



Article Written by: Mark Trope

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The essentials, riflescope and spotting scope

The Mil-Surp sniper rifle will wear an optical sighting device. A Mil-Surp rifle that has been sporterized usually has been drilled & tapped for scope bases. Many Mil-Surp's are readily adaptable to optics. Often a "No Drill or Tap" mount that replaces a part of the rifle will quickly adapt a Mil-Surp to wear a scope. Shooting an iron sighted Mil-Surp rifle requires a spotting scope, unless you *enjoy* hiking 100 yards every 15 minutes.

In a previous article, [STAYING LEVEL & CENTERED](#), we discussed in-depth how a scope operates. In that article, we approached things from the point of view that it was a correctly operating scope (COS). However, it is an imperfect world. In this article we will look at scopes from the prospective of a poorly operating scope (POS). Everything we say about riflescopes also applies to spotting scopes.

Allowing the shooter to achieve zero for a given load in a given rifle is a function of causing the shooters eye to look at the same place as a bullet impacts on a target. Moving the erector tube inside a scope by adjusting the turret's causes these two points to coincide.

The smoothness, repeatability and ability of the scope to retain zero will be determined by design, materials and quality control put into an optical unit.

How clear and bright the image appears is determined by lens quality and overall design of the scope.

A scopes ability to take linear stress, maintain structural integrity, and not leak is a combination of engineering, high-grade material and quality assurance.

ABOUT THE QUALITY ASSURANCE INSPECTOR...

If the Quality Assurance (Q&A) Inspector is considered a "good 'ole boy or good 'ole gal" around the factory, chances are they aren't doing their job!

Quality Assurance, especially in a premium optics factory, is a tough act to do on a daily basis. The Q&A person has to be totally uncompromising, and willing to break hearts at the drop of hat. When the Q&A person puts the "Passed" sticker on a scope, that's their word it meets the absolute highest standard.

Anything less than "perfect" in a scope will show up when it counts most. Let's look at some all too common faults in POS's. For the sake of this discussion, assume the rifle, bases & rings are correct and in alignment.

- ▶ Even though the hunter knew his range & held steady, the trophy of a lifetime is missed.
- ▶ The shot that was a righteous "X", wanders into the 9-ring during the big match.
- ▶ After a hunter trudges 2 miles through calf deep snow during a sleet storm, he spies a monster buck less then 100 yards away. He shoulders his rifle only to find the scope is internally fogged from leakage.
- ▶ A shot is fired on the range. The bolt is cycled and the shooter looks through the scope again only to see a blurry image or a missing reticule.
- ▶ The adjustable objective (A/O) ring is turned to focus an image at a certain range. Zero changes and the scope turrets have to be adjusted to bring shots center again.
- ▶ A scope listed as suitable for Target/Varmint applications has a very thick reticule. Much of the target or small game cannot be seen due to a thick X-hair or Duplex reticule.
- ▶ A scope with a power range of 8-32 has fairly good optics at the lower settings. When the owner approaches the upper limits, say, past 20 power, the image gets progressively darker and focus becomes very difficult.
- ▶ A scope has fairly good optics and takes the punishment of centerfire ammunition. However, eye relief is extremely critical. Move your head ½ inch forward or back, and the image goes black!

These are the kind of situations that make even-tempered men exasperated!

Let's discuss these problems again, and determine the causes.

► **A hunter misses his trophy. He held steady and estimated his range well.**

In low quality optics, any excessive, and often not-so-excessive jostling will cause the zero of the scope to really wander. Two weeks before the big hunt a rifle with low quality optics is zeroed on the range. It gets put in a gun case, tossed into the back of the truck, carried home. Two weeks later it gets tossed in the truck again, carried many miles to a hunting camp, then jostled as the hunter trudges through muddy trails up the mountain. In addition to all the jostling, the scope is subjected to changes in temperature.

Most quality hunting camps have clients re-zero on arrival. They know lots of things can happen between home and camp. The overall poor quality of inexpensive optics will really show up at this time. Upon re-zeroing at camp, the hunter may be really puzzled, he comments; *"How could have it changed so much? I just zeroed it 12 days ago"*. The camp staff knows it won't do to disparage the client's scope. They just shrug and say, *"Who knows? The weather is funny here, but now it's re-zeroed & you're all set to hunt"*.

► **The shot that was a righteous "X", wanders into the 9-ring during the big match.**

Match rifles get plenty of TLC. When a competitor sits down at a bench match he or she usually watches the range conditions; and adjusts the scope turrets for the *most prevailing* condition on the range. As stated before, the turrets will move the erector tube *inside* the scope to have the shooter's eye and point of impact (POI) coincide. In high quality scopes, the stated value of a "click" is exactly what you will get, 1/8 ¼, ½ minute etc. The reticule moves when you turn the turrets, it moves the required amount, and stays put, period! The reason this happens is the very best materials are used; held to the highest standards and the design is one with no margin of error.

POS's have lots of plastic inside, cheap springs and overall simple design in the turrets and erector tubes. Often, moving the turrets results in a "delayed" reaction before the reticule moves! Or it moves more or less than the amount you wanted. Sometimes it moves the required amount, but then zero "floats" for several shots before the scope settles down. The only thing one can do about this is move *past* the point you want, and then move *back up* to the required point. This may remove some of the slack in the system. Then fire several sighter shots to settle it back in, *before* firing a record shot.

► **A hunter trudges 2 miles through calf deep snow during a sleet storm, He shoulders his rifle, and the scope is internally fogged.**

Quality scopes are purged and filled with nitrogen. Lenses are coated to admit the maximum amount of light and resist fogging. All parts are mounted in special seals that fit into precise grooves. Stories abound of good scopes getting lost in the woods, buried under snow for a few months. In spring the rifle is found, rusted up. The scope is still good. In Pennsylvania a good scope got buried in a mud slide. It still worked fine! Everything is done to insure no outside air leaks into the scope. Things like humidity, sleet, rain and changes in temperature raise heck with inexpensive optics. They tend to leak. Poor overall design, shoddy seals and a lack of quality assurance make inexpensive scopes prime candidates for leakage. There's little you can do about this. Taking a rifle from a warm truck cab into wet, cold weather is setting it up for fogging. Keeping the scoped rifle where

it won't be subjected to temperature changes will help. Many hunting camps have a special un-heated room where client rifles are stored.

► **A shot is fired on the range. The bolt is cycled and the shooter looks through the scope again only to see a blurry image or a missing reticule.**

Cheap scopes may hold up under the stress of a .22 or a .17 rimfire, but put them on a short barreled, light stocked sporter and the kinetic energy will kick them apart! A scoped Mil-Surp may get a bit of grace in this situation. Mil-Surp rifles tend to be heavier.

However, I have seen a fellow get a "special buy" scope from a web-based supplier. The scope wore a name that *used* to stand for fairly good quality. He mounted it on a sporterized Mil-Surp that retained a full barrel length and the stock was only mildly cut down. Less than 20 rounds and the scope went all blurry. The lens had moved. It was returned, and replaced by the web-based supplier. The replacement scope's reticule fell off in about 18 shots! Cheap scopes just can't take much punishment.

► **The adjustable objective (A/O) ring is turned to focus an image at a certain range. Zero changes and the scope turrets have to be adjusted to bring shots center again.**

Inexpensive optical units tend to have poor quality control. Many scopes get shipped that would be rejected from a quality manufacturer. When the A/O is turned, the ring, lenses and scope must be exactly concentric with each other. Any misalignment causes zero to shift. When the A/O is turned, the feel should be the same while it is turning. If there are tight or loose feeling spots, it's almost sure the A/O ring is eccentric and zero will wander. In this case the only option is to return the scope and hope the replacement is better.

► **A scope listed as suitable for Target/Varmint applications has a very thick reticule. Much of the target or small game cannot be seen due to a thick X-hair or Duplex reticule.**

This situation affects both inexpensive and some very high-end scopes. I have a top-of-the-line scope from a very prominent company. It's their most expensive scope. In all respects this scope is excellent, with one exception. The duplex reticule was simply way too thick! Provided I sent the scope and \$55.00, the company would change the reticule. But they only offer an X-hair & 1/2 minute dot reticule as an option. Returning the scope to the manufacturer for work protects the lifetime warranty. However, I wanted a very fine X-hair & 1/8 minute dot.

To get a very fine X-hair & 1/8 minute dot I would have to send the scope to another company. When it comes to reticule replacement, [T.K. Lee](#) is the best in the business. I knew having them install a new reticule would void the manufacturer's warranty. As this is a best quality scope, I accepted the warranty loss. I couldn't have been happier with T.K. Lee's work! They did a perfect job. T.K. Lee can change most any scope reticule. Check their site for specific models and current prices.

► **A scope with a power range of 8-32 has fairly good optics at the lower settings. When the owner approaches the upper limits, say, past 20 power, the image gets**

progressively darker and proper focus seems to always be just out of reach.

Features are a selling point of optics. When a scope is advertised as 4-16, 6-24, or 8-32 Power, that statement will get a prospective buyers attention. What the buyer may not consider is that an inexpensive scope has to give up something when it costs 1/3 or less then a quality unit. Something simply has to give. What will usually give is the optical quality in the upper power ranges. Yes, the scope will achieve 32 power, but at the expense of brightness and image quality.

This is *especially* true of spotting scopes. Advertisements like to tout the size of lens or power range. A poor quality spotter that won't allow you to see bullet holes on a target is less then worthless! Just a few weeks ago I was trying to help a fellow get zeroed on the range. His spotting scope was giving him fits. No matter what we did with it, it just wouldn't focus correctly @ 100 yards. He came out with some choice expletives! He admitted it needed to be replaced with a quality unit.

► A scope has fairly good optics and takes the punishment of centerfire ammunition. However, eye relief is extremely critical. Move your head ½ inch forward or back and the image goes black!

Everything in optics is some sort of compromise. To gain one thing, another must be considered. The best optical units are designed to make the least compromises, and get the best features all in one scope without letting any one thing be compromised too far.

One company used to market a very good fixed-power target scope. This scope even took a few national titles. The optics was clear, the image bright, the adjustments were repeatable and the crosshair quite fine. However, the eye relief was very unforgiving. In a target scope, used in range competition, this isn't all that bad. Since the scope sold for ½ the price of other units, many fellows were willing to live with the eye relief issue. A hunting scope must have plenty of eye relief. A hunter doesn't usually get a 7-minute firing period and the luxury of a nice, comfortable shooting position!

ABOUT THOSE "LIFETIME" WARRANTIES ...

A LIFETIME WARRANTY on a scope, or any item for that matter, doesn't mean the lifetime of the product, or the lifetime of the buyer, it means the lifetime of the company that sells it!

If the "MYOPTIC OPTICS" firm goes bust, the warrantee goes bust also. If another company acquires the name, "MYOPTIC OPTICS", 6 months after the original company ceased operations, in most cases the new firm will not honor any warrantee on the previous company's products, even though the item wears the same name.

*In **some cases** the company acquiring an old companies (that ceased operations) name may refer the customer to a repair station that is willing to repair the old companies products, however, the customer would have to pay for any repairs. Some of these repair stations are excellent. They do the required repairs in a timely manner for a fair price. Others are abysmal. Stories abound of lost scopes, customers making numerous phone*

calls, scopes finally returned with a tag marked "repaired", and no repair was done at all, but the customer's card was charged for the repair.

*If a company or conglomerate gets controlling interest in a company **that is still operating**, then the warrantee will usually continue.*

*In cases where a scope is sent in under the terms of Lifetime Warrantee, the company, in all cases reserves the right to repair, or, at their option, replace the scope. This can work for, or against the customer. In the case of **high-end optics**, when the company opts to replace the unit, it is always replaced with the same model, or if that model is no longer in production, it is replaced with a similar or better scope.*

*In the case of **low-end optics**, when the company opts to replace the unit, it may be replaced with a unit carrying the same model number, BUT, the scope may come from another factory than the original. The new replacement scope may be of **substantially lower quality** than the old one! A fellow found himself in this situation. The scope he sent in for repair was made in Japan. The scope was of fairly good quality. All it needed was the reticule replaced. The company opted to replace the entire scope. The new scope carried the same model number as the old one. The replacement scope was made in China. It was nowhere near the quality of the Japanese made scope! He called the firm requesting a Japanese made scope, or his old one back. He was advised the company switched to a vendor in China, no Japanese scopes were available, and his old scope had been scrapped!*

*One last thing about factory warrantees, If **anyone** other than the manufacturer or their authorized service center repairs, services or modifies your scope, the factory warrantee is null & void.*

Low-end optics are often introduced to the US market on the "bait & switch" principle. A company puts a fairly good scope out at an attractive price. For the first couple of years they get the units from a good vendor. Then, after the scopes get a following, the company switches to a vendor in another country. The second vendor's products are poor in comparison. Loyal customers feel cheated when they place an order and get a scope of comparatively poor quality compared to the scopes they bought a year or two back. Most companies won't tell you what vendor their products come from.

Companies that actually manufacture their own products in the US are quite proud of them! Some US manufactures actually serial number their scopes. An email to the company Customer Service Dept. will get you the year of manufacture and if the scope has ever been returned for service.

IN ALL FAIRNESS...

It has to be pointed out that companies that market scopes, but do not actually produce them have a "target price" a scope will sell at. That target price is designed to satisfy a certain market niche of customers. The company decides what specifications the scope will have. Then they search for a vendor who can supply the required product at a price the company can live with. Remember, the company must then market the scope and sell it to the consumer within the target price and still make a profit.

Many factors figure into the equation. Not the least of which is the stock market and international banking. If the US dollar becomes stronger, the company may stay with the same vendor for a long time. If the US dollar becomes weaker, buying power is reduced. The company has two options.

One is to raise the retail price to cover the reduced buying power. This option may take the product out of the target price. If the price now approaches the price of high quality optics, most customers will opt to pay just a few dollars more and get a better product with a better track record. When this happens the company loses that market niche. (This is known as pricing yourself out of the market)

The second option is to find a vendor that will deliver the product at a cheaper price to the company. This usually means going to a vendor in yet another country, where labor will be cheaper and the US dollar has more buying power. IF the quality of the new vendor's product is comparable to the first vendor, then all is well. Sadly, in most cases it means a product of lesser quality.

As you may have noticed, other than the mythical "MYOPTIC OPTICS" firm, I have refrained from naming names. It's very difficult to say: "This scope is good or that scope is bad". Generally speaking, expensive equals good and cheap equals potential problem! However, that is just too simple.

Often, an inexpensive scope can be good! However, it usually is a fixed power scope with a low magnification. Often its turrets won't have "click" adjustments. By doing away with all the bells & whistles, a fairly good unit can sell for less. I have one such scope. It's been in service for over 15 years on a rifle with very hard recoil. Can a high quality scope go bad, or be bad right out of the box? You bet!

The difference is; when the expensive unit fails, the company will make good on it pronto. Several years' back, the "Peek-A-Boo" optics firm introduced a new, very expensive, scope line. Soon, reports began to filter in that all was not well with the scopes. The company figured out the problem & changed the design to prevent the problem from reoccurring. They quickly repaired or replaced all the malfunctioning scopes. Customer satisfaction is paramount to the high quality optics producer. So, what's to be done to pick optics?



Read the instructions and warrantee carefully!

I urge you to go to the site of any company whose products you are considering. **READ THEIR WARRANTEE STATEMENT CAREFULLY.** Be *very aware* of exactly what they will, or won't do for you.

One company simply has a 100% forever warrantee. It doesn't matter how old the scope is, you don't have to be the original owner; have a receipt or anything else. If the scope fails, send it back. It will be repaired or replaced, end of story. Of course, this is the most expensive optics line, but, when it *never* goes out of warrantee, the price is justified.

Other high-end companies have similar warrantees. Some high-end companies have a 100% forever warrantee but it's only to the original owner, so keep your receipt. However, I'm told they tend to be flexible on this point. If you send in the scope with a note saying the scope was received as a Xmas gift; they usually repair it without proof of original ownership. OK, that's high-end, what's the rest of the story?

Low-end companies may offer a similar warrantee to the original owner. Keep your receipts; they *will* want to see it. However, they usually have spotty repair records, or extremely long shop time. Often, they simply replace a POS scope with another POS scope that has the same problems. I know of scopes being replaced 3 times and the same problem continues to show up in short order. Poor design is just that. So, beyond reading warrantee statements, what's to be done to pick optics?

Usually, you get you pay for. The more money spent usually pays itself back to you, because, you only spend the money once. Going inexpensive usually means replacing the unit. I know a fellow who bought a bargain priced spotting scope. He wasn't satisfied. He replaced it with one of slightly higher quality and still wasn't happy. The third one he bought was from a quality vendor. Had he simply bought the good one right away, he would have been money ahead. If one doesn't have the money for a quality unit, it may be better to simply wait until the cash is available (Yeah, easier said than done). Another thing some folks may want to consider is resale.

High-end optics usually retains their resale value. Sometimes, the value of a discontinued, but much sought after model from a high-end scope manufacturer will **appreciate** in value.

It's true! Even with honest use, provided no ring marks are present and the scope has all the original accessories, the owner may actually get a bit more than he paid for it. On some models, the owner may see 2 or 3 times profit over what it cost him 20 or 25 years ago! Often, when a very good, high-end scope has been recently discontinued, there is a buying frenzy. Owners of used, but clean examples can sell it for just as much as it cost when they purchased it, or they sell it at a very slight loss. If they got good use from the scope for a few years, that use will offset the slight loss when it's sold. Several years ago, a company that markets scopes made by the best optical firm in Japan, made a special purchase of their top-of-the-line scope. For a few months the scopes were retailing for \$150.00 less than the normal price. A fellow selling one of the scopes bought during that short period could see a huge profit today.

Needless to say, POS's have little resale value. Once they have been seen use, get ring marks, etc they lose most of their value. When a scope wasn't very good to begin with, use can only bring its value down. So, once again, what's to be done to pick optics?

OK, warranty statements have been read. We now know & understand how different companies stand behind their products. Read our Surplusrifle.com forum section on optics. Fellows will sound off both good & bad about different scopes, and about how a company treated them when they needed warranty support. With this in mind, decide **exactly** what purpose a particular scope must fill. Will it be on a hard kicking center fire, or a light recoiling rifle like a .17 or .22? Will it be taken into the field? If so, will it be in a dry or wet climate? If the scope is to be on a target rifle, is the reticle fine enough? Do you really need a wide magnification range or finger adjustable turrets?

Once you have answered all these questions, determined exactly what your situation requires, and then you can look over the various scopes that fit your needs. Try to actually look thru an example of the model you are considering. Reading the copy on a company's site is good, but of course, they won't say: "*Our scopes are poor quality*". Get the very best optics you can. It will pay itself back to you again & again.

Talk to fellows in your gun club. See what the guys who win the matches or bring home the venison have on their guns. Usually, it's going to be a better grade of scope. Same story with spotting scopes, the guys who peer quickly thru their spotter one time and know *exactly* where the bullet hit on the target have a better class of spotter than the guys who look, then squint, wipe their eyes, look again, all the while muttering things best not said in polite society.

Can good, used, quality optics be had for less? Yes, they can. Ebay, www.ebay.com is one source for used and new optics. A smart bidder can get good deals there. Another source is www.samplelist.com. This site is part of SWFA, a huge, web based supplier of new optics. They also take in trades; the best part is they get new or just slightly used demos. The trade-ins & demos are heavily discounted on their web site. Gun Shows are another great source for optics. Prices at the gun show are always negotiable. Before bidding or buying, research what the true "street price" of a unit is. If a used scope has ring marks, or the caps are missing, that needs to be a point of negotiating the price down. However, if the used scope is perfect, the box, papers and all accessories are present, be prepared to pay.

I carry a shoulder bag at gun shows. The bag is a great place to store small purchases.

It also has copies of my C&R, a bore light, pens, notebook and several current catalog fliers. The catalog fliers serve a purpose.

If a seller at the gun show has his products very overpriced, you can gently show him the catalog. Then he knows prices are a bit out of line. Usually this will bring the price closer to reality, but not always. I was looking at a new scope on a dealer's table. Yes it was a premium scope, but he had it priced \$200.00 **over** the price from a well-known catalog/web supplier. He was extolling the virtues of the scope when I showed him the catalog. I politely suggested his price a bit high. He just shrugged and mumbled "*Well then, buy it from them.*" I just smiled and moved on. When a dealer refuses to budge on the inflated price of a current production item it usually means one of two things. He either suffers from unbridled greed, but what probably happened is *he* paid too much for the item himself! Now he is hoping to find an uninformed buyer, so he can unload the item. This is why research is so important. Dealers deserve a fair profit on their business, but not to the point of "taking **YOU** to the cleaners!"

Another source of used, but perfectly good optics is fellows involved in some of the extremely competitive shooting disciplines. Benchresters are forever looking to trade up, or feel they need the latest "go faster" gadget. Often, they need to finance some new project and willing to deal quickly on an item to raise cash.

So, what's up with the name of this article, "*The Problem with Good Optics!*" Good question; thought you'd never ask! About the only problem with good rifle and spotting scopes are you get spoiled by them! I know I am. After having quality optics, it gets hard to consider using something less.

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