the two screws on the left side of each mount and sliding both mounts at the same time off of the scope blocks. The screws have small tips that go into counter bores on the blocks. The screws need to be backed out enough for the tips to clear the counter bores.

When reinstalling the scope, make sure the screws are backed out far enough and slide both mounts over the blocks. While tightening the screws, keep the ends of the mounts even with the ends of the blocks. **DO NOT** over tighten the screws. The counter bores will prevent the mounts from sliding, and over tightening will mushroom the screw tips or cause the heads to twist off.

MAINTENANCE OF SCOPE AND MOUNTS

Dirt and moisture are the biggest enemies of a scope. The MVA scope has safeguards against them both, but excess of either may damage the mechanism or the optics. **ANY DISASSEMBLY OF THE SCOPE OR MOUNTS WILL VOID THE WARRANTY.** If the assembly gets dirty, wipe it clean. Use of a silicone cloth will help protect the surface of the scope. Do not oil the scope as it may leach into the scope and coat the optics. Keeping the scope dry will prevent rust. You may choose to apply a small amount of grease to the contact points between the scope and mounts to help it slide easier, but this may allow dirt to accumulate in these areas.

The lenses in the scope are coated to help light transmittal. If the eyepiece lens becomes dirty, use only a quality glass cleaner and soft cloth to clean it. **DO NOT RUB DIRT OFF WITH A DRY CLOTH.** This will scratch the coating. The objective end of the scope has a plain glass coverlens that is easily replaceable if it becomes scratched. Clean this lens with glass cleaner also. Always replace the lens caps when not using the scope to protect the outside lenses.

With proper care, this set of scope and mounts should supply years of satisfaction. Follow these directions and please call either Lars or Jim at MVA if you have any questions. Good luck and happy shooting.