

Optics for a 22 Rifle for League Shooting

by Paul Komroski – February, 2010

Optics is a huge subject. I'm not going to include in this article all considerations for elements outside of what we do at the club. The subject matter is huge, and since we do not shoot 300 yards, or even 50 yards we can narrow the subject way down. So I'm confining this article to optics for our 22 rifles for our shooting at the club. Now some of the points would apply to our pistol shooting optics but they are very different, so mainly do not apply the same way.

Most guys put a cheap scope on their 22 and that's the way it normally goes. For most uses of the 22 that's fine and you will never be bothered by it. You can get cheap scopes for less than \$30.00 and they even look good to the average guy who doesn't know what to look for. But you will never do well if you don't have some important elements in your scope regardless of its cost. I will give you some pointers to grade your scope if you want to do well with our competition and your own scores.

1. Perfectly clear sharp focus of target and crosshairs with no fading or fussiness' of crosshairs.
2. An Adjustable Objective to focus parallax as close as 20 feet.
3. Magnification of at least 9 power magnification. Ideally more like 12 power for indoors and 14-16 or more for outdoors. But the clear focus is a must of both crosshairs and target at the same time.

The definition of a clear focus.

The first thing to consider (and most important when thinking about a scope for your 22 rifle) is its use. We shoot extremely close distance for a scope indoors. This makes it very hard to select a scope, and the reason it's hard is because of the issue of clear focus. The scope has to focus indoors at 50 feet, and that's hard for most scopes to do. **Let's define what a clear focus is. It is when you can see the target and the crosshairs at the same time very clearly, and the crosshairs never fade in and out of focus.** Often a variable powered scope will not be able to be turned way up and still keep the focus sharp crisp and clear.

The scope would need to be turned down some, and then once it's turned down some, it's nice and clear. This is fine so long as the power it's turned down to gives enough magnification to "make the X big". Now there are probably many differences in opinion on how much magnification is needed but we will get into that later in the article. The main point is if it's not in perfectly clear focus it's no good.

There are some midrange scopes that go way up in power — say 24 power — but can not focus at the 50 foot range, yet focus great at 10 power, and will go to 14 power outdoors really clear. Those are the tools you need to do really well.

We could talk about optical clarity, and multi-coated lenses, but we don't really need to. We are shooting so close and in as near to perfect conditions (indoor lighting, out of the rain) so those are just bells and whistles that are secondary to the main points we are discussing. A multi-coated lens is great; with its clarity and brightness it will help with the bright sun and the cloudy days, but not enough for our application for you to be concerned about. If you find a \$150 scope that will do all that is discussed in this article and it doesn't have the coating of a Leopold don't sweat it, your not losing enough for it to be considered in our competitions. If you have the money to afford a scope with multi-coatings, get them, they are a great luxury to have and they will make your eye happy.

If you're not perfect you need an adjustable objective.

An adjustable objective is a dial around the objective end of the scope, or a knob on the left side of the turret housing. This allows you to adjust your scope's parallax to a certain distance by moving these adjustments until a clear picture is perceived, and/or the marked corresponding incremental yardages are approximated to your target distance. The correct setting of an adjustable objective prevents the apparent movement between the reticle and the target when the shooter moves his head slightly off-center of the rifle scope. That's the long technical definition; in layman terms, it's a dial that makes the crosshairs hit the mark no matter how you have your eye looking through the scope.

Because of the way most optics are made there is a distance that the crosshairs will always be "on" with rifles with a non-adjustable objective. This is normally 100 to 125 yards; with 22 scopes it's normally 50 yards. But this isn't good enough for what we are doing. It's fine for hunting and general plinking, but to shoot the X out of a target you need much better accuracy. If you have an objective that's set at 100 yards, then at 50 feet you could look through the scope and if your eye isn't exactly centered you will miss your mark by 1/2 of an inch or more.

By the way, with a 1/2 inch to the left on the first shot, and a 1/2 inch to the right on the second shot, you're opening up your groups to over an inch and doing nothing wrong except not centering your eye, and sometimes it's hard to notice that your eye isn't centered. Sometimes I will hear guys get frustrated because they can't hit the same and make a small group off a bench rest; almost always it's because they are not shooting for where their scopes non-adjustable objective is set.

This feature is very important when you're trying to hit a little tiny dot. If you don't have an adjustable objective on your scope, you have to have your crosshairs perfectly centered in the scope body before you put the crosshairs on the x. This is harder than you think. Remember, we are talking about perfect, not 'good enough.' The dot that marks the X is too small for 'good enough.'

To adjust the objective, place your gun on the bench unloaded and set it up in or upon a rest so it will stay there and not move. Then, move the gun and bags/rest/contraption you have it in so that you can see the bull's-eye through the scope with the crosshairs centered in the scope, without touching the gun. Now, looking through the scope perfectly centered you will see the x right under the crosshairs, but when you move your head around so the

crosshairs are not centered in the scope you will notice the crosshairs are not over the x anymore. Move your objective dial until no matter where or how you look through your scope your crosshairs are on the x (or they don't move from wherever they are pointed.) This makes the crosshairs and centering the eye idiot-proof, and we know we all need as much of that as possible.

Without an adjustable objective on your scope you will not be able to shoot to your best ability. With an adjustable objective you can buy a scope that's made for a much bigger rifle and adapt it down to your 22 for indoor or outdoor shooting (make sure it will go low enough; if the label states "Parallax focus from 10 yards to infinity" you will be fine.). Often it will be abbreviated using the symbols "AO" on the box or advertising. You have a very small group of scopes to choose from if you look only at scopes designed for a 22, and even then they need the AO in order to shoot right for our competition. With the AO feature you can look at scopes designed for high-powered rifles that will give you the magnification you need and shoot right where you put the crosshairs.

Let's talk magnification.

The third thing mentioned is magnification, and that would leave dots out of the subject as they don't offer any. You need magnification! You're not shooting running game, you don't care what the field of view is, you can mark your target to make sure your shooting our own target, so again you don't need field-of-view. Field-of-view doesn't matter for what we are doing. If you compete in the scoped division you need as much magnification as you can use, if you're going to try to compete with low power magnification you will do better in competition to shoot iron sights. The amount of magnification will depend on a few things, namely a good clear focus and the stillness of your hold. Magnification is worthless without the clear focus we have already discussed.

If you're a new shooter your hold will be very shaky, much more than an experienced shooter. The fix is very simple; shoot till the brass is up to your knees and your problems will magically disappear. Now that may sound funny but nothing replaces just good practice on good equipment.

Until you develop your hold, you will develop bad habits with too much magnification because of what your brain is telling you. Let me explain....The more you move, the more your brain tells you not to pull the trigger (after all you're not stupid, right!). If you have a scope that will focus at 14 power, in the indoor range your bull's-eye will more than fill your scope, and if your movement makes the bull's-eye look like a shooting star going past your crosshairs you're in trouble.

When you see what looks to your brain like a lot of movement, you will hesitate to pull the trigger. Then when you do finally pull the trigger you will not pull it in one continuous movement; it will be a jerk or a jerk-stop-jerk-flinch. But if you turn the scope down to 8 power you can keep the crosshairs on the black most of the time. It will not look to your brain that you're moving as much anymore and as a result you will have a much smoother trigger pull. In fact, you will be moving the same amount, but your brain

will be affected differently by what it sees. You will shoot better and your scores will be higher, your hold will gradually become better.

So you may be saying to yourself, “Ok, I don’t need that great of magnification because I cannot hold that still.” Let me encourage you not to underestimate yourself with good equipment. Once you get a really good scope your hold will improve very nicely over just a few leagues of competition. Most people will improve their hold up to 20% to 30% in 2 years of shooting with good equipment, barring medical (or mental) problems. When your hold gets better you turn your scope up a little more, then you get a little better and you turn your scope up some more, and before you know it you’re shooting indoors at 12 power and your movement is very predictable and easy. So, with magnification you want to go as big as you can afford but be prepared to spend some money, much more money. If you can get more magnification than you can use just turn it down, and look forward to the day you will be able to use all that magnification.

An expensive scope is nice in that they all now come with great warranties, with lifetime the norm. They are extremely well-made and hardly ever need repair; they transmit light beautifully, and they retain a great value for resale. The problem is they are hard to find locally at a decent price. The best way to save money is to buy on-line from a reputable distributor of the brand. However, be careful because the Chinese are making knockoffs that are almost identical to the real thing and their goal is to deceive you. They put other manufacturers’ names on them, and make boxes that are identical to the original manufacturer. Make sure if you’re going to plunk down more money on your optics than you spent on the gun, (by the way most of the time the optics cost more than the gun with the improvements made to it) that you get the real deal and you do this by making sure where you buy it is an approved distributor of that product. For our competition you don’t need an expensive rifle as I said in another article. A Ruger 10/22 will work great, but spend the big money on the scope and you will not be sorry you did.

Some scopes that I know are good are the Bushnell 4200 line, especially the 6X24x40mm (these are in the \$400 range), and the Leopold 22 3x9 AO version (they have 3 types and only one has the AO). I cannot remember the names of some of the others, but there are many that would work real well.

Shoot straight and shoot a lot, and if I can ever help you out, just let me know.

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